FEBRUARY 1980 $3.00

BM/E

BROADCAST MANAGEMENT/ENGINEERING

STRATEGIES FOR THE 1980's

Dependable. . . another reason why Networks, Independent broadcasters and Post Production houses worldwide rely on the CD-480 video switcher for the highest quality television.

They can depend on the power and flexibility of the CD-480 to perform the most complex production sequences with no worry of lock out. . . because the SFX Amplifier permits them to artistically control four video sources in any combination, with one fader handle.

And they depend on CDL to create new options that are easily added to the CD-480 modular design. That is being done now with CAP. . . CDL's Computer Assisted Production system which memorizes, retrieves and accurately executes production sequences created by the operator.

The CD-480 is another example of why CDL has been a leader in video switchers for 20 years.

If our global customers can depend on the CD-480 to meet their requirements, you can be sure CDL can design a CD-480 for you.

Call us.

Depend on the CD-480 to give you the competitive advantage

CENTRAL DYNAMICS LTD

Chicago
331 West Northwest Hwy.
Palatine, IL 60067
(312) 991-4720
TWX—910 693 4805

New York
(914) 592-5440

Los Angeles
(213) 789-0574

Atlanta
(404) 491-9037

Dallas
(214) 741-3332

Denver
(303) 623-7603

CANADA—Montreal
(514) 697-0810

Circle 101 on Reader Service Card

OPTIMUS ON CMX

Maximum creative freedom. Minimum client cost.

Seven years ago Optimus, Inc., was established in Chicago to provide a film editing service for midwestern clients. Two years later its founder, Jimmy Smyth, recognizing that video tape was taking its place alongside film as an accepted post-production tool, installed his first CMX editing system, a System 50, in his growing business. Today Optimus is at the forefront of both film and tape post-production in the midwest. It recently opened extensive new facilities in Chicago, featuring three CMX suites which offer a unique, highly efficient design permitting direct, face-to-face communication between client and editor. Jimmy Smyth, the practical businessman and creative editor, chose a CMX 340X for his third and newest post-production system. What he has to say about Optimus, the addition of the 340X, and how it serves his broadcast, industrial, and educational television clients, tells a lot.

"Our early experience with CMX, very much a part of the venture that took us into video post-production, was rewarding and profitable for us. But when it came time to make a decision on a new editing system last year, we were faced with many new competitive products. And they had a lot to offer. Obviously the decision had to be weighed carefully.

"We literally spent days analyzing the comparative strengths of the different editing systems, evaluating which company best understood and kept pace with this constantly changing medium. The answer, again, was CMX; the system was the CMX 340X. Our experience has reinforced our decision.

"A major consideration in our decision was the need to control escalating post-production costs — a problem affecting every post-production house in the country. With equipment and labor costs constantly moving up, the only element anyone can address intelligently is the time it takes to edit. We therefore designed our facility around speed and ease of editing. The 340X, tied to four one-inch machines, a quad, a 4-track audio deck and video switcher, is an incredibly fast system. We don't think anyone can touch us when it comes to sheer speed in post-production.

"The foresight that CMX demonstrated in thinking through the 340X concept is particularly evident in its handling of the new one-inch VTR's.

"We like the Gismo, for instance, because this innovative search and jogging feature for one-inch VTR's gives our post-production editor another tool that helps to give tape editing a film feel. They've designed the 340X to interface completely with most teleproduction devices. This approach gave us the freedom to select the equipment that most closely matches our requirement.

"We found that the new expanded keyboard soon proved to make editing simpler and, of course, much faster. Our editors love it. Combined with the latest software improvements, we came out way ahead in speed and flexibility.

"CMX has always delivered what they promised to us, and their record of reliability has held up well, including the company's emphasis on field service.

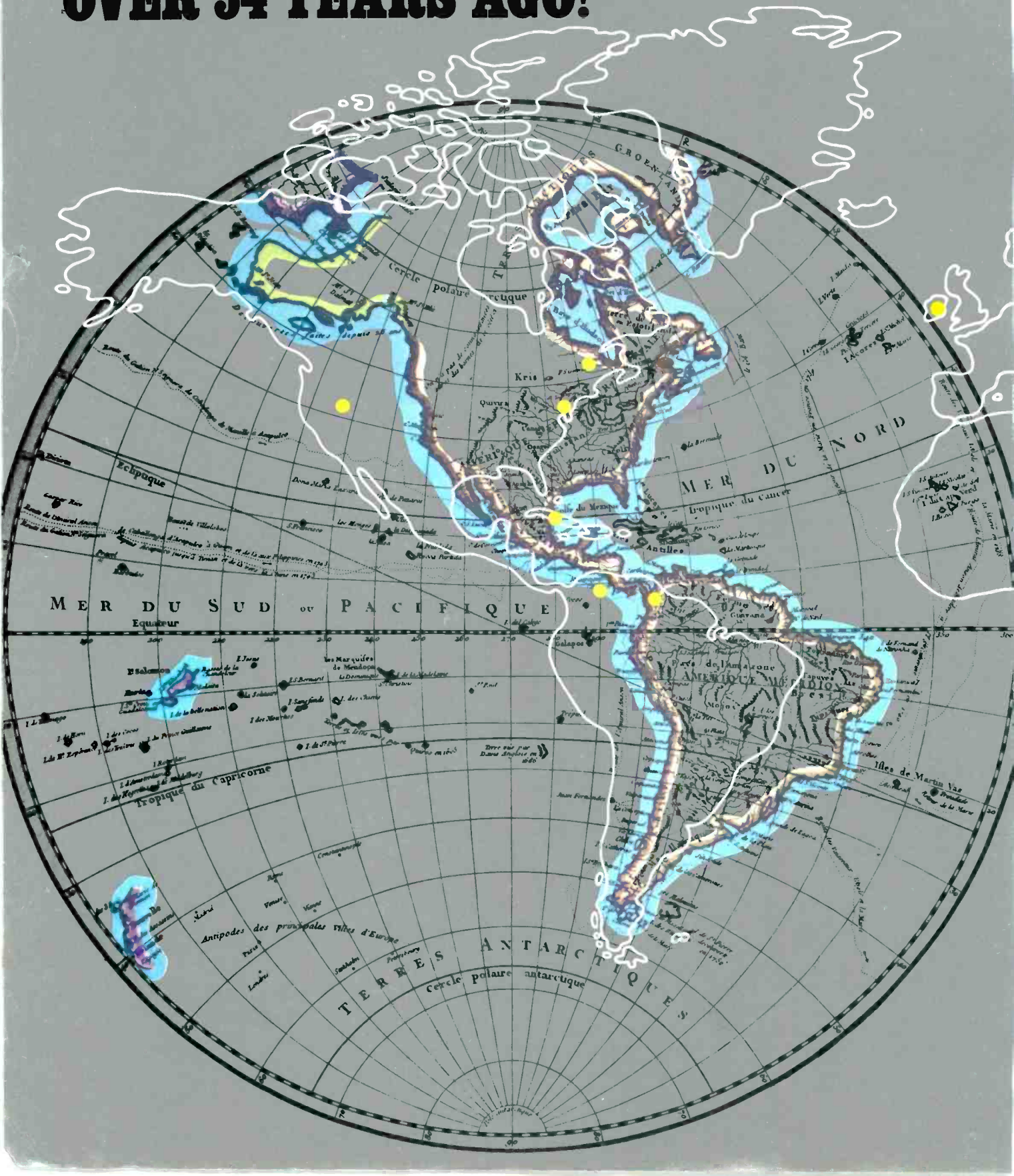
"There's no question about it. Our 340X, along with our two System 50's, have proven to be well worth the investment. We not only deliver editing at a lower cost, but we are also afforded the creative freedom which is unmatched by others."

CMX
ORROX

Orrox Corporation, 3303 Scott Blvd., Santa Clara, CA 95050 (408) 988-2000 Telex 910-338-0554
Los Angeles (213) 980-7927 / New York (212) 371-1122 / **Hot Line:** (800) 538-8092 / Southern California (213) 460-6282
International Representatives: Magna Techtronics Pty. Limited, Artarmon, N.S.W., Australia / Totsu, Tokyo, Japan / Telemation de Mexico, Mexico City / Marconi Communications Systems, Ltd., Chelmsford, England / Thomson-CSF, Gennevilliers, France / GTC GmbH, 2970 Grosshansdorf, W. Germany

Circle 102 on Reader Service Card

RELIABILITY PUT NEC TRANSMITTERS ON THE MAP OVER 54 YEARS AGO!

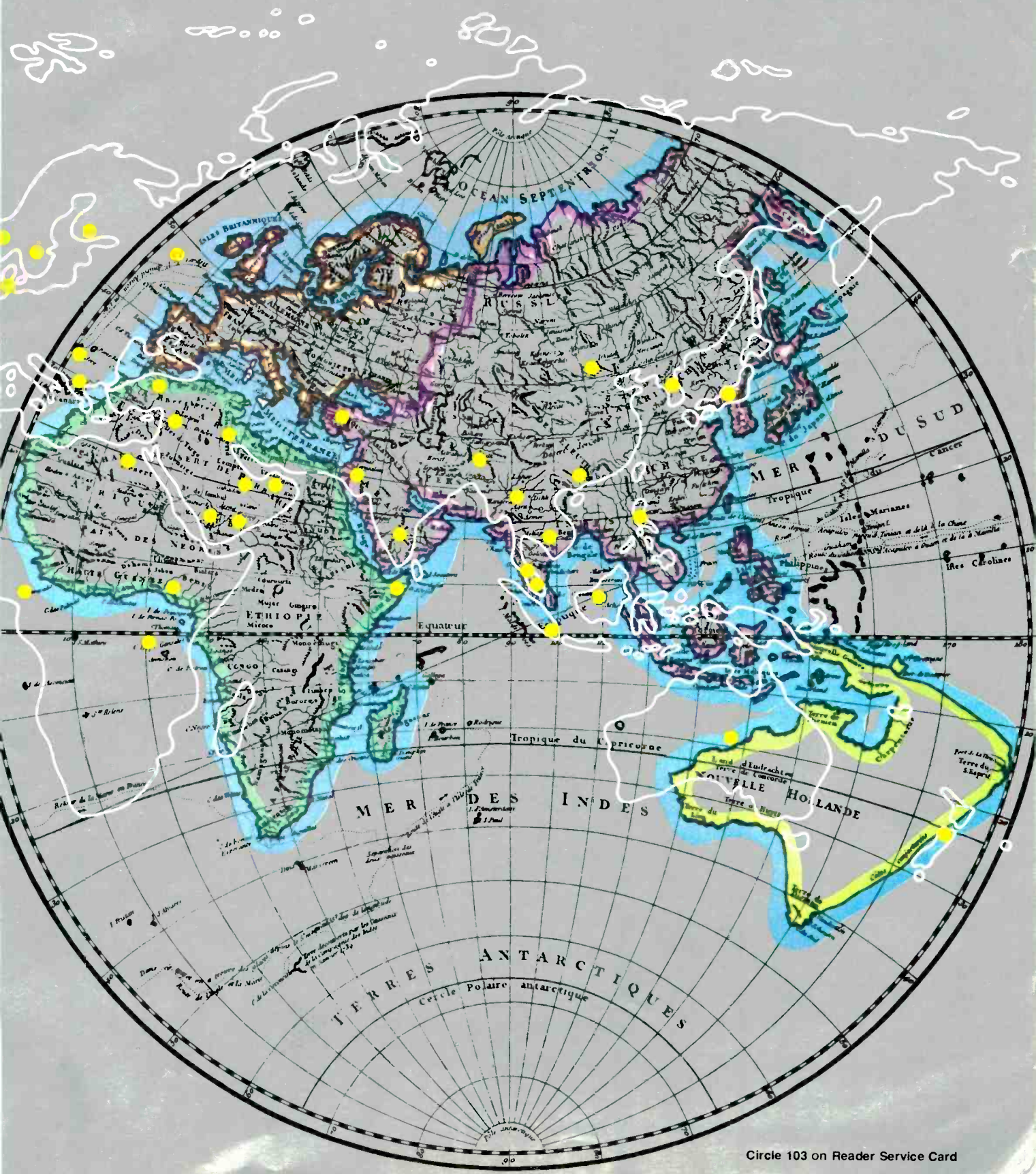


And today NEC has more than 1000 models installed and serviced around the world. Choose from over 20 models, including VHF, UHF, and FM.

New for 1980, see our TV transmitter with stereo audio at NAB. Let us put your station on the map. Complete literature will be sent on request.

Call Toll Free 800/323-6656
In Illinois Call 312/640-3792

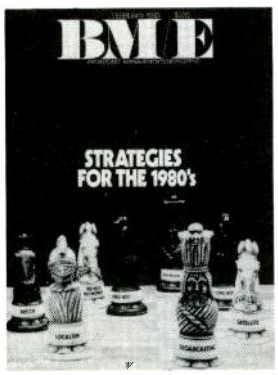
NEC
Nippon Electric Co., Ltd.
NEC America, Inc.
Broadcast Equipment Division
130 Martin Lane
Elk Grove Village, Illinois 60007



Circle 103 on Reader Service Card

BM/E
BROADCAST MANAGEMENT/ENGINEERING

FEBRUARY 1980/VOLUME 16/NUMBER 2



As broadcasting enters the new decade, there are challenges that face the industry. New technology has been suggested by some as a competitive force. Societal changes and other factors will be at work. In this special report, industry leaders reveal the moves they will make to advance broadcasting as the premier mass communications system

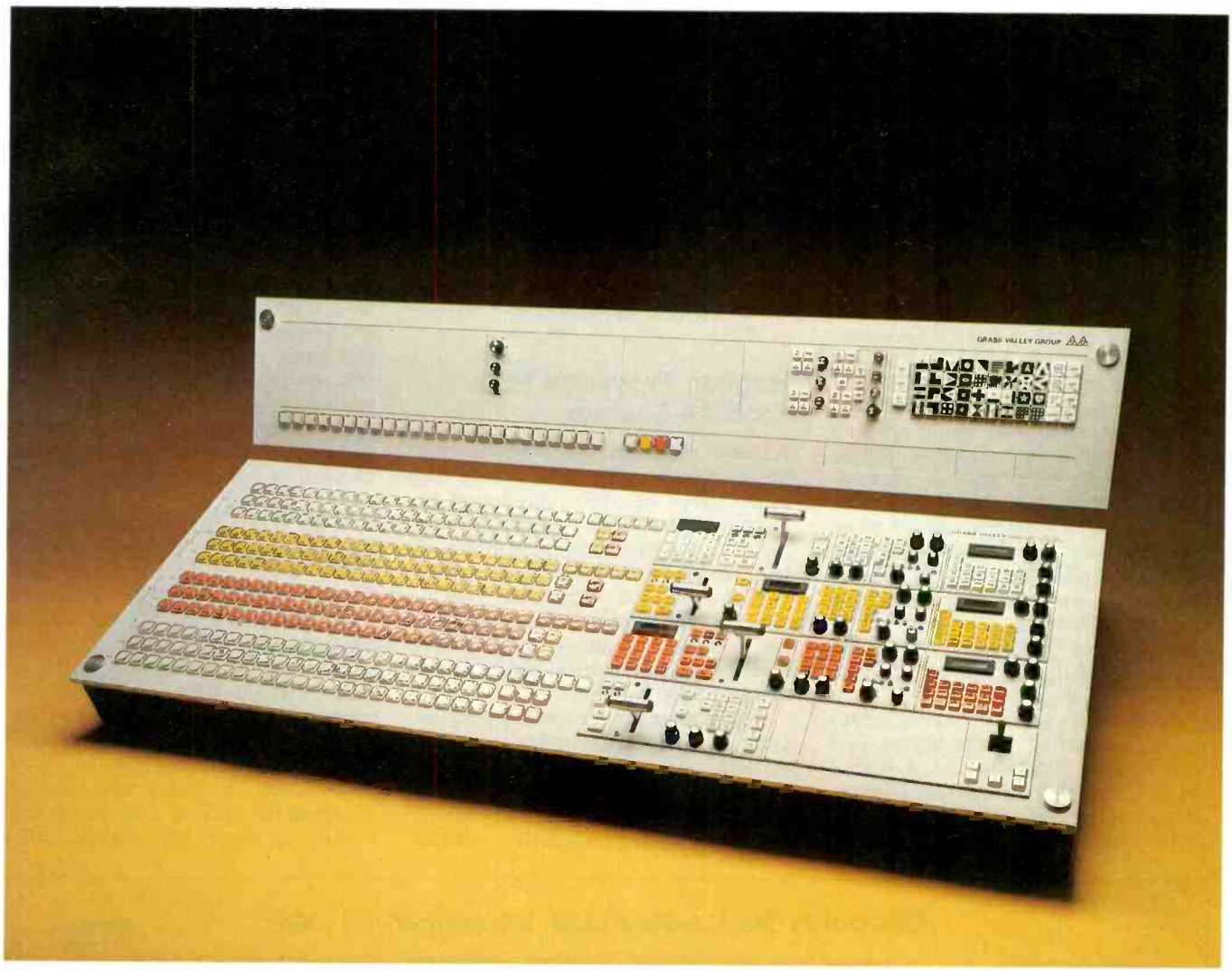
BROADBAND INFORMATION SERVICES, INC.
295 Madison Ave., New York, N.Y. 10017, 212-685-5320, Telex: 644-001
Publishers of: **BM/E—Broadcast Management/Engineering**
BM/E's World Broadcast News

ABP MCC BPA

BM/E BROADCAST MANAGEMENT ENGINEERING (USPS 059280) is published monthly by Broadband Information Services Inc. All notices pertaining to undeliverable mail or subscriptions should be addressed to 295 Madison Ave., New York, NY 10017. 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 in the U.S. and Canada. 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 $24.00 one year, $36.00 two years, Foreign $30.00 one year, $48.00 two years. Air Mail rates on request. Controlled circulation postage paid at East Stroudsburg, PA.

Unmatched Power!

The new GVG™ 300 Production Switcher and Four-Channel Mark II Digital Video Effects



New-from-the-ground-up designs

The 300 switcher and MkII DVE are completely new in concept and design—not merely revisions of previous models. The 300 is a no-compromise switcher designed to complement the popular 1600 Series for the ultimate in production flexibility and power. The four-channel MkII DVE is a second generation unit with unique features providing an almost unlimited variety of effects.

New features, new production power

The 300 is an advanced design with unique features such as unlimited re-entry of effects, fully integrated E-MEM™ Effects Memory system, four input buses per M/E, a quad split from each M/E, automatic key follow and Personality Programming.

Second generation Digital Video Effects

The MkII DVE combines the power of the new NEC DVP-16 multichannel Digital Video Processor and the GVG MkII control system. It operates like a production switcher, not a computer terminal. Selection of most common on-air effects is no more complicated than choosing a wipe pattern. For post-production flexibility, programming modes permit creation of highly complex effects which in turn can be memorized in the standard E-MEM system. Other standard features include continuous zoom from zero to infinity, digital noise reduction with motion detection, and Digital Strobe Action, a motion-dependent freeze.

See it all at NAB

300s are shipping. Contact your nearest GVG sales office for a complete description of the system.

THE GRASS VALLEY GROUP, INC.®

P.O. BOX 1114 GRASS VALLEY CALIFORNIA 95945 USA • TEL: (916) 273-8421 TWX: 910-530-8280

A TEKTRONIX COMPANY

*Grass Valley Group Field Offices: **WEST**; 4419 Van Nuys Blvd Ste 307, Sherman Oaks, CA 91403 (213) 990-6172 · **SOUTHEAST**; 1644 Tullie Cir NE, Atlanta, GA 33029 (404) 321-4318 · **NORTH CENTRAL**; 810 W Bristol St, Elkhart, IN 46514 (219) 264-0931 · **NEW ENGLAND & MID ATLANTIC**; Station Plaza East, Great Neck, NY 11021 (516) 487-1311 · **SOUTHWEST**; 2639 Walnut Hill Ln Ste 143, Dallas, TX 75229 (214) 358-4229 · **MIDWEST**; 3585 N Lexington Ave Ste 374, Arden Hills, MN 55112 (612) 483-2594*

Circle 104 on Reader Service Card

BROADCAST INDUSTRY NEWS

Commission Backs 9 kHz AM Spacing

The FCC has given its blessing to a reduction of AM channel spacing from 10 kHz to 9 kHz. If approved by the State Department, the proposal will be made at the upcoming Region 2 Administrative Radio Conference in Buenos Aires next month, where it faces expected opposition from Canada and other western hemisphere countries.

The Commission predicts that the reduced channel spacing would open up the airwaves to an additional 200 to 1400 full-time radio stations, depending on the action taken at the Argentina meet. Benefits foreseen include more full-time local service, more diverse media ownership, especially by minority owners, and greater programming choices for listeners. Also possible, according to the Commission, would be expansion of the system of noncommercial educational stations.

Commissioner Quello, while "reluctantly" concurring with the action, said in a separate statement that he feared the FCC "might be proposing a course of action which could be counterproductive in terms of overall service to the public." He pointed out technical problems with the reduced spacing, and noted that the potential effect of the change upon AM stereo was not clear. In addition, he indicated that it was not yet certain exactly how many new full-time stations would be created. Commissioner Abbott Washburn joined Quello in the statement.

Hughes Proposes New Satellite System

A new domestic communications satellite system serving broadcasters and other users has been proposed by Hughes Aircraft Co. Hughes's subsidiary, Hughes Communications, Inc., has applied to the FCC for permission to build and operate the system, which would consist of two 24-channel satellites and a ground spare. Construction and launching are expected to run to some $190 million.

Potential users for the system include, according to Hughes, common carriers, cable and broadcast television, industry, and government. A telemetry and command control station will be built in Santa Barbara, Calif., with an operational control center in El Segundo, Calif.

In announcing the filing, Dr. Allen E. Puckett, chairman of the board and chief executive officer of Hughes Aircraft, pointed to the firm's long history in the satellite field and said, "We feel that the option of leasing satellite capacity is a natural extension of our business of manufacturing and selling satellites and earth stations. We are confident that the growing demand for satellite communications will support this new system in addition to the other commercial U.S. satellite systems already planned or in operation."

TV's "Top 50" Policy Abolished

The FCC's 11-year-old, unenforced "top 50" policy for TV station applicants has been abolished. The policy required applicants for a fourth TV station (VHF or UHF) or a third VHF station in a top-50 market to make a "compelling interest showing" of the benefits of the acquisition.

Although the policy was originally designed to prevent concentration of ownership in the top markets and to

Electronic Station-Rep Link Introduced By DCC

A new service that electronically links broadcast stations with their national sales representatives was inaugurated last month by Data Communications Corp. as part of its BIAS business automation system. Known as Buy Line, the service is intended to streamline the flow of information between stations and reps, largely eliminating the use of TWX machines and reducing paperwork.

Buy Line will initially be available to stations whose reps use Mini-Pak, a representative system. KPRC-TV, Houston, linked up with Buy Line in early January, the first station to do so. In the initial phase of the program, KPRC can instantly access avails submissions from its rep, the Petry Company, through its BIAS terminal. At its end, Petry can access demographic and cost information from the station. The communications link between Petry and KPRC is supplied by DCC's Special Communications Network; stations not using BIAS will still be able to hook up with Buy Line via the Special Communications Network.

KPRC general sales manager Jeffrey Lee checks Buy Line readouts with Nancy Long, the station's traffic department coordinator

Phase 2 of the Buy Line service, targeted for July, is an "electronic contract." Order specifications are transmitted electronically to the station, where the system assigns the order a reference number and stores it in memory. The station then checks the avails and rates on its terminal and advises the rep of any changes. Upon final approval, the station instructs the system to move the pending order from memory and schedules the spot. Contracts are then generated via the terminals simultaneously for both station and rep. Mini-Pak and BIAS perform a matching procedure to check the contracts, and the station and rep then print confirmations for their own files.

The third phase, still "blue sky," is electronic transfer of funds. This faces some legal obstacles before it can be put into operation.

About 120 stations use reps that are tied to Mini-Pak and are thus immediately eligible for Buy Line. Stations pay a fee to BIAS for the service; representatives pay for Mini-Pak.

ADM

Control the complete audio spectrum

Our ADM 1600: modest but mighty

Although it's a desk-top model, our 1600 Series audio console offers a brilliant array of features and capabilities for handling the most demanding program material.

One of our new breed of consoles, the ADM® 1600 is available with up to 16 discrete inputs, 4 submaster and 2 master outputs. Combined with a host of pre-selector, buss selector and processor modules, the ADM 1600 creates perfect harmony with today's video. Like all ADM consoles, the 1600 is designed to exacting standards and manufactured to the most rigid tolerances. Each ADM console is backed by an exclusive 5-year warranty.

Make sure you control the entire audio spectrum. Contact ADM Technology, Inc., 16005 Sturgeon, Roseville, MI 48066. Phone (313) 778-8400. TLX-23-1114. *The Audio Company.*

promote diversity, the Commission in practice always accepted the compelling interest showing and granted applications without a hearing.

In its action, the Commission noted that several additional multiple ownership restrictions had been adopted since the top 50 rule went into effect, and that these seemed effective in preventing concentration and promoting diversity. In a separate statement, chairman Charles Ferris pointed out that "local citizens can continue to raise public interest questions" if a multiple owner does not meet EEO or programming obligations. He stated that the Commission is obligated to determine whether any TV license transfer is in the public interest, and indicated the Commission's increased enforcement of EEO rules, new tax incentives for minority owners, and reexamination of children's programming. Calling the top 50 policy "irrational," Ferris noted that it made "no distinction between acquiring four stations in the top 10 markets or four stations in markets 40 – 50" and that "the largest accretions of concentrated group ownership power in the industry — the network-owned stations" were grandfathered under the rule.

RCA Explores Alternatives After Satcom III Loss

Despite efforts by RCA, NASA, and NORAD (North American Air Defense Command), RCA's ill-fated Satcom III remains lost in space, and the company is making plans to make up for the loss.

As reported in *VideoNews*, users of Satcom I who were supposed to move to Satcom III will now stay put, while transponder owners on Satcom III will probably use Satcom II. RCA Americom is reportedly trying to buy transponders from Western Union and AT&T in order to have room for all its customers, even though this may involve a loss of money for RCA.

On another front, RCA is seeking to hasten the launch date of Satcom IV, now scheduled for June, 1981. The company hopes to put the "spare" bird in flight by November or December of this year.

AM Monitoring Point Policy Relaxed

Major changes have been announced in the FCC's policy for the assignment of monitoring point limits to directional AM stations. The Broadcast Bureau has adopted the use of a relaxed "direct ratio" method of assignment for the limits, by which AM directionals monitor adjustment of their radiation patterns. In addition, the bureau announced that it would no longer lower the limits based on "partial proof" measurements.

Broadcast Bureau chief Richard Shiben explained that the changes were made possible by "the current mandatory use of type-accepted antenna monitors by directional stations and the widespread use of approved sample systems," but that they would be instituted on an experimental basis for "at least a year" before permanent adoption.

Public Broadcast Applications Get New Boost

Special attention will be given to public broadcasting applications by newly designated special staffs within the branches of the Broadcast Bureau's Broadcast Facilities Division.

In the FM branch, a special unit will monitor the progress of all educational

HITACHI SK-96

Inside this superlative broadcast studio camera lives an equally superb hand-held module for field production. Here at last is a convertible that makes no compromises in picture quality ...with S/N ratio of better than 51 dB...three 2/3" Saticons...500-line resolution...built-in ABO ...internal triax adapter...AC/DC operation... and more. All wrapped in a super tough but lightweight diecast housing. For an unprecedented low price. Call your Hitachi dealer for more details.

Hitachi... Tomorrow's technology today.

7 Regional Centers for 24-Hour Parts and Field Service

- New York (516) 921-7200
- Chicago (312) 344-4020
- Los Angeles (213) 328-2110
- Atlanta (404) 451-9453
- Dallas (214) 233-7623
- Denver (303) 344-3156
- Seattle (206) 575-1680

HITACHI
Hitachi Denshi America, Ltd.
175 Crossways Park West
Woodbury, New York 11797

Camera Control Unit

The Hitachi Hard-to-Top Convertible.

Circle 106 on Reader Service Card

FM applications and will process their non-engineering portions. Headed by senior broadcast analyst Charles A. Estep, the unit will also coordinate funding requests of all FM, TV, and auxiliary services applicants seeking grants under NTIA's Public Telecommunications Facilities Program. A similar but less formal approach will be implemented in the Television Branch, where far fewer educational applications are filed.

The special units will aim to reduce the average processing time to six to nine months (presently it takes nine to 12 months) and to see that no application remains on file more than 18 months.

FCC Proposes AM Advisory Committee

The FCC has proposed the formation of an Advisory Committee on AM Broadcasting in Region 2. The new committee would provide advice to FCC representatives responsible for participating in the preparatory and plenary sessions of the Region 2 Administrative Radio Conference on AM broadcasting and for the implementation of agreements that may be prepared by the conference concerning use of the AM broadcast spectrum by the nations of the western hemisphere. The conference will take place in Buenos Aires next month.

Up to 30 members will be selected for the committee on the basis of experience and expertise in AM transmission and reception, transmitting and receiving instrument design capacities and manufacture, operation of AM stations, and public purposes and goals of AM service. The Commission states that it will "attempt to ensure that the composition of the committee is fairly balanced and representative of all technically qualified parties having an interest in AM broadcasting."

Mutual Inaugurates Satellite Net

WCFL, Chicago, became the first link in the satellite chain that will tie the Mutual Radio Network together with the activation of its newly installed earth station on January 1. The Mutual O&O will receive programs relayed from Mutual Broadcasting System headquarters in Washington, D.C., by Westar I.

Mutual has high hopes for the satellite, which will give it multiple program capability, allowing it to broadcast several different programs simultaneously. In addition, sound fidelity will be boosted from 5 kHz to 15 kHz, and stereo broadcasting — previously not possible for radio nets — will be permitted. The system predicts live, stereo network radio concerts as one benefit of the bird.

WCWA/WIOT-FM, Mutual's Toledo, Ohio, affiliate, is presently installing an earth station and will be the second station on the net. Mutual plans to have at least 35 earth stations in operation early this year, with the satellite net growing to 650 stations by the spring of 1981. California Microwave, Inc., manufacturer of the earth stations, is expected to install about 50 earth stations per month. Depending upon the location, 15-foot, 10-foot, or six-foot antennas will be used.

Black Group Wins Landmark License Case

A 25-year-long proceeding has ended with the award of the license of WLBT-TV, Jackson, Miss., to a black-controlled group. TV3, 51 percent black-owned and headed by Aaron Henry, president of the Mississippi chapter of the NAACP, is the new licensee of the NBC affiliate.

U-Matic, Beta, and VHS Format Color Videocassettes
Reflections of Reality

AMPEX

Ampex Corporation, Magnetic Tape Division, 401 Broadway, Redwood City, CA 94063, 415/367-2011

Circle 108 on Reader Service Card

News

The controversy over WLBT began in 1955 with complaints against then-licensee Lamar Life, Inc., that it failed to meet the needs of the 43 percent of the state's population that is black. A legal challenge was brought in 1964 by the United Church of Christ, and in 1969 the license was vacated by the U.S. Court of Appeals for the District of Columbia.

The case was the first in which the FCC entertained a license challenge from anyone other than broadcasters or other economically interested individuals. It was also the first case in which a license was vacated because the licensee had failed to serve the public interest.

Administrative Law Judge Lenore G. Ehrig, who made the ruling, stressed the need for a black-controlled station in Mississippi. She noted that the interim nonprofit group that has operated WLBT for the past 10 years is largely black-controlled, bringing the station's audience to "accept and expect the representation of minority interests and views in the station's programming service." TV3 will purchase the facilities of Lamar Life for $2,850,000.

News Briefs

Outlet Company has announced completion of its **acquisition of WQRS-FM,** Detroit. The group owner will retain the station's classical music format . . . . Minority-controlled W.G.P.R., Inc., has received permission for an **STV operation** over Detroit's WGPR-TV. This is the first STV authorization made possible by the repeal of the "one-to-a-community" rule . . . . According to the FCC's 1979 employment data, **percentages of women and minorities have increased** over 1978 levels at network headquarters and O&O stations. Net O&Os showed significantly higher levels of female and minority employment than net headquarters.

NAB and NRBA have commented on the **NTIA's minority ownership proposals.** Both associations support review of the FCC's distress sale policy while objecting to minority-only waiver of multiple ownership rules, which NRBA termed "alarming" . . . . The FCC has **endorsed a favorable tax** ruling to permit NAB's Minority Broadcast Investment Fund to operate a Minority Enterprise Small Business Corporation.

Comsat is not legally authorized to **establish satellite-to-home TV service,** according to NAB. In a filing with the FCC, the association asserted that the Communications Satellite Act limits Comsat to common carrier service and "only those additional activities incidental to its primary purpose" . . . . In cooperation with the Pan American Development Foundation, NAB's International Committee has issued a call for **contributions of broadcast equipment** for developing nations in the Americas. Tax breaks are possible with the donations, and shipping costs are paid by NAB; equipment must be in good working order. Contact NAB Broadcast Equipment Exchange Program, c/o Station Services Dept., NAB, 1771 N Street NW, Washington, D.C. 20036.

NAB has asked the FCC to **drop its television blanking regulations** and adopt recommendations made by the association's Subcommittee on TV Blanking Widths. The subcommittee has proposed that the Commission continue its policy of nonenforcement of blanking rules for five years while the industry recommends standards. **RTNDA** has also urged the FCC to continue nonenforcement of the blanking regulations. The news directors' association pointed out that news archives

HIGHEST QUALITY FOR THE 1980's.

Join the Neve world of excellence for highest quality audio. From the 4 new small mixers in the 542 range to the most comprehensive TV production consoles, Neve offers an incomparable choice of state-of-the-art audio products. Please call or write. We're in your future!

Model 5422
Suitcase Mixer
Ni-Cad powered

Model 5442
Table Top
Mixer

Other 542 Range Mixers:
Model 5422R Rack Mounted
Model 5432 Table Drop Through

Neve

Rupert Neve Incorporated - Berkshire Industrial Park, Bethel, Connecticut 06801 Tel: (203) 744-6230 Telex: 969638
Rupert Neve Incorporated - Suite 609, 6255 Sunset Blvd., Hollywood, California 90028 Tel: (213) 465-4822
Rupert Neve of Canada, Ltd. - 2721 Rena Road, Malton, Ontario L4T 3K1. Canada Tel: (416. 677-6611 Telex: 983502
Neve Electronics International, Ltd. - Cambridge House, Melbourn, Royston, Hertfordshire, SG8 6AU England Tel: (0763) 60776
Rupert Neve GmbH - 6100 Darmstadt Bismarckstrasse 114, West Germany Tel: (06151) 81764

News Briefs

often contain videotaped material that is technically substandard but of high news value . . . . NRBA has requested the FCC to approve **increased nighttime power** to 1 kW for Class IV AM stations.

NRBA has opposed any regulation of loud commercials, calling such rules "unnecessary and inappropriate." The radio group pointed to "fundamental problems" in defining and measuring objectionable loudness, noting that the public's tolerance of loudness was "a matter of taste." The association has indicated its **"wholehearted support" of S-622,** Sen. Goldwater's revised Communications Act amendment.

In a recent RTNDA survey, only eight percent of radio news directors said they feared **cutbacks following radio deregulation,** while seven percent expected increases in news and 84 percent foresaw little change. Some consumer groups have forecast large cuts in nonentertainment programming as a result of deregulation . . . . A **management training seminar** for broadcast journalists will be held in Chicago February 25 to 27. For details, contact RTNDA, 1735 DeSales Street NW, Washington, D.C. 20036, or phone (202) 737-8657.

RKO Radio Network, surpassing its planned goals, announced its **first 50 affiliates** in December. The 50 stations cover 62 percent of U.S. markets, including New York, Chicago, Los Angeles, Detroit, and Boston . . . . Mutual Broadcasting System has **named three vice presidents.** Terry Hourigan was promoted to vice president/programming, while Frank J. Murphy III succeeded him as vice president/station relations; Bruce Goodman stepped up to vice president/general counsel.

For the third consecutive year, Boston's **WCVB-TV won the most Emmys** in the competition sponsored by the Boston/New England chapter of the National Academy of Television Arts and Sciences. The high scorer stole 13 of the 45 awards. Doubling its awards over last year was **WNAC-TV,** also of Boston, which took away 10 New England Emmys.

Business Briefs

Burnup & Sims, Inc., has entered the television earth station business with its acquisition of **Gardiner Communications Corp.** of Houston, Texas. The second largest in its industry, Gardiner commands about 30 percent of the cable earth station market . . . . **Thomson-CSF Broadcast, Inc.,** has been formed to manufacture and market the Thomson line of professional broadcast equipment in the U.S. The new subsidiary of the French electronics giant is located in Stamford, Conn. . . . The FCC has conditionally approved the merger of **Xerox Corp.** with **WUI, Inc.,** and its wholly owned subsidiaries, including Western Union International, Inc. Xerox will own all of WUI's outstanding stock, and will maintain WUI and its subsidiaries as separate corporate entities.

Recortec, Inc., has moved to larger quarters at 475 Ellis Street, Mountain View, Calif. 94043, telephone (415) 962-0220 . . . . **Image Transform, Inc.,** has begun construction on a new full-service film lab at 1115 W. Chestnut Street, Burbank, Calif. Operations at the new center will begin next month . . . . **Leader Instruments Corp.** has opened a new facility at 380 Oser Avenue, Hauppage, N.Y. 11737, to replace its former home in Plainview, N.Y., which was destroyed by a tornado in the summer of 1978.

BBI Communications, Inc., wholly owned subsidiary of Boston Broadcasters, Inc., has opened sales headquarters at 420 Lexington Avenue,

WORLD'S LARGEST SELLING TBC/FRAME SYNCHRONIZER.

SMALL WONDER.

ADDA's VW-1 Frame Synchronizer with infinite-window time base correction works digital wonders with television signals. Here's a frame synchronizer that prevents blanking problems, locks remote, network, EFP/ENG and satellite feeds to your station reference. Plus it offers freeze frame and freeze field capabilities.

Teamed with heterodyne color VTR's, the VW-1 time base correction goes all the way with an infinitely wide full-frame window. The VW-1 features adjustable velocity compensation and chrominance-to-luminance delay. Blanking is always within specifications. A remote control panel accessory is also available.

Viewers of the 1979 Tournament of Roses Parade and Super Bowl XIII telecasts witnessed brilliant performances by the VW-1.

Now, you too can see why our recognized low cost, compact size and unmatched combination of features have allowed us to place more units in operation than anyone else in the world. No one comes close. Small wonder.

Call or write for information or a demonstration. 1671 Dell Avenue, Campbell, California 95008 (408) 379-1500.

ADDA CORPORATION

Circle 112 on Reader Service Card

Business Briefs

New York, N.Y. 10017 . . . . A new professional representative corporation, **Pro Rep Corp.,** has been organized to represent video manufacturers serving broadcast and other users. Pro Rep is located at 37 High Street, San Francisco, Calif. 94114, telephone (415) 285-8457.

Scientific-Atlanta, Inc., will supply Cable Atlanta, Inc., with a complete 400 MHz cable communications system for its 1500-mile CATV system in Atlanta. Delivery of the package, described as the industry's first 400 MHz system, will begin early this year. S-A also announced an order from Cable News Network for six satellite earth stations valued at $700,000 . . . . CNN, undaunted by the loss of its promised slot on the unlucky Satcom III, has also ordered $1.8 million in **RCA** cameras (six TK-47s and 21 TK-76Cs), as well as a variety of production switching, routing switching, and master control automation systems from the **Grass Valley Group.**

Several major orders have been signed by **Harris Corp.** WAPI-AM of Birmingham, Ala., is replacing its existing transmitters with an MW-50A 50 kW and an MW-10 10 kW. WESH-TV of Daytona Beach, Fla., has ordered a Harris CP antenna as well as a BTD-50L2 50 kW transmitter and a 9100 facility control system. Also on the market for transmitters was the South Carolina Educational TV network, which placed a $1.5 million order for two BT-55U1 55 kW UHF units and two Andrew antennas . . . . **O'Connor Engineering** has been named official camera head supplier for the Lake Placid Winter Olympics, taking place this month . . . . Complete Post Productions of Hollywood, Calif., has purchased a **TeleMation** TVS/TAS 1000 routing switcher, believed to be the largest of its kind in the Los Angeles market, from Broadcast Marketing Associates.

Gilbert R. Kesser has been elected chairman of the board of **Micro Consultants, Inc. (MCI/Quantel).** George A. Grasso succeeds him as president of the firm . . . . Erik H. van der Kaay has been named vice president and general manager of **Microwave Associates Communications'** Broadcast Division . . . . **TerraCom,** the digital communications systems division of Loral Corp., has appointed Kenneth Years as its new president . . . Hal Jones has been appointed national sales manager of **ADDA Corp.**

McMartin Industries has announced the appointment of A. Hans Bott as vice president and director of engineering . . . . Joe C. Culp has assumed the post of director of marketing for **Rockwell International's Collins Transmission Systems Division** . . . . **Industrial Sciences, Inc.,** has named Dale Buzan director of product development . . . . Rupert F. Goodspeed and O.G. (Bud) Mills are western and southeastern regional managers, respectively, for **Ikegami Electronics (USA), Inc.** The firm has also named Don Skulte manager of technical services . . . . **Sintronic Corp.** has appointed Joseph Novik national sales manager.

Correction

In the Best Station Award entry for WKSN/WHUG (December, 1979, p. 57), the 10-channel, stereo-capable mixing console is incorrectly identified. The station's console is manufactured by Broadcast Audio Associates, and is pictured on p. 59.

1979 Emmy Award Winner

SqueeZoom™

Vital Industries, pioneers in television broadcast technology, are proud to receive the Governor's Emmy award for the SqueeZoom. The Florida chapter of the National Academy of Television Arts and Sciences recognized Vital Industries and its late founder, Nubar Donoyan, for his outstanding contribution to the television industry. Reginald McCoy and Bill Vice pooled their talents in the design and development of the SqueeZoom. This innovative 4-channel manipulation device offers many special effects that allow unprecedented versatility in television broadcasting.

Vital Industries is recognized internationally for the SqueeZoom and for the design and manufacture of master control switchers and automated systems. Contact the representative in your area today and discover why.

HI TECHNOLOGY PRODUCT INNOVATORS

VITAL INDUSTRIES, INC.

MAIN OFFICE: 3700 N.E. 53rd Ave., Gainesville, FL 32601 U.S.A.
Tel.: Area 904—378-1581 • TWX 810-825-2370

BARRY ENDERS Northeast
338 E. Lake Rd.
Williamson, N.Y. 14589
Phone 315/589-9363

ROBERT McCALL Northeast
34 Autum Lane
Hicksville, N.Y. 11801
Phone 516/735-0055

GORDON PETERS Southwest
P.O. Box 912
Arlington, Texas 76010
Phone 817/467-0051

ERIC KING Southeast
Fox Hill Road
Lynchburg, Va. 24503
Phone 804/384-7001

BARRY HOLLAND West Coast
1580 Skyline Dr.
Laguna Beach, Ca. 92651
Phone 714/497-4516

MORRELL BEAVERS Midwest
2644 North Seventh St.
Terre Haute, Indiana 47804
Phone 812/466-3212

Circle 114 on Reader Service Card

Introducing the Ramko a new cart machine, but

Finally you can get your hands on a cart system with reel-to-reel performance.

A cart system that eliminates phase shift error once and for all. That sets new standards for low wow-and-flutter. That provides signal-to-noise, distortion and frequency response that are better than anything else in the industry.

Finally, the PhaseMaster.

PhaseMaster: the cart machine, redefined.

The new Ramko PhaseMaster has all the features you want, and some that never existed before.

It's built to take the pounding you're going to give it, hit after hit, commercial after commercial, day after day.

The deck is a 5/8" casting for stability, with a stainless steel cover plate for wear resistance. The crystal-controlled dc servo motor ensures greater speed accuracy and lower heat

PhaseMaster, not just a whole new concept.

generation (15 ips, 7½ ips, 3¾ ips motor speeds field-selectable). The machined head stack is rock-stable, and we've included internal illumination for your periodic head inspections and cleaning. There are no micro-switches to break or jam —and never any start-up wow—because the motor is started by an optical sensor as you begin to insert the cart. And the cart hold-down presses on the edges for greater stability and exacting alignment, pressing with roller contact for velvet smooth insertion and withdrawal.

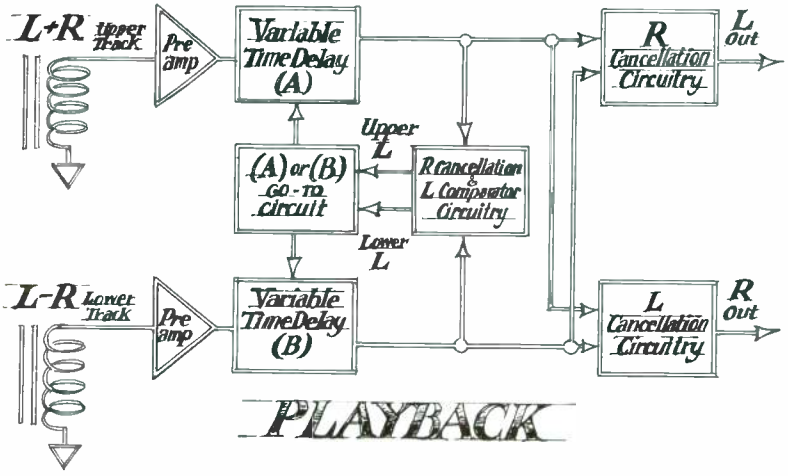
lower track. On playback, the left channel signals from both tracks are compared, and any phase shift difference is corrected automatically by a continuously tracking electronic time delay.

Simple.

And it works—no more holes in your sound, and no more side-to-side spectrum shift.

The ultimate cart system, mono and stereo

The Ramko PhaseMaster System, in mono and stereo, is available as a playback



And no more stereo phase shift error

Phase shift doesn't much matter in mono, so when you're recording stereo, the PhaseMaster encodes a mono L + R signal on the upper track, L − R on the

unit or a record/playback deck.

It also comes as a complete reproduction center which duplicates—as well as plays and records—your mono and stereo carts and cassettes. This consists of four modules: an elec-

tronic control center; two A and B cart decks; and a cassette deck.

To record, you switch-select any of three inputs to record on any or all of the decks. When you play back, the control center determines whether your tape is mono or stereo, coded or uncoded, and automatically reproduces the correct outputs.

To dupe, you simply load tape (cart or cassette) and one or two blanks, then hit Record/Play and the control center puts the signal where it's supposed to be.

Call collect for the full-featured brochure

Get the brochure. It covers the PhaseMaster System's convenience and ease of operation; the left, right and phase meters; the 4-digit timer; the three cue tones; the integral testing facilities; and everything that you were hoping would be in it.

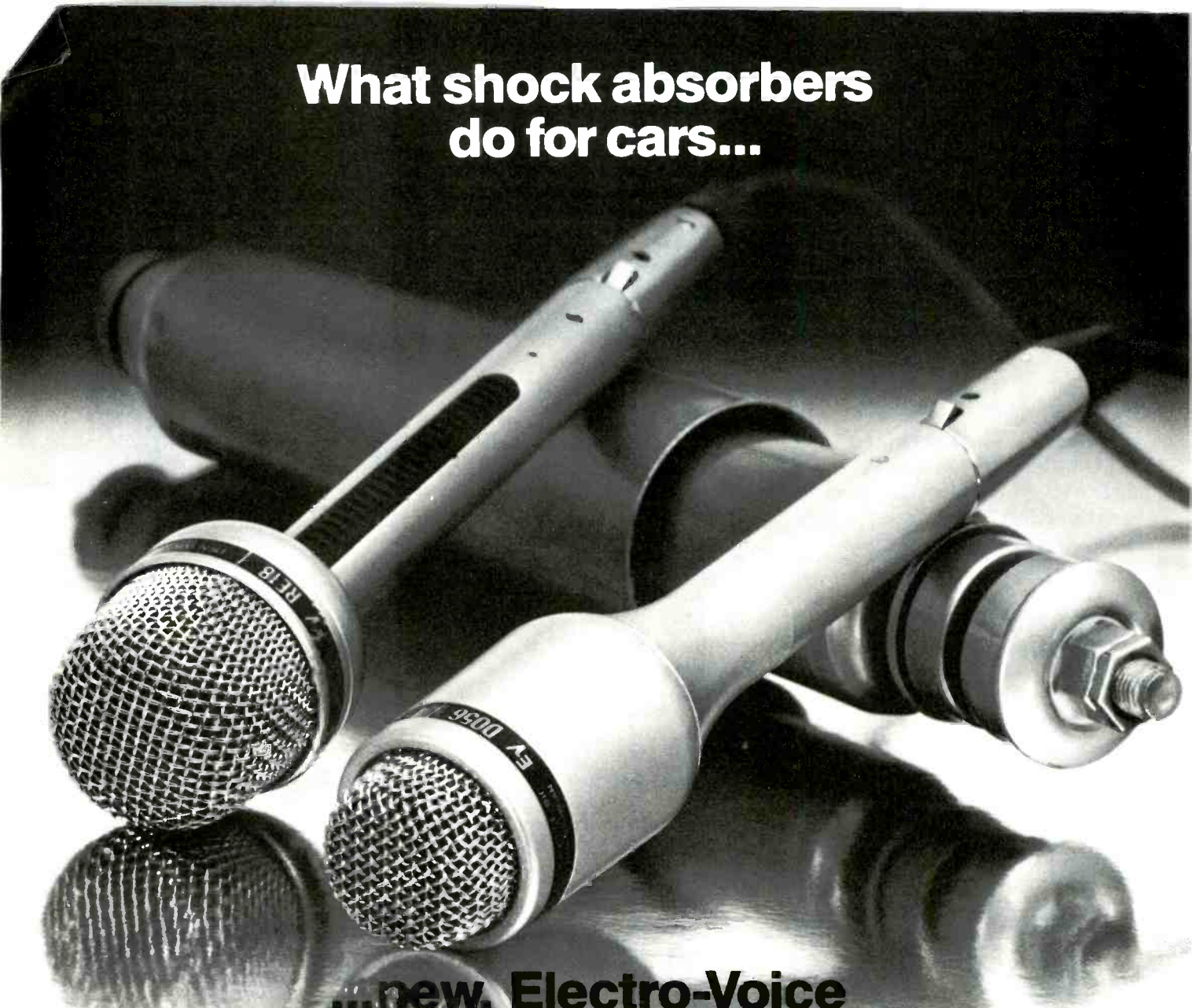
Write Ramko Research, 11355 Folsom Blvd., Rancho Cordova, CA 95670. Or if you can't wait for the mail, contact your nearest rep or call (916) 635-3600 collect and arrange for a 2 week free trial.

RAMKO

Brains, not brawn.

Circle 115 on Reader Service Card

What shock absorbers do for cars...



...new, Electro-Voice shock-mounted microphones do for sound.

DO56 Omni – The DO56 shock-mounted omnidirectional microphone is virtually impervious to mechanical noise. Its isolated capsule eliminates the possibility of capsule/case collision making the DO56 the ideal microphone whenever there is lots of action. The excellent "G-factor" margin makes this new microphone less susceptible to the bell-like clang typically heard from other shock-mounted microphones when they are accelerated or decelerated rapidly. Plus, a built-in blast filter reduces "P-popping" dramatically to keep your audio clean.

The DO56 also offers attractive styling, making it ideal for broadcast applications where visual appeal is a necessity. The memraflex grille resists denting, keeping the DO56 looking like new indefinitely.

RE18 Super Cardioid – Where ambient noise rejection is mandatory, the companion RE18 super cardioid combines the best performance features of the famous RE15 and RE16 with superb mechanical noise isolation. Acoustic performance is the same as an RE15, while a refined small-profile blast filter resists "P-popping" as much as the larger RE16.

Unlike "multi-port" directional mikes, E-V's exclusive Variable-D® design insures uniform frequency response at *all* angles, for uncolored pickup on and off axis. And Variable-D reduces the bass-boosting proximity effect found in Single-D cardioids, for consistent sound quality at any working distance.

Electro-Voice Warranty – Both microphones are covered by Electro-Voice's unique two-year unconditional professional microphone warranty. For two years E-V will replace or repair these microphones, when returned to Electro-Voice for service, at no charge – no matter what caused the damage.

These are microphones to depend on, in the studio or in the field. If they weren't, E-V couldn't offer this warranty. When your application calls for a shock-mounted microphone, test one of these at your E-V professional microphone dealer.

Electro-Voice®
a gulton company
600 Cecil Street, Buchanan, Michigan 49107

Circle 116 on Reader Service Card

Do-It-Yourself Research: Some Rules For Getting Useful Answers

A RADIO MANAGEMENT has to measure the station's audience. Must they hire a professional organization to do the job?

If the management wants figures on market share, cume listeners, etc., convincing enough to interest a national ad agency, the answer is *yes*, the management must hire a top firm in the field. But if a management, for example, changed the format a few months before and wants a quick check on whether or not listeners know about the new programs, then carefully done home-brewed research may work out well.

If the results are to have any connection with reality the research must be done with skillful adherence to certain rules. These were set forth lucidly and convincingly in one of the workshop sessions at the NAB Radio Programming Conference in St. Louis in September, 1979. The talks given by the panelists indicated that a radio management can get excellent guidance from home-made research, if the objectives are carefully kept within the limitations of such research. The cost can be moderate (an annual budget of $1000 was stipulated).

Bob Pittman, program manager of WNBC-AM, New York. If the station has $10-15,000 to spend, the management should hire a firm of pros for the research. However, with a budget of $1000 the study must be done "at home," and the first job is to define an objective that is within the reach of simplified research. This objective should not be a many-element question such as "Am I doing well?" but rather some undivided element in station operation, for example, "What proportion of people in the community are aware of the station, as compared with those aware of my direct competitors?" This is not to find a 33 percent versus a 29 percent, for example, but rather a 10 percent versus a 20 percent or a 40 percent. This kind of information can be very important to a station management; if audience awareness is particularly low, then the station needs more outside promotion. If awareness is comparatively high, then any extra time and money can go into sales and programming; outside promotion has a lower priority.

After choosing an objective for the study, the next move is to make up a questionnaire. For several reasons a low-cost study is best done with telephone interviews (although the phone has limitations). So the questionnaire is built for telephone interviewers.

Making up a valid questionnaire takes great care, and the station management should probably seek help from a textbook on elementary survey design, available in connection with any college course in statistics, or in the local library.

In choosing the sample, the station *must* avoid any special group such as contest winners or people who phone in requests: from such groups the station can not learn anything about its listeners as a whole, nor about all listeners in the community. The questionnaire must include questions that identify the listener demographically, for preliminary screening to eliminate those outside the target audience.

A good, inexpensive way to get something close to a random sample is using the telephone book. There are a number of ways to obtain numbers from the book — using the first one in every other column, etc.

Another often-used "randomizer" is a table of random numbers; call them using local exchange numbers.

It is important to always keep in mind that time is a crucial element of such a survey, not only because the time spent on the survey is money spent, but also because such surveys will ordinarily have value only if they are done fairly quickly. They often fill the gap between ratings sweeps, to give the station some interim guidance.

Sam Paley, president of Customer Audience Consultants. Here is a rundown on the mathematical and sorting operations that are valuable once the questionnaires have been completed. This starts with putting the respondents into "cells" according to age, sex, listeners, non-listeners, rock listeners, country listeners, etc. The number in each group who answered a certain way is tabulated opposite that group.

Then cross-tabulation can bring out many facts about responses of various sections of the audience. However, do not slice the groups too small; the validity of the cell as a sample of the whole population becomes less and less sure as the size goes down. Three people have no significance as a listener sample.

Subjectivity is always a danger in analyzing survey results, and completing analysis of each question separately before going on to the next helps to minimize subjectivity.

It is important to compare the station's listeners with the market as a whole (as already noted above). For example, if 40 percent of the total population listens regularly to news, and 80 percent of the station's listeners are news regulars, then the station is doing a spectacular job on news and does not need to overhaul it. The reverse figures *would* indicate the need for an overhaul.

This kind of cross-tabulation takes time, but makes the survey worth the time and money spent on it. To get the maximum out of the survey, analyze each question in every way the data allows. Also, the researchers should recheck the math at convenient intervals, to make sure they did not take a trip away from accuracy.

Radio Programming

Richard Woodward, director of music research for RKO. This is how we keep track of the standing of popular music with audiences. With $1000 to spend, the telephone is the only feasible survey instrument. "Focus groups," often used in music research — small groups who listen to new music and discuss it in depth — are valuable for giving a programmer new insights into the character and impact of new music, but the groups are much too small to stand as samples of the population. Sending out questionnaires by mail makes a slow operation, and is expensive.

A phone book or a set of random numbers, or both, can be used to pick the phones called. Using the phone book cuts down on the highest economic bracket (unlisted numbers) and the lowest (no phones). Another caveat: in a college market, phone books are out of date quickly. And the phone questionnaire must begin with screening questions to stop the interview if the responder is outside the wanted demographics.

Have a specific sample size (see below). Get each respondent to agree to four weeks of questioning. Each week add about 25 percent new numbers, to compensate for those who drop out.

Make three attempts to reach each household — any more becomes uneconomical. Don't make calls before 3 p.m. (students not home) or after 10 p.m. (people are tired, get angry). Put five to seven seconds of the song you want to check on the phone, usually the "hook"; that focuses attention on a particular record.

The records must be generally familiar to the audience — you can't get an accurate reading on unfamiliar records. RKO asks each listener to rate each song, usually on a scale of one to seven (other scales can be used). Twenty songs a week are tested, including songs not on the air through RKO stations, but on competitors' stations.

This is a good way to keep on top of "burn-outs," records that have overstayed their welcome. Such records must be moved back sharply. Other sources of evaluation: experience of other stations; retail sales; your own ears.

The responses on calls, matched with responders' demographics, will also tell when to play certain records, according to different demographics of the day-parts.

This kind of telephone music survey can define music programming better than sales research, request calls, or anything else.

Steve Casey, research director, Doubleday Broadcasting. As noted, you must define the problem precisely, e.g., how many people know the station exists, how many know it is a rock station, how many listen as against competitors? A question must not involve knowledge the listener is not likely to have: it should involve only people saying what they think and what they do.

How big should the sample be? Two hundred is a good sample for handling, but the accuracy will be only ±4 points on 10 percent. That is no good for selling ads, but will tell you enough for a basic determination of your position against competitors and general success or non-success of the format.

For more accuracy, you need a larger sample. Basic statistical knowledge can be handy in these decisions. You might consider consultation with somebody trained in that field.

As the others note, the telephone is the best for very low budgets. The questions might include:

- Favorite station;
- Others listened to;
- Do you listen to these? (list actual competitors);
- What kind of music does (name actual competitor) play?
- How old do you think a listener to this station is likely to be? (To define image of programming.)

As Sam Paley pointed out, there are many ways to use cross-tabulations to get important information.

Some further comments made in a summation were: Researcher must use ordinary English, not broadcasting jargon. Keep the number of questions low, to avoid responder fatigue. Use cross references to check validity of answers. Realize that in early summer evenings few people are home. Telephoning is better than face-to-face interviews, because people become defensive in a straight encounter.

A questioner asked the panel what percentage of rejection signalled a "burn-out" that should be reduced in play or eliminated. The answers set 10 percent as about the danger line, with the decision influenced by local factors. If the competitors are playing a record heavily, they can burn it out for your audience without help from you.

The panelists pointed out that research is not policy making, but a help in reaching some decisions.

In studying the demographic makeup of various areas, the Department of Commerce manpower studies are a great help. Two other points: the station should check where its signal actually reaches, to avoid sampling people who can't hear it well. And in the ratings books, the cume figures are the only ones actually counted. All others, including the quarter-hour figures, are "made up" from the cumes. **BM/E**

Tomorrow's tools. For today's problems.

You might say we make time machines.

CSC's smarter tools for testing and design help you make the most of your time in every corner of electronics, by working *smarter* instead of harder, for far less than you'd expect.

We give your head a head start with a variety of solderless breadboarding systems that let you translate ideas directly into working circuits, as fast as you can think.

We offer the most logical way to test logic—The Logical Force™—portable, circuit-powered digital instruments that dramatically cut the time (and cost) of diagnosing state-oriented logic. Available singly or in Logical Analysis Test Kits. The Logical Force simplifies design, maintenance, field service, education . . . wherever you need logical answers at a logical price.

Also instrumental in making life easier are CSC's value-packed test instruments, including palm-size frequency counters that go from audio to past 550 MHz. Our Ultravariable Pulse Generator™ that lives up to its name with a range of 0.5Hz to 5 MHz and a duty cycle variable over ten-million-to-one. A function generator whose VCO is externally sweepable over 100:1.

There's a lot more, too. All in our new 38-page catalog, crammed full of smarter ideas in testing and design. Send for your free copy today.

Smarter tools for testing and design.

CONTINENTAL SPECIALTIES CORPORATION

70 Fulton Terr., New Haven, CT 06509 (203) 624-3103 TWX 710-465-1227
OTHER OFFICES: San Francisco (415) 421-8872 TWX 910-372-7992
Europe: CSC (UK) LTD. Phone Saffron-Walden 0799-21682, TLX 817477
Canada: Len Finkler Ltd., Ontario

Call toll-free for details
1-800-243-6077
8:30AM-5PM Eastern Time

Available at selected local distributors.

Circle 118 on Reader Service Card

Syndicators For Radio

Mutual Broadcasting System
1755 S. Jefferson Davis Highway
Arlington, Va., 22202
Tel.: (703) 885-2000

ONE OF THE BIG changes in the radio landscape, discussed by just about every person interviewed for the prognostication of radio's future in this issue, is the coming of the satellite nets as distributors of programming for radio. As earth terminals become common parts of radio plants, the operators of the satellite nets will move gradually away from the old radio network character and more toward that of syndicators. What seems likely is something intermediate to the two forms, with radio managements taking programs from a variety of sources. The operation will differ from traditional syndication in that most programs will be "specials"; the station will not get all its basic programming from a new kind of syndicator.

Some of the present-day syndicators who do supply all basic programming may well turn to satellites for distribution to their subscribers. That would be cheaper, quicker, and probably higher in quality than sending out duplicates of tapes: as it develops it will be a big story in itself.

Here we are concerned with a new kind of thing, the availability of many attractive series and specials on the satellite nets. The Mutual Broadcasting System is the furthest advanced in getting a country-wide satellite net in place, and is also far advanced in developing programming for initiating the new kind of satellite operation.

With the FCC opening the way for small earth terminals to go in without detailed frequency clearance, Mutual is pushing to get its 650-odd affiliates supplied with earth terminals in a hurry. Martin Rubinstein, Mutual's new president, told *BM/E* that terminals were going in at the rate of about 50 a month, and the hope is to have everybody supplied by the end of this year.

Mutual is already adding programs to its long-established mix of news and sports. A significant one, scheduled to start on the net early in March, is the Mutual Radio Theater, a continuation under Mutual auspices of the Sears Radio Theater produced by Columbia Broadcasting System last year.

Sears is no longer involved in the program; Mutual will produce and market it to affiliates, or to other stations if the affiliate in a market turns it down. (This policy will apply to all Mutual programs.) The Radio Theater programs will be made in Hollywood with Elliott Lewis, a veteran of radio drama, as executive producer.

There will be five one-hour dramas a week in five categories: Western, mystery, comedy, love, adventure. Each class of program will have a permanent host on hand to introduce each play. The hosts are, in the same order, Lorne Green, Vincent Price, Andy Griffith, Cicely Tyson, and Leonard Nimoy.

The programs will be in stereo, to take advantage of the inherent dramatic possibilities. (They will be fully effective in mono, of course, for the many listeners who haven't yet gone to stereo.)

Reaction to the Mutual Radio Theater has been extremely positive, according to Terry Hourigan, Mutual's vice president for programming. More than 200 stations have already agreed to take it, and that number will go up substantially when the program actually gets on the air.

A program that Mutual has been putting out for a year via landlines is *Jamboree U.S.A.*, a country-music, weekly hour, recorded at country concerts at WWVA in Wheeling, W. Va. The satellites will allow Mutual to put the series in stereo and raise the fidelity sharply. The reaction to the program is already strongly favorable, and Mutual is sure that the transformation worked by the satellites will magnify its popularity.

In the coming summer, Mutual will further respond to the popularity of this music with a five- to six-hour special, recorded at country music festivals, called "Jamboree in the Hills." Another program that was a big success, taken by more than 280 stations covering every major market, was a three-hour special on the fortieth anniversary of Frank Sinatra's start in show business. This included music, recorded and live, from Sinatra, and an interview with him. Other similar specials are now in the works.

Terry Hourigan noted that these programs are just the beginning for the "new" Mutual. It is clear that the satellites *are* going to enrich radio programming on a grand scale, and be one big element of 80s radio. **BM/E**

AUDIO FILE

Savings worth saving, from the "Pro Shop for the Industry". . . since 1960.

Technics
SL-1200MK2 Quartz Direct Drive Turntable

- Direct Drive
- Pitch Adjustment ±8%
- Full Speed ¼ Turn
- Two Speed
- Quick Stops
- Strobe
- Stylus Illuminator for Low Light Conditions
- Includes Tone Arm/Base

Net $350.00 **AUDIO $299.00**

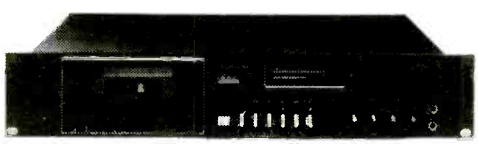
AMPEX ATR-700

- 4-In, 2-Out Mixer
- 2 Channel Stereo
- 7½ & 15 ips
- Vari-Speed
- 10½" Reel Capacity
- 3 Motor Transport
- Servo Controlled Drive
- Motion Sensing
- Sel-Sync Standard
- Tape Timer in Minutes
- Rack Mount Included
- ¼ Track Play Head Available
- Remote Control Available

Net $1895.00
AUDIO $1845.00

All Advertised Items In Stock For
IMMEDIATE DELIVERY!

Technics RS-M65 Direct Drive Stereo Cassette Deck



- Rack Mountable
- Direct Drive Servo
- Soft Touch Logic Control
- 2 Color FL Peak Meters
- SX Heads
- Dolby with MPX Filter
- 3 Position Tape Selector

Limited Quantities
Net $550.00 **AUDIO $369.00**

ADI-200C
The Tape Eraser That Works!

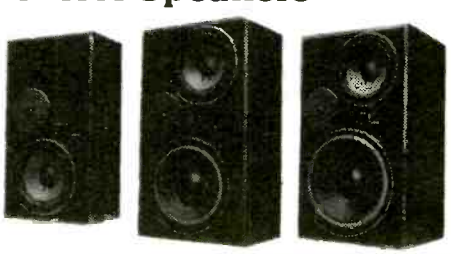
Broadcast Carts, Reel Tape, & Cassettes.
Net $59.00 **AUDIO $42.00**

Electro-Voice Microphone

	Net	AUDIO
635A	$69.95	$55.86
RE-15	202.00	161.60
RE-18	225.00	180.00
DO-56	100.00	80.00
CO-90	112.50	90.00
DS-35	115.50	92.40

Electro-Voice Monitor Speakers

	Net	AUDIO
Interface 1 Series II	129.00	$109.00
Interface 2 Series II	169.00	144.95
Interface 3 Series II	209.00	179.00



Prices Expire April 15, 1980

To Order Call
800-253-9281
Michigan Customers Call
800-632-4535

HOURS:
9-5 WEEKDAYS EST

VISA **Financing Available!**

For information, call (616) 452-1596

AUDIO distributors inc.
2342 S. Division, Grand Rapids, MI. 49507

Circle 120 on Reader Service Card

OUR EFFECTS ARE SPECIAL

This wipe to a masked title key, over a chroma key, over a quad split may be simply and quickly performed on a single 558 mix amplifier.

American Data 558 Series Video Production Systems feature the Four Channel Serial Video Processor in single or double mix/effects configurations. Numerous options are available which allow systems to be tailored according to users' exact demands.

OPERATIONAL FLEXIBILITY AT SURPRISINGLY MODERATE PRICES. Contact any one of our worldwide representatives for specifications and pricing information.

American Data

401 Wynn Dr • Research Park
Huntsville, Alabama 35805
Telephone (205) 837-5180
TWX 810 726-2125

A North American Philips Company

ARGENTINA:	WESA, S.C.A.
AUSTRALIA:	Magna-Techtronics
BRAZIL:	Centelec
CHILE:	RAYLEX
DENMARK:	JAI Jorgen Andersen
ENGLAND:	Crow of Reading
ITALY:	TV Research S.R.L.
JAPAN:	Sigma Engineering
KOREA:	Kim Oh & Company
MEXICO:	TeknoMerica, S.A.
VENEZUELA:	ESOMA Corporation

ADC NORTHEAST
401 Wynn Dr.
Huntsville, AL 35805
(205) 837-5180

ADC WEST
3760 Cahuenga Blvd.
North Hollywood, CA 91604
(213) 760-3221

ADC MID-ATLANTIC
Box 364
Washington Grove, MD 20880
(301) 258-7676

ADC SOUTHEAST
401 Wynn Dr.
Huntsville, AL 35805
(205) 837-5180

ADC MIDWEST
P.O. Box 27324
Indianapolis, IN 46227
(317) 784-3000

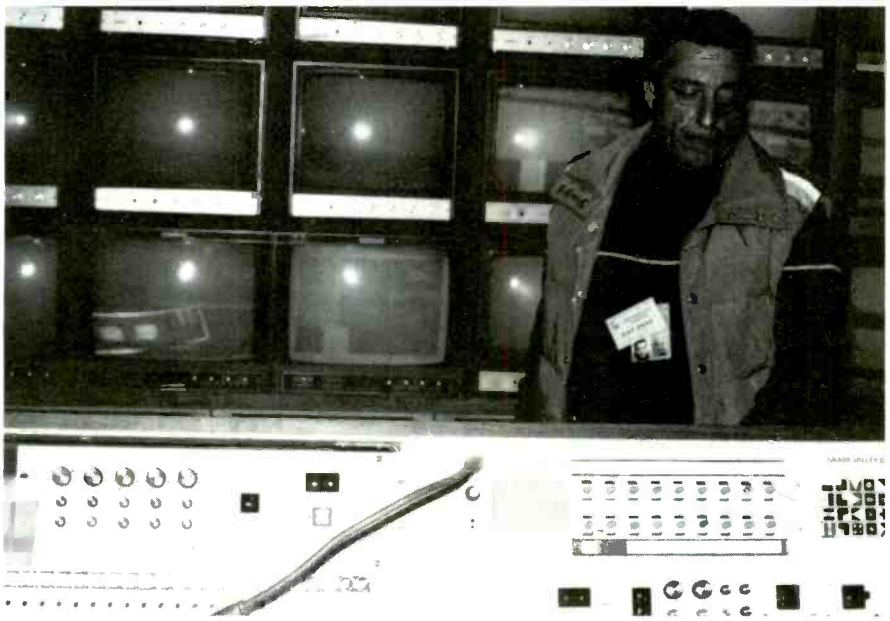
ADC N. CENTRAL
1121 Riverwood Drive
Burnsville, MN 55337
(612) 890-8920

Circle 121 on Reader Service Card

TELEVISION

PROGRAMMING & PRODUCTION FOR PROFIT

ABC Winter Olympics Coverage To Be The Most Extensive Ever



AS OF EARLY FEBRUARY, ABC television stands completely prepared to provide 51 hours of programming, much of it live, from what it modestly describes as "the grand remote" — the XIIIth Winter Olympic Games. Coverage starts from the Lake Placid venues on the evening of February 12 with an important U.S. vs. Sweden ice hockey game, and concludes with the Closing Ceremony on February 24.

Of equal importance to ABC's unilateral coverage for the American audience will be the top-to-bottom, live coverage of every single event at the Olympics for broadcasters from around the world. The Lake Placid Games will mark the first time that an American television network has acted in the role of "coordinating world broadcaster," and it has placed special demands on Julius Barnathan, president of ABC's Broadcast Operations and Engineering, and Joe DeBonis, general manager of studio and field services for ABC.

Some idea of the scale of the operation may be gleaned from the amount of equipment involved: more than 100 video cameras (primarily Philips LDK-5s and Ikegami HL-77s and 79s), 15 large mobile vans, 40 VTRs (primarily Ampex one-inch Type C units), 10 Chyron character generators, 11 Ampex HS-100 slo-mos, an MCI/Quantel DPE-5000 and a DPE-5000 Plus, Grass Valley Group 300 and 1600 7K production switchers, a Vital four-channel SqueeZoom, etc. Another measure is the more than 450 technicians and engineers who will be operating the equipment round the clock.

The greatest challenge, as mentioned, comes from having to provide, simultaneously, a clean picture with natural sound for world broadcasters' off-tube or on-site commentary, and a unilateral program of interest to American viewers.

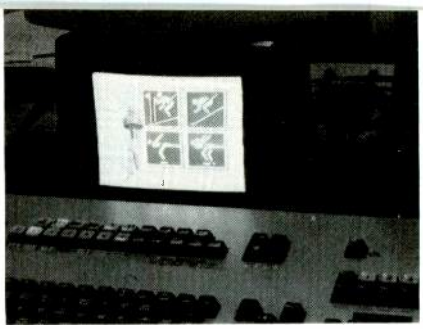
Perhaps the simplest events to cover will be the bobsled and luge competitions. Here, ABC will be relying exclusively on 15 Philips LDK-5 and four Ikegami HL-77 cameras to cover the competition for both the international feed and domestic distribution. The international director, operating from a large van supplied by Continental Color Recording parked at the venue, will have his choice of any of the camera inputs to create the program. Two Sony BVH-1000 VTRs give the director editing capability, while a Sony BHV-1100 with a motion controller can be used to provide slow motion effects. The director's switched program is sent back live to the television center where it is distributed to world broadcasters for retransmission.

At the same time, the image is received within ABC's portion of the

television center where it will be recorded for subsequent editing and then telecast. Both ABC and other world broadcasters will add Chyron computer-generated team identifications and other graphic material in their respective portions of the TV signal.

Venues from which ABC is providing unilateral coverage to supplement the international program present considerably greater engineering challenges. To cover events such as ski jumping, for instance, there will be two mobile vans stationed under the 70-meter tower, each with its own director. One van is assigned to provide international coverage, the other American. The director who will be assembling the international program will have at his disposal seven Philips LDK-5 cameras, positioned at various points along both the 70- and 90-meter jumps.

The ABC unilateral director, in his own van, has an additional six cameras to cover the jumping competition for the American audience. In addition, the unilateral director can utilize the images from any of the seven international cameras or the switched international program. To the unilateral image, the ABC director can add his own graphics through a Chyron IV character generator, create his own special effects with an Ampex slo-mo, and record material for later editing on two Ampex VPR-2s.



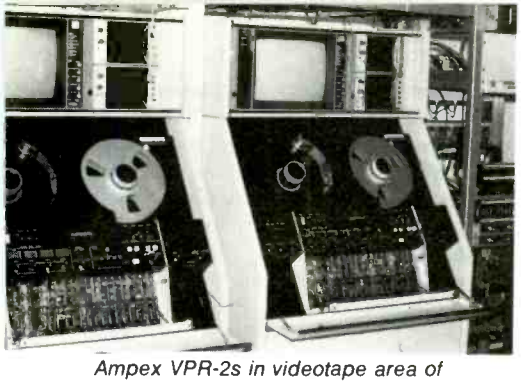
Graphics system co-developed by Dubner Computer and ABC stores Olympic torch, event symbols, Olympic rings, national flags, etc., as single characters on floppy-disc fonts

View from camera position atop 90-meter ski jumping tower towards 70-meter tower under which mobile vans will park

The engineering complexity at venues such as these does not come from the number of different program sources alone. Tying the whole system together in sync presented a major challenge to Barnathan and DeBonis. Each van will have its own internal sync generator system to which all the cameras will be genlocked. When more than one van is used at any given location, the ABC unilateral van will be locked to the sync provided by the international van so that signals from the international cameras and the international switched feed are available to the ABC unilateral director as synchronous sources. Further, the entire system will be synchronized with the broadcast center through the use of Leitch Video Source Synchronizers which provide a master pulse to each of the local sync generators in the vans. By judicious use of backtiming circuits, all pieces of television equipment being used in Lake Placid, with the exception of mobile ENG cameras and recorders, can be kept completely synchronized!

Mobile microwave

The physical characters of the venues present further unique challenges to broadcasters. Examples are the cross-



Ampex VPR-2s in videotape area of broadcast center during installation. 25 of the units are supplied with both forward and reverse slow-motion capabilities

Workers install cables in underground conduit. Light-colored cable is Galite Company's six-cable fiber optic link between broadcast center and Opening/Closing Ceremony venue

country skiing area with its many miles of trails, and the Whiteface Mountain alpine ski slopes.

These Games will mark the first time that Olympic cross country skiing events will be covered live *from beginning to end*. The major problem facing the ABC staff for this event was getting a camera signal from the middle of deeply-wooded areas back to the van acting as the "home base unit." Further, since the trails will be changed from day to day depending on the competition, no permanent installations could be attempted except at the start/finish line where the van will be parked.

To solve the problem, Barnathan and DeBonis turned to two Snow Cats — tractor-like vehicles with tank treads, capable of traveling over otherwise inpenetrable trails. The Snow Cats, specially modified for television use by AF Associates, are each capable of handling three Ikegami HL-77 cameras. The three cameras are cabled back to the Snow Cat. Then, by using a Farinon system, the three signals are multiplexed onto a single microwave link together with program audio. The multiplexed microwave signals are then relayed back to the van by 14 relay towers constructed at strategic points along the trails, each powered by a silenced gasoline generator. At the mobile van, the director has his choice of any of the six mobile cameras, in addition to six additional cameras to cover the starts and finishes. In the event that one of the multiplexing systems fails, an engineer on the Snow Cat can also use a small Crosspoint Latch switcher to feed a single mobile camera back to the mobile van

The other venue offering a major challenge to Barnathan and DeBonis' ingenuity was Whiteface Mountain, on which the alpine ski events will take place. To cover the races live from top to bottom meant that at least some of the 25 cameras had to be placed on top of the hill while the international and unilateral vans had to park near the relatively flat area at the finish line.

With standard triax cable, of course, the longest distance the cameras could be from the vans was 5000 feet — not nearly far enough. During ABC's coverage of the World Cup skiing competition at Whiteface last February, Barnathan and DeBonis had experimented with an improvised system in which the LDK-5's CCU was physically taken apart and one half of it moved along with the camera. The LDK-5 was then run from the mobile van with serialized data transmission. Though this system permitted longer cable runs, it meant having a portable generator to power each of the cameras — an unnecessary complication.

For the 1980 Games, however, ABC worked with Philips engineers to develop a small RF amplifier which can be inserted into the cable. With the amplifier, distances up to 17,000 feet of 14 mm triax cable can be achieved, with the camera powered directly from the van. The cable and amplifiers are buried in underground troughs so as not to interfere with the skiing competitions.

Another problem on Whiteface is the bitter cold with −40 degrees C temperatures common at this time of year. Not only production people but also the equipment has to be kept warm. The cameras themselves are not generally a problem. Once the Games begin, the cameras will never be turned off — although the beams on the Plumbicon® tubes will be turned down at night. Cameras are also fitted with special internal thermostatically-controlled heating elements. Enclosed within an operating cover, and protected at night by an "elephant blanket" which completely envelops the camera and tripod, the cameras should pose no problem.

The lenses are another matter, since any radical change in temperature can cause either internal or external fogging and condensation. ABC has therefore worked with Canon to design special internal lens heaters for the Canon 18:1 and 25:1 zoom lenses that will be used extensively throughout the Games. These heating elements, together with the operating covers which cover the

lens at the same time as the camera, should prove adequate.

The extensive cabling system with its 100,000 feet of triax, and six junction boxes to avoid duplication of cable runs from the different slopes, is matched by a carefully constructed plan to move cameras from slope to slope. Each of the cameras is mounted on an O'Connor tripod which is firmly secured to a three-and-a-half foot wooden pallette with strong metal cross-bracing on the bottom to provide strength. At the corners of the pallettes are metal rings to which are attached strong metal chains. Normally the pallettes and cameras sit on seven square foot camera platforms high enough to raise them above the snow line.

When the time comes to move the camera, an elephant blanket is thrown over it and lashed down. A small helicopter is then lowered into place and technicians attach the chains at the corners of the pallette. As the helicopter rises, the chains come together around the elephant blanket, wedging the camera between them and protecting it during transport. At the new location, the camera pallette is simply lowered into place, technicians plug in the pre-layed cable connector, and the camera is ready to be used. According to DeBonis, it takes only two-and-a-half to three minutes to move each of the cameras, and the slopes can be completely changed over for the next day's competition in less than two hours!

Signals arrive back at the 485 x 100 foot, $10 million broadcast center through a variety of means, mostly New York Telephone land lines. ABC's Joe Maltz, the Center's design engineer and installation project manager, explains, however, that a fiber optics system will be tried out as a link between the broadcast center and the Opening and Closing Ceremonies venue. The 1600-foot link, using newly-developed encoders and decoders by the Grass Valley Group, and the Galite Company's cable and connectors, will carry four fibers for video signals and two fibers with four-channel multiplexed audio each.

According to Maltz, ABC will be using the Lake Placid fiber optic system as a trial run for the possibilities of intra-plant distribution. His criteria for standard configuration (the encoders and decoders fit within conventional Grass Valley routing switcher racks) and economy appear to have been met by the experimental system.

Up to eight incoming signals can be monitored simultaneously in the master control room, then immediately put into a Grass Valley 64 x 64 routing switcher for distribution. Most of the outputs are located in the videotape area and the two fully-equipped production control rooms.

The VTRs are almost exclusively Ampex VPR-2s, 25 of which are equipped with both forward and reverse AST slow-motion controllers. There is an adjacent transfer room for dubbing the occasional quad material, and also a telecine room with two RCA film chains and audio dubbers. Each of the seven one-inch editing stations, which can be configured interchangeably for either two- or three-machine capability, has its own small Grass Valley switcher for limited effects. A DPE-5000 is dedicated to the VTR area, and individual editors can also make use of the extensive graphics capability by taking feeds from the separate graphics room. The VTRs are tied together with the Convergence ECS/Ampex editing controllers.

Production control room B is designed as a backup for the main production control room and will serve to

coordinate most of the pre-packaging of the programs. A GVG 1600 7K switcher is interfaced with a four-channel Vital SqueeZoom. At the audio position, two Ampex reel-to-reel decks, an International Tapetronics cart player, and a custom-built Siemens audio mixer handle the sound. A small announce booth looks out into the studio.

Production control room A is where the main on-air program will be switched, and will serve as the central command post from which Roone Arledge will personally produce the telecasts. Basic equipment consists of a GVG 300 switcher, a brand new DPE-5000 Plus digital effects generator (which can handle up to five sources simultaneously with image manipulation accomplished through a floppy disc memory), and an audio setup identical to that of control room B. This room also contains a small audio announce booth, while off to the side is the on-air studio where three Ikegami 312 studio cameras will cover Olympics host Jim McKay and other talent. The control room with its bustle of activity will be seen over McKay's shoulder through a window.

In close proximity to the control rooms is the graphics center, where the engineer in charge of the Olympics, Max Berry, together with engineers Eric Rosenthal, Abdelnour Tadros, and Dave Linick, worked to install a vast array of sophisticated equipment which can be routed throughout the center. In addition to an Ampex ESS electronic still store, the room contains several Chyron IVs, a titling camera, and so forth. A new addition to the graphics repertory, being unveiled at the Olympics for the first time, is a system co-developed by Dubner Computer and ABC. The system has been used to digitally create graphics elements such as the Olympic rings, gold medals, a flickering Olympic torch, flags for each participating country, and so forth. Graphic elements are stored as if they were single characters in a conventional character generator, and can be recalled and manipulated with the same ease as conventional letters.

The components of the ABC production package have every indication of being the state of the art for years to come, perhaps even until ABC televises the Summer Games from Los Angeles in 1984. Meanwhile, broadcasters, like the rest of the viewing audience, are eagerly waiting to see what will be done with it all. **BM/E**

Note: As part of our April, 1980 special report on electronic field production, BM/E *will offer an extensive rundown on how the Olympics coverage was put together, based on an exclusive first-hand report.–Ed.*

WGBH engineers talk about the Ikegami HK-312

WGBH covers Boston Pops Orchestra concerts with Ikegami HK-312 cameras from Symphony Hall, Boston.

Eight Ikegami HK-312 studio color cameras are in service at WGBH, Boston, some dating back to October 1977 — long enough for intelligence on their performance. From recent interviews with key WGBH people, read these excerpts.

Pops without noise
Tom Keller, Director of Engineering:

"The HK-312s have such high sensitivity that we were able to reduce significantly our light levels at the Boston Pops and Symphony telecasts. Yet, despite the major light reduction, we experienced no visible noise with the HK-312s . . . With their remarkable reliability record, we can depend on 6 cameras for 6-camera coverage, and not 7 for 6 as in the past. After all, you can't stop a live orchestra performance for a retake if you've lost a camera."

2 IRE, but a complaint
Ken Hori, Senior Engineer for Advanced Development:

"We tested several camera makes for RFI within a quarter-mile of a 50 KW radio transmitter. The HK-312 measured 2 IRE, whereas most others were in the 5 to 7 IRE area, and some as high as 20 IRE . . . For symphony remotes we'd need 2 to 5 hours for warm-up, but nowadays we're set up in less than an hour . . . We like its straightforward design — example, its truly high signal-to-noise ratio as compared to other cameras that resort to reduced bandwidth to attain a comparable ratio but wind up delivering noise too . . ."

We did get one complaint from the maintenance crew. They said that because they rarely found the problem of a down HK-312, they would never get to know the HK-312 well enough to fix it.

Washouts and dropouts
Bill Fairweather,
Video Control Engineer:

"During a lighting seminar staged here by Imero Fiorentino Associates, an actor in a normally lighted scene held up a sheet of white paper with printing on it to show loss of detail in the case of more than 60 percent tv white reflectance. The HK-312, however, was able to retain enough detail for the printing to be readable on the monitor.

Next came a demonstration of the dangers of too much or too little light on a chroma-key background. The HK-312 held the key to such a low light level on the blank background that the lecturer grinned and said, "I guess WGBH has pretty good cameras!" and went on to the next subject."

The HK-312 is the camera that met WGBH criteria for performance, stability, and reliability. They also have HL-53s, high-performance portable cameras that interface with HK-312 CCUs and can operate portably with their own CCUs.

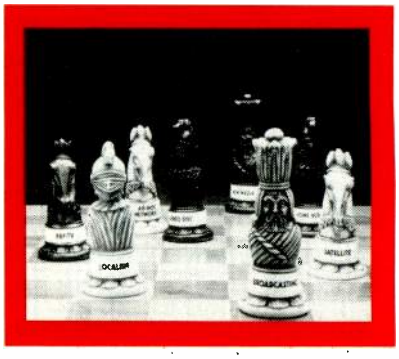
Adapters for triax cable, using digital techniques, make their cameras remote-usable at nearly a mile from base stations, yet easily revertible to multicore cable whenever needed.

In daily use, their HK-312s and HL-53s are interfaced with microprocessor-computer control units that automatically cycle them through all set-up adjustments, including black-and-white balance, flare and gamma correction, video gain, and eight registration functions, then recheck all those adjustments — all within 45 seconds. The cameras can also operate independently of the set-up computers, a feature that is an Ikegami exclusive.

If all of this suggests that the HK-312 is probably the best studio/field color camera in the industry, consider this: camera, set-up computer, and triax adaptor are not only operational, they are deliverable. For details or a demonstration, contact **Ikegami Electronics (USA) Inc.**, 37 Brook Ave., Maywood, NJ 07607, (201) 368-9171 / West Coast: 19164 Van Ness Ave., Torrance, CA 90501, (213) 328-2814 / Southwest: 330 North Belt East, Houston TX 77060, (713) 445-0100.

Ikegami HK-312

THE CHANGING GAME



As broadcasters look ahead into the next decade they confront a new mix of media, a changing marketplace for their services, and shifts in the lifestyles and tastes of their audiences. To meet these challenges broadcasters have a wide variety of new tools to choose from and new opportunities to re-align their methods and appeal. The 80s will be evolutionary, not revolutionary.

IF BROADCASTERS SPOKE with a single voice they might paraphrase Mark Twain, who cabled the AP that "the reports of my death are greatly exaggerated." In fact, radio and television broadcasting is coming off its best year ever with an enthusiasm for the new decade which promises to be as exciting and profitable as any since the industry's foundation. The new technologies that have been reported as potential Brutuses to broadcasting's Caesar are, in fact, viewed by broadcasters as exciting new distribution systems for broadcast products. While narrowcasting has been offered as a dagger, broadcasters see it as a two-edged sword. The new systems will need programming and programming has been, and is likely to remain, the province of the broadcast industry.

This said, what are the facts about the coming decade? Why do broadcasters feel so confident that these new technologies will only enhance the position of broadcasters? First of all, broadcasters perceive a fundamental difference between the broadcasting industry and the new distribution systems. In the discussions that follow (on pages 49 through 81), where leading individuals from key positions in the radio and television industries explain their intentions, a common theme emerges. Broadcasting plays a central role in the economy of the country and in the psychology of its citizens. The emerging technologies for new distribution systems are, in the strictest sense, "narrowcast." These new systems will bring new services to American audiences, but not broadcast services — not services predicated on large, simultaneous viewership. The new services will be in addition to broadcasting; not in place of it. Part and parcel to this theme of essential difference is the view that the new technologies are not so much threats as opportunities. These new media will have an insatiable appetite for program production and at the outset only the broadcast industry has the capacity, resources, technology, and know-how to meet this demand.

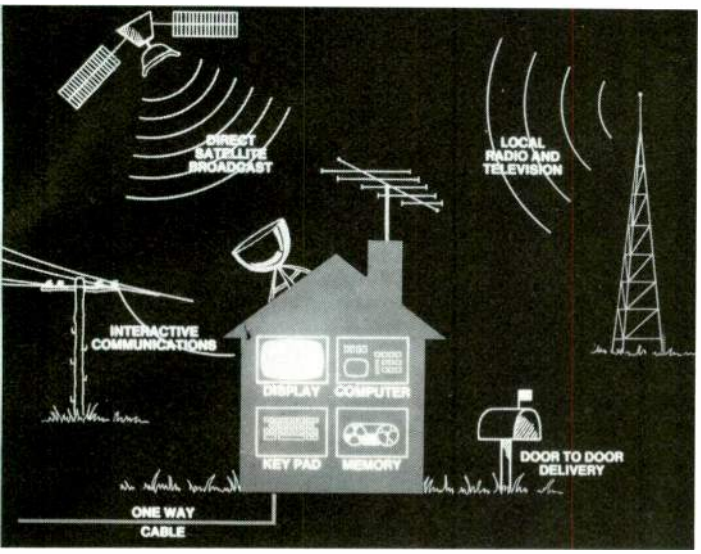
While a single videodisc copy of a major motion picture may cost just $24, the recorded motion picture may have cost $50 million or more. While it is common wisdom in the television business that first-run shows never make any money, it is also common wisdom that they begin to make money in reruns, go on to make money in foreign distribution, syndication, and market after market. To the broadcast industry, videodiscs, pay TV, home VCRs, et al, are yet additional aftermarkets. And if an acceptable copyright or retransmission agreement can ever be worked out with cable TV, even cable could become an aftermarket.

So, as we look across the broad expanse of the next 10 years, we might get the clearest picture by focusing on where we are now and remembering clearly where we have been. Broadcasting, like any other industry, does not exist in a vacuum. Broadcasters are affected by the economy, changes in the population, technology, and, more than some industries, government policy.

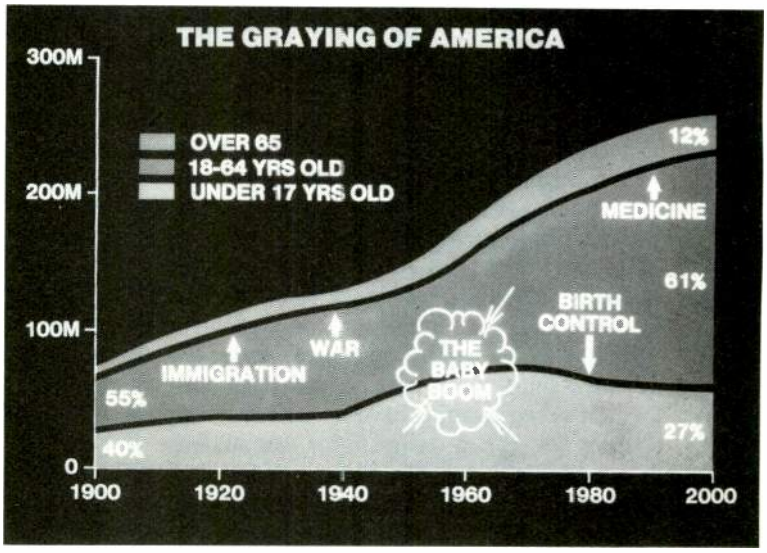
The economy

Generally the outlook for the economy in 1980 is a mixed bag. While the economy as a whole is expected to grow only slightly, if at all, and while the government's own indicators point toward a recession in the first two quarters of 1980, an upturn is expected to be discernible in the third quarter with a decent recovery in the fourth quarter. While broadcasting is not recession-proof, it is recession-resistant. Advertising, the economic engine that drives commercial broadcasting, showed some distressing weaknesses in growth during recent recessions in 1970, 1973, and 1974, but Robert Coen of McCann-Erikson, making his presentation to the seventh annual Conference on the Outlook for the Media, said that the performance of the advertising industry during this recession might be more similar to the experience during post-World War II recession years. In those years, advertising outperformed the economy by substantial margins (see Fig. 1).

In recent recessions other factors, most notably the



The full range of communications services will not reach the home until the late 80s and probably later. Source, J. Christopher Burns, vice president/planning, The Washington Post Company



With the baby boom over and the later retirement age, the audience of the 80s will be older. Source, The Washington Post Company

withdrawal of cigarette advertising, seriously harmed revenue growth for the advertising and broadcasting industries. Television weathered the storm a little better as other advertisers came on line quickly and radio actually outperformed both advertising and TV. While all advertising last year grew by 11 percent, advertising by the media and by the government, two areas that were minor advertisers at the beginning of the decade, grew by 27 percent and 66 percent respectively (see Fig. 2). In the short term, with 1980 being a major election year, revenue growth for radio and television should be substantial. In past election years, political advertising helped spur both radio and television to rates of growth far outdistancing the economy as a whole (see Fig. 3). Another bright spot on the horizon is the Olympics, which produce very high commercial prices and a backlog of advertisers forced to other availabilities by the high cost of such time.

In the long run, radio and television can expect sustained growth as the national branding of products plays an increasingly important role in the marketing strategies of major advertisers. Looking far into the future, Coen's projection offers the prospect of $55 billion in advertising expenditures by 1985 and $135 billion by 1990. A very large share of this revenue will go to broadcasters and much of it will come from significant local advertising growth.

Executives, representing the Outlet, Capital Cities, and Multimedia broadcasting companies at the conference, generally concurred on the growth of the local market. Walter E. Barlett, president of Multimedia, predicted that his company would see more than 60 percent of its revenues coming from local sources by 1983. While retail advertisers represent much of the potential advertising revenue, other factors will also influence this trend to local revenue. Agencies are increasingly opening up regional offices and buying locally for national clients, so some of this increase will merely be a shift in purchasing patterns.

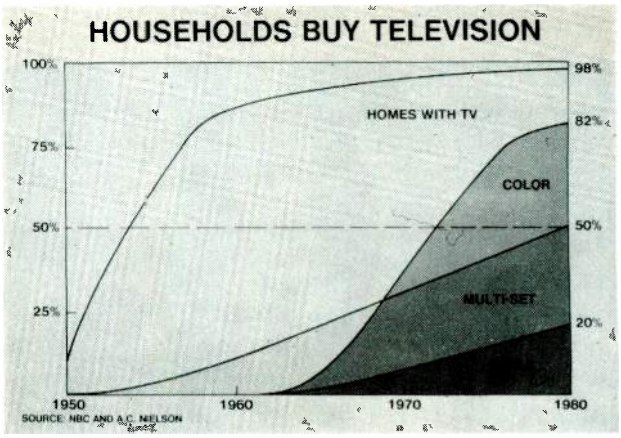
In the economy at large, inflation poses a real threat. While an eight percent growth of the GNP next year is expected in dollars, adjusted for inflation the GNP could decline by as much as two to 2.5 percent. Coen's projection for the GNP in the coming years is deceptively reassuring, showing a $2.55 trillion value by 1980 and reaching a $6.4 trillion value by 1990. How much of that growth will be eaten up by inflation is anybody's guess. Nevertheless, personal consumption expenditures continue to grow, and Coen projects $1620 billion in such expenditures in 1980, $2400 billion in 1985, and $4000 billion by 1990. While this represents a 48 percent growth in personal consumption expenditures over a five year period (between 1980 and 1985), if inflation continues at its double-digit pace, the actual growth in 1980 dollars could be considerably less than 10 percent for the same period.

To complete the economic and social fabric confronting broadcasters in the 80s, we can look forward to an older population changing the emphasis on audience groups from age 18–49, to possibly 25–65. Of that population, Philip Levine of Ogilvy & Mather painted a picture at the conference of four major groups. Levine said there will be a growing gap between the "haves" and the "have nots," at the expense of the middle class. The "haves" will themselves be divided into older "haves," non-estate builders who will spend money freely on luxury items, and younger "haves," who will spend their money cautiously, insisting on value and durability in exchange for their dollars. The poorest of the poor will be the older "have nots," people on fixed incomes ravished by inflation. The younger "disenfranchised have nots" will be made up largely of minority groups whose modest gains will be eroded by economic shrinkage and inflation. The two major groups of "have nots," according to Levine, will pack considerable political wallop and will require larger and more comprehensive social programs in the interest of social justice and tranquility. Such programs

are likely to put an increasing tax bite on the incomes of the middle class and the vast bulk of the "haves," thus diminishing discretionary expenditures. While Levine painted a bleak picture of our society in the 80s, the prospect, on balance, is for modest but substantive improvements in the standard of living for almost everyone.

While advertising demand looks healthy, another regulatory fiat against advertising like the cigarette ban of 1970-71 could seriously impair the short term. The most likely target for regulators would be a ban, or severe restriction, on commercials during children's programming. Radio would, of course, suffer less from such a move since public interest groups concerned with children's programming have focused on television, and radio does not, per se, program for that audience anyway. Of course, the demand by advertisers for commercial time is contingent on the demand by the public for the programming that television and radio offer. While the gloom and doom purveyors see audiences flocking to other media, there is a stark absence of any evidence of such a trend and, historically, virtually no precedent. The public continues to increase its use of broadcast services, with the average individual now watching television for six hours and 23 minutes and listening to radio for three hours and 23 minutes daily.

The print medium, which has been under competitive pressures from other media for decades, has never been stronger. In fact, the history of media records that introductions of new communications technology usually have a beneficial impact on pre-existing communications technologies. Though television's introduction was supposed to close the door on radio and motion pictures, both have undergone remarkable growth. Though radio was to spell disaster for the phonograph record industry, it instead spurred the recording business to even greater heights. When audio tape recording became widespread after World War II the record industry wrung its hands over the prospect that commercial radio, combined with this new



With the enormous growth of television sets per household, inroads by other media will be offset

off-air recording technique, would certainly destroy the business. (There was even a lawsuit at the time which challenged the legality of recording music off-the-air.) The pundits were wrong once again. The human animal seems to have an insatiable appetite for communication and thus each new communications technology is woven into the fabric of communication synergistically.

The emerging picture of the 1980s finds the American public continuing to rely on commercial radio and television for the provision of news, information, and entertainment. None of the emerging technologies will provide these services in as broad a fashion as the current broadcast technologies and they are likely to rely heavily on the commercial broadcast structure to supply the bulk of their entertainment and news programming. Informational systems and programs may develop indigenously to the new services, but these services will be much narrower in appeal than the types of informational services offered by the broadcast media.

One of the recurring themes among the broadcast leaders who spoke to *BM/E* was the notion that this is the "communications" business, not just the broadcast business. While broadcasting will remain the most important distribution system for the products of the industry, broadcasters will also market their products to these new technologies and use some new technologies of their own to improve and expand the effectiveness of broadcasting.

The product that broadcasters routinely provide is expensive. In 1978, the three networks combined spent $2.278 billion on their operations. All television stations spent $1.145 billion. Pay TV and cable combined spent just $12 million. According to Gene F. Jankowski, president of CBS/Broadcast Group, the networks' expenditures for this past year are likely to exceed $3.5 billion. While it is unlikely that the newer technologies could spend this type of money for product any time in the near future, it is conceivable that pay TV could outbid the networks for certain specific events — particularly professional sports. Even pay TV proponents concede, however, that in the area of national sports programming the transfer of such programs from "free" to "pay" status would be politically unpopular. Legislation restricting such a development is not unthinkable.

The challenge of new distribution systems

While keeping in mind that the general economic picture of the 1980s offers uncertain prospects for the rapid adoption of new technologies, they will find a role in the fabric of communications. Martin Ewenstein of CBS,

Comparison Of The 1979 "Outlook And Actual"

	Outlook	Actual
National Broadcast	+11%	+13%
National Print	+12	+14
Other National	+11	+12
Total National	+11	+13
Total Local	+10	+14
Grand Total	**+11.0%**	**+13.3%**

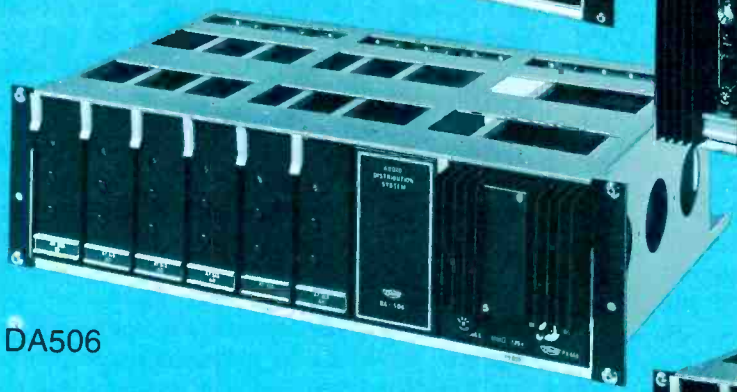
The Outlook For 1980

	Change Over 1979	1980 Forecast (000,000)
National Broadcast	+13%	$ 9340
National Print	+10	5500
Other National	+11	15,315
Total National	+11.4	30,155
Total Local	+10.4	24,985
Grand Total	**+11.0%**	**$55,140**

Source, McCann Erikson

Audio distribution systems for all applications.

DA504



DA506

DA505

DA507

All requirements for quality audio distribution can be fulfilled by the broad range of McCurdy audio distribution systems. Each is self-powered, modular and is compactly housed in a sturdy all-welded steel frame, occupying 5.25 inches of rack space.

State of the art circuitry incorporating many outstanding features is employed, engineered and built to stringent broadcast industry specifications. These features, with indication of system availability, include:

- Accommodation of input levels from −70dBm to +30dBm, DA506.
- Output levels up to +43dBm, DA505.
- Up to seventy-five 600 ohm output splits per amplifier, DA505.
- DC remote gain control, DA504, DA505.
- Up to twelve amplifiers per system, DA507.
- Feedback gain control utilized on all units.
- Transformer-coupled inputs and outputs, DA505, DA506.
- High-power heatsinks on front panel, keeping frame interior cool.
- Remotely controlled mute, DA505.
- Fully protected amplifiers and power supplies.

Larger systems and custom designs are also available.

Each system is based on over thirty years experience in providing quality audio equipment to the broadcast industry.

McCURDY RADIO INDUSTRIES

TORONTO (416) 751-6262 • TELEX 06-963533
CHICAGO (312) 640-7077 • TWX 910-222-0436
NEW YORK (201) 327-0750 • TWX 710-988-2254

Circle 128 on Reader Service Card

The Changing Game

Inc., predicts that by 1988, networks will suffer no more than about a 10 percent loss in share of audience to the new media, pay cable, STV, CATV, videodiscs, and home VCRs. The 10 percent loss of share, said Ewenstein, would be about equally divided amongst cable, pay, and in-home discs/cassettes. In effect, this sharing of the siphoned audiences will permit none of the new technologies to successfully compete for advertising revenue. Frank Tomeo, vice president at J. Walter Thompson, threw more cold water on the expectations of "new media enthusiasts" as he pointed out that the pivotal figure of 30 percent penetration that many cable proponents cite for offering themselves as a viable advertising medium "is more like 60 percent." Tomeo pointed out that many barter shows, ad hoc networks, and other efforts have difficulty locating advertiser support even when they are able to offer 60 to 70 percent of the market.

That is not to say that the new media will not play a role in the future strategies of advertisers. Should "specialized" programming develop successfully for particular audiences, it is conceivable that some marketers will look at the new media as more efficient. Nevertheless, this type of advertising is likely to be in addition to broadcast advertising and not in place of it. Marketers will still need the mass audiences to launch new products, and the 13 million homes with videodisc and cassette that Ewenstein projects for 1988 would not be sufficient for this type of marketing. Retailers will continue to need the speed, ease, reach, and frequency of television and radio commercials to handle short-term campaigns such as sales and specials. Even though shopping services are proffered by cable enthusiasts, television may be ready to counter with teletext or a similar system. By 1990 cable is expected to be in 40 million homes according to Ewenstein, but whether penetration in all markets will be sufficient to be a viable alternative to broadcast services that may be offered is another matter. More likely, such services will be in addition to broadcast advertising. Ewenstein stressed, as do most other forecasters in the broadcast business, that these other media "will be viable businesses." As such, ABC and CBS have begun major new enterprises to provide the programming that these new media will demand. RCA, parent of NBC, has announced major investments in both the supply of hardware (videodisc players) and software (some 300 titles for its library of programs).

Not everyone is as optimistic as Ewenstein about the effect of the new media on broadcasting. John Reidy, an analyst for Drexel, Burnham, Lambert, sees a 15 percent loss of audience shares to the networks from all other media by 1985, but even this projection expects a 14 percent increase in television households to offset the effects of such a drain.

Internal competition to be more serious

While most network and advertising industry researchers expect that the new distribution systems will have little impact on over-the-air broadcasting, competition within the industry itself could cause severe re-alignments. Radio, which has continued to grow at a steady six to eight percent rate during the past decade, is expected to continue in that pattern. Television's growth is estimated variously at 11 to 15 percent annually in the coming years. But there is, especially for radio, the expectation that many new stations will be licensed in the coming years. The 9 kHz spacing proposals could lead to as many as 2000 new AM stations and the dissolution of the "clear channel" stations could permit the full-time operation of current daytime-only stations. The recent WARC deliberations in Geneva have opened up the 1605-1665 kHz band for yet more AM stations.

AM radio has been involved in trench warfare with FM for the past 25 years and the FM service has finally established a firm claim on the music listening audience (see Table 1). There are currently some 3114 commercial FM stations and 993 educational FMs. The demand for FM licenses is strong and likely to continue. The battle between AM and FM is a serious one and radio broadcasters will find themselves confronting an evermore fragmented audience. Time was when stations boasted of 20 percent shares while six or seven percent shares are now considered successful. By and large, this is a testimony to the ability of radio to identify and sell to its individual audience, but these techniques will have to be sharpened in the years ahead.

AM stereo is viewed as an important advance for AM to stay competitive, but critics say the poorer stereo quality offered by AM stereo will undercut its effectiveness. While this remains to be seen, most AM radio managements have been willing to invest in stereo production equipment in the expectation that, if the problems can be solved, and if music is the format, having stereo will be better than not having it.

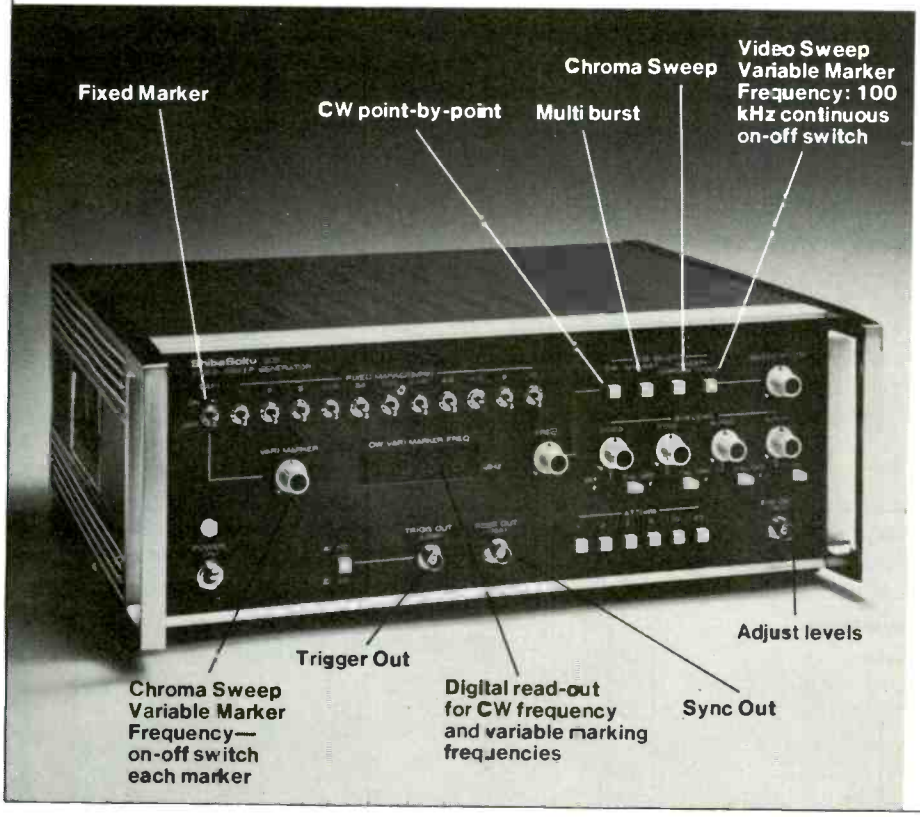
Satellites are likely to play an immensely important role in the strategies of both radio and television stations. The general tactics of the next decade are usually listed under the heading of "localism." Both radio and television managements are convinced that their stations will have to become increasingly involved in their local communities and markets to prosper in the 80s. For local radio this will mean devoting increasing resources to local sales efforts and developing better marketing techniques for selling the audiences served. Satellites will be the key tool in bringing in high quality programming which would be otherwise unaffordable or simply unobtainable. Satellites will carry music, sports, news, and other program material that can be used to complete the individual station's package. To a large degree these services have already begun via Mutual Broadcasting, AP, UPI, and others. Even

National FM Shares (Arbitron)

April/May	1979	50.887%	(9,480,800 of 18,631,200)
October/November	1978	50.698%	(7,525,100 of 14,843,000)
April/May	1978	50.698%	(8,565,600 of 18,025,100)
October/November	1977	46.501%	(6,561,700 of 14,110,900)
April/May	1977	44.428%	(7,745,900 of 17,434,700)
October/November	1976	43.818%	(6,079,600 of 16,834,200)
April/May	1976	40.886%	(6,882,900 of 16,834,200)

Table 1. *FM has established itself among music enthusiasts challenging AM radio's long dominance. AM will find itself competing not only with FM in the 80s, but possibly a large number of new AM stations*

BUILT TO MAKE IT!



AND MAINTAIN IT!! Measures frequency response on TVs, VTRs and other video equipment.

The Asaca Video Sweep Generator 205 contains a built-in standard color sync signal generator. The color burst can be switched on and off so the 205 is ideal for oscillator comparisons to measure frequency response of color equipment.

There is a selection of output signals: video sweep (0.1 - 10 MHz), chroma sweep (sub carrier ±2MHz), CW and multi-burst.

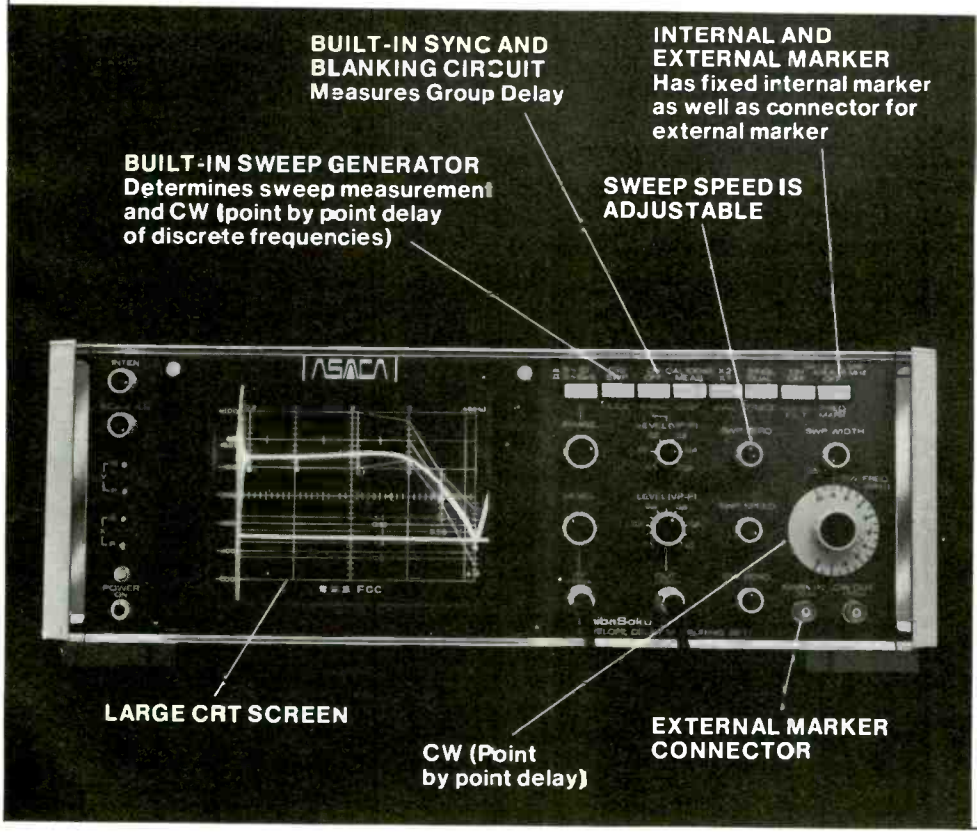
Also, the 205 features facilities for composite sync signal outputs and trigger pulse outputs (H. D/V. D. Selectable) and so it can be used for oscilloscope triggering. Digital read out for CW frequency and variable marking.

Contact your Asaca distributor for details or demonstration. Or write to:

ASACA®

ASACA CORPORATION OF AMERICA
1289 Rand Road, Des Plaines, Ill. 60016
(312)) 298-4380
In the far east, contact ShibaSoku., Ltd.
19-13 Chome, Fukuzawa, Setagaya-ku
Tokyo, Japan Phone: 703-5151

MEASURES GROUP DELAY IN TRANSMISSION SYSTEMS & LINES



At last! The Envelope Delay Measuring Set You've Always Wanted—But Which Technology Couldn't Develop Until now! Compare Performance With Equipment Selling For $14,000.00. Our Price—Only $6,900.00!

Our envelope Delay Measuring Instruments* feature large CRT screens, built-in sweep generators and allow spot frequency delay measurements from 200 KHz to 10 MHz. Check out Models 763 NA and the new 201-1. Both are NTSC or PAL compatible. The 201-1 adds a built-in sync generator and blanking mixer.

Don't you delay in getting full information. Write.

We create change

ASACA®

ASACA CORPORATION OF AMERICA
1289 Rand Road, Des Plaines, Ill. 60016
Phone (312) 298-4380

155-B San Lazaro Ave.
Sunnyvale, Calif. 49086
(408) 735-7350

*Product of SHIBASOKU— sister company of ASACA

Circle 129 on Reader Service Card

syndicators have suggested that satellite distribution might offer them a more flexible means of distribution.

There seems to be no decline in demand for radio. In 1979 there were some 450,800,000 radio sets in use; some 5.7 sets per average household. In fact, 1978 saw consumers buy some $3.5 billion worth of radio sets — more money than consumers spent on many other forms of leisure/entertainment (see Table 2).

The use of satellite communications in television will be even more profound. While the number of television stations will not increase all that sharply, the relationships of television stations, both independents and affiliates, will change because of satellite technology. Network affiliates have more say in network decisions now than ever before and are likely to have even more of a say in the

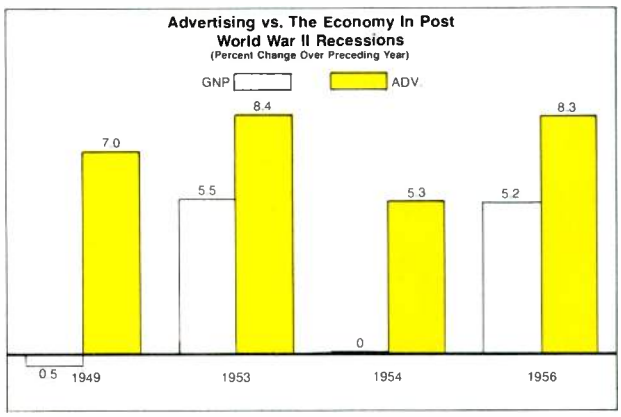


Fig 1 Coen expects that the advertising growth rate during the impending recession of 1980 will be similar to the post war years

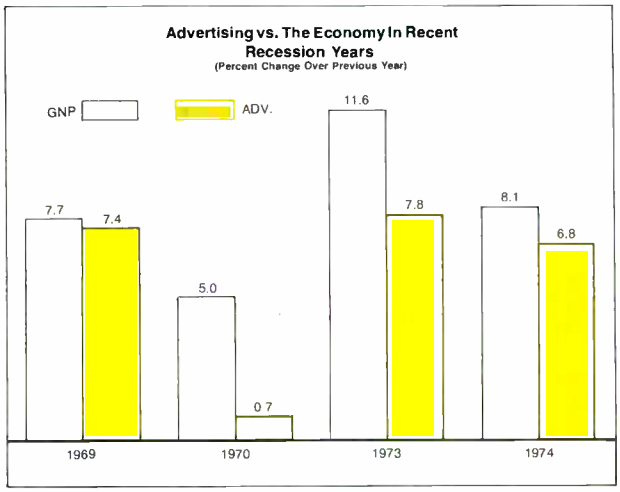


Fig 2 The poor performance of advertising growth in recent recession years was attributed to a variety of reasons, including the ban on cigarette advertisements

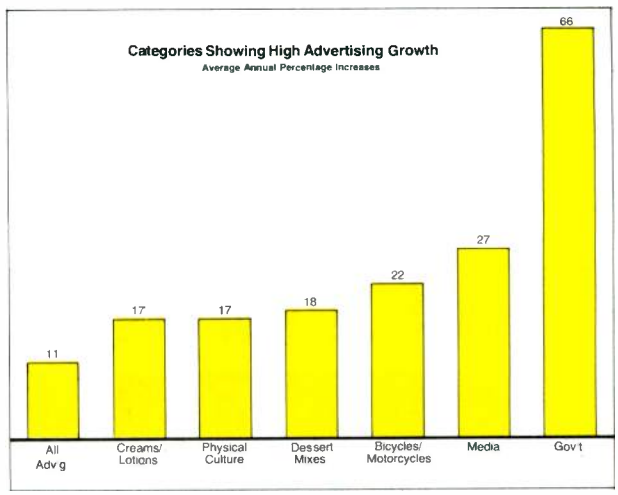


Fig 3 Two of the fastest growing advertisers are media and government which were only minor factors at the beginning of the decade

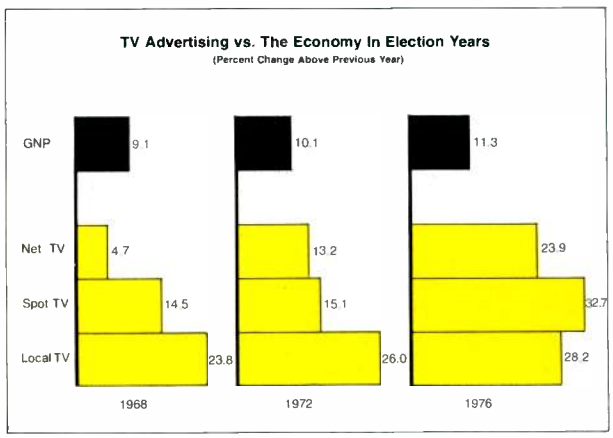
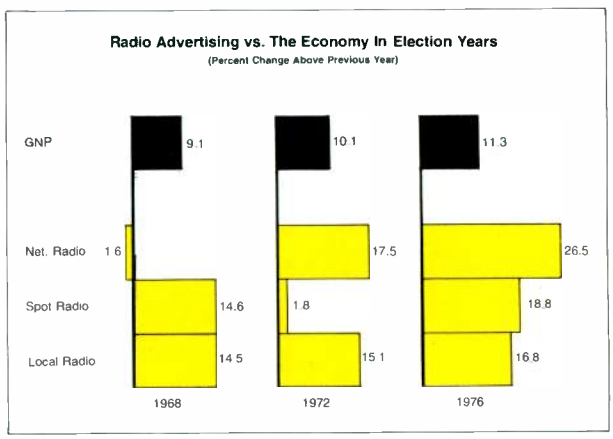


Fig 4 Both radio and television advertising has increased dramatically in recent election years. Local stations are the primary beneficiary of this "campaign" advertising. (Graphs were prepared by McCann Erikson)



Telegram western union

PMS VIDEO TAPE EDITOR

TO VIDEO TAPE EDITORS

SUBJECT: Z6E ABC ROLL/EFFECTS EDITING SYSTEM

VIDEOMEDIA ANNOUNES THE INTRODUCTION OF THE Z6E EDITING/POST PRODUCTION SYSTEM WHILE THE Z6B EDITING SYSTEM HAS BEEN ACCEPTED WITH GREAT ENTHUSIAM MANY USERS EXPRESSED THE NEED FOR AB ROLLS AND EFFECTS IN THEIR POST PRODUCTION FACILITY. VIDEOMEDIA HAS DESIGNED THE Z6E EXPRESSLY FOR THIS PURPOSE, AND BEYOND. SHOWN AT VIDEO EXPO NEW YORK AND SMPTE LOS ANGELES IN OCT'79- THE Z6E NOT ONLY CAN PERFORM AB ROLLS BUT ALSO ABC/EXTERNAL ROLLS. THE Z6E AUTOMATICALLY DETERMINES IF A MATCH FRAME EDIT IS REQUIRED AND PERFORMS SUCH WITHOUT OPERATOR INTERVENTION.

IN ADDITION, THE Z6E IS CAPABLE OF TRUE EDITING WITH OPTIONAL FEATURES SUCH AS ADD/DELETE EVENT, RIPPLE EVENT LIST AND ALSO AVAILABLE SMPTE TIME CODE READER.

THE Z6E IS AN UPGRADE OF THE Z6B AND AS SUCH IS EQUIPPED WITH ALL Z6B OPTIONS SUCH AS DUMP-THE EXCLUSIVE Z6 OPTION WHICH ALLOWS ALL EDIT DECISIONS TO BE STORED DIGITALLY ON THE VIDEO TAPE ITSELF. THE Z6E IS THE MOST POWERFUL EDITING SYSTEM IN THE WORLD TODAY. SINCERELY

VIDEOMEDIA INC
250 NORTH WOLFE ROAD, SUNNYVALE CA94086
408 733-6500

future. Satellites will permit group-owned stations to pool resources more readily and ad hoc networking will offer affiliate stations opportunities both to program their stations from other than network sources when the network offering performs poorly and to reap additional revenues when advertiser-sponsored networks seek regional or demographic combinations on one-shot deals. Tomeo, of J. Walter Thompson, described ad hoc networks at the Conference on the Outlook for the Media as "exciting," suggesting that advertisers would find sufficient economies and efficiencies through the use of such satellite-linked occasional networks.

The experimental SMARTS program involving RCA, Post Newsweek stations, and Viacom suggests that satellites will offer a cost-effective method of distributing syndicated programs, and the Blair experiment, in which commercial spots are distributed via satellite, suggests that the economics of satellites will result in television stations being increasingly tuned to the birds.

While there are only about 50 satellite receiving stations in operation at commercial television stations now, this number is likely to grow astronomically in the coming years. *BM/E's* own "Panels of 100 Survey" (elsewhere in this issue) showed a marked increase in the number of television (and radio) broadcasters intending to install earth stations within the next two years.

The remarkable promise of satellite communications is reflected in other ways as well. Robert Wold, of the Robert Wold Company, intends to get into the "common carrier" earth station business in cities around the country. Wold currently operates such an installation in the Hawaiian islands, under a special dispensation from the FCC. It is hoped that this concept will spread rapidly in the continental United States. Roy Bliss, of United Video in Tulsa, Okla., which now distributes WGN-TV and WFMT, FM radio, around the country to cable systems, expects that the 80s will present his company with opportunities to perfect cooperative programming efforts by broadcasters for use on cable TV systems. Robert Seidenglanz, president of the rapidly growing Compact Video Systems, expects to see more and more use of satellites and notes that several contracts for mobile uplinks and downlinks have been let. Wold alone expects to have three air-mobile satellite uplinks available within the next few years. Networks, groups, and individual program producers have already planned to use such systems when they become operational. Seidenglanz sees in the development of Image Transform's (a Compact Video company) new tape-to-film process the promise of electronic distribution of theatrical releases. So one of the most apparent changes ahead for television and radio stations will be the way they receive their program material. To those stations that remain tethered to the network, the switch to satellite distribution may be largely transparent but to other stations, particularly the aggressive group-owned ones, there will be a new level of flexibility.

Independent stations, which already lead the affiliated stations in the installation of earth station terminals, are likely to be the most profoundly affected. The independents, who have learned increasingly how to compete against network affiliates in fringe time, look to satellites as central in their plans to compete with networks in prime time. With the new profitability of UHF stations, a boom in UHF prices has materialized. There are now more than 230 pending UHF licenses before the FCC, and recent sales of UHF stations have brought as much as $15 million for unaffiliated stations, according to a report in *The New York Times*. While much of the interest in UHF licenses can be attributed to the prospects of STV, there is also a renewed confidence on the part of traditional independents.

Expenditures On Leisure Time Products

Radio Sets	$3.5 billion
Hi-fi Phonographs	$3.3 billion
Records	$3.0 billion
General Interest Books	$3.0 billion
Movies	$2.65 billion
All Spectator Sports	$2.3 billion
Musical Instruments	$2.1 billion
Film Developing	$2.0 billion

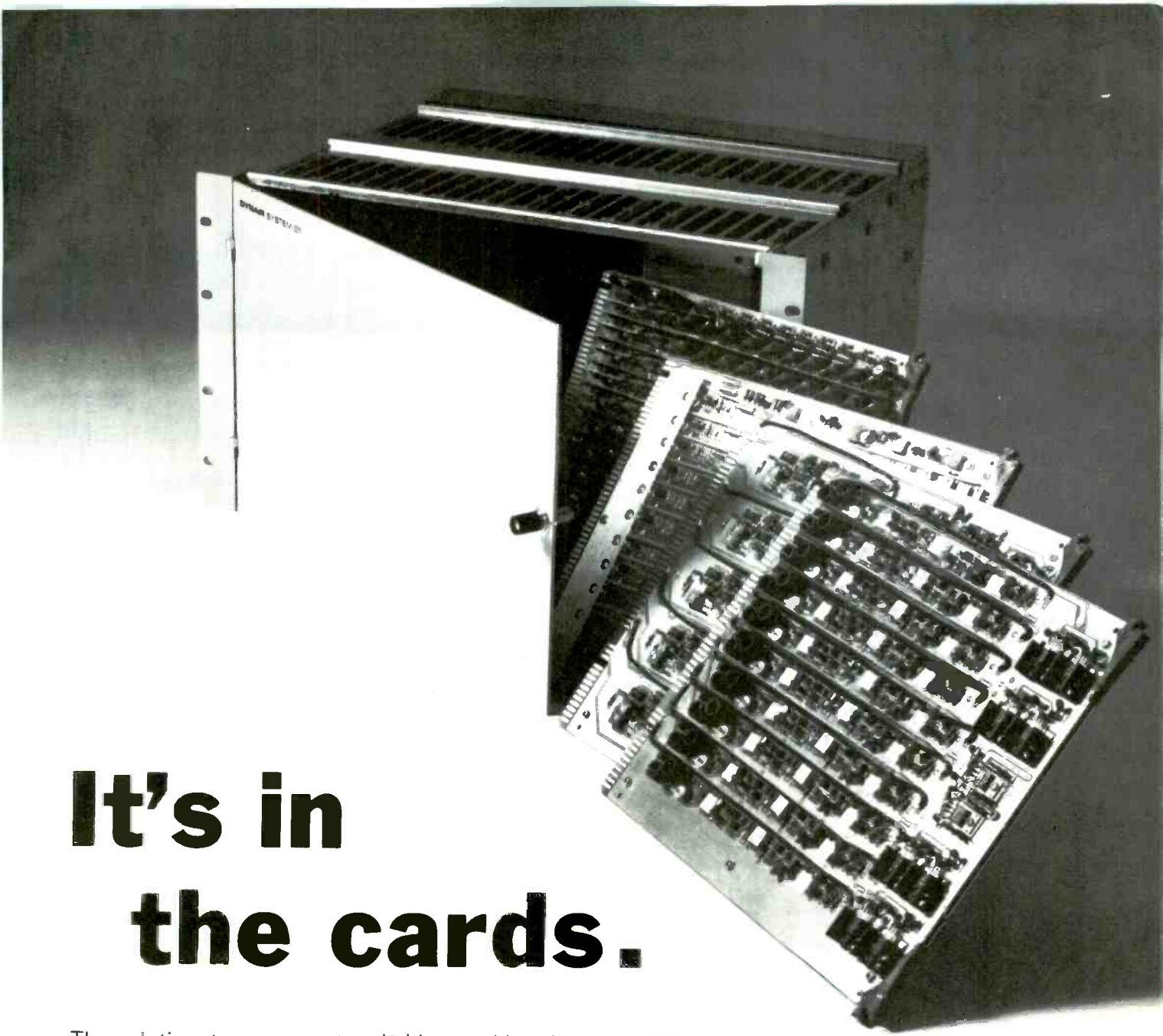
Table 2. *Americans spent more on radio sets last year than they did on many other forms of entertainment*

Though satellites will provide the most profound change for broadcast television, other areas of technological change will have their impact. With the cost of syndicated product zooming, the scarcity of off-network programming, and the tremendous 20 percent growth in the cost of news production, broadcasters will be looking harder and harder at the cost effectiveness of equipment. The digitalization of elements in the broadcast system will continue, and the digital plant will appear increasingly attractive as broadcasters seek to control cost and increase efficiency. Digital recording of video is a very strong "maybe." Unless digital VTRs can offer more operational flexibility and better cost effectiveness than current analog one-inch VTRs, their introduction or adoption is chancy. The short-term demand by broadcasters in the video recording area seems to be for one-inch cassette or cartridge players to enable them to shift commercial operations to the one-inch medium. Smaller and lighter field recorders are also a high priority.

Camera technology, on the other hand, is a definite target for change on the minds of broadcasters. While ENG/EFP cameras have never been better, lighter, smaller, or less power-consuming, broadcasters still demand more of the same. The development of an all solid state camera would seem to be a high priority in the minds of broadcasters. Whether this can be accomplished within the next 10 years or not is questionable. Small monochrome CCD-type cameras have been developed and the technology is progressing.

As we were told time and again while preparing this report, there is little demand for dramatic technological change in broadcasting at this point. As one spokesman put it, "For the first time, technology is way ahead of the ability of creative people to exploit it." The demand of the 1980s by broadcasters is for efficiency and reliability. Competition in local markets for both radio and television will be fierce and both media are positioning themselves to win it locally, with local production, local control, and local involvement. To do this, stations will need to control the cost of hardware and operations. Programming costs will continue to rise so only the replacement of inefficient ones with efficient systems and the imaginative use of reliable equipment will offer radio and television managements any hope of cost control in the years ahead.

BM/E



It's in the cards.

The solution to your next switching problem is probably built into one of our new System 21 cards.

We've unsnarled many a complicated distribution switching puzzle during our 22 years in the audio, video and data switching business. So, when we developed this new state-of-the-art system, we created an architecture that would let us move with cost-effective ease from 10 x 10 to 1000 x 1000 inputs and outputs.

What's your requirement? Our standard video cards in television broadcast applications offer specification numbers like 0.15% differential gain, 0.15° differential phase and ±0.1-dB frequency response to 5 MHz. Other video cards operate at 30-MHz bandwidths in high resolution environments.

Audio cards keep harmonic distortion under 0.25% at full 30 dBm output with hum and noise riding 105 dB below. They're balanced in and out and are protected against short circuits for an indefinite period. Worst case crosstalk isolation is greater than 80 dB to 15 kHz.

Cards are instantly replaceable with power on. They're controlled by a microprocessor with battery-backed memory so loss of power doesn't lose the matrix setting.

Controls, a variety of standard configurations, all operate on a single coaxial cable, or you might find our RS-232 port and your computer the best answer.

Yes . . . it's in the cards. We know we can be of assistance to you so call or write for additional information.

DYNAIR ELECTRONICS, INC.
5275 Market Street, San Diego, CA 92114
Tel.: (714) 263-7711 TWX: (910) 335-2040

Circle 131 on Reader Service Card

FREE* FOR

AUDIO CONSOLES (The Silent Series)

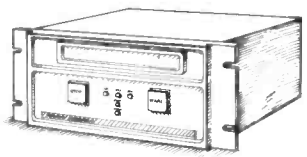
DC-38: 5, 8 or 10 mixers, up to 40 inputs: $2,447 to $4,980.

SC-5, DC-5, DC-8: 5 & 8 mixer, 12 to 18 inputs: $995 to $2,375.

P5M: Portable; 5 mixers, 8 inputs; built-in compressor: $545.

DC-12: Remote control; up to 12 mixers (expandable to 20) with 2 inputs each: $4,200 to $5,200.

THE PHASE-ERROR-FREE CART PRODUCTION CENTER



(Demos now, deliveries Jan/80)
PhaseMaster: Phase-error-free record/reproduce/duplicate; full complement of broadcast features and construction.

MA Series: Studio monitors; 12 W mono, 20 W stereo; 10 Hz–50 kHz±1 dB; distortion 0.05% max: $121 and $171.

MIC/LINE/STUDIO AMPLIFIERS:

SMA Series: Studio monitor; 25 W rms/ch. stereo; 15 Hz–50 kHz±1 dB; distortion 0.6% max: $325.

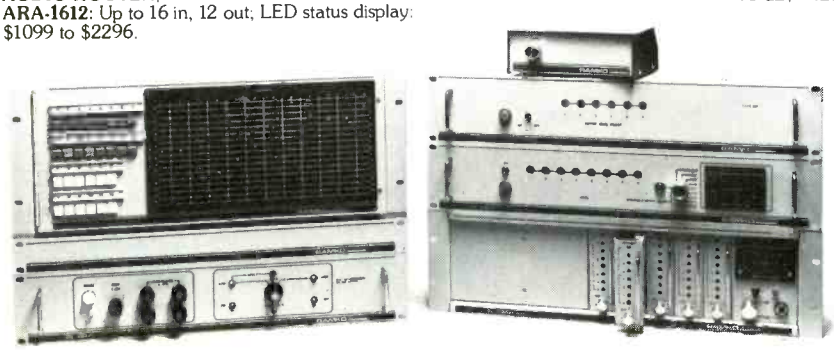
DML Series: Dual mic in to amplify, mix, limit and control gain; built in compressor; AC and DC: $239 to $281.

L Series: Line amps, with or without equalization; up to 10 mono, 5 stereo ch.; solid-state balanced and unbalanced inputs; +21 dBm max. in and out; response 10 Hz–50 kHz +0, −1 dB; distortion 0.008%: $135 to $453.

MLA Series: Mic/line inputs; studio or remote: $128 to $185.

TURNTABLE PREAMPLIFIERS
MP-8 & SP-8: Mono & stereo; S/N −77 dB; ±1 dB RIAA: $98 & $144.
ESP-38: 0.03% distortion; S/N −85 dB; ±.25 dB RIAA: $325.

AUDIO ROUTER/AMPLIFIER
ARA-1612: Up to 16 in, 12 out; LED status display: $1099 to $2296.



AUDIO DISTRIBUTION AMPLIFIERS
DA Series: 12 versions from 1 x 30 mass feed to 20 x 80 rack mount; 20 Hz to 20 kHz±0.5 dB; −75 dB separation: $145 to $2276.

Prices subject to change without prior notice.

2 WEEKS.

***You can use any of the gear you see free for 2 weeks (with credit approval prior to shipment).**

Play with the cart/cassette record/playback/duplication center that eliminates stereo phase shift error once and for all. The most advanced turntable preamp in captivity. Consoles so advanced, so silent you're not going to believe them until you try them. Or an audio router that makes whatever you've got now look—and sound—like so much spaghetti.

Then, if it's not for you, just ship it back.

But in all fairness, we have to warn you—once you've tried Ramko, chances are you're hooked for life.

Phase shift doesn't matter in mono.

So instead of adding failure-prone electro-mechanical components or re-inventing the cartridge, in the Ramko PhaseMaster Cart/Cassette Duplicating Center, we simply encode the stereo before it ever sees the heads or tape, then decode the signal after it leaves these two major sources of stereo phase shift error.

The result is phase-error-free recording/reproduction/duplication, and performance specifications that meet or exceed whatever cart drives you're using now.

Features include: an A and B cart deck; an A cart deck; and a cassette deck. Simple cassette-to-cart(s) and cart-to-cassette duplication. Automatic switching of record/playback, encoding/decoding and mono/stereo. Left, right and phase analysis meters. Front panel input selection. Three cue tones. And so much more that you'll just have to contact us for details and a demonstration.

Ask for the Ramko PhaseMaster.

Just another turntable preamp?

Look at what one user wrote:

"Three days ago I replaced the (brand name) preamps in our studio with your ESP-38 preamps."

"The result was astounding. The next day we had six unsolicited calls from local stereo stores. All commented on our improved disk reproduction and wanted to know what we had done."

"The comments from listeners have been excellent."

Try it. You're going to like it a lot.

For AM stereo, or an FM station upgrade.

Ramko consoles come with features you won't even find in more expensive competitive units.

Total dc control of all mixing and switching function means no more noisy pots and switches, no stereo tracking error, and much more resistance to RFI.

We've developed solid-state *balanced* inputs for better sound. Added gain select on each input. Included switch-programmable cue and monitor mute selection. Provided mono, stereo and phase meters as standard features.

And then we backed everything with a 2-year warranty (4 years on the DC-38 and DC-12).

Kiss your patch panels good-bye.

Because with the Ramko ARA-1612 Audio Router/Amplifier you use front panel pushbuttons to route 16 inputs to any of 12 outputs, simultaneously or individually, with an instant LED display of what is going where. You've never seen anything like it.

IC switching and isolation buffers mean no loading and no degradation of S/N or frequency response with multiple feeds (stack them for up to 45 in and *thousands* out). On-board switches change stereo to mono instantly. Individual gain control on all inputs allows precise level matching. Frequency response is 20 Hz–20 kHz±0.5 dB; S/N is −75 dB; distortion <0.3%; and input/output levels are +21 dBm max.

And all this is yours at the lowest cost per crosspoint in the industry.

The music goes 'round and 'round...

For moving sound around, we offer more different kinds of amplifiers than anybody.

Ten models of Audio Distribution Amplifiers, each with 10 Hz–20 kHz±0.5 dB frequency response, less than 0.1% distortion, and more inputs and outputs for the size and price than any other comparable ADA.

Four different Line Amplifiers with 20 Hz–50 kHz+0, −1 dB frequency response, 0.008% distortion, balanced in and out, and +21 dBm max out.

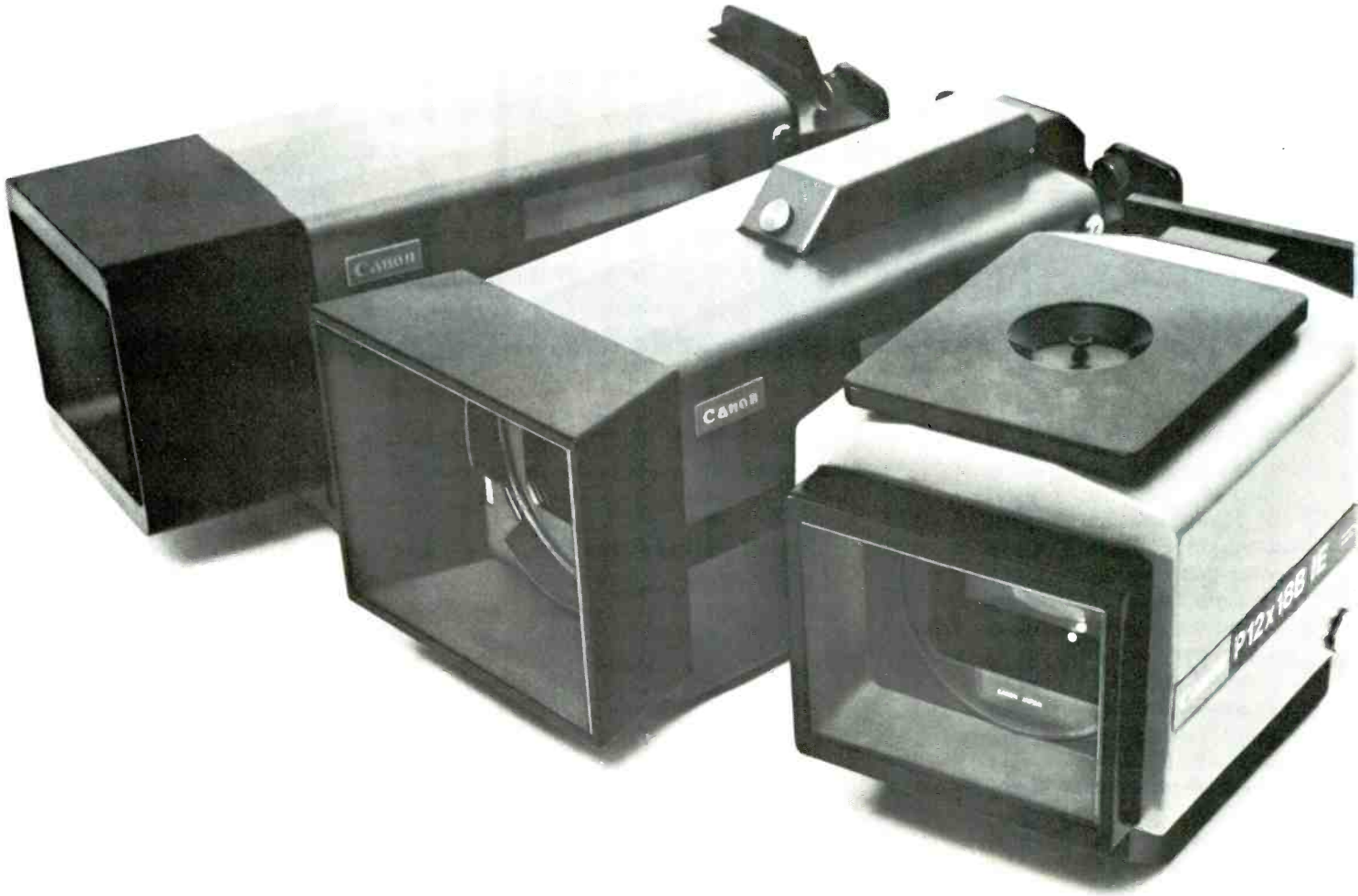
Portable and studio dual function MIC/LINE amplifiers with balanced in and out, built-in RFI suppression, 20 Hz–20 kHz±0.5 dB frequency response, gain from 64 dB on MIC to 26 dB on the high level channels, and distortion at an inaudible 0.1%.

And isn't that music to your ears? To hear more, contact: Ramko Research, 11355 Folsom Blvd., Rancho Cordova, CA 95670.

Or just call (916) 635-3600 collect today.

RAMKO

Brains, not brawn.

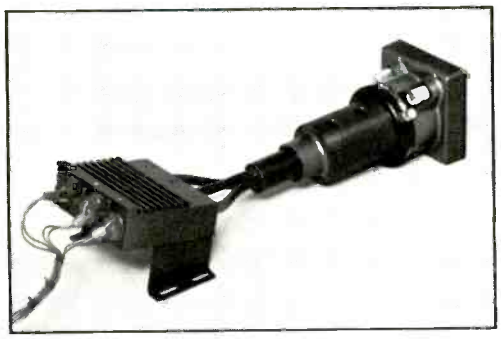


THE BEST SETUP IN THE BUSINESS.

With the advent of high-technology microprocessor-controlled cameras, lenses today have an added function; they are the Reference Point for camera setup. The picture quality is therefore related to the diascope system within the lens.

The heart of Canon's new lens family for microprocessor cameras is our ultra-precision diascope, with features including:

Precision matching of diascope and main lens optics for extremely accurate registration setup.



Accurate 3-lamp control of color temperature for exact match to ambient lighting conditions.

High stability of diascope optical axis to assure exact camera setup to main lens axis.

Long lamp life to provide consistent illumination of pattern.

Canon's diascope is available in our new 12X studio lens as well as in our popular 18x and 25x lenses.

Contact us for a demonstration or more information.

Canon®

Canon U.S.A. Inc. Head Office, 10 Nevada Drive, Lake Success, N.Y. 11040 (516) 488-6700 • 140 Industrial Drive, Elmhurst, Ill. 60126 (312) 833-3070
123 Paularino Avenue East, Costa Mesa, Ca. 92626 (714) 979-6000
Canon Optics & Business Machines, Canada, Ltd., 3245 American Drive, Mississauga, Ontario L4V 1B8, Can.
Canon Amsterdam N.V., Industrial Products Division De Boelelaan 8, Amsterdam, Netherlands

TELEVISION TO PLAY FROM THE DOMINANT POSITION

Will cable, pay TV, or STV threaten your operation in the future? What strategies will you develop to increase scarce engineering talent? Will teletext find a place at your station? Where do you see your greatest revenue growth potential? How is your audience changing? What areas of regulation concern you the most? These were among the questions we asked a panel of 14 of the most influential broadcasters around the country. Their answers prove that broadcasting is here to stay.

TO READ *TV Guide, Business Week,* or any of a dozen other magazines, you might think the time has come to sell your license, or move to another career. The beginnings of new decades seem to bring the prophets out, and what better target for crystal balling than the completely public medium of television? The most popular line appears to be that, with cable, STV, videodiscs, home VCRs, teletext, direct-to-home satellites, etc., etc., the commercial broadcaster as we know him today will shortly become a vanishing species, his revenue base completely undermined by these new forms of competition.

Inside the industry, however, a different picture emerges — one in which new forms of competition serve to increase the total size of the audience and extend its viewing hours . . . in which new satellite technology makes possible through ad hoc networking program options that were not available until a few years ago . . . in which the ability of a local station to provide *local* news, information, and programming gives it an identity not available to the superstation . . . in which commercial broadcasters can actually program for the disc or the VCR through an expanded use of their facilities . . . in which the broadcasting industry has never looked healthier. To those who prophesy the doom of commercial television, it can only be suggested that they read back through the pages of time to similar statements about how television and radio were going to destroy the motion picture industry.

To find out what broadcasters *really* feel about their future, *BM/E* conducted exclusive interviews with 14 of the country's top broadcast executives and those in allied industries. They represent engineering and management viewpoints from network and independent alike, group owners, aggressive affiliates, VHF and UHF licensees, those who own cable systems, advertising agencies, broadcast reps — the whole gamut of the industry. The panel included, in alphabetical order:

John Auld, executive VP and chief operating officer of Wometco Home Theater (WHT), the country's first STV service; **Julius Barnathan,** president of ABC's broadcast operations and engineering division; **Robert Bennett,** president and general manager of Boston Broadcasters, Inc. (BBI) and general manager of WCVB-TV, Boston; **Anthony B. Cassara,** president of the television division of Golden West Broadcasters, owner of KTLA-TV, Los Angeles, eight AM and FM radio stations, and a videotape production facility with nine sound stages; **Joel Chaseman,** president of Post Newsweek Stations, a group that owns four VHF affiliated stations and is leading the way to satellite use in commercial television by participating in RCA's SMARTS; **Don Curran,** president of Field Communications, a group which owns and operates five of the most successful UHF independents; **Bob Fountain,** VP of affiliate relations, ABC Television Network; **Chuck Gingold,** president of the NATPE and newly appointed program director of WABC-TV, New York; **Dave Henderson,** president of the Outlet Company's broadcasting division and executive VP of the Outlet Company, a group that owns four (and, pending approval, five) VHF stations; **Gene F. Jankowski,** president, CBS/Broadcast Group, vice president of CBS, Inc., and a director of the Corporation; **Frank McDonald,** senior VP and director of media and marketing services at the Cunningham & Walsh advertising agency; **Harry Pappas,** president of Pappas Telecommunications, a group which owns one, and proposes to own five, full-fledged commercial UHF stations, in addition to owning a common carrier company operating an earth station in Fresno, Calif.; **Warren A. Schwartz,** president of Blair Television, a company which serves 95 U.S. TV stations as an independent broadcast representative; and **Robert Wold,** president of the Robert Wold Company, which specializes in satellite interconnection for television and radio stations and has been instrumental in developing the ad hoc network concept.

Of each we asked much the same questions, then grouped the broadcasters' answers to each question below. As you will see, there was frequently a concensus about a particular issue, even from broadcasters with widely differing backgrounds; in these cases we printed one or two of the more eloquent answers, in addition to those which differed slightly from the concensus. In other cases, the multiplicity of answers allowed us to enter into an extended discussion as if it were an actual symposium. In reading we ask you to bear in mind that our purpose was not to crystal ball and gaze into the future; we were asking our panel to take a realistic look at the next ten years and suggest what strategies they would adopt to meet the challenges of the 80s.

1: REVENUE PRODUCTION PROGRAMMING REGULATION

Q: *There seems to be a concensus among broadcasters and those in affiliated industries that the greatest potential for a local station's revenue growth during the coming years will be in local advertising. Some say that local sales may soon account for 60 percent of a station's revenues. How do you view this development?*

Henderson: I think it's clear that advertising that is placed locally will be the greatest future source of station revenue. That does not necessarily represent pure growth in "local revenue." What is happening is that national marketers are finding ways to coop with local retailers. We think that the retail sectors — particularly shopping centers, specialty stores, department stores, supermarkets, mens' stores, and all that type of activity — are going to be the bastion of our future with coop advertising.

Bennett: I think the phenomenon happening is that most of the advertising directors of major retail stores now have grown up with TV, whereas the guys we were having to deal with for the past 20 years were their fathers, who were print-oriented and found it difficult to understand or to deal with what TV brought them. Now we're dealing with their sons, who were born and raised with television and are very much oriented towards it. Right now we're going after their dollars and we're finding a more receptive ear.

Curran: We feel that there is a great deal of growth potential yet ahead for independents. But I think the big dollars are going to come from national advertisers, who have long since recognized that the UHF independent stations are a viable segment of the media and can be a very efficient tool in reaching their targeted television audience. Every month we find ourselves with national advertisers that we've never had on the air before.

Chaseman: There is another factor which ought to be noted: that some of the major agencies have opened regional offices and thus some of the business that would have been called "national spot" has become local simply because the client has decided to buy local through his national agency. So it may not be as significant a trend toward local retail as national spot regionalized by the offices around the country at the request of the client. That is a trend within a trend and it shouldn't be ignored.

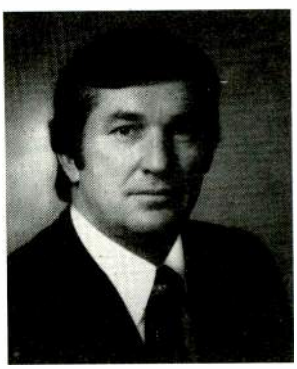
McDonald: It's true. A lot of advertising agencies recently, particularly the big ones, have been buying the small regional agencies which have been involved with local retailers.

We see an increase in cooperative advertising where large national advertisers are running coop ads with local retail outlets. But there is also a significant increase in the local department stores doing their own, non-coop advertising. Then, a lot of local growth is coming in the franchise area and agencies are heavily involved in that kind of placement.

Schwartz: As far as we're concerned, the more a station sells locally the more we like it because that supports the rate structure at the station. It means that we end up selling fewer spots, but for more money. What used to be the case was that a few major advertisers could pretty much control the rates of a station. But they can't do that any more, because so much of a station's revenue is now derived on a local basis.

Q: *Does this mean, in turn, an increase in local commercial production?*

Pappas: I think a broadcaster has to be fully prepared to provide high quality creative services for the local advertiser. A local advertiser in the newspaper, even if his business is a small one, can, with the various art services the newspaper offers, end up having an ad that looks "as good as the big guy." Generally, that is not now true for the small TV advertiser; his commercials look like those of a small advertiser. That, in our view, is one of the impediments to the further development of high levels of local sales. You can't simply go to those local advertisers and say "We have the medium, we have the viewers, and we have the programming." We also have to be able to say that we can make his commercial look as good as that of a larger advertiser. The stations that do the best job of providing facilities are going to be the ones which will also find that they get the lion's share of the local advertising budget.



"The real question is, how are Procter & Gamble or General Foods going to sell their products if not on TV stations? Where else can you sell toilet paper except on commercial TV?"
Robert Bennett, WCVB-TV/BBI

McDonald: We're seeing more and more commercials that look like they're home-made. It's a reflection of the growth of the local advertiser. We have to convince the local guy that although his wife and his kid are in the commercial and he wrote the commercial with the producer, that he can get a better sell and a more persuasive quality with better production value. The problem is that when you come in and they start hearing from $18,000 to $40,000 to produce a 30-second spot, they think you're out of your mind. But it's very important for them to start thinking about buying better quality and running it longer, but not doing it as often.

Gingold: The facilities at local stations are becoming so sophisticated that commercial production is going to be a significant factor in terms of a profit center. I don't see it happening here at the O&Os, but local stations can get deeply into commercial production. But the economics of producing commercials are radically different than selling time. You might be making 40¢ on the dollar selling air time and only 20¢ on the dollar producing commercials. That seems to be the rationale for producing only for one's own air: to get the client committed.

Jankowski: As radio has demonstrated for many years, the ability to cut a demo can even help you make the sale. I think how many stations are going to be able to do that will be a function of how much they are capable of spending on capital equipment — digital video effects capacity, for example, can enhance the creative look of commercials. I would think that wherever a station can afford it, it would be a real asset — especially as equipment gets smaller and easier to handle and can be taken out to stores to do commercials.

Q: *On the subject of production, do you think that local advertisers will be*

NEC

Frame Synchronizer

FS-16

Under $14,000 – see it at NAB

Nippon Electric Co. Ltd.

DESCRIPTION:

The FS-16 Frame Synchronizer has been developed to meet the ever increasing need for simple, low-cost signal synchronization. The FS-16 occupies less rack space than the average processing amplifier, has the same control capability, and is similarly priced. A user could well consider the FS-16 as a replacement for an existing processing amplifier, having the benefit of proc-amp functions, plus a frame synchronizer.

The compactness of the FS-16 leads to exciting capabilities in consideration of remote use of the synchronizer either in trucks, vans, automobiles, or any location where synchronization is required. The FS-16 consumes only 150 Watts at 110VAC, making it truly conservative in use either in the studio or in the field. At 34 pounds (15Kg) the FS-16 is easily handled.

As the pioneer in frame synchronization and DVE (Digital Video Effects), NEC has once again incorporated existing features that have increased the value of previous products... such as data rotation and a built-in memory analyzer. Data Rotation permits the user to quickly cover any memory failure while on-the-air by interchanging the most for least significant bit in the digital word flow. A built-in memory analyzer permits rapid fire isolation of memory failures... at the most three minutes from analysis to replacement. New features for the FS-16 include a separated sync output to provide vertical blanking switching to external equipment, cable equalization of up to 6Db to 8Mhz and remote control panel option.

The performance specifications of the FS-16 are unsurpassed by any competitive unit. NEC has incorporated 4 times subcarrier sampling and 9-bit quantizing to provide the most transparent digital video available. The FS-16 includes a digital I/O port for those applications requiring access to the input or output functions in the digital domain.

The FS-16 simply represents a new age in frame synchronization techniques and costs. Whether in the field or in the studio, the FS-16 gives latitude to new styles of operation.

FEATURES:

- The most compact frame synchronizer available
- True frame synchronization—not field
- Studio transparent quality based upon 4 times subcarrier sampling, 9-bit quantization
- Digital data input/output port provided
- Full processing amplifier controls
- Integral freeze-frame feature/field
- Data rotation and built-in memory analyzer

NEC America, Inc.
Broadcast Equipment Division
130 Martin Lane
Elk Grove Village, Ill 60007
Tel.: 312-640-3792
Telex: 25-4379

Television Plans

demanding more local programming to buy, and will this in turn cause you to produce more locally?

Pappas: There are many cases in which local advertisers do prefer to be involved with a broadcast which is local in character — ranging from a local newscast to local sports. And some advertisers do like to be involved in public affairs programming which deals with a topic particularly relevant to citizens of an area. But the same advertisers are also asking if there is sufficient audience to justify the expense.

Chaseman: I think there will be some effect. These local and regional clients will prefer normally to have a program that they can promote and that they can be identified with. It is harder to do that with some spot within a network offering. You can't say, "*Laverne & Shirley* brought to you by the Farmer and Merchants." So that may create more of a market for local personalities, local news, local public affairs, and other local programs.

Bennett: I don't think the local production comes necessarily to support the advertising; it comes almost as a defense mechanism against the incredible prices syndicators are asking now. If we don't figure out an alternate source for programming, we're all going to wind up working for the syndicators. You'd better have a big success with that sitcom at the price they're offering it. You'd better have a success for five years. You'd better have a sellout at about 85 percent in order just to pay for the show. So what I'm doing, and I think a lot of stations are going to do, is to say, "Hey. Rather than do that, why don't we try something ourselves. The risk is much smaller; the payoff could be almost as good; and we have control of our destiny — if it doesn't work, we'll cancel it after a month or six weeks."

"The big challenge we're going to have as independents in the years ahead is maintaining a local identity and maintaining a local market presence."
Harry Pappas, Pappas Telecommunications

Henderson: We *are* looking for a change in the contract provisions on network compensation whereby we would get paid according to the network's ability to sell instead of the current flat price contract. We would increase the downside risk, but we would also get the upside benefit. I think that as other media may come on line the networks will probably, as a matter of survival, have to share more with the affiliates.

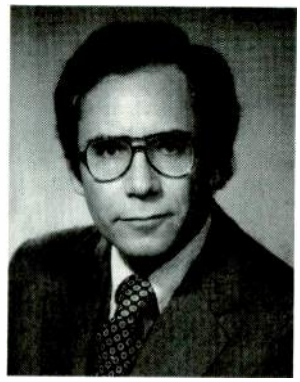
Q: *Turning to programming now, where do you see local broadcasters making their biggest impact? News? Public affairs? Entertainment? Sports?*

Curran: There's no question that we will be doing more news and public affairs. We now have live news strips in three of our markets and they have become successful from every point of view. The graphics, the aesthetics, the journalistic aspect of those shows are really top notch. I think they could measure up to anything that anybody's doing in the industry. As a result, we are looking for other avenues to expand our news operation into — various prime time news projects. And, from a public affairs point of view, we've been concentrating very heavily on quality children's programming of an instructional and informational nature.

Schwartz: The Cleveland Scripps Howard station which we represent has done a show called *Morning Exchange* for years and has had 50+ shares. They started an *Afternoon Exchange* about a year ago that has been almost as successful. I think that we will see a swing away from the syndicated game show into more of that kind of show.

Fountain: We're seeing an increasing appetite by our stations for more reality programming. The success of *60 Minutes* does not go unnoticed here. The success of our *20/20* is very significant, as are the Iranian half-hours that we're doing in late night. I see more of that happening. In terms of sports, ABC in particular has had a lot of sports on the air, and I think there's a point of saturation. I'm not sure that Roone Arledge would agree with me, but I think people are pretty close to that saturation point now. But I definitely see an increase in news and public affairs products.

Gingold: I think if you are progressive in your thinking and you look at the options out there — which are extremely limited — from the syndicators, there is really only one avenue to turn to and that is to say, "If they



"With greater diversity of program choices brought to us by the new technology, obviously we will be selecting programs from more sources than a single network, and we will be generating some of our own."
Joel Chaseman, Post Newsweek Stations

can't do it then we'd better damn well do it ourselves, and do it right, and commit to do it right." I think it will take more dollars to do this than to put *Hollywood Squares* on at 7:30.

There are a lot of advantages in local programming. Don't forget, if you buy a syndicated property you don't have any capacity to fix it. If a local project isn't working, you have the capacity, if you are doing your job, to look at it, evaluate it, find out what is wrong, and make the changes that are necessary. You can't do that with syndication.

Jankowski: One program director said to me, "One of the big challenges of the 80s will be to come up with something 'beyond the magazine format.'" He sees a demand for informational-news type programming but he thinks there has to be another format for it.

Pappas: The big challenge we're going to have as independents in the years ahead is maintaining a local identity and maintaining a local market presence. If an independent in New York, for instance, is carrying *Laverne & Shirley*, and an independent just being carried into that market has the exact same program, the distinguishing difference between those stations is going to be those programs that are local in character — and that generally means news and other forms of local programming such as public affairs.

Gingold: Localism is very definitely the wave of the future. But there has to be something more than the magazine. I'd like to see some other successful program forms surface that could be utilized either as strips, or, if some station facility is really aggressive, de-

veloped as a combination of local programming with the best of syndication. Maybe there is a marriage somewhere along the line where we could have three original half hours associated with some form of syndication. I think another option, if people would ever consider it — especially the groups — is joint ventures with syndicators.

There are a lot of resources in terms of Viacom, Time-Life, and others. Projects where they might offer a service to us that we could augment. For example, they would feed us a portion

"What good does it do an ad hoc network or a superstation to offer advertisers a nationwide distribution since they're picking up most of the people in network buys anyway? What's the great appeal of watching the Atlanta Hawks all over the country?" Warren Schwartz, Blair Television

of a program to be integrated locally — in essence to say that we would receive a feed for 15 minutes from a service that could do things that we can't do — say provide name entertainment that could then be kicked to local talent.

Chaseman: News and public affairs, election coverage, and specials generally, lend themselves to local station involvement because they do not require sophisticated writing or direction. The coverage of events is more within our capability than the generation of a new form. The talent pool isn't very big for generating dramas, comedies, satires, and sophisticated theatrical performances. My guess is that they will be in the minority.

Bennett: Bear in mind that no local station, and no group of stations, has ever done situation comedies. We're the only broadcaster that has ever attempted sitcoms of professional quality: *The Baxters* and *Park Street Under*. They're expensive. But if it works, aren't we better off doing it ourselves than buying it from Los Angeles? I don't think everybody's going to do situation comedies. But I think it's possible that you're going to find a whole different feel and form of programming in access time, which was what the FCC intended it to be when they came out with the rule.

Auld: Up to now, our STV service has been buying from major producers and independents. I think that all pay organizations will eventually get into production, however. HBO appears to be leading the way, having spent $100 million. Showtime has increased its budget. The big problem is that there's always a shortage of fine product. So everybody will have to become involved with producing programming. Especially as the buying power of the pay TV organization increases as time goes on.

Cassara: The thing that is scarcest as the business is changing is programs. What you are seeing now is a technical revolution caused by earth stations, STV, cable, and all the things that are going on in the TV business. But it isn't the old TV business — it's the television business of the 80s. What's changing really are the distribution systems. And the one thing they all must have is programming. Therefore we feel there will be an enormous growth of local programming development.

Q: *That raises the question of ad hoc networking. What are some of the benefits, or pitfalls, you see for it in the coming years? Do you think you will be participating in more ad hoc networks?*

Curran: Field has participated in more than one consortium, including Operation Prime Time in two of our markets. And we were partners and founders of the Production Development Group. I think there is hardly any question that collective programming efforts are going to continue to grow. Particularly when the networks are finding it more difficult to sustain a program long enough that it becomes viable as a vehicle for independent television.

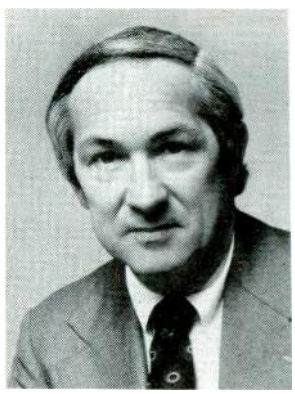
Bennett: We at WCVB, for one, are planning on producing programming that we will offer on satellite to stations around the country as an access source of programs, though they may lend themselves to other areas. We don't plan on competing with our network or other networks by sending out programs and encouraging stations to preempt prime time for them. However, just in access alone there are seven half hours or hours a week that a station could fill.

Chaseman: With program costs as high as they are for off-network syndication, it gives us the opportunity to generate programming for our stations and other stations and eliminate one whole level of cost. In other words, we don't have to pay off the producer, we don't have to buy anybody's capital gain when we buy the program, and it makes it more realistic in terms of our stations. The syndicators have just about priced themselves out of the marketplace, except for the most outstanding — the *Laverne & Shirley*, the *M*A*S*H* kind of show. It also gives us control of the program, of content. It simply isn't enough to tell the network, "Well gee, you really ought to be doing this and doing that." It takes us out of second guessing and puts us into control.

Q: *What about event programming distributed through an ad hoc network?*

Curran: One of the problems with that kind of programming is that it is also very competitive with HBO and other distribution systems, so it's making it more difficult to acquire events that have national simultaneous interest. But it continues. We had coverage of the Rose Bowl Parade as a collective effort — things of that nature. I think that sports continues to be a valuable chunk of independent stations' programming efforts and again it's the flexibility of satellite equipment and the availability of pickup equipment that are going to make that even more viable in the future for independents.

Wold: We see advertisers underwriting more and more special networks in



"We definitely see the trend that most marketers are seeing: that a lot of people aren't dying when they're supposed to. There's a much higher segment of over-50 people in this country." Bob Fountain, ABC Television Network

CP* provides the best TV signal. Harris provides the best CP system.

Harris' Cyclotran is the first complete TV broadcast system designed specifically for circular polarization. It's the most economical way to enjoy the benefits of CP without major expense for a new tower and transmitter building.

The system includes Harris TV transmitters with power ratings up to 100 kilowatts; Harris CP antennas designed with low windloading specifications or multiplexed to permit multi-channel operations on the same tower; and Harris' 9100 Facilities Control, offering un-manned operation. Cyclotran improves picture quality, increases fringe area coverage and maintains maximum output without violating FCC standards.

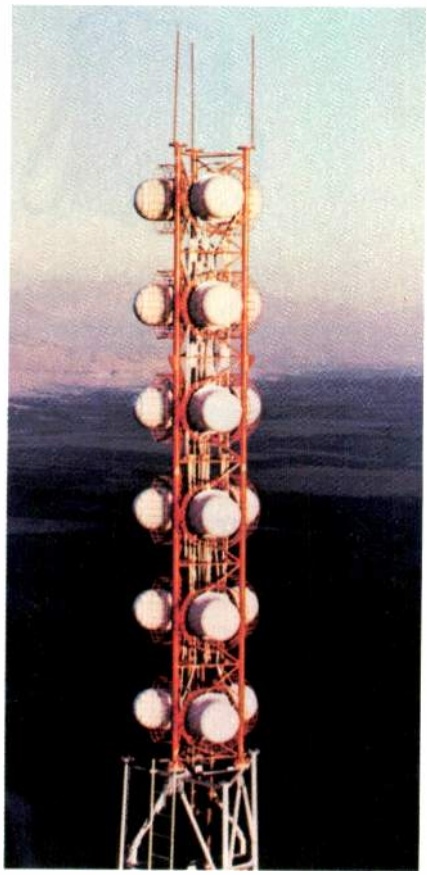
Upgrade your TV broadcast performance. Turn first to Harris—the company that delivers state-of-the-art equipment and high quality service at a competitive price. Contact Harris Corporation, Broadcast Products Division, P.O. Box 4290, Quincy, Illinois 62301.

HARRIS
COMMUNICATION AND INFORMATION PROCESSING

*Circular Polarization

TV-50H Transmitter

9100 Facilities Control



CP Antenna

Circle 134 on Reader Service Card

order to have their own programs, control them, and be able to customize the area that they're reaching. There's an increasing interest on the part of major advertising to find a fourth channel for first-run program distribution and there's no magic in doing it in a simultaneous network.

I don't think that there'll be too many more OPTs because they put some awfully big money in that, and in order to get their money back they're running those shows with a lot of repeats and it's eating up a lot of time. I also think that there'll be less and less ad hoc networks in sports because the three major networks are doing so much in that area. And then you've got a lot of sports now that are being done by the cable industry.

Cassara: The fact that there is going to be more local production will almost force more ad hoc networking, simply because a station can't afford to put a lot of money into a production that's only going to run on one station. It wouldn't be economically feasible for us to sit here and produce shows for just our own air day in and day out.

Schwartz: What good does it do an ad hoc network or a superstation like Ted Turner's to offer local advertisers a nationwide distribution? The superstation can have only a very limited appeal. We haven't seen it to be economically viable. Turner has now gone back to selling the station as a local. WPIX-TV in New York with their Yankee baseball games is another example. They picked up a tremendous amount of upstate New York viewers with their games. But they priced it for the metropolitan area, so they were never able to sell it up there. Viewers in outside areas are just a bonus for the advertiser. If you get a big national advertiser, that bonus is nice. But what they're willing to pay for it is questionable since they're picking up most of their people in network buys anyway. Eventually, as in everything else, you get down to what is the product. In Turner's case, he talks about all his sports — which is true. But he happens to have lousy franchises. What's the great appeal of watching the Atlanta Hawks all over the country?

Q: *What about other kinds of networking arrangements? Could independent stations, for instance, benefit from some sort of regular cooperative programming feeds?*

Auld: We have a unique situation here in New Jersey where we're tying in STV with commercial broadcasting. We have channel 68 in Newark, and, to improve our performance in N.J., we have reached an agreement with channel 65 located in Vineland in the southern part of the state. They will run STV as their initial prime source of revenue. And, in addition to working with them on an STV basis, we are tying the two stations together into a single rate card for national accounts. We will also be doing joint news programs where our channel 68 will cover the northern part of the state, and channel 65 the southern part, with a microwave link between them. We will be producing an hour of news that will really cover the entire state. We might even extend the network a little further south through an arrangement with channel 54 to cover the Baltimore/Washington, D.C. area.

Gingold: I think it is the OPT and Golden Circle type of programming that will make independents more viable in the future. Because they, like the affiliates with more time periods to fill, are faced with the same paucity of syndicated programming that we are. Look at what's happened in the afternoons with the off-network programming—the *All In The Familys,* etc. So how long can that last? There's such a little amount of programming coming off the networks. We're not in the days anymore where there was the 39 and 13 configuration; it is more like 24 and 28. And with the life span of a typical

"A million homes watching a movie they just bought on a videodisc is less than the statistical error on some of our prime time programs."
Gene Jankowski, CBS Broadcast Group

schedule these days, look at how long it would take to build a strip even with successful syndicated programs.

Curran: The secret of an independent is total flexibility. When we can counter-program everybody in the market, we're in a much better position than if we lock ourselves into a form of programming where we can't do that. And so there are two very strong schools of thought as to whether a fourth network per se would be as advantageous as remaining totally flexible with a program schedule that the individual programmer can himself structure in order to counter-program. We're looking for something that would not restrict us to time and date for the programs that we co-produce, but rather that would give us the flexibility to program it where we think it would do the most good.

Wold: I think there's going to be a big expansion by various stations in their news coverage. Instead of limiting themselves to doing the local news actualities of the cat that's caught in the tree or the apartment building that has a fire, they're going to find themselves doing more out-of-town stories that relate to their city. Let's say that your station is in Colorado and the senator from Colorado's got something he wants to say — I think you're going to have a lot of that kind of thing transmitting out of Washington via satellite starting this year.

Q: *With this multiplicity of program sources now available, can you foresee any changes coming in the role of group ownership or in the network/affiliate relationship?*

Chaseman: One change has already begun to happen in that it is now a three network economy for the first time in the history of broadcasting; all three networks are more solicitous of affiliates than they used to be. That obviously encourages us as affiliates to give more in terms of constructive advice and encouragement. It also encourages us to demand more, and I think most affiliates are doing that. The flip side is that, with a greater diversity of program choices brought to us by the new technology, obviously we will be selecting programs from more sources than a single network and we will be generating some of our own and we will be working with other station groups to form consortia to generate some and we will be receptive to others — because what we will be looking for is programming. Our audience will be demanding. They will know about the other efforts. They will be reading about and hearing about the evidence that there is an explosion out there, and we are going to be part of it.

Gingold: If the O&O's were ever to flex their muscles and recognize their power and potential they could at some point in the future unify their resources. What I'm saying is that there is strength in numbers. If you have large stations with good facilities and staff, and communities where both personalities and story potentials exist, there is a plethora of potential material there. The bottom line of it is that localism, in my estimation, just has to be the salvation of the station operation. Because the syndication well is drying up.

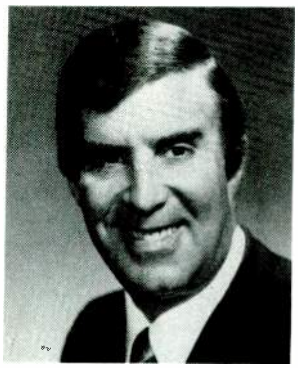
Henderson: It is conceivable that the coming of satellite transmission and a change in the product or mix might change our relationship with the network. We could take an original program from a Norman Lear and bring it into our stations via the bird, so we'd have our own little ad hoc network. The delivery system is only the mechanism; the product is going to draw the crowd.

Q: *What areas of regulation concern you the most and what strategies will you be adopting to deal with them?*

Jankowski: There are three things that really affect our business: one is ratings, one is the economy, and the third is legislation. If there is legislation that says you can't have advertising in children's programming, or if there is legislation that you can't own more than one television station, or you can't have more than two radio stations, or can't own radio and television stations together in any markets, that's the kind of thing that will have a major impact, as taking cigarettes out of our business did back in the early 70s. So things that have the potential of working against the freedom of the broadcaster and our status as a free speech communications device, those are the things we have to be mindful of.

Henderson: I'm fundamentally interested in the retransmission issue, because that is protective legislation we require to keep the system intact. If it is approved at some point, either by Congress or the FCC, it forces the cable industry to be accountable for its own product. I don't know of any other industry in the world that has been allowed to crawl on someone else's back and take a free ride.

Pappas: In the case of the Federal Trade Commission and its proposal to develop limits on children's advertising, I'm encouraged by recent developments. I think that a substantial measure of sanity is now prevailing, and the blatantly discriminatory and factually unfounded presumptions under which the FTC operated in the proceeding have been tested in the light



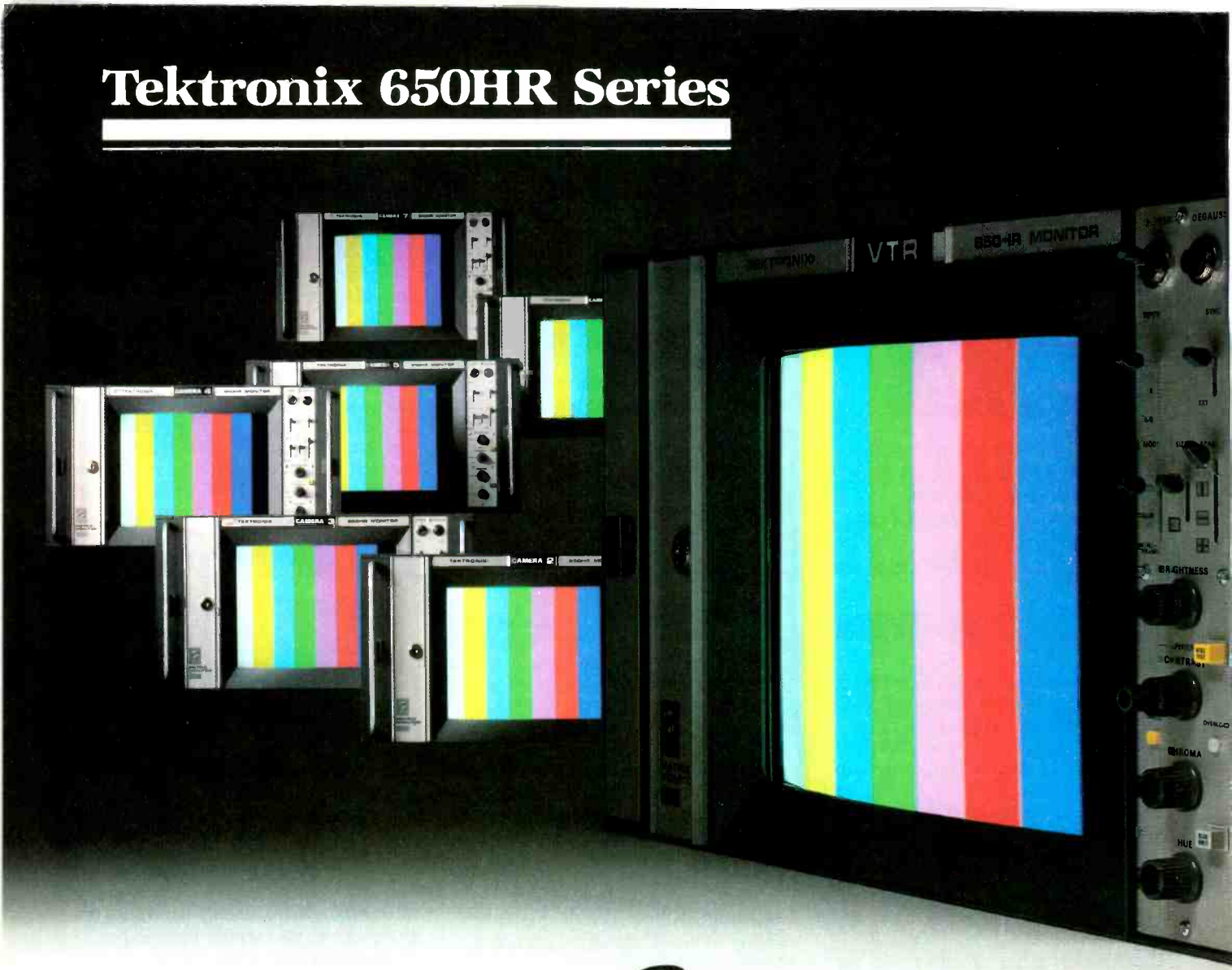
"Localism is definitely the wave of the future. But there has to be something more than the magazine. I'd like to see some other successful program forms that could be utilized either as strips or a combination of local programming with syndication."
Chuck Gingold, NATPE/WABC-TV

of day and been found to be just that. If any change should result, I'm sure it will be relatively modest and reasonable in terms of application.

The FCC, I'm sure, will finally give weight to factual arguments that have been presented by broadcasters as to the harm and the loss of service that can result if this protection is removed. More importantly, the Commission will, I'm reasonably confident, extend those syndicated program exclusivity rules to all markets.

At the Congressional level, broadcasters have to redouble their efforts to secure longer-term licenses in order to secure confidence from the investment community. Also the matter of full freedom for broadcasters, equal to the freedom enjoyed by our brothers in the print media, has to be a high priority of

Tektronix 650HR Series



No softy.

The 650HR is a real stickler for detail. Tektronix engineered it to meet your most exacting needs in a color picture monitor.

The improved picture tube is a new, high resolution version of the Trinitron®, providing sharp, accurate pictures. With the 650HR, you know the picture is honest.

This precision color monitor is designed to mirror reality. And it's stable. A row of monitors, adjusted and matched, stays matched.

Trinitron® is a registered trade mark of Sony Corporation.

The 650HR incorporates all the features of our 650A Series. Selectable AFC speed. Variable aperture correction. Extended bandwidth luminance channel. The unique Blue Only mode—a fast, highly sensitive means for checking video tape recorder noise. This monitor is available in all major tv standards, including RGB versions.

Our high resolution monitor is no softy. You demand performance; the 650HR delivers it. And Tektronix backs every instrument with proven, worldwide support and service.

For additional information, call your nearest Tektronix Field Office. Or write Tektronix, Inc., P.O. Box 1700, Beaverton, OR 97075. In Europe, write Tektronix International, Inc., European Marketing Centre, Post Box 827, 1180 AV Amstelveen, The Netherlands.

Tektronix®
COMMITTED TO EXCELLENCE

Circle 136 on Reader Service Card

all broadcasters. This reverse discrimination and blatant limitation of freedom of speech of broadcasters has simply got to be an issue that broadcasters take up as a cause celebre. There's simply no justification in a free society for one medium of communication to enjoy full freedom while another is afforded less than that.

Cassara: The very foundation of local television is local market exclusivity. Technologically speaking, you don't need 900 TV stations to cover the country — not with satellites; you could do it out of one building in one city. But I don't think that would be good, first because of the centralization of that kind of communications power, and second because I don't think anybody wants that. I think the FCC should think about what they're doing to the local broadcaster by not enforcing what has been for 40 years what this business has been built on — local market exclusivity.

Chaseman: Any regulation which would require every broadcaster to produce or present "x" hours every day of a specific programming, like children's programming, concerns me. I think there are some genuine American constitutional problems with that, because who's to say what the next category will be. I think a second very important area is the cheapening of the signal by crowding the spectrum. We've already seen what that has done to degrade the AM signal and to some extent the FM signal. I'd hate to see it happen to television. The drop-ins and the low power stuff that they are talking about have zero technical foundation and they are being treated as political handouts.

Another area that concerns me is the NTIA proposal to establish some objective criteria for performance by a licensee in the areas of news, local, and public affairs. We went through some challenges in the early 70s and had there been that kind of objective criteria, it would not have been possible to put us through the kind of chilling process that did. It's tough on a station's creativity and it's tough on its enterprise to have to constantly second-guess the tough public affairs and news decision on the basis that there could be some individual out there who may want to challenge your license.

Q. *Do you see your audience changing demographically or psychographically, and do you have any strategies to counter the shift?*

Fountain: We definitely see the trend that most marketers are seeing; that a lot of people aren't dying when they're supposed to. There's a much larger segment of over-50 people in this country, and it is unquestionably going to grow. So it becomes a significant segment of TV viewers and will become increasingly significant. If you take a look at certain program formats like news, you find that the majority of people who watch on a regular basis are significantly older than 18 years. I'm not sure, but I believe that over 50 percent of them are over 50 years of age.

Gingold: I like to think that we will be programming for a broader spectrum of audience. The rise in inflation is going to create more viewership because people really find themselves so strapped that they can not afford very lavish entertainment as they may have in the past. Some of this is leading to people staying home more. I think we have to get off the 18-49 thing and realize that people who are over 50 years old are not "old" and that they still buy refrigerators, and automobiles, and a multitude of consumer products. I have always found it utterly inconceivable that we ever got into this 18-49 women syndrome; it is the family and it is people in general who watch television. I'm saying that instead of 18-49 maybe we ought to consider expanding at both ends. The point is that with our population growing older we need to re-evaluate our target audiences. Also the buying power.

"Some people are interested in many channels of service, and cable will find its place. But there are also people who are mainly interested in movies and entertainment. There's room for both."
John Auld, Wometco Home Theater

Jankowski: We are going to see everybody who wanted to jump on the 18-49 bandwagon shift want to jump on the 25-54 bandwagon or maybe the 30-60. I think the other thing that is going to help from a marketing point of view is that mandatory retirement rules now allow people to continue to work until they are 70. Which means that the 65- to 70-year-old is going to continue to have purchasing power. And, without the burdens of raising young kids, more discretionary income.

Cassara: I think that there is a little bit of a tempest in a teapot here. The ad agencies used to be more interested in women and men 18-49. They still are. But there has been a little less attention paid to 49-54, because that's really about the amount of the population shift. So if you go 25-54, you've still got the bulk of what advertisers are interested in. It's just taken five years off the bottom and added it to the top. My feeling is that by looking at the advertising that appears on the air — and I figure that the agencies spend a lot of money doing marketing research — I don't see them slanting their advertising to appeal to an older audience. So it's not "we used to buy everyone under 35 but now it's only people over 50." Primarily it's still 18-49.

Henderson: The emphasis on the 18-49 was more of an economic tool of the advertising fraternity than it was of real importance to the broadcasting industry. It was, for them, a tool for negotiating a more favorable rate. The more breakdowns they have of the demographics, the more concise they say they can be. So what they do is to fragment your total audience and in effect say that they only want to pay for the particular segment of importance to them. So that's a part of the bartering process for rates. While we have conducted research and stratified it to meet the advertiser demand, the bulk of television has always appealed to the 25-plus. People 18-24 are really not in family unit structures. They're either starting a job or they're in school. They're highly mobile and haven't settled in. Their habits are inconsistent. So I don't think we've ever tried to depend on people 18-24.

Chaseman: The baby boom is over, so that those children and teenagers of the 60s and 70s are going to be in their 20s and 30s this coming decade. I think that's an interesting change and means that the kinds of programming in early evening will by necessity change some. As that happens I think that tastes and cultural depth will become more sophisticated. I think that means that programming will be less primitive; less cartoons translated into live action. As local station operators, we will continue to encourage the networks to try less broadstroke programming in favor of tilting toward more mature efforts. But a medium as consuming as television can't always get the material it would like to have. It is not possible to create everything that you would like to create. So I think we will begin to realize that there is nothing per se bad about repeating a worthwhile program.

2: CONTRIBUTING AND COMPETING TECHNOLOGIES

Q: *We spoke before about networking, which almost inevitably leads to a discussion of satellite technology and earth stations. Do you have any prognosis about the future of this technology and how broadcasters can benefit from it?*

Curran: Field operates five independent television stations in five very competitive major television markets, and there is just no question in my mind that we will find economically viable, successful uses for satellite transmission between our stations in planning program efforts in the future, whether they be news, sports, or transmission of entertainment product. Anytime we can carry a sporting event to any of our stations via satellite we do it. We can actually save money picking up a Los Angeles basketball game and bringing it to San Francisco via satellite rather than by using land lines. I would say within the next couple of years, at least two or three of our stations will have their own earth stations.

Pappas: At KMPH, we currently have a 10-meter receiving station which we've had in for eight months — it operates as a common carrier, providing service to the other TV stations in this market. I see virtually every independent TV station in the country having its own satellite earth station within the next four to five years. It's become an essential tool.

Jankowski: The distribution system is essentially transparent. But sure, I see it in meeting certain advertiser demands. If we have the capacity to feed not one network but ten networks for an advertiser, we can send the same programs through pretty much the way we do now, but for a General Foods we'd have the flexibility of feeding different commercials for different products.

Chaseman: PNS produces a weekly half-hour prime time program called *Agronsky and Company* here in Washington. We have thought that we could use the satellite to distribute that program to our stations and to the other stations carrying the show. Also, we maintain a Post Newsweek Washington bureau which at the moment employs a courier to take tapes out to the airport and get them to our stations. We thought we could make that service more timely and perhaps expand it. Those are two principal current ways we are going.

The strength of the group is when you put something like SMARTS in, people at individual stations get excited and start thinking about ways to use it. Once it's in, we're going to find uses that never occurred to us — creative uses brought to us by people at the stations.

Wold: We'll be operational by March with the first of our three transportable earth stations which will be able to be carried by airplane — in fact, we call them "flying saucers." The networks are very interested in using them for doing sports remotes to help cut down on the very high cost of telephone company microwaves that they get hit with whenever they come out of a smaller city. We also see a lot of use for it in news, because it's so transportable. When a dam breaks in Tennessee, for instance, we'll fly it in there right away and make it available as an audio and video communications center.

Gingold: I certainly think they're going to be used for news as the number one potential. Over and above that, there's certainly the capacity to feed commercials and programming to us O&Os instead of utilizing the current distribution methods. Viacom has worked on a project with Post Newsweek with programming, Blair has experimented sending commercials by satellite, so I think that there are some tremendous potentials to do something with the capacity of satellites that we haven't even begun to recognize.

"I think that there is hardly any question that collective programming efforts are going to continue to grow, particularly when the networks are finding it more difficult to sustain a program long enough that it becomes viable as a vehicle for independent television."
Don Curran, Field Communications

Bennett: We *are* planning to get an earth station within the next 12 months, and we're thinking of buying time on satellites for as much as 12 hours a day for distribution of our programs.

Cassara: I think the thing that will be most significant is satellite-to-home. They're already experimenting with it in Japan. If it happens here, and I think eventually it will, there will be a very significant advancement for distribution. It will affect television in that it will take a lot of live events away. I don't think the Super Bowl will be on commercial television anymore, because they will be able to distribute it directly and have 40 million paid attendants sitting in their homes.

Q: *Cable TV is obviously on every broadcaster's mind. Do you see any possibilities for cooperation between broadcasters and the cable industry – using cable to network your original programming, for instance – or will it continue to be an adversary relationship?*

Gingold: I still look on cable as being essentially parasitic and I wonder when they are going to be providing something beyond their capacity to import distant signals. There have been a few programming concepts attempted. But I don't see that they are at a point where the over-the-air broadcaster has to feel a particular challenge. What has cable really delivered? I think the most interesting experiment has to be QUBE two-way; but cable obviously has not realized its potential and I don't think it will really in terms of original programming for a long time. They don't have the facilities.

Pappas: In the short term, I don't see cooperation with the cable industry for networking of programs as a significant, likely development. Many of the cable systems are interested in exploiting the available channel capacity by carrying otherwise unavailable programming into an area over which they have total control. So I think there's relatively little incentive for the cable operators to allocate part of their channels to some sort of a cooperative arrangement with local broadcasters — at least for the next four or five years.

Curran: Well, we always have cooperated with cable. In the case of UHF independents it's been a two-edged sword. Cable systems put us on an even footing with VHFs and network affiliates in cable homes. The problem we have is in the copyright areas. We've been fighting the copyright issue for all we're worth, because we believe that if you have a franchise to play a program in a market, and you've paid for that franchise, then

that franchise should be inviolate.

We believe that the various distribution systems now in development in this country are all going to ultimately meld into a fairly complex, very efficient communications system. There are some things that cable can do and vice versa and each of these media will find its proper place and they will all survive.

Auld: We were ordered by the FCC to divest ourselves of two cable systems in our broadcast area. But during the two years we had them, we experimented with sending scrambled STV signals through the cable and hooking people up to them, and it worked. I think in the future we will be finding more and more cable systems who want to participate in the STV service as affiliates. There are times and locations where people will be interested in many channels of service, and cable will find its place. But there are also people who are mainly interested in movies and entertainment. There's room for both.

My personal opinion is that the mandatory carriage issue will be passed. The FCC is constantly calling STV a broadcast service. Now, the rules say that any broadcast service has to be accommodated by the cable system under its area of signal. Well, it would be a dichotomy to say that on the one hand STV is a broadcast service and on the other that it doesn't fit into the category of carriage. I think it's only a matter of time. I understand this issue will be coming up before the FCC in some reasonable length of time.

Jankowski: A couple of principles again. As history has demonstrated with radio and with motion pictures in the 30s and 40s, and television in the 50s, and now cable and so forth, new means of technology don't necessarily bring about the end of the others. We have 74 million television homes now and we think that by 1988 or '89 there'll be about 88 million television homes. Our best estimates say that maybe ten percent of the audience will watch something else through some other means. But that gives us more absolute homes tuned to network television ten years from now than we have today.

Fountain: Cable is growing tremendously, and we look at it as a very serious competitive factor to free television. Recently we have seen the ability of cable to go after even major events and get into the auction with the three networks. For example, though it didn't receive much publicity, cable TV bid very seriously for the rights to televise the 1984 Summer Olympics. Cable could probably afford to pay more and make more money on the Super Bowl than any of the networks.

McDonald: The opportunity for the cable operator selling locally *is* there, if

"We see advertisers underwriting more and more special networks in order to have their own programs, control them, and be able to customize the area that they're reaching."
Robert Wold, Robert Wold Company

he understands the segment of the market that he can get to. Take an area like Albany, N.Y. At the right time of the year, say in May when they have the white water races, 30,000 people go into that area. There is footage of white water races all over that can be picked up for pennies. The interest during April and May in that market for that type of programming is high. He knows it and can reflect it and he can program it. That's where I think the opportunities are going to be.

It all gets down to the program. If the advertiser can get into the right kind of program at the right price, he's going to buy it. It's not, for most clients, going to be a major portion of the dollars. It really gets down to whether you need the audience in those markets.

Bennett: The real question is, how are Procter & Gamble or General Foods going to sell all their products if not on TV stations? They're spending billions of dollars to sell what are in effect distasteful products. Where else but commercial TV could you sell toilet paper? So commercial TV will be bolstered and helped, I think, by the demand of the advertiser who is looking and desperately needs us to sell his products. You can do it to some degree in newspapers, magazines, and radio — but you can't do it to the mass degree that Procter & Gamble needs to sell its toilet paper.

It's going to become more and more important for every station in every market to establish its identity in localism. So what we will do is expand our news involvement in the area. That's the one thing they can't get from cable or pay cable. They can't get local news from the network. We'll be doing 40 hours a week of local news. That's our buffer against the future.

Henderson: I have no quarrel with the development of the cable industry per se. However, I find it ludicrous that the cable industry is allowed to replicate the product of an over-the-air station and not pay the station or the supplier appropriate compensation. I think the whole idea of transporting signals the way Ted Turner does is totally contradictory to what the FCC should be about. I see no benefit from taking Mr. Turner's material from Atlanta to anywhere else. The country was cut up on a territorial basis to provide local service and I think that's fine. I think that when stations are not restrained from delivering product to areas beyond where they're licensed it can economically hurt the industry.

Schwartz: We're going to see more proliferation in TV just like we did in radio, and TV will become as successful with its proliferation as radio did with its. It's just going to be viewed differently and it's going to be bought differently and you're going to have different influences. You'll have more specialization, you'll have more channels that are doing more specialized things, and more advertisers buying on a specialized basis as they now do on radio and in magazines. But TV continues to be, and will continue to be for at least the next five years, the last single mass communications medium.

Curran: There is just no question that if you have some diversity in programming it is going to dilute the audience. But it also affords broadcasters — particularly independent broadcasters — unique opportunities in the co-venturing of projects. You can deal with cable interests and/or pay TV interests and co-venture programming that can be played on free television as well as on pay TV. We've been talking to a number of organizations about projects along those lines. So there are opportunities as well as problems.

Q: *Does over-the-air subscription television (STV) pose a similar challenge and what will your strategies be for dealing with it?*

Auld: The big thing, that even the FCC admits now, is that STV is the first apparent alternate for a new station to derive revenue from other than a network affiliation — which is very difficult to come by. We fill the prime time hours of any new station with key programming which can counter-program against a network. Our first run movies can certainly stand up against anything the networks are going to put on. So we feel that STV will expand the broadcast market. It will also provide the funds that will allow stations to perform a better local service. We're expecting the STV market to reach six million by 1985.

Television Plans

Henderson: I see STV as being quite viable, at least in the short term. It will provide capabilities in many areas substantially in advance of when you could possibly consider wiring. You don't need any heavy plant costs like what are required in wiring a major city. What the public's appetite to buy product will ultimately be, however, is unknown. It's interesting: certain things people will pay for, certain things they won't. When Ohio State football was free in that market it was every bit as successful as a Super Bowl. Fan loyalty in that area is tremendous. Yet when they put it on the pay system, it doesn't do well; people will not pay to see Ohio State play football. I think that's been a disappointment. It may say something about a lot of events where the assumption has been that people are willing to pay.

Chaseman: STV bases their business on 22 movies a month; there aren't 22 movies a month being produced. Further, that's only 40 hours of programming a month. That's no threat to the 600 hours of programming a month that the average television station provides. It doesn't mean anything. It's like the drive-in movie of the 80s except that they aren't driving to the movies. Fine. When the movie is over, they're going to watch us.

Q: *While still on the subject of alternate distribution, some have said that the developing technologies of home videodiscs and VCRs may open up new possibilities for broadcasters. Do you see any potential in programming for disc or the VCR, or as an aftermarket for other programs you produce?*

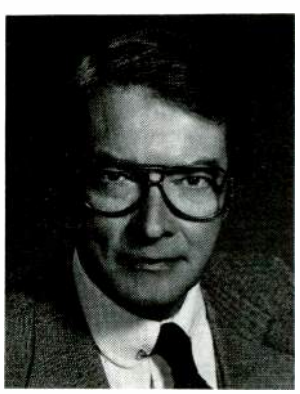
Cassara: We feel that videodiscs and videocassettes will appeal to a more specific market than a general one, and Golden West's opportunity is in programming for the home market that appeals to special interests. For example, how to refinish furniture — very specific things that people want to learn or know how to do. We feel that a lot of the disc business — other than the big movies — is going to be almost like a visual public library. We're actually looking at this as a market to produce programming for. I don't think that everybody in America is going to have a disc player in his or her house in the foreseeable future. So I think it's going to be a very specific, very particular, fairly affluent market for the most part.

Jankowski: The one area where I think major investments in production have an opportunity to attract an audience would be in the videodisc area. But to do fairly well, you are also talking about an audience size that is not going to have a major impact on network television; a million homes watching a movie they just bought on a disc is less than the statistical error on some of our prime time television programs.

Let's go back to the basic marketing issue. Our attitude is that we are in the communications business. And television, like radio, like newspapers, like print, is another means to communicate information or entertainment. With that approach, we have to ask ourselves, "What other avenues of communications do we see developing that could provide a useful service to the home consumer?" One of the reasons we don't look at some of these new visual or pictorial distribution systems as a major threat to us is because when you are the home consumer, when you turn on your TV set, you really don't care whether what you tune in is coming over the air or over a cable, a disc, or a tape in your living room. It is the same creative situation if it's a motion picture, a situation comedy, or a news program. What you really care about is the enjoyment of the information that you are receiving as you look at the screen.

Gingold: I think that there is a centrality of time that people are still wedded to. Even the inundation of all the technology and the other spectrum options has not really dented the viewing habits of the American people. For example, ABC has proved that old series programming, even when there is a blockbuster movie on the schedule against ABC's strong Tuesday prime time lineup, will still do well. People like to know that at 8 o'clock they can tune into *Happy Days;* they know where their programs are and they know when to tune them in.

The psychology of time is something that I think we haven't given enough consideration to. People can play a cassette or a disc in their home; but I wonder really if that is as significant as knowing that their favorite program is going to be on at 9 o'clock and knowing that in between the two programs they get updates on the news.



"I think it's atrocious that the industry and the suppliers have not addressed the question of production automation more fully . . . . There's no great human contribution in taking a picture of a newscaster."
Dave Henderson, The Outlet Company

Auld: I think that those technologies are going to be very compatible with STV. As a matter of fact, I think they can be promoted through our own system's capability. The same is true for movie theaters. In our guide each month we review two movies that are currently playing in theaters. People who like movie entertainment — there's no reason why they shouldn't go see material at theaters as well as seeing material on our service. You can't say that people should be locked up all the time in their homes. But with the present cost of things, it's hard to beat an entertainment package that allows a family of four to pay 40 cents each for sitting at home and watching a movie. The cost of discs is going to be fairly high, so it works out economically in our favor. The other thing is that there are very few movies that people like to continually see — maybe things like *The Sound Of Music* or *Gone With The Wind* — people might want those in their libraries. But not the average fare.

Chaseman: A lot of people have always had 16 mm and 8 mm projectors. People buy a movie, they watch it once, they may watch it twice, but they aren't going to watch it any more; it becomes a toy. All of your friends with all the Betamaxes and all the rest of it — it'll get to be a toy very quickly and off in a closet somewhere because they want to watch something new. The American public's drive, I think, is towards new things, and that isn't something discs or VCRs can give you. The basic thing that the public wants from us cannot be prepackaged — our currency, entertainment, and a common channel; the knowledge that they've plugged in with everybody else is really very reassuring to people.

Jankowski: As for the aftermarket, there has been one and it's growing. CBS News has been involved in an aftermarket for almost 10 years now, selling videocassettes to companies overseas, selling educational material. CBS News is the biggest supplier of inflight entertainment, next to motion picture companies. We provide a one-hour program each month, a magazine of the air, and I see that growing.

Q: *We'd like to focus now on some of the newer technologies that are coming into the foreground for broadcasters. We'd like to get your views on how you see them affecting your operations. Let's start with teletext. Can you see yourself offering a teletext or viewdata service? What do you think of the prob-*

If you think their character generator is easy to operate, just go ahead and exawkm.

Before you invest in a top of the line character generator, you should know more than just what it can do. That's why the versatile new 3M D-8800 character generator could be just the one for you. You see, all instructions are in English, not in code. And we've put them on a convenient L.E.D. panel above the keyboard for less wasted eye motion. So even a beginner can soon be composing in all kinds of fonts and colors. See your 3M representative right away for the character generator any of your people can run, or call 612-736-1032 for more information. Unless of course, you'd rather exawkm.

3M

Television Plans

"The fact that there is going to be more local production will almost force ad hoc networking, simply because a station can't afford to put a lot of money into a production that's only going to play on its own air."
Anthony Cassara, Golden West Broadcasters

lem suggested by some that it may interfere with your own commercial broadcasts?

Chaseman: You've got to remember that invention is not the mother of necessity. The fact that teletext exists is wonderful. But I can't think how to market it. I would like for us and other broadcasters to use that vertical interval. I think it's important to do that; but I don't want to do it at a loss. I would advise us all to keep our eye on the telephone company on teletext. I think it might be more viable to use the telephone and the screen rather than the vertical interval.

Barnathan: We are looking at teletext, but we don't see any great use for it by commercial broadcasters. First of all, we think it's too slow. Right now you can only get two lines in the vertical interval, and I think it interferes with our programs and our commercials. I *am* interested, however, in a printer in the home. That doesn't interfere with the program — it doesn't have to come on the screen. I can print our programs, I can print coupons, the schedule for the next day, menus, etc. That I would like to see.

Henderson: I don't think teletext is the kind of service that people would want to tune in on a long-term basis. My concept is that it would provide weather data, some news, airline departures, store openings, stock market, community messages — a whole host of things. But I think it's like a newspaper — you use it for the period of time that you are searching for the information, then you put it down. Once you know what the temperature is, then you go away from it. I don't see it as having a long duration of interest for the viewer — it's just a sometime thing.

Jankowski: What we see in teletext is what Procter & Gamble has seen for years. They have Duz on the market and then they come out with Tide. It may cut a little bit into Duz but between Duz and Tide they are farther ahead than they would be with one product. What we see happening, because teletext is different from TV, is people coming to teletext who wouldn't ordinarily be turning on the television set. It is also possible that if there is a national commercial they can put a line in there saying "turn to page 101 of teletext" and the individual has not only seen the national commercial but also a list of all the local dealers. From a retailer's point of view it offers the opportunity to do the classified and special item advertising that is available only in newspapers.

Curran: I read three newspapers a day. When I read the newspaper, I'm not listening to the radio or watching television. I just divide my time up — and yet, I watch a lot of television and listen to a lot of radio. So I just make my own choice as to what I want to do and when. I think that teletext might conceivably replace some of the reading that I might do because I can go to selected information quickly. I don't think it is necessarily going to replace newspapers by any means because of the depth of information that is available in newspapers.

Q. *What about stereo audio for television?*

Curran: I think that the audio part of television is something that had been terribly overlooked. To buy a $500 television set and have a two-inch speaker is kind of ridiculous. But I think that is going to be a consumer type decision. I don't see any major impact on television any more than big screen projection has had a major impact.

Jankowski: With our current-size screens in the living room I don't see it as any real asset. I don't think the public has ever really thought about it and I think the FM signal currently has a better fidelity to it than AM radio has. However, when we do get into large screen television, then I think stereo is a definite plus. I think the question is, "What is the need?" While stereo is something that some audiophiles might love to have, the average American consumer is not going to spend money for a stereo television set.

Barnathan: An excellent idea. We're working with the Committee. But even more than that, we want the dual language capability. Particularly for us, since ABC has stations in New York and Los Angeles, and we have a lot of Spanish-speaking viewers.

Q: *What are the most critical demands you will be making on technology in the coming years?*

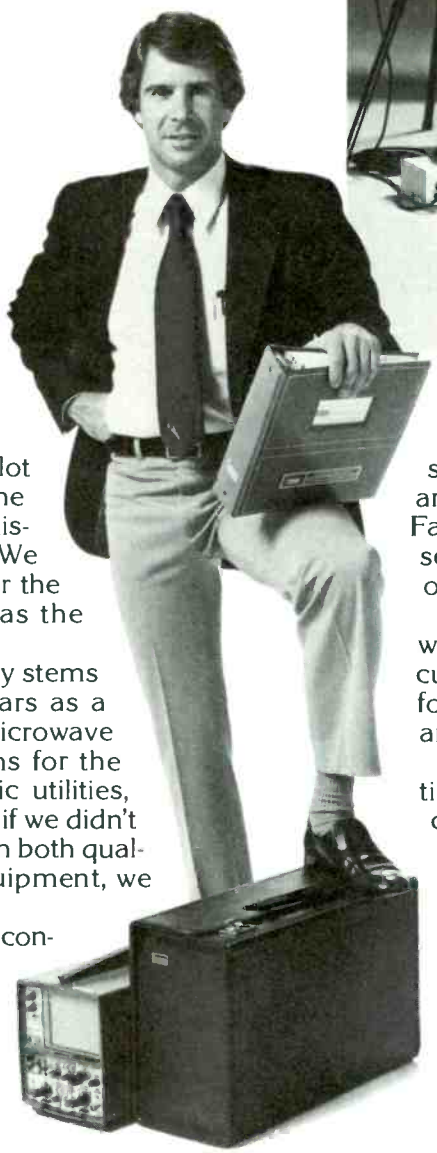
Henderson: I think we're more interested in what happens in the videotape area than in anything else, because that is going to be the primary recording process. We're wondering whether a digital recorder, for instance, is going to be practical. Collecting data is our big issue. We don't care if it's in a cube full of bubble memories or whether it's on videotape or on videodisc. Whatever is going to be the easiest to work with.

Auld: What I think is going to help STV, as the technology develops, are projection TV systems. I think there's a bigger and bigger market for large-screen displays if the price can be right. Of course, we've been talking for years about having a wall-mounted display and the LCD technology and the various plasmas to do that. So far, they just haven't succeeded. But some day that will come along, and in the interim, the work that is being done with large screen displays is getting heavier and heavier.

Jankowski: Smaller and faster computers. In the complex world in which we live and the very complex world in which business operates and the competitive environment in which we operate, the ability to disseminate information which management can really use to make decisions is going to grow. I don't think we could run our sales organizations and price our product as efficiently as we do today without the benefit of computers. I think the day of the all-computerized television station

"The opportunity for the cable operator selling locally is there, if he understands the segment of the market he can get to . . . . It all gets down to the program. If we can get into the right kind of program at the right price, we'll buy it."
Frank McDonald, Cunningham & Walsh

We won't run out on you when your warranty does.



At Farinon Video, we do a lot more than make some of the best video and ENG transmission equipment around. We realize that our service after the sale is just as important as the quality of our hardware.

This service philosophy stems from Farinon's 20-plus years as a leading manufacturer of microwave radio transmission systems for the broadcast, telephone, public utilities, and pipeline industries. For if we didn't provide these industries with both quality service and quality equipment, we wouldn't be here today.

So the next time you're considering a portable video transmission system, STL microwave radio, inter-city transmission system, ENG central receivers, or related video transmission equipment, consider Farinon Video. And, later, if a problem arises – either directly or indirectly related to Farinon Video equipment – our engineers and service personnel are available to help you out any way they can.

At Farinon Video, we'll still be available when your warranty runs out. That's why our customers world-wide keep coming back to us for more quality video transmission systems – and quality service.

For a copy of our warranty or information about Farinon Video products, write or call us today.

Farinon
VIDEO
A Farinon Company

Main Office: 1680 Bayport Ave., San Carlos, CA 94070; Telex: 34-8491
Domestic, Phone: (415) 595-3500
Export, Phone: (415) 592-4120

Canada: 657 Orly Ave., Dorval, PQ H9P 1G1
Phone: (514) 636-0974; Telex: 05-82-1893;
TWX: 610-422-4122

Circle 138 on Reader Service Card

Shoot our newest cameras at the NAB Show.

A hands-on demonstration will reveal some major advances across the line. Like an extended-performance camera that reaches previously unattainable levels of picture quality.

You'll see that pounds have been trimmed off our newest ENG/EFP cameras. New features have been added.

SHOOT US.

We've built performance and stamina second to none into every one of our cameras for the studio and field.

You get a lot of RCA with every RCA camera: RCA technology, to help you deliver the very best on-air product.

And RCA TechAlert service, unmatched anywhere, to keep you out of trouble and on the air.

RCA is with you on every shoot.

Shoot us at the show. RCA Broadcast Systems, Building 2-2, Camden, N.J. 08102

is coming, just as we have it with the FM radio stations. I also think there is going to be a continuing transition from film to tape. I think that down the road the ability to produce feature films electronically is something that is going to be developed. If you have films being produced electronically and you have electronic screens why not distribute motion pictures via satellite?

Curran: Technologically, I want to see improved economic efficiencies in satellite communications, continued miniaturization and flexibility of equipment, and improved UHF transmitter and antenna development to increase our efficiencies at lower power and bring us more and more into line with VHF. I think already the television set manufacturers are aware of what UHF is doing in our country and pressures for the set manufacturer to develop better tuning and better human engineering for television sets is coming from the consumer side.

Barnathan: Greater use of computer technology. Greater memory, and greater capacity for memory. That's really the fundamental aspect of what's happening. Once that happens then of course digital television becomes much easier — not necessarily the digital VTR but digital television. Also, the continued miniaturization of videotape with regard to news gathering so that we can have a one-piece camera a la the 16 mm film cameras. I'm trying to get down from ¾-inch to ½-inch or ¼-inch, because the VTR right now, if you look at it, is almost all mechanical — there's very little that's electronic. The size is mostly due to the parts you need to mechanically move the ¾-inch tape.

Our biggest problem right now is to get the production people to understand what capabilities we now have visually and electronically. They used to sit there with menu boards; now they have all sorts of graphics, letters that can grow and reduce, etc. But some of these guys think we're still running with a menu board. We're actually making a concerted effort to make sure that the production people are understanding the technology better — that they not be frightened of it and get to know what its capabilities are. I think we've helped change the traditional picture that the production people come up with a new idea and then ask engineering to help them find a way of doing it. We're pretty far ahead of them right now.

Pappas: The further utilization of one-inch VTRs and the further exploitation of the economy and the efficiency that are available by using them will become very important. I was also told by the manager of the Sony factory which I visited recently in Japan that there will be a commercial-grade CCD camera within the next five years. So I see that as a forthcoming development in this decade that will further serve to reduce the size of cameras, improve their reliability, and probably reduce their cost.

Chaseman: One is accomplishing the digital revolution without destroying what we've got. I think the digital revolution is going to be important but I think the marketers are being very smart in withholding it until they can do what one-inch can already do. Number two, giving us some cost benefits with the new technology. I think the marriage of marketing and technology is a very important development. Most manufacturers are being very practical and very responsive to a real need, because now we're into very significant dollars and it isn't enough to trumpet new technology. You've got to be able to fit it into a business scheme.

Q: *Our final question regarding engineering concerns the increasing scarcity of qualified engineering talent. Some of the strategies for dealing with the problem are obvious: spending more money to hire the best people available, working with schools and colleges to develop curricula oriented towards broadcasting, steering interested students into your own internship programs, making sure your present staff is completely up-to-date on the latest technologies, etc. What do you think, however, about using increased automation as a solution?*

Jankowski: You find with computers that you really don't save on your costs. As a matter of fact, more often than not you hire more people — to do the programming, etc. The computer handles information you used to manage — information you need to have. Rather than cut back on cost what it really does in the long run is improve your revenues.

Pappas: Our operation is currently semi-automated, and when we're not doing news or other live programming, we operate with a single person. Again, I think the Japanese are leading the way with this sort of thing. I saw there on a recent visit all the technologies that are necessary for a fully-automated control room. They have a library with 1500 program elements. That library, on ¾-inch videocassettes, was serviced by a robot that directed the program material to the playback systems. The playback systems identified the program elements and notified the central computer what it was. The computer knew where it needed to go, told the switcher that it was ready, and it all worked.

Barnathan: All automation does is to take the preciseness that we need in our industry out of human hands. For instance, starting precisely at 28:37:32. I mean, if you blink an eyelash you've missed it. That should be done by a machine. We're not trying to get rid of a man — we'd rather he be there in case something happens, to know how to change things around.

"Our biggest problem right now is to get the production people to understand what capabilities we now have visually and electronically . . . . We're pretty far ahead of them right now."
Julius Barnathan, ABC Broadcast O&E

Chaseman: Automation carries its own germs. Automation has to be repaired and it takes a new kind of engineer to understand the guts of it and he can't always just pull out the board and put in a new one. But I'll tell you the area that I think is most critical — that's propagation technology. There are an awful lot of people who understand chips and the non-RF stuff, but when you get into transmitter technology, antenna technology, and propagation technology, you've got a problem.

Henderson: I think it's atrocious that the industry and the suppliers have not addressed the question of production automation more fully. There's no magic and no great human contribution in taking a picture of a newscaster. When we built the new facility for WJAR in Providence, R.I., we planned to set up the news studio for limited production automation. We will be going ahead with it as soon as we can. You could take six or seven of the smaller cameras and put them on what I call a "lazy boy" and through some tracking mechanism you could move them and preset them — especially with a fixed situation like a news set. I find no merit in tying up two or three qualified technicians to stand behind cameras for 30 minutes at a time when they could be doing something far more interesting.

Q. *Thank you.* **BM/E**

RADIO REPOSITIONED FOR FURTHER GAINS

A panel of top executives in radio and others closely concerned with radio success agreed quite generally on what radio managements must do, not only to survive the 80s, but to make them the biggest 10 years radio has ever had.

RADIO BROADCASTING enters the 80s at the highest level of success in the industry's 60-year history. Revenues of $3 billion in 1979 are several times the annual totals of the late 1940s, the period of radio's peak when it was alone in the living room without the competition of television.

But radio also enters the 80s immersed in a swirl of change and prospects of change. The satellites, cable television, the new video technology, AM stereo, changes in listener demographics, digital techniques, and new directions in basic government policy are some of the elements of the 80s milieu for radio that will put large pressures on the industry. Radio managements will need a set of new strategies to absorb these changes, to maintain and enlarge success — even to stay alive.

BM/E has interviewed 17 radio managements and others intimately concerned with the industry, asking them to join in developing a preliminary set of guidelines for 80s survival. One encouraging finding is a considerable degree of consensus on what radio managements must do in the next 10 years. As the following report shows, there were disagreements, but they were much less weighty than the agreements.

Even more encouraging is the general belief that radio, if it is managed reasonably well, will go on to much higher levels of social, artistic, and economic performance. The radio managements showing talent and energy in the 70s are unanimously excited about the prospects for the 80s, sure that radio is on the verge of its greatest decade. *BM/E* happily joins them in looking toward the decade with the highest hopes for radio.

The main problems — the main solutions

The following are some highlights from the responses of those interviewed.

How can managements handle increased competition? Government policy is pushing toward many more radio stations on the air — as many as 900 more, by some counts. Some responses:

- Radio managements must identify thoroughly with their respective communities, go deeply *local* in programming, advertising, and public service.

How can radio attract advertising more efficiently? In a great many markets a radio station must choose a particular segment of the audience, as the specialty magazines do. But whether the local situation requires that or not, the management must:

- Research the audience thoroughly, "market" that audience intelligently and fully to advertisers;
- Make a careful decision on just how much national and regional advertising the station has the qualities to attract, and avoid useless effort in those directions — especially important is *not* diverting effort from local advertising, which will be the mainstay for most stations.

How will the changing population mix affect radio? Americans are getting older, and added to that is a trend lately acknowledged by ad agencies and others concerned. The people of 35–40 and up have lots of money and spend more and more of it on themselves: they save less for their children. Smart radio managements will:

- Study carefully the buying habits and tastes of the "older" audience, develop programming for them (there seems to be a shortage of it now);
- Learn how to market this group to advertisers — which products will appeal and which will not.

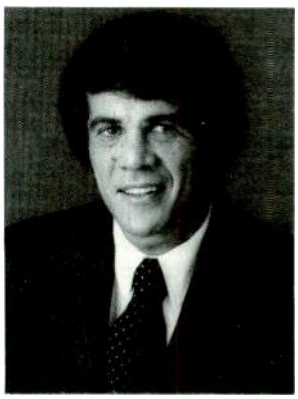
How can radio confront new entertainment technologies? Most prominent as coming new competitors for audience attention are the videodisc, videocassette, and cable television. There is general agreement that the first two will not affect radio substantially: televi-

sion broadcasting is their main rival. But cable television, particularly in the small markets, may be friend or enemy. Radio managements should:

- Make friends with local cable management, explore ways to cooperate (there are several, as some interviewees point out). One interesting suggestion to cable operators from consultant Harvey Rees (see below): why not put the whole local FM band on the cable?

What should AM managements do about stereo? AM stereo was the only major topic that stirred substantially opposing points of view. Some responders said it is very far off, too expensive for most AM stations, not attractive enough for the audience to buy the necessary new receivers, not really technically an advance. But a majority took the opposite position: AM stereo is near at hand, the public will adopt it rapidly (especially in cars), AM stations will have no large financial or technical problems, and the receiver makers are 100 percent ready and eager to go. *BM/E* is inclined to go with the majority, and so advises:

Today a station can dominate a market with a 6 share, can be a financial success with a 4 share in a very large market .... management intelligence will work well in the 80s – it will be a good decade for radio – Martin Greenberg, president, ABC-owned FM stations, New York, N.Y.



- Get ready for AM stereo (many AM managements have done that already) by upgrading studio equipment and getting in two-channel circuits; study the requirements of stereo programming.

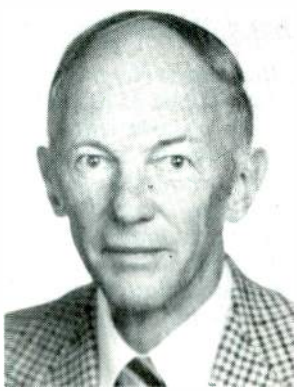
How will satellites affect radio? More and more centrally produced network programs will be available via satellite as the decade progresses. Radio managements should:

- Consider seriously installation of an earth terminal so that programs selected from those available on the birds can be added to the basically local program mix. The cost will be moderate and the programs will include attractive material the station cannot do for itself, such as live stereo concerts.

What should radio do about new studio and transmission techniques? There is agreement that the highest technical quality will be more and more necessary for radio success. Some of those interviewed (for example, Arthur Holt) say that topmost technical quality is already a significant factor in listener totals in many markets. So radio managements should:

- Engage in constant, skillful upgrading of studio and transmitter equipment for ever better on-air sound quality;
- In line with that, keep a close watch on digital techniques and absorb them into the plant as the equipment becomes cost effective, because digital units — recording, signal processing, editing, etc. — will bring tremendous advances in efficiency, precision, and fidelity.

Radio must point out that it can deliver certain audiences cheaply that are very costly and difficult to reach with television .... radio can repeat impressions cheaply .... the average spot on television is seen by most viewers once a week – James Seiler, president, Mediastat, Inc., Silver Spring, Md.



These are the main lines of agreement that developed from the interviews. In the following, the material is organized around the questions asked, and significant replies to each question, with the responder identified, are shown. This magazine could not supply nearly enough space for all the interesting comments that came in. Those appearing here were selected by the editors as most worth reproducing, with space limitations in mind. *BM/E* has paraphrased the individual comments in many cases, in order to get more of them in.

Increased competition

Buron: There are 23 stations in our market, and only four to six are really successful. More stations will mean that audiences and dollars will be fragmented further. But offsetting this is the fact that a station can succeed with a lower audience share than used to be necessary. We used to need a 15 to 17 share to look good to advertisers. Now six to seven will do it, and this will drop lower.

Cornels: The top stations in most markets are heavily localized, strong in local public affairs. Management must know everything going on in the market. Radio succeeds by doing what other media can't do: radio is right there and can be a close member of the community.

Costello: The old-line, mass-appeal AM station is just about finished in many markets. AM broadcasters must find their special audiences, program specifically to them. This implies knowing the audience extremely well: even age groups are not as all-determining as they used to be. Lifestyle is important.

Our audience is extremely loyal to our (Christian) programming, and this loyalty extends to the advertisers who support our station – James Young, president, KTOF, Cedar Rapids, Iowa

The Next Ten Years: Radio

The role of the satellite nets will be to furnish radio stations with exciting and innovative programming they cannot produce themselves – Martin Rubinstein, president, Mutual Broadcasting System, Alexandria, Va.

Doelitzsch: There are 20 stations within 35 miles of our community. If two or three more are added, the marginal stations, whether new or old, will probably go under. The further splitting of AM/FM simulcasting will also increase program choices, fragmenting the audience. Public service to the community comes out of station profits, so if there is less money for each station, public service will decrease. If fragmentation is too severe, you can't afford enough people to do a good local job. All this is working against localism, as is the coming of new networks using satellites. They will make available music and other programs the local station could never do for itself.

Galer: Two or three more stations added to the 10 in our market probably means less money for each station.

Guild: The industry should mount an industry-wide effort to dissuade the government from making a large expansion of stations on the air. If that fails, and something like 12 percent more stations come in, it may not be as disastrous over the long haul as some people think. Initially, AM would experience a depressing effect on rates, might have to reduce staffs. To avoid permanent loss, a station must define carefully what the audience is, know that audience thoroughly, promote to it and to advertisers about it. The sales force must understand the station's audience completely, know its strong points for various advertisers. The national rep must also know all the facts about the station's audience in order to make effective presentations to national advertisers.

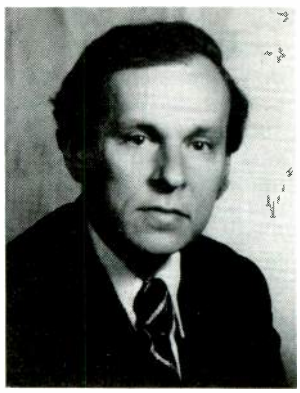
Holt: A real expansion of the number of stations is several years away, at least — the development will be gradual. Increasing the number of FM stations substantially will be very difficult because directional FM is difficult or impossible. But if a large increase in number of stations — say 25 percent — comes by the end of the 80s, we must accept a fractionalization of audiences. This may not be as strongly competitive as we fear, because many new stations may be directed to minorities who are not now served efficiently. There will be new advertising specifically for those groups, leading to a kind of coexistence, a stronger broadcasting.

Service to the public comes out of profits, so if there is less profit there will be less service to the public . . . . if fragmentation is too severe, it will also force reduction of staff, making local sales more difficult – Dutch Doelitzsch, president, WDDD-FM, Marion, Ill., Board of Directors, NRBA

Krasnow: There are economic limits on the expansion of the number of stations. The NAB is strongly asking the FCC for a thorough study of the economic effects of putting substantially more stations in various markets. This expansion cannot be done in a piecemeal way: its overall long-term effects must be studied, both the economic and the technical.

Lange: Competition creates more advertising, and if the radio management is doing a good job the station will get its share. In a community like ours (7200 people), that consists mainly in working intimately with the community, knowing all its interests and problems, knowing everybody and everything. The station must serve the community in every way. We have been at it for 56 years.

The government is beginning to recognize that the paperwork load on radio is outdated and excessive . . . . ascertainment will be cut, logging simplified . . . . but some regulation will stay, because getting rid of it would require amendment of the Communications Act, not now in the cards – Erwin Krasnow, General Counsel, National Association of Broadcasters, Washington, D.C.



Long: The station of the future, particularly in medium-sized markets, will have to market to advertisers more intelligently and thoroughly than radio managements generally have in the past. The management must pick an audience and know everything about that audience — have convincing evidence not only of its demographics but also of its buying habits, interests, lifestyle in every respect. That is going to mean audience research by an independent, reliable organization, to uncover the "psychographics" of the audience. This must be added to Arbitron (or other ratings service). Then the management can go to advertisers of products that are specific to the audience, and not waste time trying to get ads for products that don't interest the audience.

O'Shaughnessy: A station now positioned well must keep looking for more ways to get involved in the community, expanding its "local" character. The station must be preeminent in this, and if it is, will survive. FM will be well set for the higher-class music programming that will be more and more needed, and more available. There must be more specialization in formats. A station must sharply define its goals and its audience.

PORTABLE VIDEOTAPE RECORDING WITH THE AMPEX VPR-20:

Bringing Back Tape You're Sure You Can Use Calls for a Tough, "Smart" Portable Recorder.

Finally, you can videotape remotely without compromising the considerations that apply to studio work. Because Ampex engineers went far beyond the usual definitions of portable acquisition when they designed the VPR-20 one-inch helical.

Confidence Is Paramount.

On location, you have to know that you're capturing good material. So Ampex built a confidence feature into the VPR-20 that actually plays back the picture from the tape into the camera viewfinder during recording. When you see it in the viewfinder, you know it's on the tape. And you can have color playback in the field, thanks to the color stabilizer option, which mounts inside the VPR-20.

Production Flexibility for All Situations.

When the assignment is commercial production in the field, your VPR-20 can backspace itself for a flawless assemble edit. And color framing is standard. The advanced cueing system allows you to go back and look at the last shot, and either go on from there or retake the shot and eliminate unwanted material. Right in the field. As simply as pushing the appropriate button.

The Front End of a Special Effects Production.

Tapes recorded on a VPR-20 are fully compatible with every trick in the VPR-2 special effects book. Once you bring your material back to the studio, you can slow it down, speed it up or stop it on a selected frame with a VPR-2. And if you haven't seen the quality of VPR-2 special effects yet, you're in for a surprise.

If You Can Take It, Your VPR-20 Can, Too.

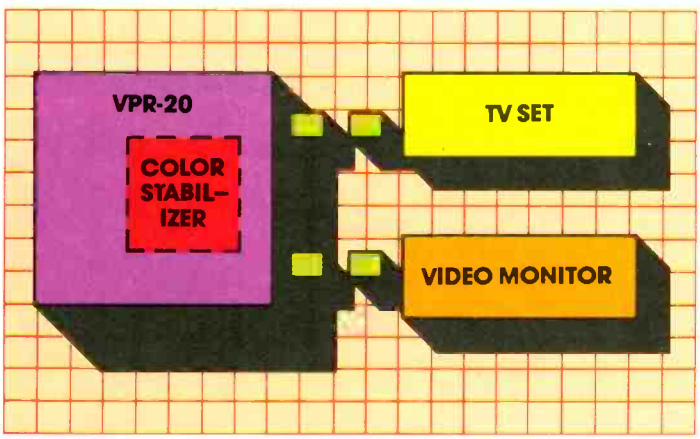
Environmentally, your VPR-20 can take nearly anything that your operator can. It shrugs off dust and sand in the air, tolerates a cloudburst, and stands up to heat and cold. Oblivious to the way it's held or positioned, the VPR-20 has an amazing resistance to the kind of gyroscopic conditions that go along with field recording. So you can take the VPR-20 for granted.

Enough Power to Finish What You Start.

The VPR-20 battery pack has more than enough capacity to record and rewind a full hour of tape. Then, when you're ready for more shooting, the quick-change battery pack gives you quick-change power. There's even a battery/charger system that brings you up to full power again in less than an hour. You'll really value the VPR-20's power-down memory. It keeps the tape timer operational during battery or power changes for up to two days if need be. This is portability with a punch.

If The Specs Don't Convince You, A Demo Will.

Somewhere within reach of your station, the tough, "smart" VPR-20 is turning the impossible into an everyday affair. Call us for the technical information, and then get your hands on a VPR-20. You won't want to let go.



AMPEX MAKES IT EXCITING

Ampex Corporation, Audio-Video Systems Division, 401 Broadway, Redwood City, CA 94063 (415) 367-2011

Circle 139 on Reader Service Card

The Next Ten Years: Radio

Radio managements, and their rep firms, must know each station's audience well, understand it thoroughly. The rep firm must have full information on each station, to make acceptable multi-station presentations to the advertisers – Ralph Guild, president, McGavren-Guild, New York, N.Y.

Rees: Radio broadcasting must go the way of magazine publishing, with specialties that appeal to particular segments of the audience. The radio management must choose an audience and go all out for it. The advertisers are moving this way: more and more they have specific "target" audiences for each product.

Seiler: The net result of the new competition will be audience fragmentation; but those managements that are sharper on programming will move ahead in spite of it. The others must share their audiences and will lose. There will be many ways to win, but it will be tougher for marginal stations.

Young: The specialty we are involved in is Christian broadcasting. We operate commercially, with both local and national advertising, to avoid asking for donations. This has worked well because our listeners are extremely loyal to the station and its advertisers. Religious broadcasting is now strongly reaching the 25–49 group, because younger people in such large numbers are looking for something more, beyond materialism; they want to belong to something to avoid emptiness. Many studies show that the "born again" group is very large among teenagers and young married people.

The videocassette, videodisc, cable TV

Cornels: Broadcasters must finally admit that cable is not going to go away. Many cable systems will use radio, so radio should make friends with cable: there will often be a joint interest, with cable giving the radio signal more penetration.

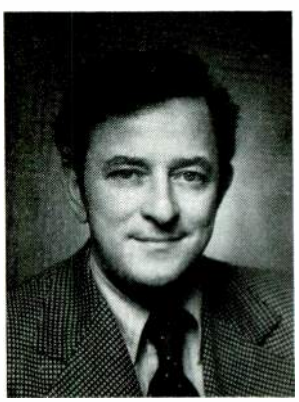
Galer: Radio has nothing to fear from the new home video technologies: they will mostly affect television. Cable television is not a threat either, if radio explores ways of joining it.

Guild: Cable TV could give many radio managements a boost by providing nighttime coverage for daytime-only stations.

Holt: Cable is very strong in our area, which was one of the first in the U.S. to be served substantially by cable. There are several radio signals on cable, showing the direction that mature cable operations will take.

Long: Cable does not look like a problem for us, and in some communities is definitely a help.

O'Shaughnessy: We are already cooperating substantially with cable in our area, and they with us. For example, when the Governor went on the air through our station, cable picked up the event as a joint operation. When the local cable system inaugurated a series of public affairs programs, I was the moderator of the first one, reflecting our station's long identification with community affairs.



Radio is not telling its stengths to national advertisers; radio managements must learn who their advertiser and agency market is, what the philosophy of those buyers is – A. P. Aurichio, vice president and general manager, Arbitron Radio, New York, N.Y.

Rees: Cable may be somewhat competitive with radio in some small markets, but this can be changed into a radio advantage with radio-cable cooperation. Cable will help educate people to better standards of picture and audio quality. A suggestion for the future: why not put a substantial part or all of the FM band on the local cable system, let the subscriber choose any station he wants? This would make the cable subscription more attractive to prospective customers, might even bring in an additional fee in some markets. There are some technical problems but they look reasonably easy.

AM stereo

Buron: Radio managements will want to hear AM stereo under actual operating conditions: will it have a top-quality sound? AM stereo could be very important in cars, where FM stereo often fails; this could solidify and extend a station's drive-time audience substantially. But AM stereo will not be as important in homes because it will probably not sound as good as FM stereo.

Cornels: AM stereo is exciting, and it is not 10 years away as some claim, but almost here. Much of the broadcast industry is ready for it, and the receiver manufacturers have fully developed models for each of the five systems. AM stereo and FM stereo will co-exist, with AM stereo predominant in cars. AM stereo will force a vast upgrading of technical quality on AM. Better quality is a

We are cautiously optimistic for the 80s, with the emphasis on 'optimistic' . . . . you must be more of a businessman to run radio in the 1980s – Louis Buron, vice president and general manager, KDWB (AM/FM), Minneapolis, Minn.

Announcing new AM/FM Stereo Consoles from ADM

THEY DO EVERYTHING BUT THE HELICOPTER REPORT

ADM® is proud to announce the ST Series, newest addition to our line of quality professional broadcast consoles. Compact as they are, they're big on capability and flexibility. They feature the same performance excellence, operational simplicity and reliability you'll find in any product from ADM.

The new ST consoles offer a series of modular frames that we will equip to your particular needs. A variety of input, output and signal processing modules are also available to satisify your present requirements as well as future expansion. Each ST frame offers up to three separate stereo and one monaural output. All modules are front panel plug-ins. Electrical specifications set a new level of excellence for the industry.

So confident is ADM of the excellence of the ST Series, that they're backed with an exclusive 5-year warranty.

To find out more about how the new ST Series can make Audio Broadcasting easier for you, write or telephone us today. ADM Technology, Inc., 16005 Sturgeon, Roseville, Michigan 48066. Phone 313/778-8400. TLX 23-1114.

ADM®

The Audio Company

Here are some facts you should consider about a broadcast recorder. Our competitors wish they had.

PERFORMANCE:
Overall Signal-to-Noise: 66 dB unweighted at 520 nWb/m (30 Hz to 18 kHz audio filter).

Playback Signal-to-Noise (electronics): 72 dB unweighted (with audio filter).

Headroom: +24 dB. Maximum Output: +28 dBm.

Overall Frequency Response (15 ips): 30 Hz to 22 kHz ±2 dB.

Playback Frequency Response (MRL test tape): 31.5 Hz to 20 kHz ±2 dB.

RELIABILITY: An unmatched four-year track record of on the job performance for the original compact professional recorder. Day in, night out. Just ask someone you trust.

ALIGNABILITY: Any tape recorder must be aligned to achieve maximum performance. With the MX-5050-B, all primary alignments are on the front panel. So is a 1-kHz test oscillator. Secondary alignments are inside the bottom panel. You or your maintenance people can align it fast and easy. This saves you time, money, and enhances your reputation.

INTERFACEABILITY: With a flick of the output switch you can plug-in to any system: +4 dBm 600 ohm or −10 dB high impedance. No line amps or pads to mess with. A perfect match everytime.

ADDITIONAL BENEFITS: Three speeds, dc servo ±7%, ¼ track reproduce, full edit capability, over-dubbing, noise free inserts, XLR connectors, NAB/CCIR switching, unique three-position alignment level switch.

PRICE: Suggested retail price $2,050 (USA).

MX-5050-B: The best value in a professional tape recorder.

OTARI®

Call Ruth Pruett Ables on 415/592-8311 for the name of your nearest Otari professional dealer.
Otari Corporation, 1559 Industrial Road,
San Carlos, CA 94070 TWX 910-376-4890
In Canada: BSR (Canada, Ltd.),
P.O. Box 7003 Station B, Rexdale, Ontario M9V 4B3
416/675-2425

Circle 140 on Reader Service Card

positive factor in radio broadcasting; it will be very good for the industry as a whole.

Costello: AM stereo may simply play up the low quality on AM. People are not going to leave the good musical quality on FM stereo. AM stereo could have an interesting function on talk shows, to separate the speakers in space.

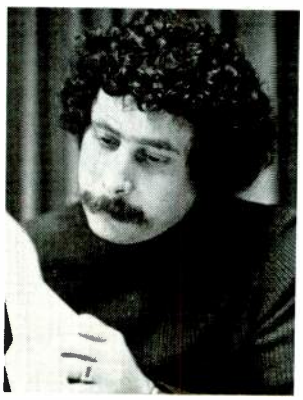
Galer: We are mentally prepared for AM stereo, will welcome it when the time is ripe.

Greenberg: It is too late for AM stereo to upset the position of FM stereo. But AM stereo will be very good for AM, upgrading the quality. The most important effect may be on programming: marginal AM stations will have to get back in the music business.

Lange: We will be watching AM stereo closely to see how it might affect our market: we think it is too early to judge the specifics.

Long: AM stereo won't amount to much, unless we get reasonably priced receivers from Japan. Most people are not excited about it.

O'Shaughnessy: We have no plans yet for AM stereo. We think it is probably not a big plus in our market. We will wait and see.



Our market is already overcrowded, with 10 stations for about 120,000 people, so two or three more stations will mean less money for each of us .... but we look forward to the 80s; our station is in a good position to move with the times – it will be very exciting – Michael Galer, president and general manager, KDZA/KZLO, Pueblo, Colo.

Rees: AM stereo will bring a big technical improvement in AM radio. The receivers will have to be very much better, and that in itself will give broadcasters incentive to upgrade their own quality.

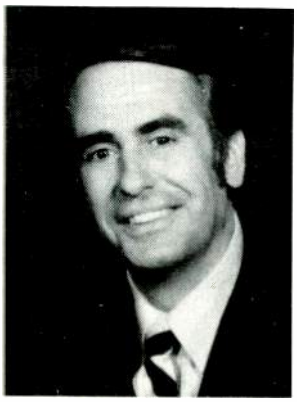
The satellites

Aurichio: The satellites are going to complicate audience measurement — it will be even more difficult for the audience to identify the programs they listen to.

Buron: The satellites are becoming very big in cable television, and will have strong effects on wire networks. If attractive programming develops for radio, we will certainly take a look, could join up if we like the programming. One area the satellites will probably move into is distribution of syndicated programming: it could be cheaper and much better than sending out tape copies of programs.

Cornels: In the future radio managements will be able to make their programming mix more attractive by fitting selected satellite-distributed programs into their basic "local" material. Wall-to-wall programming of a single, "purist" character will be out: there will be many "specials" that will be blended into a station's programming, including many "live" stereo programs that the station could not do itself. The radio management will have many choices and must study what will fit that station's particular audience. This will force radio managements to be more alert, more intelligent about many kinds of programming. A trend that helps meet this need is the movement of more and more programming experts to the top management team. Programmers advise top management not only on programs but also on equipment needed for better sound quality.

Radio has a weak national image .... a stronger one must come if radio is to realize its inherent potential and importance – Wayne Cornels, vice president, Radio Department, National Association of Broadcasters, Washington, D.C.



Costello: We are looking forward to getting programs via satellite. We are on the board of affiliates of ABC, and the affiliates are already asking ABC for new kinds of programming; live concerts in stereo, for example. If the good programming does get on the satellites, I would put an earth terminal on our roof — at my own expense, if necessary.

Galer: Yes, we welcome the coming of the satellite nets and in due time will get our own earth terminal. The satellites will give us a much wider choice of programs.

Holt: The radio "superstation" will be to a large extent an accident of time. Except for highly specialized programming (e.g., WFMT in Chicago), radio-originated material via satellite only covers a gap until local services move into it.

Lange: We will be part of the Mutual satellite net and look forward to the enlarged programming choice it will bring.

Rees: The satellites will bring an improvement in radio programming; it must be basically "local," but can be made more attractive with selected satellite programs (for example, live stereo concerts).

Rubinstein: The satellite nets will bring inexpensively and with top quality the programs the station needs and cannot do itself.

AM broadcasters have to accept the fact that, except in a few very large markets, the old-line, mass-appeal AM station is finished. AM operators must find a niche – Joseph M. Costello, owner and general manager, WRNO-FM, New Orleans, La., and Board of Directors, NRBA

The shape of editing in the 80's

See it at NAB 1980

Booth 1205

datatron, inc.

VIDEO SYSTEMS DIVISION

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

Circle 141 on Reader Service Card

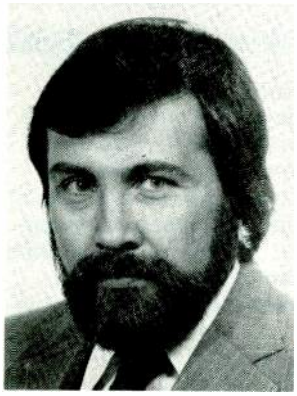
The Next Ten Years: Radio

Seiler: The success of the satellite nets depends on the programming. If they offer something people want to hear, they will certainly be used. The satellites may make some kinds of programming cheaper.

Digital and other new technology

Cornels: Digital techniques will definitely move into radio strongly in the 1980s. This fits in with the increased awareness of quality on both AM and FM. Digital techniques will be especially important in production and control — there is likely to be a digital production unit in every radio station, for editing, signal processing, etc.
Costello: We are strongly oriented toward using the best engineering, will go to digital techniques as the equipment becomes available and gets a test in the field. We think high technical quality will be most important in the 80s.
Galer: We surely want to go with digital technology as it becomes available at attractive prices. We want the quality and ease of production it will bring.
Greenberg: Technical quality will continue to grow as an important element of station performance. Therefore digital units and others lifting quality are going to be correspondingly important.
Holt: Radio has a tremendous job to get equipment up to the quality that will be demanded in the 80s (even two-year-old equipment should be regarded with suspicion). That is because technical excellence will be a No. 1 point of the 80s. A station must *sound* like No. 1 in order to *be* No. 1. Digital technology will be most important in this, especially in recording and in signal processing. By 1985 all top stations will have a substantial complement of digital units. The days of sloppy audio are about over. Young people today spend much more for high fidelity than they do for television: the music and hi-fi industries reached about $5 billion in 1979.
Lange: Although we are 56 years old, with success throughout that period, we know we must move with the technical times. Yes, we will buy the latest equipment as it reaches price stabilization and fits into our needs. Just in the last couple of years we have automated our bookkeeping and our FM programming, put in a new console and transmitter.
Long: We will go digital inside our stations over coming years.

Better marketing of radio to advertisers is the answer to survival in the 80s. Radio managements must have detailed data on their audiences; what they own, what they buy, their complete economic and lifestyle make-up – James Long, president, Long Pride Broadcasting Corp., Dallas, Texas



The Next Ten Years: Radio

Today a station with two-year-old equipment may be out of date technically – a very weighty point is going to be technical excellence . . . . social and economic trends of the 80s will reinforce the position of radio; broadcasters will provide more services to the public – Arthur Holt, president, The Holt Corporation (consultants), and president and general manager, WGPA/WEZV, Bethlehem, Penn.

Rees: The small microprocessor is going to spread widely in radio stations to bring precision control of nearly everything. Quality is certainly going up on a grand scale. A station must join that movement or get left behind.

Getting more (national) (local) advertising

Aurichio: Many radio managements do not explain effectively to national advertisers what they (the stations) have to offer. They must learn to market themselves to the big agencies, learn the psychology of the advertisers. The station managements must know their audiences thoroughly, know how to market those audiences.

Cornels: Radio's advertising support in the 1980s will be heavily local (as will its whole effort), but that does not preclude a good proportion of national and regional ads. One big problem is that radio has a weak national image. Radio needs much greater knowledge of its own strengths and means for telling the advertisers what those strengths are. For example, in tight economic periods the fact that radio has the most favorable cost per thousand becomes vital: it is better than TV, magazines, newspapers. A stronger radio image will bring more dollars into radio.

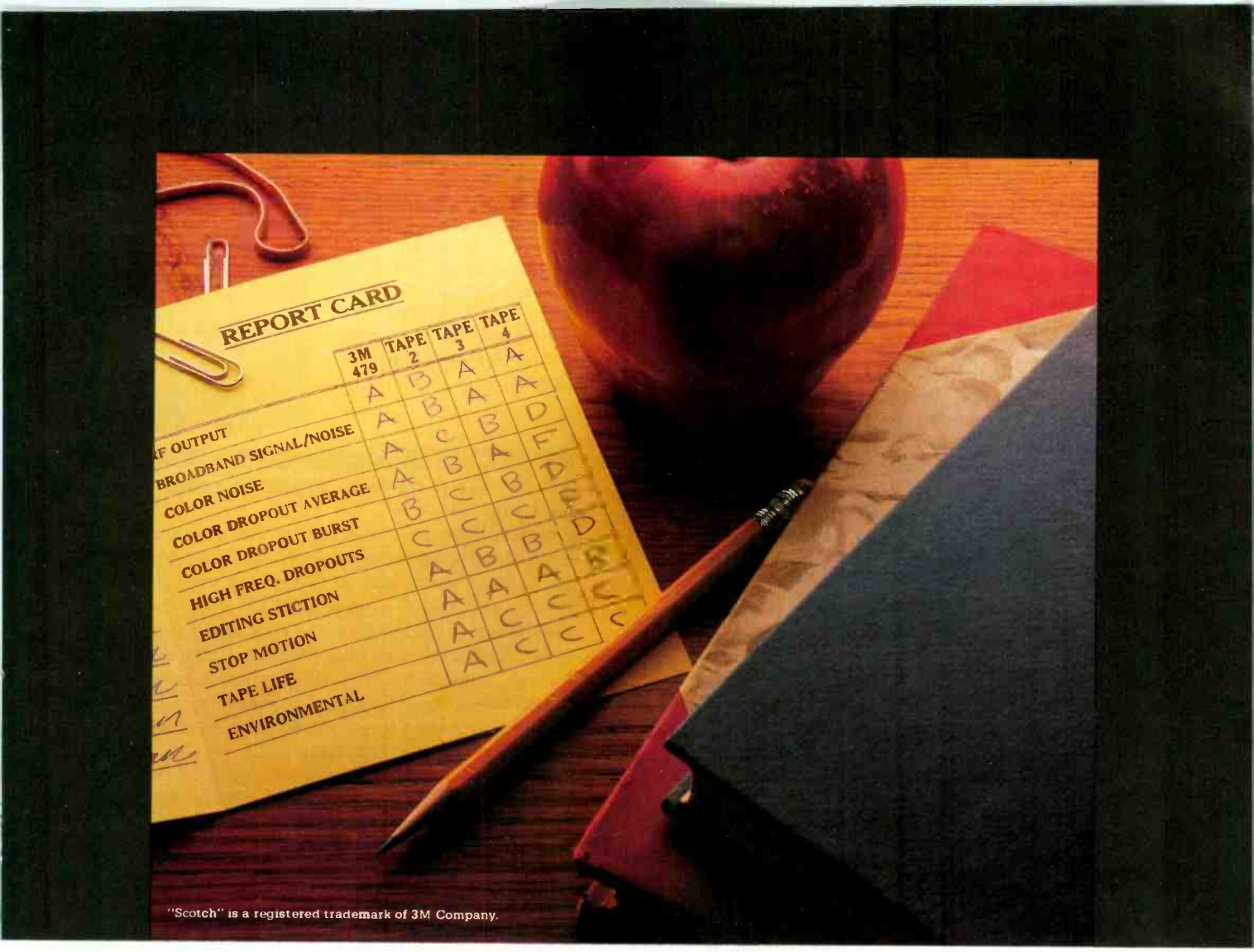
Doelitzsch: Radio must put more and more effort into local selling, because that is where its lifeblood comes from. If more local competition comes in, that means more effective local selling will be needed.

Galer: If radio has its local base thoroughly covered, it can try for regional and national advertising; but the management must be knowledgeable about the needs and thinking of the larger advertisers.

Greenberg: We will aim for about 75 percent of our business locally. That is radio's great strength.

Guild: Some local stations don't qualify for national business because they do not reach the right audiences in sufficient numbers. The managements must acknowledge this and put all their effort into local sales: other effort will be wasted.

Holt: We will be considerably more local than national. A radio management in a small or medium market needs a national rep firm who can put together a block of stations to interest national advertisers: it's the only way to get those ads.



IN A TEST OF ONE-INCH VIDEO TAPES, WE ACED OUT THE COMPETITION.

When we tested the top four brands under strict lab conditions, the overwhelming performance leader was Scotch 479 Master Broadcast Video Tape. In fact, we came out on top in all ten performance categories.

If that isn't reason enough to make us your choice, maybe this is. We're the only one-inch supplier that winds your tape onto a special cushioned flange reel to protect against shipping and handling damage. And we pack and ship our tape in a flame-retardant case to give you even more protection.

We're the people who pioneered the development of video tape 25 years ago. And according to the pros who know video tape best, we're still the best video tape. Give or take an inch.

3M

The Next Ten Years: Radio

Lange: We are 90 percent local, but we have several reps who do bring in some national ads, some with local dealers as tie-ins. Our market includes not only our city, but the area for 80 miles around.

Long: Radio in small and medium markets will continue to get mostly local advertising. But intelligent, active marketing of audiences, based on thorough study, can bring in some regional and national ads.

Seiler: Radio must stress the fact that it can inexpensively deliver desirable audiences that TV can't deliver, or delivers at high cost. Moreover, radio can *repeat* impressions very cheaply, whereas the average TV viewer sees the average spot only once a week. One group that's very hard to reach on TV, but easy on radio, is men 18–24. In sum, radio gets 10 to 15 percent more people than TV and triples the number of impressions, at much lower cost. Our surveys have proved this, and our recommendations to certain advertisers that they use combination radio-TV campaigns have worked well.

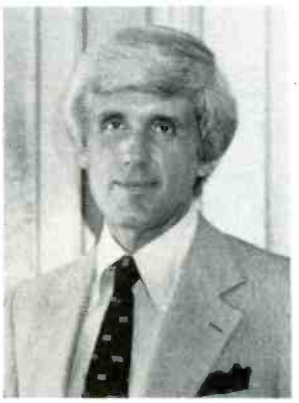
Young: Having a format that arouses strong listener loyalty is a potent approach for both local and national ads.

Programming — demographic changes

Cornels: The programming of the future is another aspect of "localism." It must be directed to a specific audience, if there are, say, three or more stations in a market. The radio management has to study that audience and speak directly to its tastes.

Doelitzsch: All the figures tell us that the adult audience will dominate in the future. Programming must evolve to meet adult tastes.

We should reduce our dependence on quantitative research. People are not predictable; they respond to creative programming. Creativity is good business in radio – William O'Shaughnessy, president, WVOX/WRTN, New Rochelle, N.Y., and member, NAB Radio Board



Guild: A large movement in programming must be made to reach the people 25 to 50 years old. There will be more and more of them, and the figures say they have lots of money and spend a great deal of it on themselves. Programming for this group is very scarce right now.

Long: Each market is a little different, and needs analysis. Overall, straight wall-to-wall pop music is weak; radio can no longer base programming simply on national sales charts. Radio must tune its programming to specific listeners, the listeners it actually has.

O'Shaughnessy: The standard ratings will be less and less important. People are not that predictable; they respond to innovative programming. Creativity is good

THE STATION WITH A STUDER HAS A REPUTATION TO MAINTAIN.

Like Chicago's superstation WFMT, whose demand for uncompromised excellence led them to specify Studer decks for all their broadcast and syndication operations. People who know what quality is worth know they can't afford less than a Studer.

Broadcasters will find the Studer B67 of special interest. Portable enough to take on remotes, it's built to the Studer standard for chassis integrity: plugging in a new headblock requires no mechanical realignment. Three-speed operation, with quartz-crystal servo-locked capstan, and continuously adjusted tape tension servo-control reel motors are standard. So is a digital tape timer that reads positive or negative real time at all speeds and in all operating modes to an accuracy of 0.5%.

Naturally, the B67 uses Cannon-type connectors, and ASA ballistic VU meters (augmented by IEC peak-reading LED's). And it gives you built-in editing facilities with a monitor speaker. Both mechanical and electrical construction is modular throughout, for rapid service and adjustment. Full remote control is available. And when you say that the record and playback heads are made by Studer, that's all that needs to be said. The B67 is available in 19" rack-mount, console and portable formats.

If your station is good enough to warrant a B67, call us.

Studer Revox America, Inc.
1819 Broadway, Nashville, TN. 37203 (615) 329-9576
Offices: Los Angeles (213) 780-4234
New York (212) 255-4462
In Canada: Studer Revox Canada, Ltd.

STUDER REVOX

Circle 145 on Reader Service Card

Convergence editing power for $3990.

Prices slightly higher outside continental U.S.

Convergence Corporation, the proven leader in video tape editing technology, brings you the speed, simplicity and convenience of joystick editing at a very affordable price.

Whether you're in industrial, educational, broadcast or post-production television, you can benefit from the versatility and low cost of this powerful new system. Advanced features include...

- ☐ **Fully variable joystick control of tape speeds**
- ☐ **Preview, perform and replay of edits**
- ☐ **Interchangeable VTR formats**
- ☐ **Independent control of audio and video channels**
- ☐ **Programmable high-speed search**
- ☐ **Mark-in/out on the fly**
- ☐ **CRT display of edit data**
- ☐ **Programmable pre- and post-rolls**
- ☐ **Full VTR remote control**
- ☐ **Auto tag**
- ☐ **Control track or optional SMPTE time code**

Here's an editor you can start with and stay with. And it protects your hardware investment by easy installation with your present VTR's. New direct plug-in interface connects to industrial 1/2 inch cassette and 3/4 inch U-matic format recorders with absolutely no modifications.

Discover the new low price of high-quality editing. Circle the reader service number or contact your nearby Convergence Corporation dealer for a hands-on demonstration. We'll bring the ECS-90, plug it in to your VTR's, and show you power you can't match for the price.

Convergence Corporation, 1641 McCaw, Irvine, CA 92714
(714) 549-3146

Convergence... simply the best.

CONVERGENCE CORPORATION

For information circle 146 on Reader Service Card
For demonstration circle 178 on Reader Service Card

The Next Ten Years: Radio

business in radio; it pays off.

Rees: Older people have been neglected in programming for radio. Their time is going to come in the 80s.

The Washington outlook

Krasnow: The government is recognizing that much of the paperwork imposed on radio is outdated. There are now four votes on the Commission for reducing paperwork. Ascertainment is going to be reduced, and logging rules simplified. Regulation, though, will stay because the necessary amendment of the Communications Act now looks impossible. For the next several years, there will be stricter enforcement of EEO. And several on the Commission, including Chairman Ferris, want the number of stations on the air substantially increased. The NAB has requested the FCC to make a careful study of the economic effects of such growth; there is reason to believe that *more* in this case is less good than *less*. It also seems clear that the FCC wants AM stereo soon, and probably FM quad, too.

Competition creates more advertising dollars, and if a station is doing a good job, it will get its share . . . . the station must work with the community, serve it in every way, know everything and everybody – Paul Lange, executive vice president and general manager, KDLR/KDVL, Devil's Lake, N. Dak., and Board of Directors, NRBA

The big picture — radio in the 80s.

Aurichio: It will certainly be the best in the history of radio.

Buron: We are cautiously optimistic, with the emphasis on "optimistic." Radio can play a big role in getting the public behind new approaches to energy, other vital changes of the 80s. A lot depends on the FCC: radio is still in its infancy. One thing is sure: radio managers must be better businessmen in the coming decade.

Galer: The new decade will be very exciting in radio; our station is in a good position to move with the times.

Greenberg: It will be an excellent decade for radio.

Guild: It will be the biggest growth decade in the history of radio.

Holt: I am totally enthusiastic about the prospects for the 80s. Radio will be better: energy shortages will tend to keep people home. Radio will provide widened information services, since radio takes only a small fraction of the energy of travel or of printing. Thus trends of the 80s will reinforce the position of radio, enable the industry to provide more services to the public. Technically, the new decade will be outstanding, even astounding.

Lange: Radio broadcasting is an exciting enterprise, and it will be more so in the coming decade. **BM/E**

OPTIMIZING IMPEDANCE AND PATTERN BANDWIDTHS OF A PHASED ARRAY

By Grant Bingeman

Up to now it has not often been practical to correct common-point sideband VSWRs much greater than 2.0. With the new technique described here, however, it is possible to reduce a 4.8 sideband VSWR to 1.1. This exciting new procedure promises to have far-reaching impact on antenna designs for AM stereo, where impedance and pattern bandwidths will play a significant role.

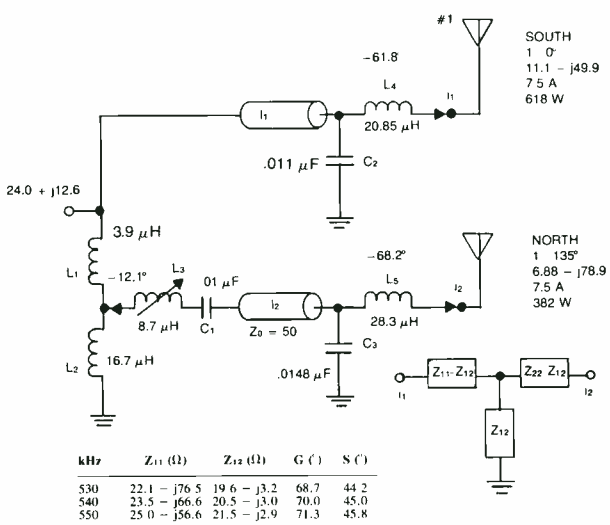
COMMON-POINT SIDEBAND VSWR and impedance are a function of the summation of the individual line sideband characteristics at the power divider of a "phaser." In this simply executed new procedure, the line lengths can be changed to produce an optimum summation (yielding the lowest VSWR) without affecting the licensed pattern. These changes in the effective line length can be carried out via the usual networks at either end of the lines, or by tailoring the actual physical lengths of the lines. The same technique can also be used to optimize pattern bandwidths.

What makes this technique so exciting is that, unlike other procedures, no additional components are required, there are no additional power losses, and the technique works with even very high initial sideband VSWRs!

The technique was discovered by using computer simulations. A two-tower phased array was modelled on a digital computer to determine what the effects of incremental changes in transmission line lengths would be on the impedance and pattern bandwidths. The array consisted of two 70 degree towers spaced 45 degrees apart. The carrier frequency was 540 kHz and the modulating frequency was 10 kHz. These values were chosen with the knowledge that they were extremes, and would tend to enhance the magnitude of the bandwidth effects. The antenna coupling units were chosen with the knowledge that they would produce moderate bandwidth degradation, thereby ensuring a good test of the optimization technique. (If leading L networks or multiple sections had been used instead, the initial degradation would have been reduced.) All components were assumed to be lossless for the sake of simplicity (Figure 1). When the technique is employed on an actual phased array, it is recommended that at least the transmission line and tower losses be modelled.

Initially, Line 2 was selected to be 10 degrees long, constraining Line 1 to be 163.5 degrees, in order to obtain the correct phase relationship between tower loop currents (135 degrees). The common-point sideband impedances were not very good; ±10 kHz VSWR was 1.7 and 4.8 (Figure 2). A lot of distortion would be associated with this load. However, when 15 degrees were added to the length of each line, a vastly improved bandwidth resulted[1] (VSWR less than 1.1 relative to 50 ohms). Of course, a

Grant Bingeman is with the Broadcast Products Dept., Collins Transmission Systems Div., of Rockwell International.



kHz	Z_{11} (Ω)	Z_{12} (Ω)	G (')	S (')
530	22.1 − j76.5	19.6 − j3.2	68.7	44.2
540	23.5 − j66.6	20.5 − j3.0	70.0	45.0
550	25.0 − j56.6	21.5 − j2.9	71.3	45.8

Figure 1.

[1]Note that a small amount of mismatch must be tolerated at carrier in order to achieve a minimum overall VSWR across the channel.

AM STEREO – NOW!

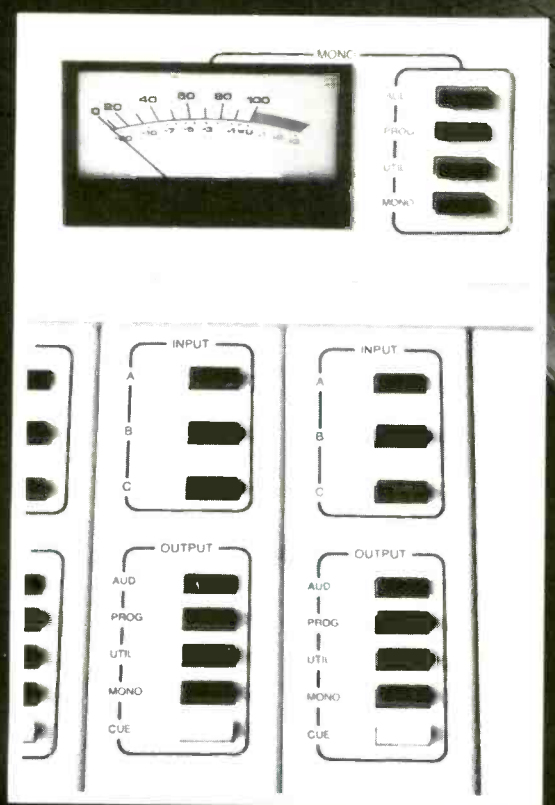
WHY WAIT? Our elegant stereo mixers have a metered mono output, so you can convert to stereo now, but continue to broadcast in monaural until FCC System Approval. In the meantime you'll be listening to shimmering stereo sound — imagine the impact on clients and staff!

Three expandable models are available, with as few as 6 mixers and as many as 16. Each version has a separate mono mixing buss *plus* stereo to mono summing. Base prices are $6250 - 8650 and additional mixers are $385 each. Delivery? Stock to 3 weeks.

WHY WAIT? Start using stereo now!

BROADCAST AUDIO ASSOCIATES

11355 PYRITES WAY
RANCHO CORDOVA, CA 95670
(916) 635-1048



Mono mixing buss *plus* stereo summing.

Circle 147 on Reader Service Card

similar result could have been achieved by increasing the phase shift across each of the antenna coupling units by 15 degrees. Note that the power divider impedances have been transformed to positions on the Smith chart most compatible with a voltage source. This was accomplished with simple tee networks (not shown in Figure 1), and has

continued on page 91

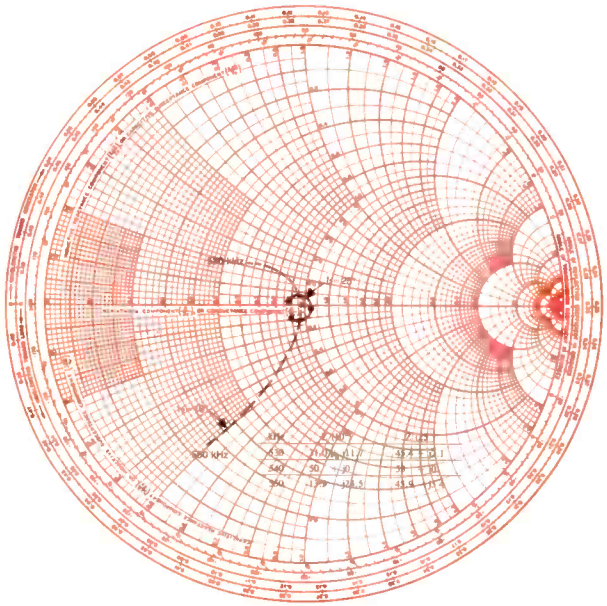


Figure 2. Common-point

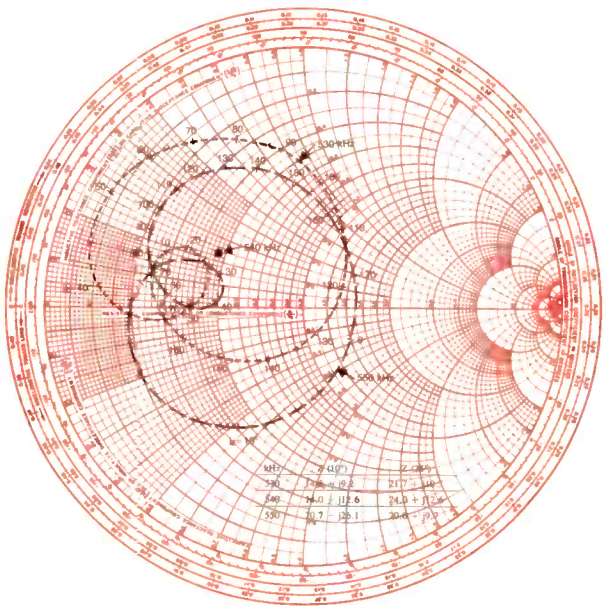


Figure 3. Sidebands at top of power divider

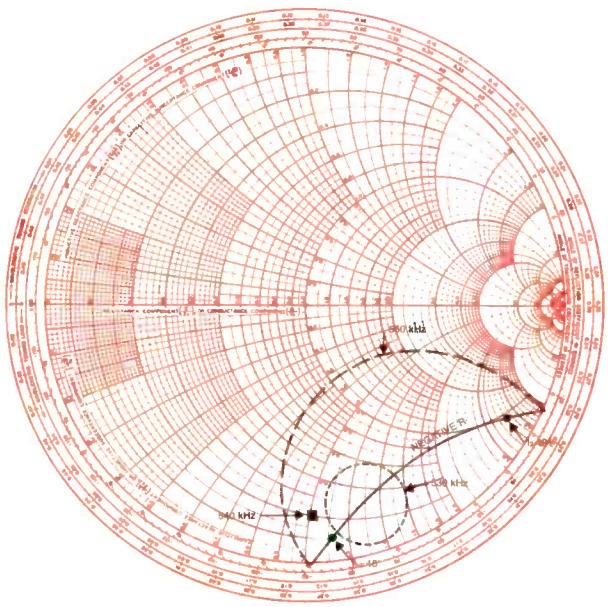


Figure 4. Operating base of Tower 1 as a function of line length

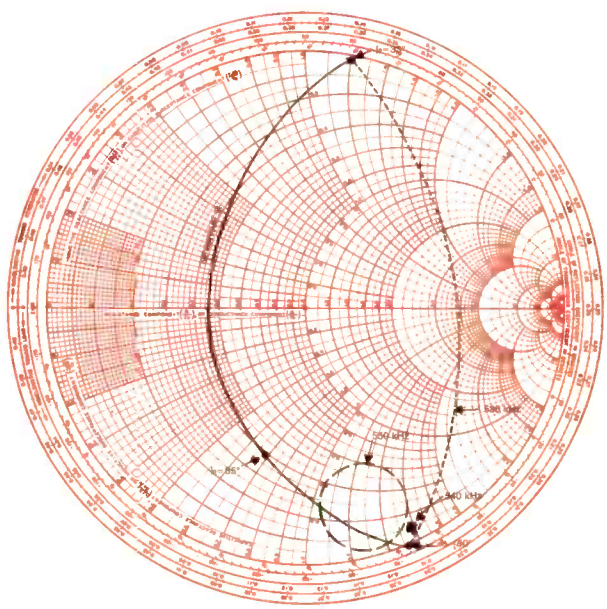


Figure 5. Operating base of Tower 2 as a function of line length

OUR SATs BRING YOU A NEW SPECTRUM IN PROGRAMMING

The California Microwave Small Aperture Terminal (SAT) can make you a superstation in your market. From world news to stereo disco and the MET, the broadcast networks using satellite technology pioneered by California Microwave will deliver a new spectrum of program diversity and quality right to your local studio. And that means delivering audience, economically, anywhere in the country. Our modular SAT assures you unmatched flexibility at a surprisingly low cost with features such as these:

- Greater than 70 dB audio dynamic range
- Impeccable stereo delivery nationwide
- Cue, automation, hard copy, and wire service data channels
- Multiple channels per carrier (MCPC) for regional sports

The SAT that has set the standard for the broadcast networks and wire services is available now.

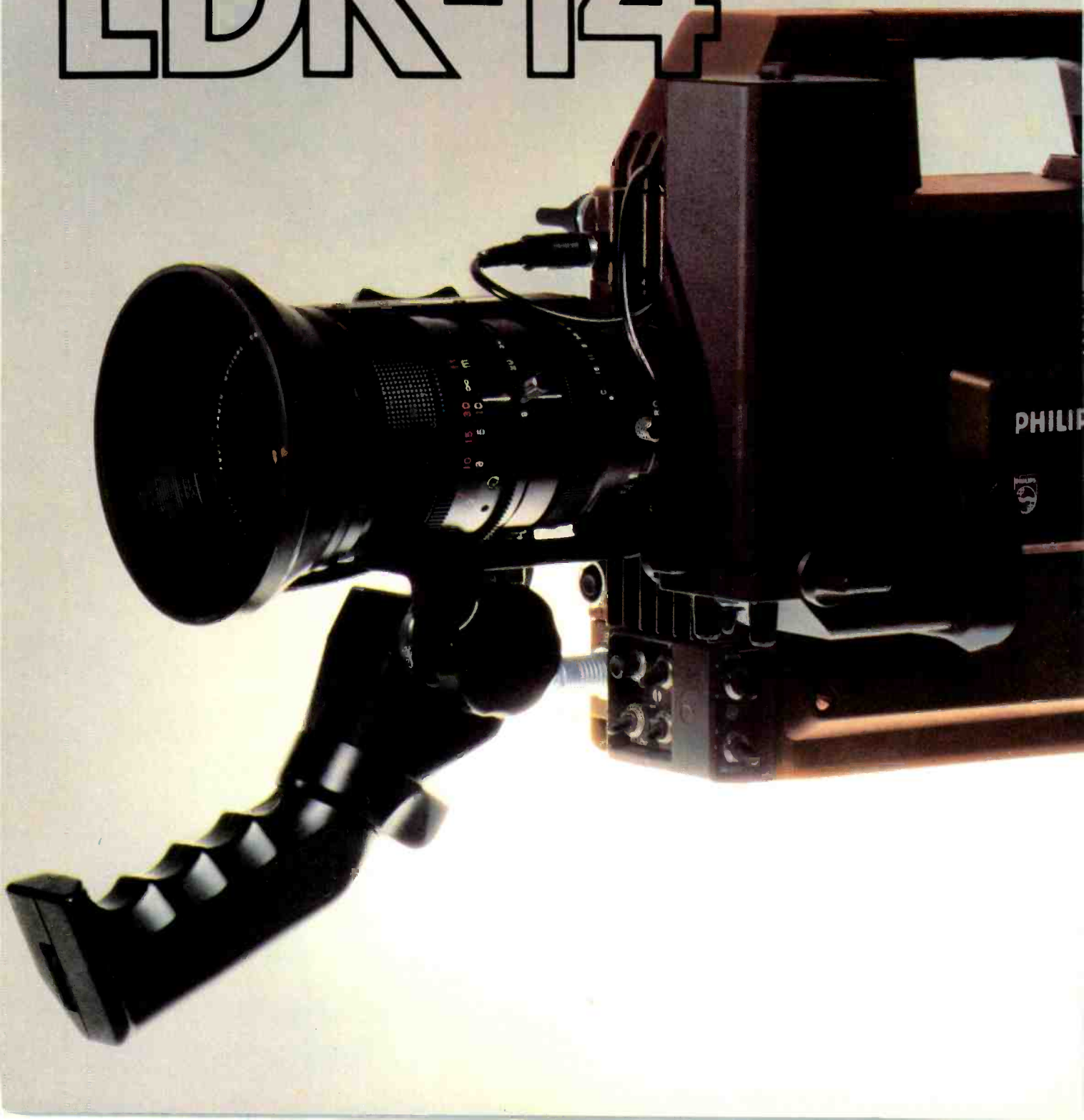
CALIFORNIA MICROWAVE

CALIFORNIA MICROWAVE, INC.
990 Almanor Ave. Sunnyvale, Calif. 94086
(408) 732-4000 TWX 910 339-9231
Call Jim Smith Ext. 163

Circle 148 on Reader Service Card

New Standard for Portables...

LDK-14



In the great tradition of Philips portables:

1968...PCP-70 The industry's first portable. The one that started it all.

1969...PCP-90 Step two. World famous Minicam.

1975...LDK-15 First generation of triax field production cameras.

1976...LDK-11 A smaller, lighter, lower cost field and studio camera.

1977...Video 80 An innovation in lightweight camera and production system...**LDK-15L** Latest version of the LDK-15.

Evolving from this long history of portable equipment leadership, Philips' engineers have created a new concept in portable and field equipment. *The LDK-14 broadcast systems camera.*

A futurized camera offering three *advanced* configurations for field and studio use...all achieved *without equipment repackaging:*

1. *ENG*—studio quality portable; self-contained, one piece; film camera handling; weighing less than 15.5 lbs. (7 Kg) lens included; less than 12 lbs. (5.5 Kg) without lens.
2. *EFP*—studio quality portable, with remote control: timing and phase adjustable gen lock; instant convertibility to studio camera use by simple change of viewfinders.
3. *Studio*—compact, maneuverable; full broadcast quality; 5" viewfinder.

The LDK-14 combines innovative design and unique capabilities in a state-of-the-art 2/3 inch camera that is *much lighter* and *uses significantly less power* than the competitive ENG-only camera. Plus the LDK-14 gives you additional advantages in size, picture quality, stability, maintainability and cost.

Among its many other unique features for portable and studio use are:

- Only 27 watts power consumption (almost 1/3 less than the ENG-only competitive portable) gives longer continuous operation with choice of battery belt or small battery pack affixed to camera. A standby switch further conserves battery power between takes.

- Viewfinder displays include: contour enhanced camera picture or external video signal; status monitors for video level, color balance, bars on, battery discharge, VTR functioning, intercom call and camera tally.
- Automatics include: color balance; white and black level; centering; noise reduction when operating with extra gain; auto iris with set and hold facility.
- Externally switchable black stretch and contrast expansion.
- Dynamic Beam Control (DBC), regulates beam current to suppress comet tailing and blooming.
- Circuitry designed to maximize advanced capabilities of the latest rear-loading Plumbicons.
- Optional remote control facilities.
- Easy access for set-up and maintenance. Rear casing flips up for access to five main plug-in circuit boards.
- The rugged magnesium housing and titanium quick-release lens mounting holds all optical and electrical components in absolute registration. (Lens mount is strong enough for the heaviest extended range zoom lenses.)
- Rain, splash and RFI proofed.
- Other features include electronic raster rotation for better registration; linear matrix for optimal and Philips compatible colorimetry; and 360-degree hue-selectable chroma key.
- Other competitive cameras may have some of these LDK-14 features—no one has them all.

Camera-Recorder Systems

With this unmatched combination of performance and portability, the LDK-14 is *also the ideal camera for field recording of ENG and EFP.*

And just as Philips has always offered the widest selection of portable and studio cameras to meet your specific needs, the same policy now applies to your choice of 1" VTR's and TBC's. Offering 'C' format and 'B' format VTR's in both portable and studio configuration, Philips can provide the greatest objectivity and cost-effectiveness in packaging systems to match your requirements.

Philips, the company that started it all, now introduces the latest portable breakthrough, the LDK-14 broadcast systems camera. It will be the industry standard for years to come. And for a camera-recorder package to match your requirements, your choice of 1" VTR formats. Only from Philips.

For all the facts on this innovative new camera or camera-recorder system (please specify) write: Philips Broadcast Equipment Corp., 91 McKee Drive, Mahwah, N.J. 07430 (Canada: Philips Broadcast Equipment, 601 Milner Ave., Scarborough, Ontario M1B 1M8)

Innovative Leader in World Television

PHILIPS

TM-N.V. Philips

"FAST, FLEXIBLE, ACCURATE..." MACH ONE AT ASTIN/MOORE.

When Astin/Moore designed its modern post-production facility, they wanted a *software-oriented* computer-assisted video editing system to interface with their Bosch "B" format one-inch VTRs.

Director of engineering Dave Orr chose the Fernseh, Inc./ Mach One™ videotape editing system.

"We needed a system that was *fast*, *flexible* and *accurate*, and on which program changes could be made easily and quickly. Mach One fills the bill."

A/M's Emmy-award-winning chief editor Marco Zappia heartily agrees.

"The Mach One's dedicated keyboard with single-key functions makes editing fast and simple. I can edit as fast as my fingers can move, and this has helped my rapport with producers and directors. If someone says, 'Okay, I'll take that,' I still have time to say, 'Well, look at this, too!'

"Everything about the Mach One system is geared to speed, and that can be translated into creativity, making for an extremely cost-effective operation.

"The system takes best advantage of the rapid roll time of the VTRs, and it parks very accurately . . . right on frame."

If your editing system is bottlenecking your video post-production output, switch to Mach One. You'll discover more control-room flexibility and freedom than you've ever known.

For descriptive literature, please write or call Fernseh, Inc., P.O. Box 15068, Salt Lake City, Utah 84115, (801) 973-4619 or 972-8000; Telex: TM388352 SLC.

FERNSEH INC.
the Video Corporation of
Bell & Howell and Robert Bosch

Circle 150 on Reader Service Card

Optimizing Impedance

been the subject of other reports.

The sideband impedances seen looking in at the top of the power divider vary widely as a function of line length (Figure 3), as do the tower base sideband impedances (Figures 4 and 5). Note that while one tower is relatively well behaved, the other tower impedance travels over a long negative-resistance path. However, this negative

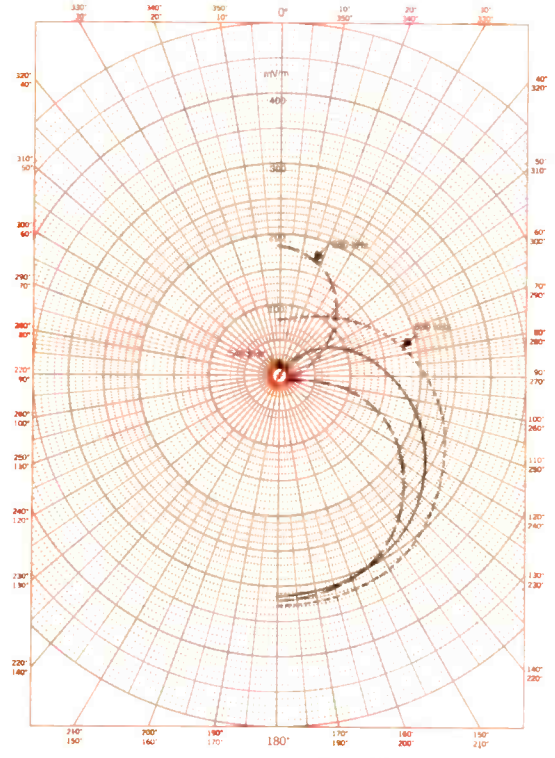


Figure 6. Field strength at one mile ($I_1=10°$)

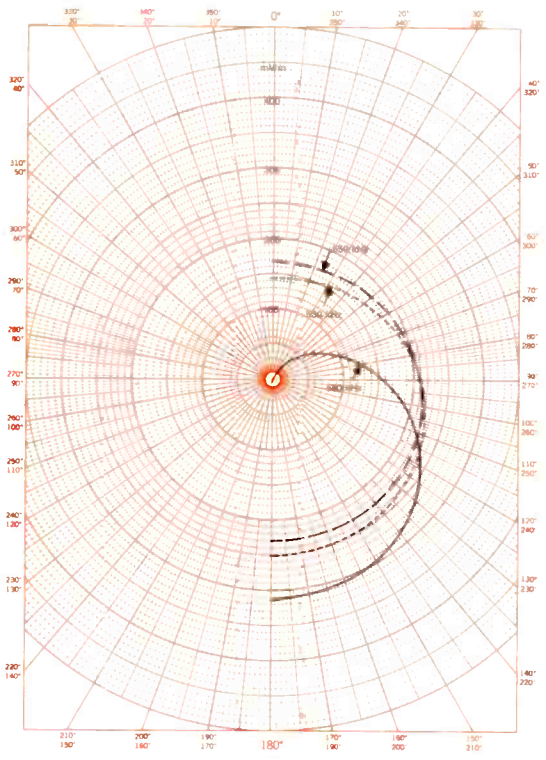


Figure 7. Field strength at one mile ($I_1=25°$)

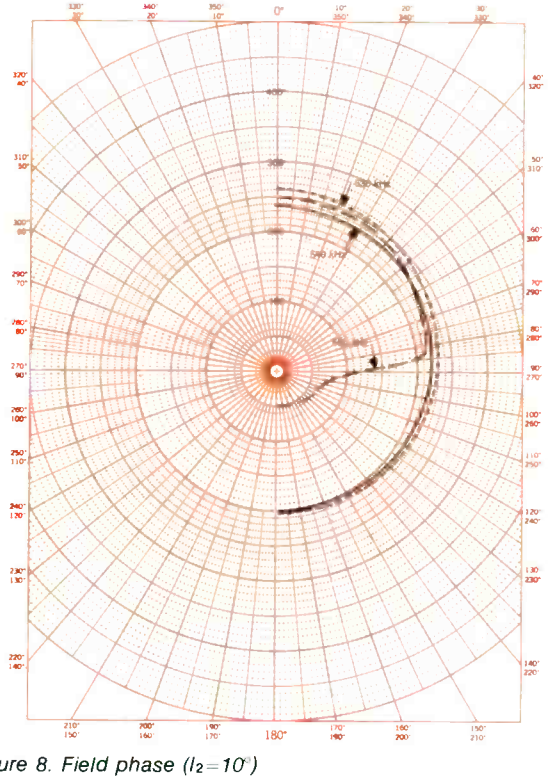


Figure 8. Field phase ($I_2=10°$)

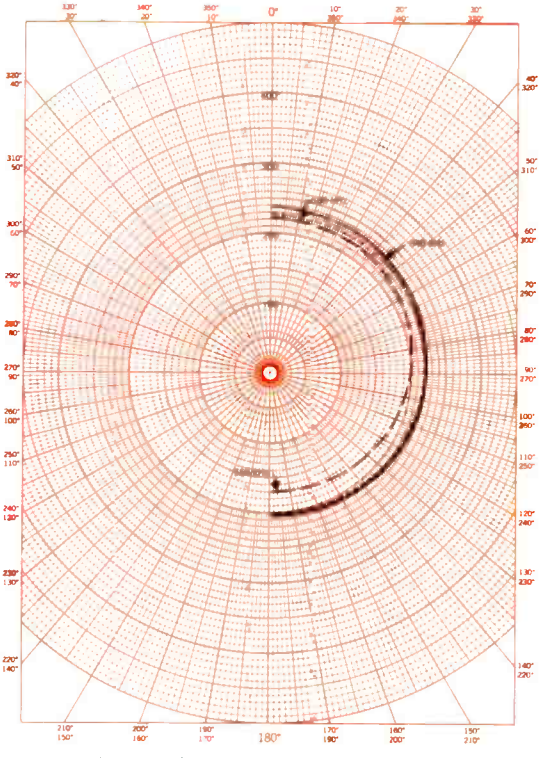


Figure 9. Field phase ($I_2=25°$)

Optimizing Impedance

path exists only for a few values of Line 2. By the way, do not be surprised if you see some counter-clockwise impedance rotation on the Smith chart with increasing radio frequency — this can occur internal to the phaser because of the coupling between towers.

The other side of the coin is pattern bandwidth. Assuming a voltage source at the common point of Figure 2 which generates 1 kW at carrier, significantly different patterns result at the sidebands (Figures 6 and 7). Ignoring the question of null protection, and concentrating on signal coverage in the major lobe, it appears that strong sideband signals are present when Line 2 is 10 degrees long, but that single sideband is transmitted on azimuths 75 and 285. When Line 2 is 25 degrees long, a more uniform sideband strength is achieved, albeit with some deemphasis of frequency response between azimuths 115 and 245, and preemphasis elsewhere. Note that these are plots of the magnitude only; distortion is also dependent on the relative phases of the sidebands in the far field (Figures 8 and 9). Ideally, the lower and upper sideband phases should be displaced equally on either side of the carrier phase. Obviously, conditions are poor when Line 2 is 10 degrees long (Figure 8), but considerably improved when Line 2 is 25 degrees long (Figure 9). Some further improvement could probably be obtained with continued iteration. As can be expected, the field ratios vary wildly about the nominal values (Figures 10 and 11), as a function of transmission line length.

Using the information contained in Figures 6, 7, 8, and

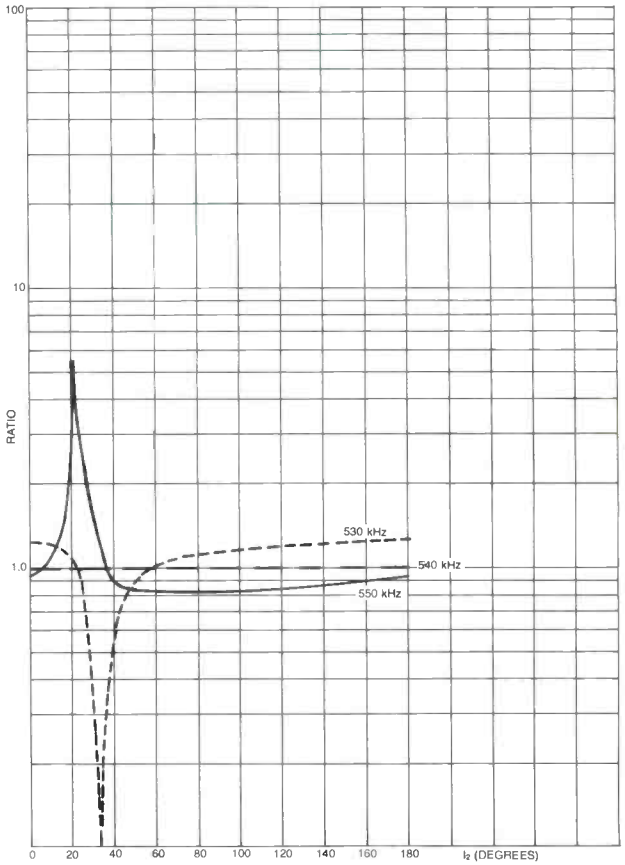
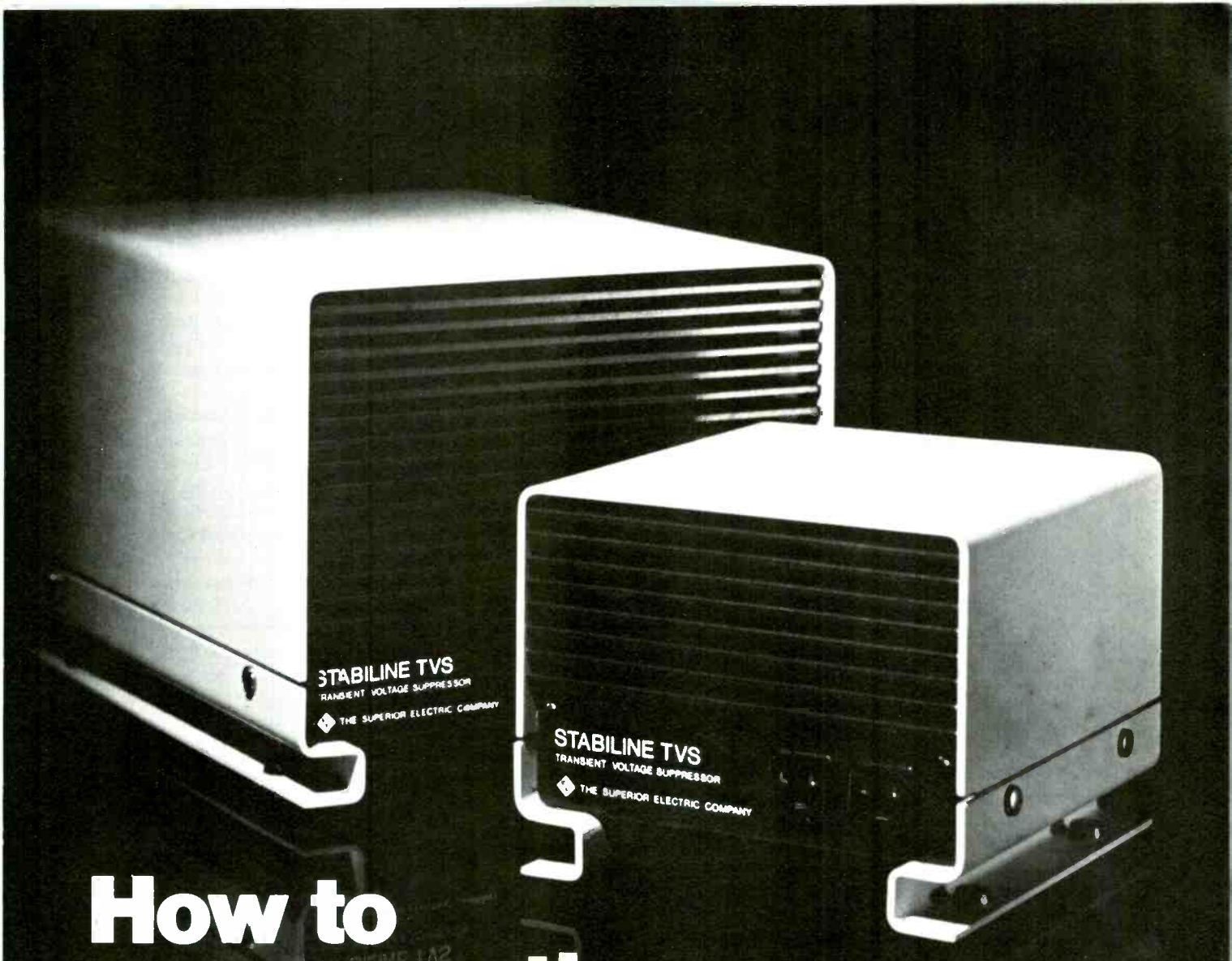


Figure 10. Normalized field ratio I_2/I_1



How to suppress the surge.

When voltage transients threaten sensitive electronic equipment.

Voltage transients, or spikes, are both unpredictable and very hazardous to sensitive electronic equipment. What's the solution? A new STABILINE® TVS Transient Voltage Suppressor.

A STABILINE TVS effectively suppresses voltage spikes and prevents costly damage to medical equipment, computers, word processors, electronic instrumentation and other power sensitive devices.

Six standard types are available with current capabilities up to 60 amperes. Response time is virtually instantaneous and suppression of transients to 3000 volts occurs in the same manner regardless of where on the sine wave or in which direction they are applied. Absolute magnitude is not required before attenuation occurs.

For product literature, or technical assistance, contact your nearest Superior Electric representative. Or, call us direct. The Superior Electric Company, Bristol, CT 06010. (203) 582-9561.

Superior Electric

We want you to know.

Circle 152 on Reader Service Card

Optimizing Impedance

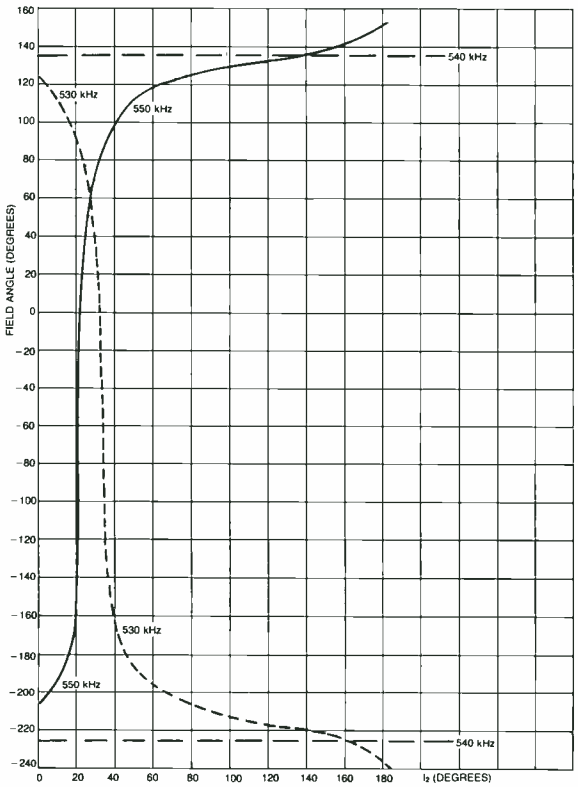


Figure 11. Normalized field ratio, angle

9, Fourier analysis can provide a picture of the waveform, distortion, and depth of modulation at each far-field point of interest. This has been the subject of previous papers. However, it is sufficient to know that equal sideband magnitudes and equal and opposite sideband phases (relative to carrier) are the optimization goals.

In short, the operating base sideband impedances of a phased array are a function of the phase shifts between the towers and the top of the power divider. By carefully selecting these phase shifts, impedance and pattern bandwidth can be optimized independently of the licensed carrier pattern. The popular technique of phase rotation, as applied externally to the phaser (between the transmitter and the power divider), does not affect the operating base impedances and can not reduce sideband VSWR at the power divider. The contrasting technique of applying phase rotation internal to the phaser, however, can yield significant reductions in VSWR. Another advantage to this technique is the fact that no high-Q networks are required; thus power losses can be held to a reasonable level. Since this technique works with negative towers and when no particular attempt has been made to minimize the "Q" of the antenna couplers, and since this technique has been shown to correct very high sideband VSWRs, it should prove very valuable in the design of new phased arrays and in the replacement or modification of existing arrays.

As a final note, it must be stressed that none of this would have come to light if constant field ratios had been assumed or if other shortcuts had been taken. It is important to use a complete model of the antenna system in any bandwidth or sensitivity analysis. **BM/E**

FULL RANGE PRODUCTION WITH THE AMPEX VPR-2:

Instead of a Different Machine for Every Trick, a Single VTR that Does Everything.

Compact VPR-2 (tabletop version) on TBC-2. Height: 25.5"; Width: 19.2"; Depth: 16"; Weight: 135 lbs.; Power: 5.5 A @ 115 VAC. *TBC-2*: Height: 11"; Width: 19"; Depth: 18"; Weight: 80 lbs.; Power:2 A @115 VAC.

You can spend a lot of time and money recording on a videotape recorder, editing on an editor, and producing slow motion on an Instant Replay system. Or you can do it *all* on the Ampex VPR-2, far more easily and in far less time.

Straight Recording in Vibrant High Band Color.

There isn't a better recording combination in the world than the Ampex VPR-2 one-inch helical and Ampex professional recording tape. You get playback performance that stands up to a trained eye as well as the most exacting technical analysis. And you get unmatched ease of operation and serviceability because of the VPR-2's modularity. You'll also appreciate the way the VPR-2's compact packaging system provides a full line of configurations from rack mount to console with full monitor bridge to suit your particular needs.

Built-in Editing for Unlimited Creativity.

Built-in editing with automatic search-to-cue simplifies and speeds ambitious production work. Tape time accuracy is maintained for frame-accurate entrance and exit edit points, even without the optional time code system. You can visually select edit points "on the fly" because you always see the picture off-tape from stop through fast forward and rewind. The remote control capability of the VPR-2 provides easy interface to external editing controllers. The creative possibilities are unlimited.

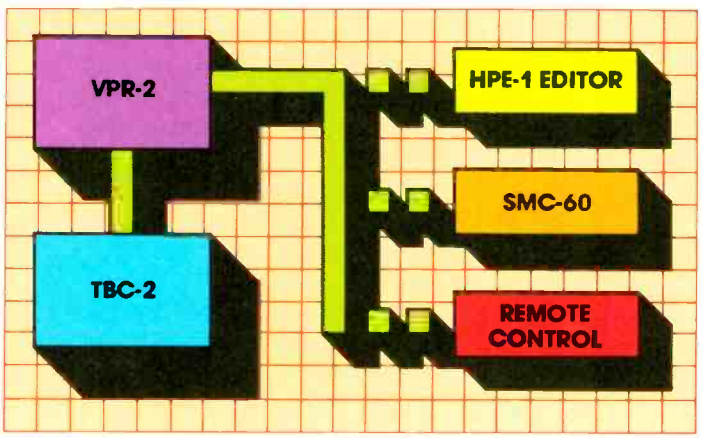
Sports Coverage From a Crawl to a Dash.

With the optional AST™ automatic tracking system, you're ready to produce all the effects of Instant Replay. There's even a slo-mo controller (SMC-60) accessory that gives you joystick command of the VPR-2 for a complete sports coverage system in one convenient package.

Automatic cueing keyed to the tape timer lets you set up for frame-accurate, "look again" in slow motion. And you can punch up slow motion at one-half or one-fifth real time for precise production matching. The Ampex TBC-2 digital time base corrector puts it all on the air, and even produces a picture in high speed shuttle for rapid cueing.

If the Specs Don't Convince You, A Demo Will.

The cost-effective VPR-2 is turning the impossible into the commonplace for users around the world. Because one machine does the work of three, the VPR-2 increases productivity and reduces operating costs. To find out why the VPR-2 is the world's most popular professional videotape recorder, contact your Ampex representative today.

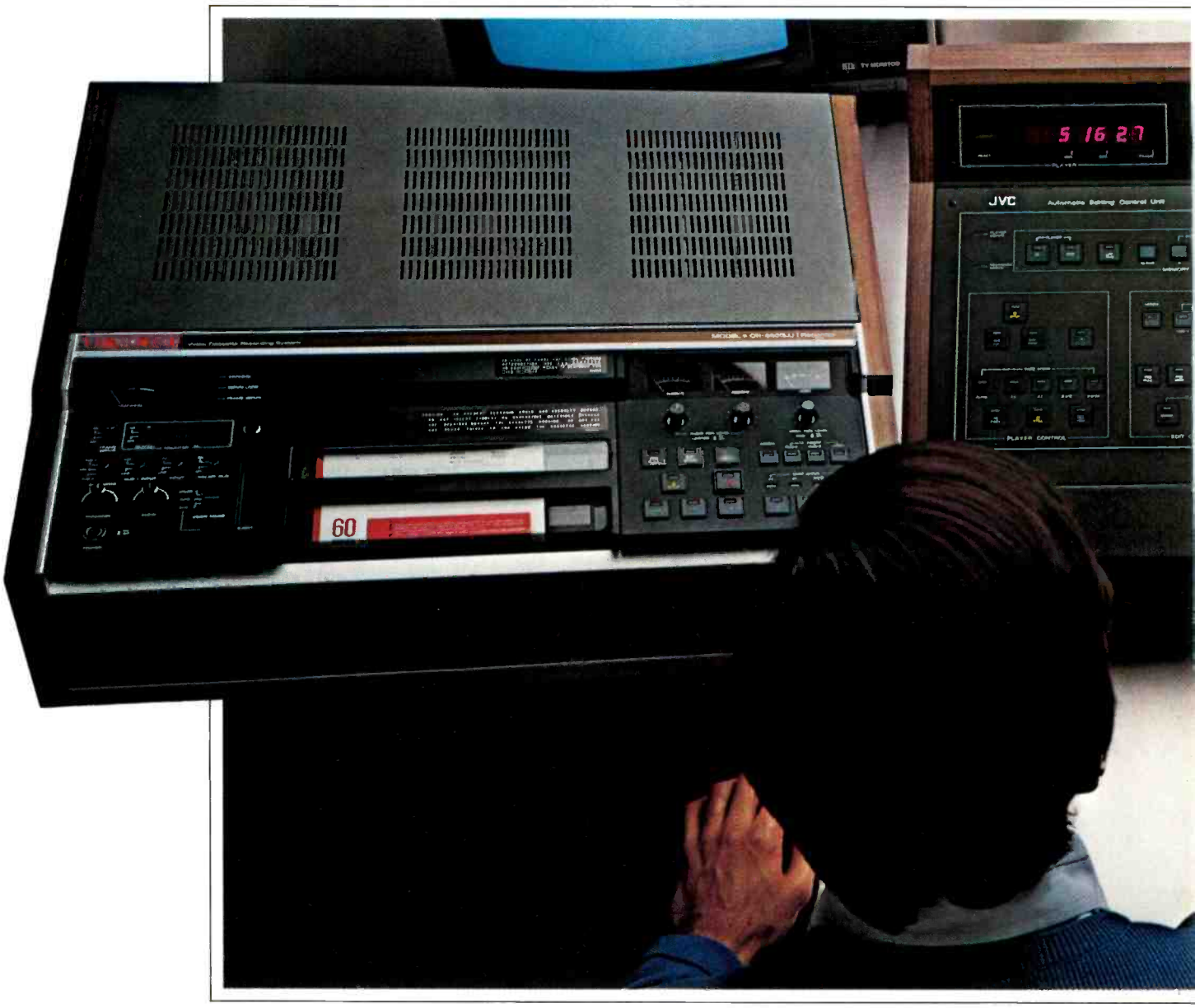


AMPEX MAKES IT EXCITING

Ampex Corporation, Audio-Video Systems Division, 401 Broadway, Redwood City, CA 94063 (415) 367-2011

Circle 154 on Reader Service Card

JVC's $17,000 editing system.



If you think a third audio channel and 10 extra lines of resolution are worth an extra $6000 in a ¾" video editing system, read no further.

But if you'd like to save $6000 compared to the nearest performing competition...yet perform advanced editing functions at tape speeds up to 10 times normal (a JVC exclusive)...and produce broadcast quality tapes even if you're not an expert...then the CR-8500LU system including RM-85U Editing Control Unit is for you. It has many features you won't find elsewhere except on that higher priced system. Plus some you won't find even there.

Fast, no-glitch editing

With pushbutton ease, you get distortion-free frame-to-frame editing, thanks to JVC's built-in rotary erase head, blanking switcher and advanced servo mechanism. First, you have a choice of 11 forward and rewind search speeds, from still-frame to an unequaled 10 times normal. After picking edit points, you also have a wide choice of automatic preroll times. (The more expensive system limits you to 2 or 5 seconds.) Then you can preview your edits and adjust edit points. Preroll again, and edits are made automatically, electronically, at exactly the selected points ±2 frames—an accuracy equal to the higher priced system. There's also a horizontal sync phase compensator to minimize timing error. A patented dubbing switch for maintaining stable color. And much more.

The RM-85U Editing Control Unit has independent LED displays for player and recorder. Each gives elapsed tape time in

For those who need funds, not frills.

minutes, seconds and frames. Or, the exact length of one edit —a JVC exclusive. But wait! Maybe you don't even need a full system.

Stand-alone versatility

Let's say you just want to assemble or insert edit live material onto a tape. All you need is one CR-8500LU Recorder/Editor...which still gives you the benefit of automatic preroll. By contrast, the higher priced brand makes you buy a control unit as well.

Let a JVC dealer show you how our editing system gives you much more for your money. For the name of your nearest dealer, call one of these numbers collect: East, 212-476-8300; Midwest, 312-364-9300; South, 713-741-3741; West, 213-537-6020. US JVC Corp., 58-75 Queens Midtown Expressway, Maspeth, NY 11378.

JVC®

PROFESSIONAL VIDEO DIVISION
US JVC CORP.

BM/E 2-80

Mail to US JVC Corp.,
58-75 Queens Midtown Expressway,
Maspeth, NY 11378.

I'd like to know more about the CR-8500LU editing system including RM-85U Editing Control Unit.

Name _____

Title _____

Company _____

Address _____

City, State, ZIP _____

Phone _____

Type of operation _____

_____

Circle 155 on Reader Service Card

GEORGE SCHLATTER'S REAL PEOPLE. TOSHIBA'S REAL CAMERA.

NBC Wednesday Night's "Real People" Production Crew Takes Toshiba's PK-39 a Step Beyond Film

George Schlatter's "Real People" production crew has been using Toshiba's new PK-39 Portable Camera to get to where they've never been before with tape. These comments from "Real People" Production Chief Hank Barr tell the whole story:

"The PK-39 is so sensitive in most cases we don't even need lights. In the long run this saves literally days of set up time compared to film as well as other hand-held cameras. Once we've rehearsed the subject there's no need to turn on the lights and jolt him into instant uneasiness. Also the PK-39's contrast ratio is superb. The editors go nuts over the pictures. It is pure mobility. Recently we did six shoots in Phoenix in two days . . . headed for the airport . . . stowed the two compact pieces under two seats . . . and arrived in San Francisco ready to shoot. In terms of versatility, size, picture quality, and sensitivity, the PK-39 goes beyond what film will do."

Toshiba International Corporation
Broadcast Electronic Systems Division
292 Gibraltar Drive
Sunnyvale, California 94086
Telephone: (408) 734-9172

TOSHIBA
In Touch with Tomorrow

Circle 156 on Reader Service Card

Broadcasters Gear Up For Production

The 10th Annual Panels of 100 Survey of Broadcast Industry Needs reveals radio and television's "most wanted" products for 1980.

AS THOUSANDS of radio and television broadcasters stream onto the convention floor for the 58th Annual Convention of the National Association of Broadcasters, they'll keep their eyes peeled for new production equipment. While television broadcasters will look for ENG cameras and one-inch VTRs in great numbers, radio broadcasters will devote much of their time to their traditional pursuits — studio tape recorders, consoles, and mixers.

While the above products have remained the top choices for the past two years in *BM/E's* "Panels of 100 Survey," some new boys have joined the leaders. In television, videotape editors and microwave for ENG have joined the top five most wanted products and in radio, remote pickup and STL equipment moved up from seventh place to third.

BM/E surveyed 1610 broadcasters from all over the country, in radio and television, in large markets and small. Engineers and top management personnel were asked what equipment they would have the greatest interest in this year as they reviewed the wares in the Las Vegas Convention Center (April 13 through 16). They were also asked which of several technological developments they expected to have the greatest impact on their business over the next two-year period. What emerged from their responses to these questions and others was a pattern of confidence in the continued growth of broadcasting and a solid, practical strategy. Radio and television broadcasters seem to be betting on satellite communications, production capacity, and computerization to carry them into the new decade. When asked which specific areas of equipment they would be looking at in Las Vegas, production got the largest vote, with 33 percent of radio broadcasters and 50 percent of television broadcasters listing it as their number one area of interest. In second place for radio was transmitting equipment with 28 percent, while television broadcasters spread out their choices among control equipment (19 percent), transmitting (17 percent), and monitoring & testing (15 percent). Radio respondents listed control equipment 21 percent of the time and monitoring & test equipment 18 percent.

Asked which technologies they would expect to have the greatest impact on their operations over the next two years, radio broadcasters gave the edge to AM stereo (24 percent). But radio broadcasters expect major advances in other areas as well. Digital technology, earth stations, and further computerization each received nearly equal portions of the votes, getting 20, 20, and 21 percent respectively.

When television broadcasters were asked the same question, they listed further computerization as the leading innovation, giving it 31 percent of the vote. Nevertheless, ENG remained strong with 26 percent of the broadcasters saying the adoption of more ENG equipment would be the most important technical innovation at their stations and 11 percent reporting that they expected their stations to go all-ENG within the next two years. Satellites are another important factor, with 25 percent of broadcasters believing that the

Overall Interest In Radio Equipment

Rank '80	Rank '79		Percent Actively Interested[1]
1	1	Tape Recorders/Players (studio)	.76
2	2	Consoles, Mixers	.74
3	7	Remote Pickup & STL	.69*
4	4	Cartridge Players/Recorders	.68
5	5	Test Equipment	.67
6	3	Audio Processors	.66
7	6	Microphones, Accessories	.62
8	8	AM Stereo Equipment	.52
9	14	Antennas	.49*
10	13	AM Transmitters	.48
11	11	Noise Reduction Systems	.48
12	10	Turntables	.47
13	12	FM Transmitters	.46
14	9	FM Monitoring Equipment	.45
15	19	Tape Recorders/Players (field)	.44
16	17	Automation Equipment	.43
17	20	Business Automation Systems	.42
18	18	ATS Equipment	.40
19	16	Monitor Speakers	.39
20	15	AM Monitoring Equipment	.43
21	21	Reverb & Special Effects	.36
22	22	FM Quad Equipment	.13

[1]Percentage checking very interested or some interest.
*Indicates those products which showed the greatest intensity of interest; that is, degree of interest was weighted towards the highest end of the scale by a wide margin.

Overall Interest In TV Equipment

Rank '80	Rank '79		Percent Actively Interested[1]
1	2	TV Cameras, ENG	.90*
2	1	VTRs (one-inch)	.88*
3	6	Videotape Editors	.77
4	4	VTRs (¾-inch)	.77
5	9	Microwave for ENG	.76*
6	3	Time Base Correctors	.74
7	7	Test Equipment	.73
8	5	Digital Effects Devices	.71*
9	11	Frame Synchronizers	.71*
10	8	Video Monitors	.67
11	10	TV Cameras, EFP	.65
12	14	Electronic Still Stores	.65
13	18	Audio Consoles, Equipment	.64
14	19	Switching Automation	.63
15	23	Master Control Switchers	.61
16	13	TV Cameras, Studio	.57
17	20	Noise Reduction Systems	.56
18	26	Production Switchers (small)	.56
19	27	Lighting Equipment	.56
20	16	Time Code Equipment	.54
21	17	Routing Switchers	.54
22	12	Character Generators	.53
23	21	Production Switchers (large)	.53
24	24	Remote Control (status, etc.)	.51
25	28	Film and Slide Chains	.48
26	15	Image Enhancers	.47
27	22	ATS Equipment	.41
28	25	CP Antennas	.40
29	31	Slow Motion Recorders	.31
30	30	Transmitters	.31
31	29	VTRs (quad)	.25

installation of an earth station would be the most important innovation at their station over the next two years.

Attendance at this year's NAB should be way up among both engineers and managers though, as has been the tradition, more managers will attend than engineers. Engineers will spend the bulk of their time touring exhibits, with the typical radio engineer expecting to visit more than 50 booths in six to 10 hours. Television engineers also expect to visit more than 50 booths but will spend a little more time doing it, somewhere around 16 hours.

Radio managers will be running wild at NAB as they try to see more than 50 exhibits in less than 10 hours. Television managers seem to be taking it a little less seriously, expecting to visit 26 to 49 booths in six to 10 hours. Regardless of whether the individuals are radio or television engineers or managers, they will have their work cut out for them as the number of exhibits expected this year at NAB will exceed 350 by a sizeable margin.

Radio's "most wanted" list

Respondents were asked to check off their degree of interest in a variety of specific product categories. Their choices were limited to "very interested," "somewhat interested," "low interest," and "no interest."

Recorders and consoles are staples for the radio industry so their inclusion at the top of the list is not surprising. The demand for remote pickup and STL equipment, however, is a strong indication that radio stations intend to do more remote work in news, public affairs, sports, and entertainment and that the STL situation continues to be difficult. Any solution that manufacturers of STL equipment are able to proffer at NAB will get close examination.

Audio processors, with a 66 percent active interest level, remain strong. In response to another question, radio broadcasters expected to use more processing rather than less by a margin of 19 percent to three percent. While the controversy over processing remains, it is apparent that the issue is a matter of the degree and kind of processing that ought to be used.

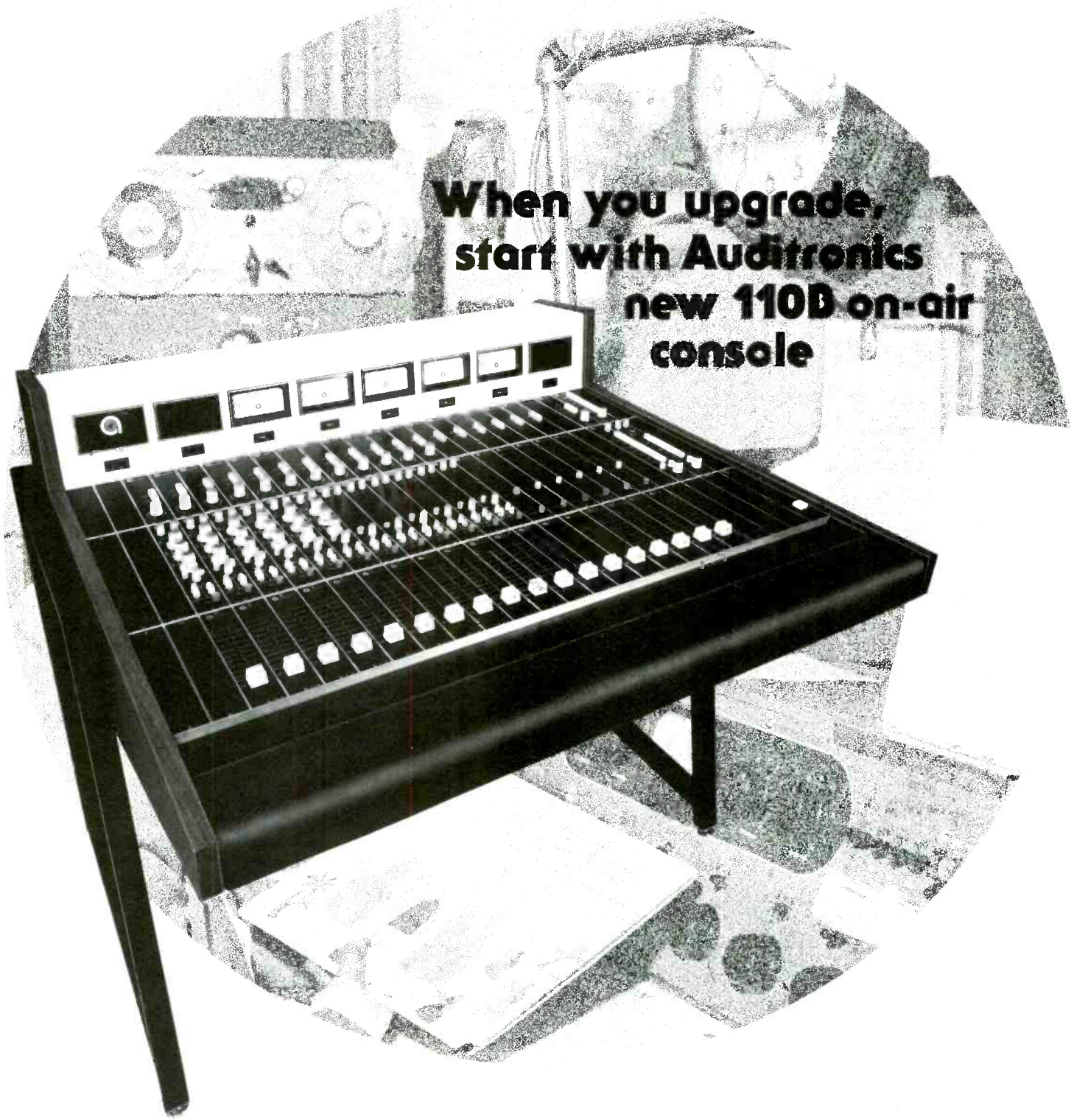
Cartridge player/recorders remained high on the list of radio's most wanted equipment, as did microphones, test equipment, and AM stereo gear. Field recorders showed good improvement, moving from nineteenth place to fifteenth, which is consonant with the rising interest in field production by radio stations.

Among the "most active" products, however, is the remarkable advance of antennas, which climbed from fourteenth place last year to ninth place this year with 49 percent active interest. Interest in AM transmitters is also up, so we may be looking at a combination of concerns over AM stereo and 9 kHz spacing.

In terms of the long run, radio managers seem particularly interested in business automation and other automation equipment, though softness in the interest levels of engineers for such systems lowered the index. The other long-term technology that seems to capture the imagination of radio broadcasters is the possibilities offered by satellites, as mentioned earlier.

Television's "most wanted" products

Like their brethren in the radio end of the industry, television broadcasters continued to show interest in the staples of their trade — one-inch VTRs, ENG cameras, test equipment, video monitors, etc. The general selection showed some significant changes, particularly with quad VTRs dropping into dead last



When you upgrade, start with Auditronics new 110B on-air console

The 110B on-air mixer gives you up to 18-inputs in either stereo or mono with these standard features • Control room monitor • Headphone control • Seven mono line output amps • Three stereo bridging line amps • Five VU meters • Stereo program and audition output channels with meters • Mono output with meter • Cue on all mic and line inputs.

Auditronics modular design lets you start now with a basic main-frame and add modules for greater operational flexibility later when you need them. And, all Auditronics input modules and faders are interchangeable and obsolescence-proof. If you'd like to air a signal that is truly state-of-the-art, the place to start is with an Auditronics 110B console. For complete information and the name of your nearest dealer, circle reader service number or call us.

auditronics, inc.

3750 Old Getwell Road, Memphis, Tennessee 38118 (901) 362-1350

Circle 158 on Reader Service Card

Panels Of 100 Survey

with a meager 25 percent active interest level. Quad seems to have arrived in the replacement market that was predicted for it when one-inch VTRs were standardized.

ENG remains the main power in the television hardware field at this time. Microwave for ENG rose sharply from ninth place in 1979 to fifth place this year. This remarkable increase in interests leads us to conclude that the crowding of ENG microwave bands will get even more serious than it is now.

Analysis of these results depends on a combination of factors. Not only are the relative positions of equipment on the list important over time, but so is the percentage of active interest. Though digital video effects dropped in the standings from fifth place to eighth, there was only a three percentage point difference between 1979 and 1980. In 1979, 74 percent of television broadcasters listed digital video effects among their most wanted equipment, while in 1980, 71 percent listed it. Thus, actual demand remains very strong for this technology and its slide in the overall standing merely reflects an increased urgency for some other systems such as microwave, videotape editors, and frame synchronizers. Such small percentage changes usually reflect an adoption of the technology, namely, some broadcasters who wanted digital effects last year got them.

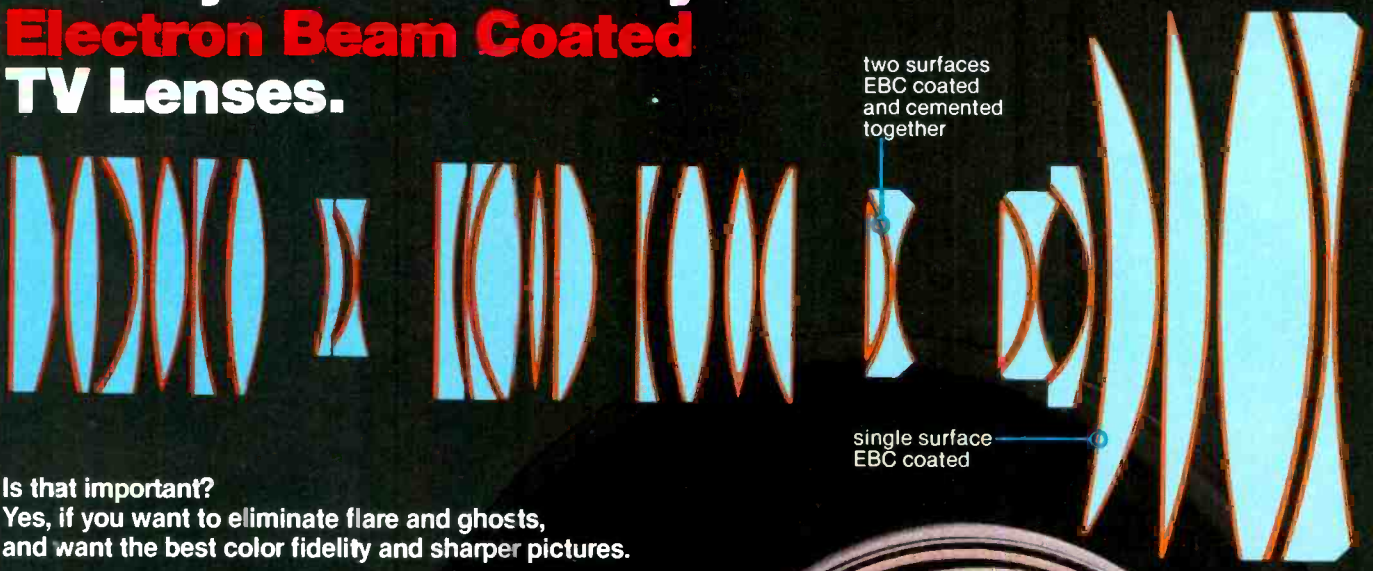
The pattern of choices and changes continues to show television broadcasters moving into the field and getting more involved in production. Among the most active television products were lighting equipment, which shot up from twenty-seventh place to nineteenth, and small production switchers, which moved up from twenty-sixth to eighteenth. These two product categories showed a six and eight percentage point improvement, respectively.

As in radio, television managers are more enthusiastic about business automation systems than are engineers. Regardless of the broadcasters' specific application ideas, however, both managers and engineers expect to see an enormous growth of computing power in television stations. Engineers elevated switching automation from nineteenth place last year to fourteenth place this year and increased their level of active interest from 56 percent to 63.

While the broadcasters who participated in our "Strategies for the 80s" interviews, elsewhere in this issue, indicated that "more production" and "localism" would be the by-words of the 80s, our survey indicates that broadcasters intend to put their money where their mouths are. **BM/E**

Nobody...

but Fujinon can offer you Electron Beam Coated TV Lenses.



Is that important?
Yes, if you want to eliminate flare and ghosts, and want the best color fidelity and sharper pictures.

Today's longer range zoom lenses with extenders plus wide angle and telephoto adapters require more lens elements. And, it has been proven that multi-coated lenses reduce reflected light (flare), and improve light transmission characteristics.

Fujinon's EBC* (Electron Beam Coating) process can apply more coatings than any other process.

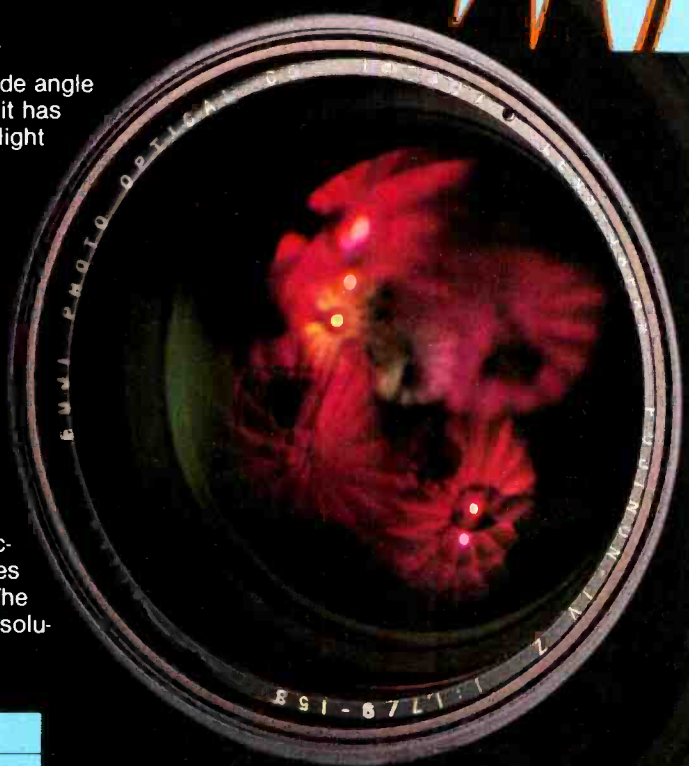
EBC lenses are precisely and selectively coated with up to 13 ultra-thin uniform layers of zirconium oxide. Even the lens surfaces cemented together are coated. This is not possible with the conventional 3 layer process used by other manufacturers.

Flare and ghosts are virtually eliminated.

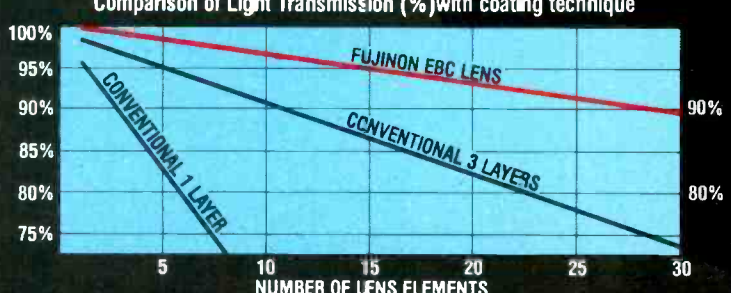
A 13 layer EBC lens element transmits 99.8% of the light. Only 0.2% is reflected. Therefore, flare, and ghosts from back lit scenes, are virtually eliminated.

Improved color fidelity and sharper pictures.

Fujinon EBC lenses are selectively coated for optimum spectrum transmission...even in the fringe areas. This eliminates color absorption problems (a bluish or reddish picture). The result is excellent color definition and gradation, and high resolution for crisper pictures.



Comparison of Light Transmission (%) with coating technique



*EBC (Electron Beam Coating) is an exclusive lens coating process invented by Fujinon

Fujinon's exclusive EBC lens coating process is another reason why Fujinon supplies over 75% of the world's Dichroic Prism and Relay Beam Splitters for TV cameras.

Call or write for complete details about Fujinon's EBC lenses for ENG/EFP and Studio cameras.

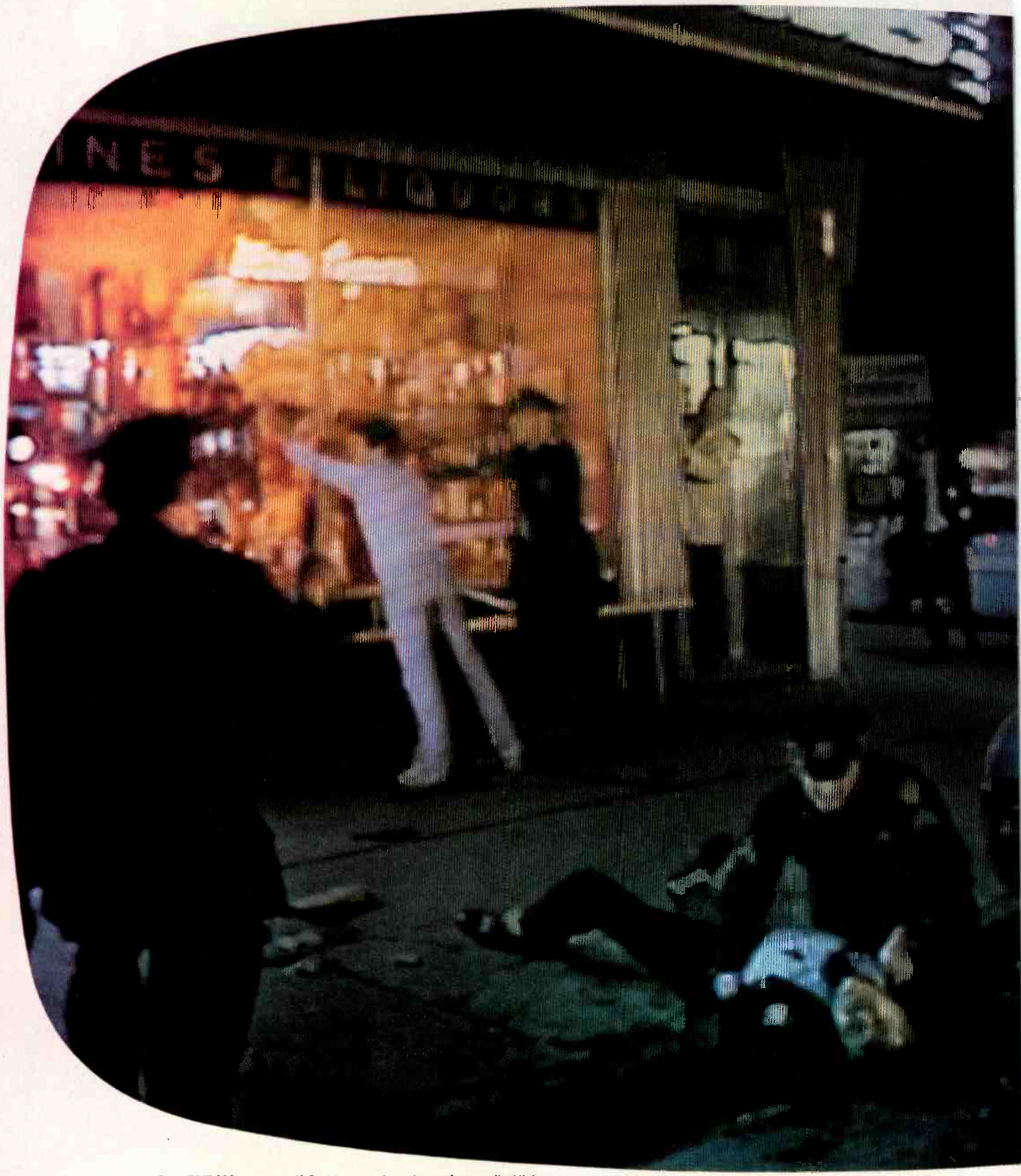
Fujinon Optical Inc., 672 White Plains Road
Scarsdale, NY 10583, (914) 472-9300 Telex: 131-642
West Coast Distributor: Fuji Optical Systems
118 Savarona Way, Carson, CA 90746, (213) 532-2861

FUJINON

First in Optical Systems

Circle 160 on Reader Service Card

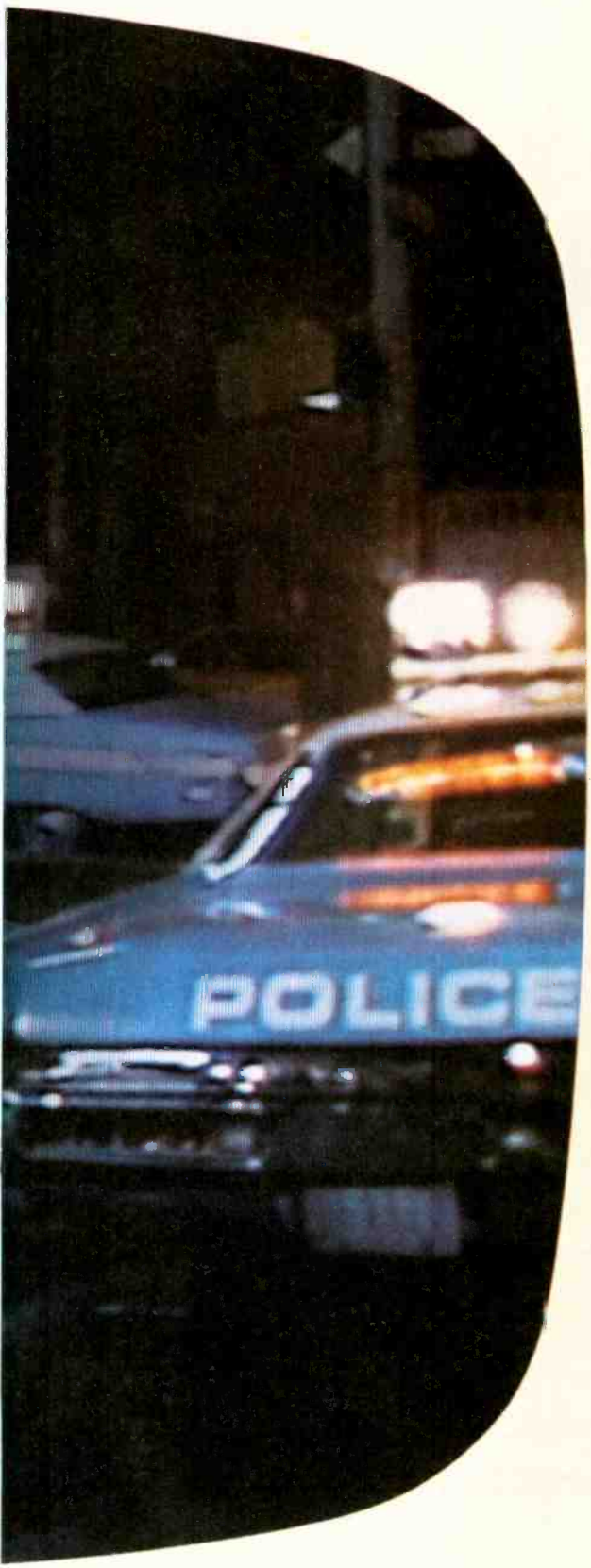
"IF YOU WANT TO COVER THE
USE A CAMERA THAT'S ONLY GOOD



Shot with a Sony BVP-300 camera at f2.5 with approximately two footcandles' light.

DARK SIDE OF A CITY, YOU CAN'T WITH BRIGHT LIGHTS."

Henry Sheppard, WCCO-TV, MINNEAPOLIS



"There are news-gathering and documentary situations where the use of artificial light is just too intrusive or difficult to achieve," says Henry Sheppard, Chief Engineer of WCCO-TV, the CBS affiliate in Minneapolis.

"That's why our Sony portable BVP-300 cameras are such a big plus. With them, we can shoot in low-light conditions and get a lot of detail other cameras might not pick up. We even get good pictures with as little as two footcandles of light."

WCCO-TV owns seven Sony BVP-300's, which the station's photographers use together with Sony BVU-50 recorders. The cameras are used to shoot public-affairs programs and segments of PM Magazine, as well as for ENG and documentaries.

"We're very particular about picture quality," says Sheppard. "And before we committed ourselves to Sony, we evaluated just about every portable color camera available.

"Sony's colorimetry is excellent, its signal-to-noise ratio is high, and it always turns out pictures that meet our standards. Many of our engineers find its quality comparable to studio cameras. And our photographers like the way Sony handles. For example, in a helicopter, they can cradle the camera on one shoulder to reduce vibrations and get a very steady picture.

"And with the Sony system, each photographer can operate independently, without a second person along to monitor sound."

When asked about Sony durability, Sheppard replied: "We don't coddle our cameras here. Each one gets handled by about 15 or 20 different photographers. They come in in the morning, grab their equipment, throw it into the back of the car, and they're off. Sony takes that kind of treatment remarkably well, and it's a good thing, because we can't afford to have our cameras down."

Of course, Sony makes a full line of one-inch broadcast equipment, including cameras, recorders, editors and the BVT-2000 digital time base corrector.

For information, write Sony Broadcast, 9 W. 57th Street, New York, N.Y. 10019. Or call us in New York at (212) 371-5800; in Chicago at (312) 792-3600; or in Los Angeles at (213) 537-4300.

SONY BROADCAST

Sony is a registered trademark of the Sony Corp.

Circle 161 on Reader Service Card

INTERPRETING THE FCC RULES & REGULATIONS

FCC Changes Rules For Radio Operators And Engineers

By Frederick W. Ford and Lee G. Lovett; Lovett Ford and Hennessey, P.C., Washington, D.C.

THE FCC HAS UPDATED its operator rules and as a result has made them comparable to the state of the art in broadcast technology. The FCC has decided that all broadcast stations can assign routine station operating duties to persons holding any class of valid commercial radio license. In addition, higher power AM and all TV stations can now employ a chief operator holding a first class license on only a *part-time* basis to oversee maintenance and technical adjustments. The Commission announced the changes in two reports and orders issued during the past year. The Commission considers these changes to be part of their efforts to consolidate existing regulations and eliminate duplication and burdensome paperwork.[1] This article will discuss these changes in the broadcast station operator requirements.

New operator policies

The recent changes by the FCC have been announced in two stages. In its *First Order*,[2] issued in early 1979, the Commission amended the rules to authorize routine operation of most AM and FM stations by persons holding a Restricted Radiotelephone Operator's Permit.

The *Second Order*,[3] issued in November 1979, extended the routine operator duties to television and AM stations with directional antennas. All TV stations and AM stations over 10 kW must continue to employ a first class engineer, designated as chief operator, to supervise technical adjustments and maintenance. However, the licensee now has the option of employing the chief operator on a part-time basis.

The *Notice of Proposed Rulemaking*,[4] released in August 1977, for this proceeding, had listed five issues to be studied:

- Operator licensing requirements for the routine operation of AM and FM broadcast stations;
- Operator licensing requirements for the technical maintenance of broadcast and non-broadcast stations;
- The term of operator licenses;
- Operator responsibility; and,
- Special endorsement on First Class Radiotelephone licenses for television station operation.

Both of the Commission decisions have indicated that the changes would proceed incrementally. So, the changes discussed here are the first in a series.

Routine operations

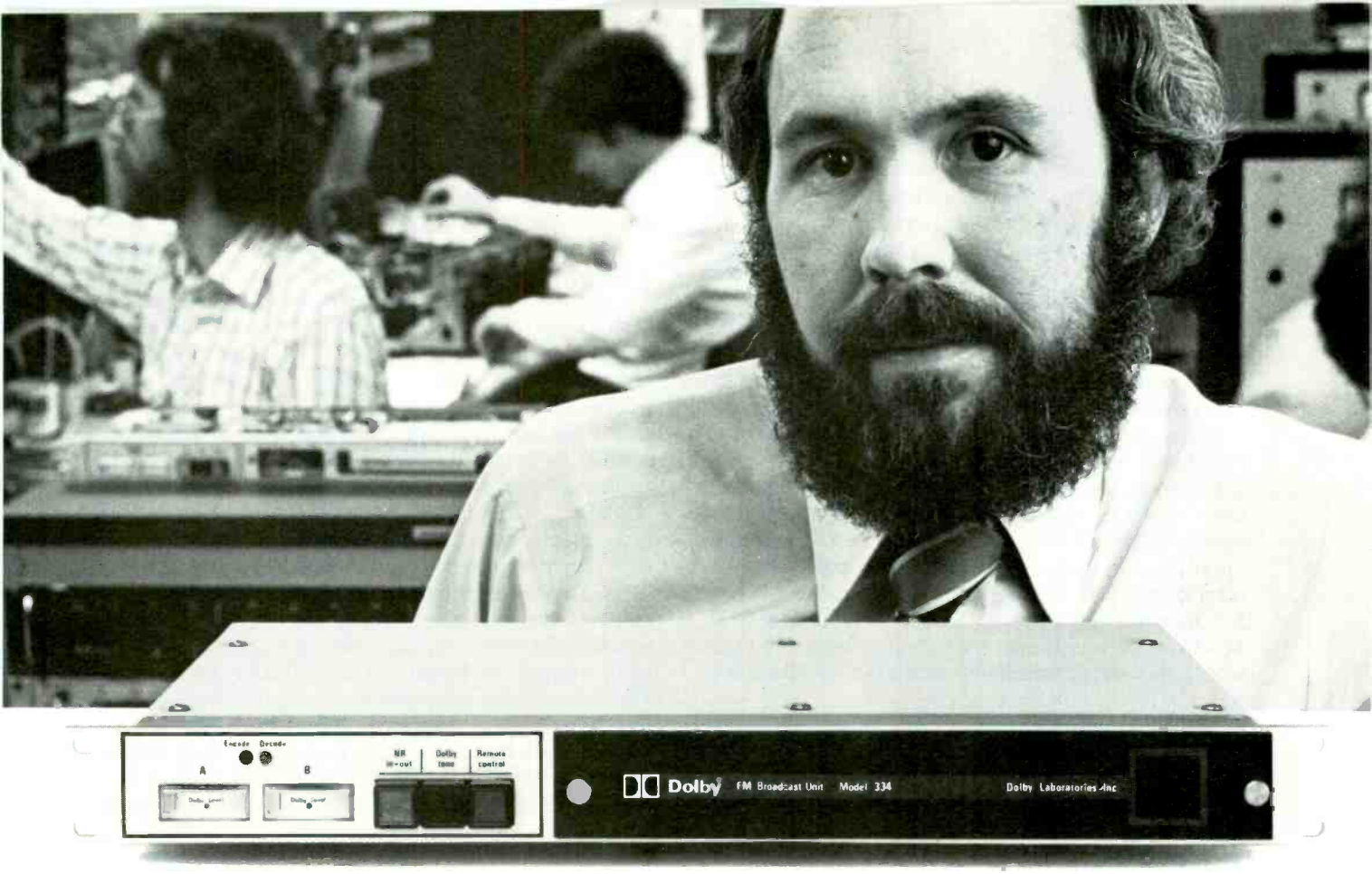
Before the changes, operators were compelled to hold valid Third Class Radiotelephone Operator's Permits that were endorsed for broadcast operation. Receipt of such a license required successful completion of a Commission

[1]See *BM/E*, November 1979, "FCC Deregulation of Radio: Wolf in Sheep's Clothing?"

[2]First *Report and Order (In the Matter of an Inquiry Relating to the Commission's Radio Operator Licensing Program)*, 70 FCC2d 2371 [44 RR2d 1521] (1979).

[3]*Second Report and Order*, FCC 79-921 [46 RR2d 805] (1979).

[4]FCC 77-528, 42 FR 40939.



There's More To Dolby® FM Than Another "Black Box"

When you decide to broadcast Dolby FM, you get more than the proven technology of the Dolby Model 334 Broadcast Unit. You also get the personal assistance of Tim Prouty, Dolby FM Development Manager. The engineering, service, and marketing support of Dolby Laboratories. And the opportunity to take advantage of probably the best known single name in consumer, professional, and cinema audio.

Dolby FM provides the increased high frequency headroom that makes it possible to reduce limiting without sacrificing level. That can mean a higher quality signal for your sound-conscious listeners and clients. And a higher quality signal can lead to a unique marketplace position audibly above the competition, which can help increase your local sales.

If the prospect of a higher quality signal makes sense to you, call us at (415) 392-0300 to arrange for an on-air trial at no cost. That way you can see and hear for yourself what Dolby FM is really *all* about.

Learn more about Dolby FM at the NAB Convention: Silver State Room in the Las Vegas Convention Center, April 13-16.

DOLBY LABORATORIES, 731 Sansome Street, San Francisco CA 94111, Telephone (415) 392-0300, Telex 34409 • 346 Clapham Road, London SW9. Telephone 01-720 1111, Telex 919109. Dolby and the double-D symbol are trademarks of Dolby Laboratories. S80/2315

DOLBY FM™

Circle 162 on Reader Service Card

examination. Comments received from interested parties generally supported routine operations by any person holding any class of operator license, including a Restricted Radiotelephone Operator's Permit. As set forth in §13.62(c) of the rules, routine duties are defined as: turning the transmitter on and off; making minor adjustments in operating power and modulation; and changing generating power or antenna modes, usually at sunrise and sunset, if required by terms of the station license. These latter items are allowed only if they involve simple activation of switches and do not require tuning or adjustment of the transmitter or antenna phasing equipment.

However, some comments suggested the exception of those broadcast stations which employed critical directional antennas. Since a Commission exam demonstrated familiarity with basic rules and operational procedures, other respondents felt that outright elimination of exams for transmitter operators would not be beneficial. Moreover, it was feared such an elimination of exams would ultimately have an adverse impact on the technical integrity of the broadcast system.

The above notwithstanding, the Commission decided that the stability of modern transmission systems was such that permission to conduct routine operations did not require an examination. The Commission surmised that any person holding a minimal class of license could be adequately trained by a station licensee.

The Commission noted that previously it had held that those who held Provisional Radio Operator Certificates for an endorsed Third Class Radiotelephone Operator's Permit had been permitted to perform routine operator duties. These Certificates were available without examination, although they were granted for only one year and were not renewable. The Commission also noted that the performance of these certificate holders had not been shown to be less than satisfactory, or below the quality of the work of the operators who passed an examination. Therefore, the rules were relaxed for most AM and FM stations regarding routine operations by any operator with at least a Restricted Radiotelephone Operator's Permit. In addition, Provisional Certificates for the third class license would no longer be issued.

The *Second Order* extended permission on routine operations by holders of Restricted Permits to all AM stations and TV stations. The *First Order* had exempted AM stations with critical directional antennas. Initially, the Commission stated that there were only 25 AM stations of this type. Moreover, the routine operating duties set out in §13.62(d) *do not* include the intricate maintenance of the ratios of currents in system elements within tolerances specified for directional antennas. A Restricted Operator (RO) should be instructed specifically pursuant to §73.93(g) to read meters and understand the tolerances. If the station were to exceed the tolerances at any time, all the RO could do in any event is turn off the transmitter. A first class operator would still have to be employed in accordance with §13.62(c) (3) "to make or supervise all adjustments, whose primary duty shall be to effect and insure the proper functioning of the transmitter system."

On the issue of television, the Commission concluded that the level of technology and reliability of equipment did allow for the routine operation of a station by ROs.

THE FIRST FAMILY OF DIGITAL VIDEO SYSTEMS.

Give us your video inputs.

We'll time base correct them with our Quantel DTC 300 time base corrector.

Synchronize *and* time base correct them with our Quantel DFS 1550 synchronizer/TBC.

Synchronize *and* time base correct *and* manipulate them with our Quantel DFS 3100 synchronizer.

Synchronize *and* clean them up automatically with our new Quantel DFS 3500 synchronizer/noise reducer.

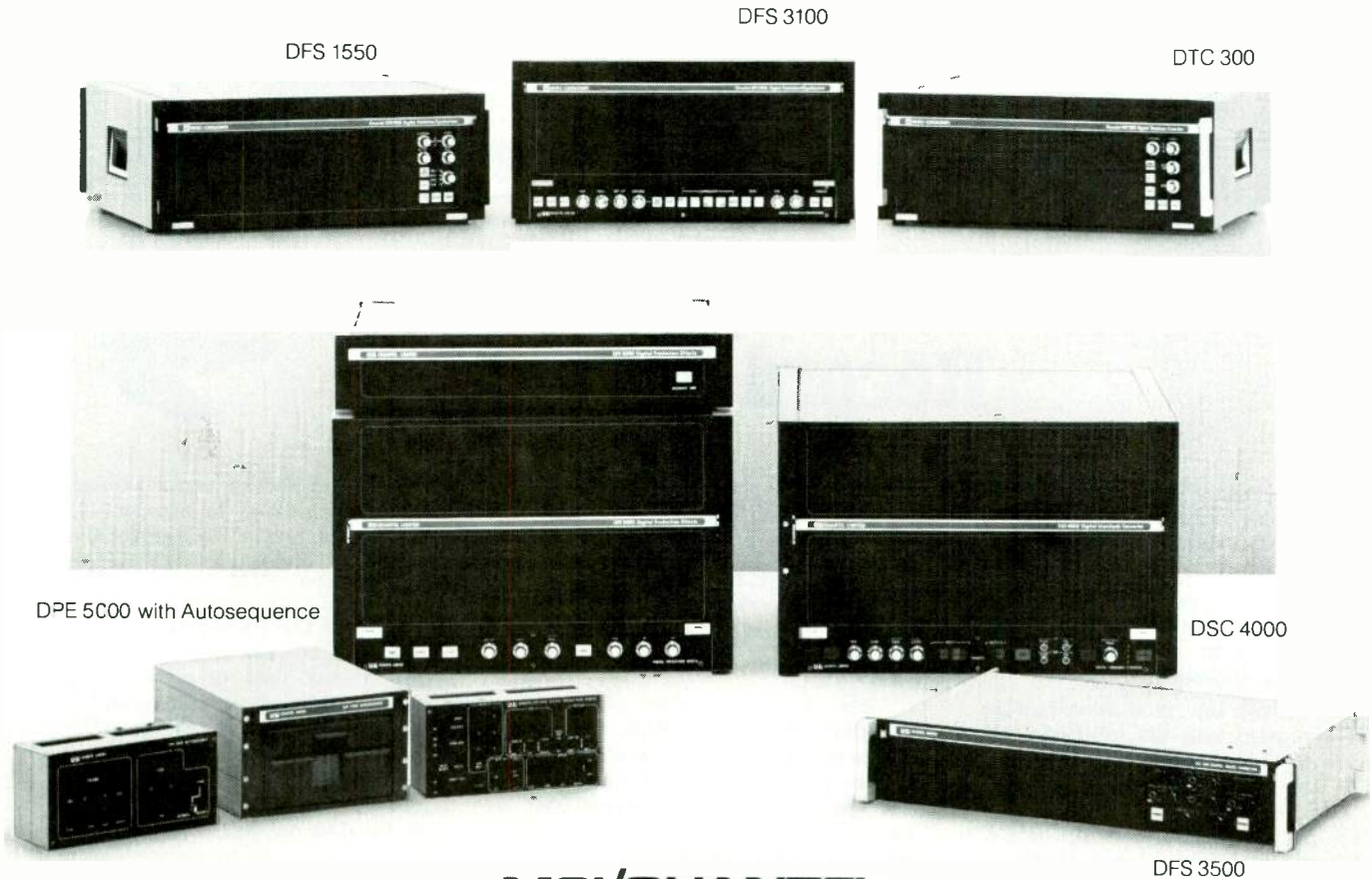
Provide a range of brilliant digital effects that look like film opticals with our Quantel DPE 5000 expandable digital effects system.

And we'll even convert them from NTSC to PAL/SECAM and vice versa with our Quantel 4000 standards converter.

The first family of digital video systems. All of them portable and ready to go wherever the action is.

What it can mean for your operation is a better, more exciting television picture on the air. And a better, more rewarding bottom line.

Call your nearest MCI/Quantel representative for more details. Or get in touch with us directly: Micro Consultants, Inc., P.O. Box 10057, Palo Alto, California 94303, 415/856-6226.



MCI/QUANTEL

The digital video people

Circle 166 on Reader Service Card

The Commission stated that there is no present basis for distinguishing between TV and AM and FM in this matter.''[5]

Maintenance operators

Next, the Commission addressed the question of maintenance operators. No change was made in the requirement that all installation, maintenance, repair, and technical supervision be conducted by a holder of a first class license. However, a change was made regarding the status of full-time employment.

Prior to the change, the AM rules required that a full-time, first class engineer be designated as chief operator, even if a lesser grade operator was actually operating the station. Section 73.661 of the TV rules required a first class operator on duty whenever the station was transmitting. The rule change allows for employment of a less than full-time chief operator by AM stations of over 10 kW. For those television stations which elect the option of a lesser grade routine duty operator, the rules would be conformed to the AM provisions, which require that the station must designate one first class operator as chief operator.

Conclusion

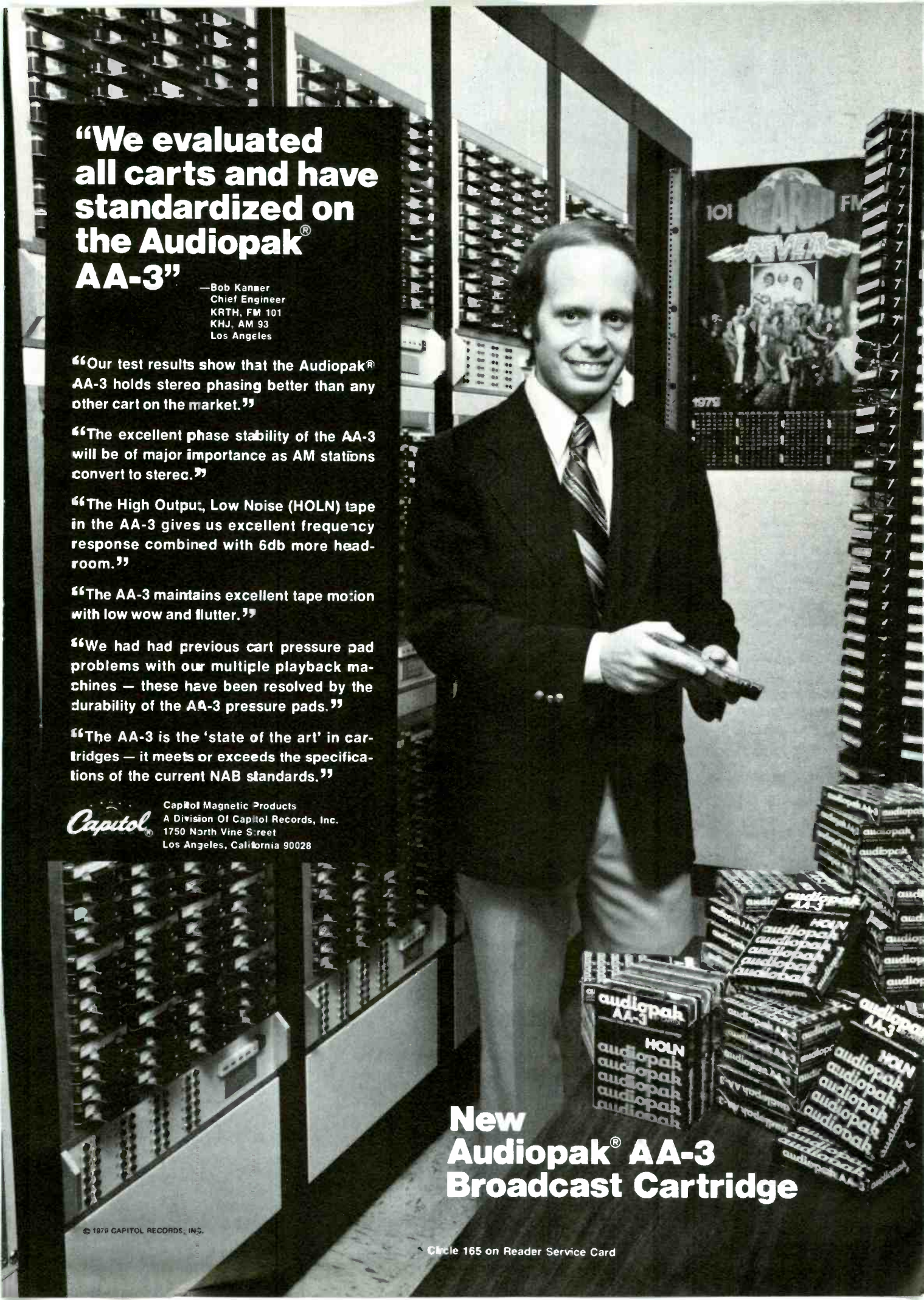
The Commission indicated repeatedly that more changes in the broadcast operator rules in all services will come in the future. The original *Notice of Proposed Rule Making* addressed several issues which the FCC has not yet decided. The final report of a contract study by the Georgia Institute of Technology raised questions not considered in the original *Notice*, but the Commission has indicated that those issues will be the subject of a further report. In a separate statement appended to the *Second Order*, Commission chairman Ferris noted, ''Our efforts in reviewing all of the Commission's radio operator licensing functions are continuing and may well result in even further deregulation.''[6]

He also noted, however, that ''licensees will still be held responsible for ensuring that their stations are in conformance with the Commission's technical rules,'' regardless of the changes in operator requirements. The Commission has also explicitly set forth in the main text of the two *Orders* that it will still hold licensees accountable for technical performance. Operators themselves will also be held accountable for their actions. As the Commission pointed out in the *First Order:*

> ''Although the Commission will continue to hold the licensee of the station responsible for its operations, operators will also be responsible for their own performance . . . The Commission has authority to assess a forfeiture against 'any person' found in violation of the Communications Act or the Commission's rules. Operators at broadcast stations should note that they are personally subject to this forfeiture provision and may be fined along with, or in lieu of, the station licensee.[7]

Licensees and operators should read the full text of these decisions. Also, licensees should discuss the ramifications of these changes and keep apprised of further reports and orders on this issue. **BM/E**

[5]46 RR 2d at 807.
[6]*Ibid.*
[7]44 RR2d at 1524.


"We evaluated all carts and have standardized on the Audiopak® AA-3"
—Bob Kanner
Chief Engineer
KRTH, FM 101
KHJ, AM 93
Los Angeles
"Our test results show that the Audiopak® AA-3 holds stereo phasing better than any other cart on the market."
"The excellent phase stability of the AA-3 will be of major importance as AM stations convert to stereo."
"The High Output, Low Noise (HOLN) tape in the AA-3 gives us excellent frequency response combined with 6db more headroom."
"The AA-3 maintains excellent tape motion with low wow and flutter."
"We had had previous cart pressure pad problems with our multiple playback machines — these have been resolved by the durability of the AA-3 pressure pads."
"The AA-3 is the 'state of the art' in cartridges — it meets or exceeds the specifications of the current NAB standards."
Capitol
Capitol Magnetic Products
A Division Of Capitol Records, Inc.
1750 North Vine Street
Los Angeles, California 90028
© 1979 CAPITOL RECORDS, INC.
New
Audiopak® AA-3
Broadcast Cartridge
Circle 165 on Reader Service Card

MICROCAM®...

because life is a contact sport.

Cover it close. Right where it lives. In the political arena or on the fifty yard line. In the heart of the city, or miles from nowhere. On location, or in studio A, Microcam covers it all.

Microcam, developed by Thomson-CSF Laboratories. The first shoulder-mount color TV camera to offer the combined benefits of studio-quality broadcasting with lightweight portability. In fact, Microcam weighs just 12.4 pounds for a total of 22 pounds, complete with motorized lens and a 5 pound silver cell battery which operates the camera for 6 hours on a single charge. Microcam provides all the essential features for superior pictures from the field or in the studio.

- Automatic beam optimizer prevents comet-tailing
- Low power consumption of 20 watts
- High index f/1.4 prism assembly
- Three position gain switch 0, +9, +18 dB
- Automatic color balance, automatic iris, and black level
- Built-In masking, split-field color bar generator and 2-line enhancer
- Color genlock included as standard
- Superior light sensitivity to allow clear, sharp pictures with only two footcandles of available light
- Variable H & V Blanking to meet the latest production requirements
- Available with optional 4½" Viewfinder and Remote Control System for EFP or studio operation.

Plus complete VTR Control, including start-stop, VTR stand-by and return video. And a complete set of operating indicators, including VTR status, located in the viewfinder.

Only Thomson-CSF gives you a choice between the mono-block MC-601 Model and the two-piece MC-602. Both cameras bring broadcast quality and ease of operation to Electronic News Gathering, field production, as well as studio applications.

Microcam. For close-up coverage. Because life is a contact sport.

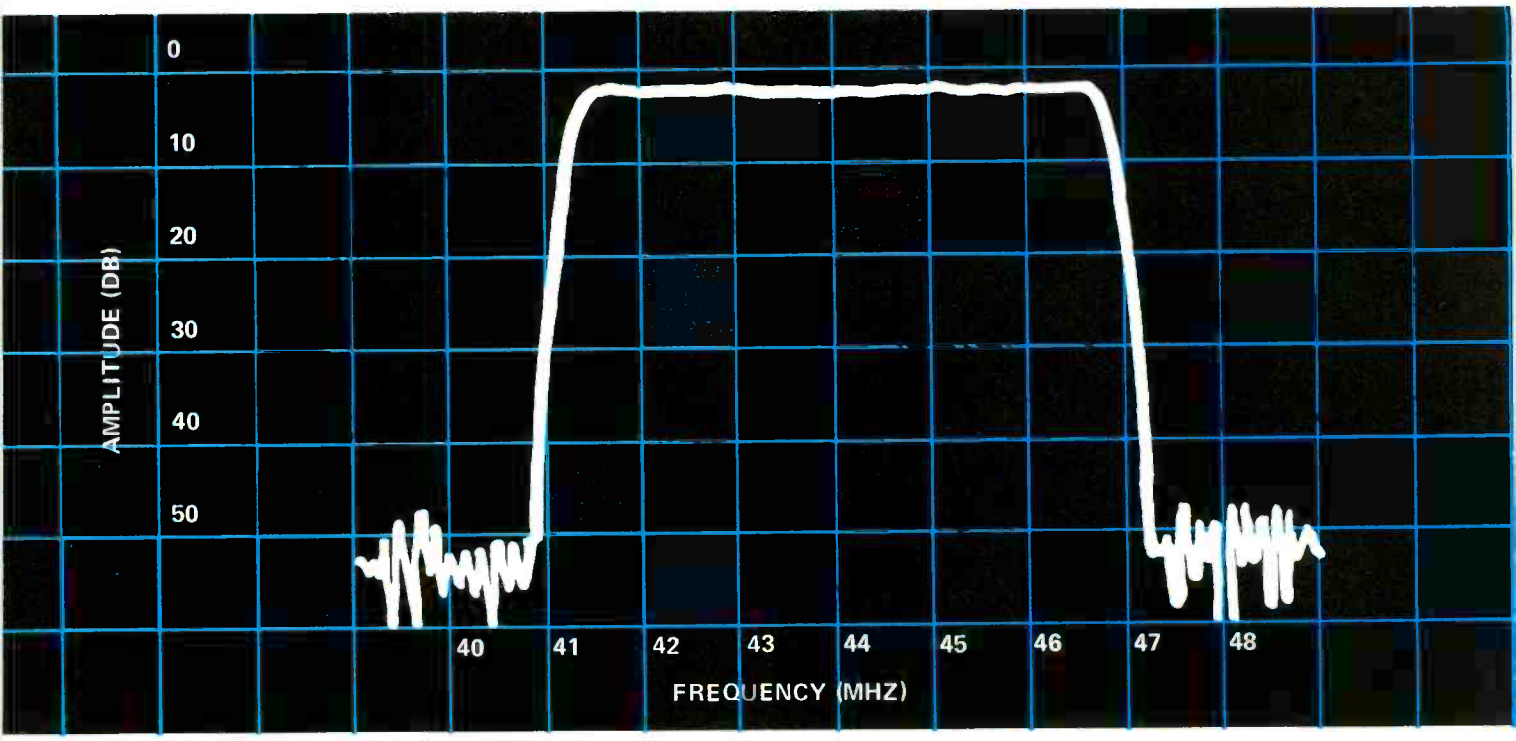
For more information about the remarkable Microcams, call or write.

THOMSON-CSF

Thomson–CSF Broadcast, Inc.
37 Brownhouse Road
Stamford, CT 06902
Tel. (203) 327-7700
TWX (710) 474-3346

Circle 167 on Reader Service Card

For a better signal, here's how Rockwell SAWs shape up.



Now you can get Rockwell technology in solid state, space saving, maintenance-free SAW filters.

Micro Power

Rockwell International announces the latest addition to its SAWD (Surface Acoustic Wave Device) product line. The Rockwell SAW CATV Modulator Filter. It combines the solid state advantages of SAW technology with the volume production and research and development resources of Rockwell International. The result: A better signal for cable TV transmission of higher resolution video. That's Rockwell Micropower!

Rockwell's SAW bandpass filter provides the CATV Modulator designer with unique benefits. Shown in the graph above, the Rockwell SAW CATV filter has excellent band pass characteristics. Its solid state construction requires no tuning or maintenance, making it ideal for remote, unattended locations. Its compact size means it saves space and allows design flexibility. Add to that its flat group delay characteristics and reliability and you'll know why Rockwell SAWs are shaping up to be the technology leader.

Rockwell's SAWD products are the result of over 10 years of research and development together with nearly 30 years of Collins mechanical filter design and production.

For more information, contact Filter Products Marketing, Electronic Devices Division, Rockwell International, 4311 Jamboree Road, Newport Beach, CA 92660. Phone: 714/833-4544/4324.

Rockwell International

...where science gets down to business

Circle 168 on Reader Service Card

GREAT IDEA CONTEST

4. Universal Line Amplifier

Lee Barrett, Chief Engineer,
KOJM-AM, Havre, Mont.

Problem: To build inexpensive line amplifier modules for Collins modular mixers in the control room.

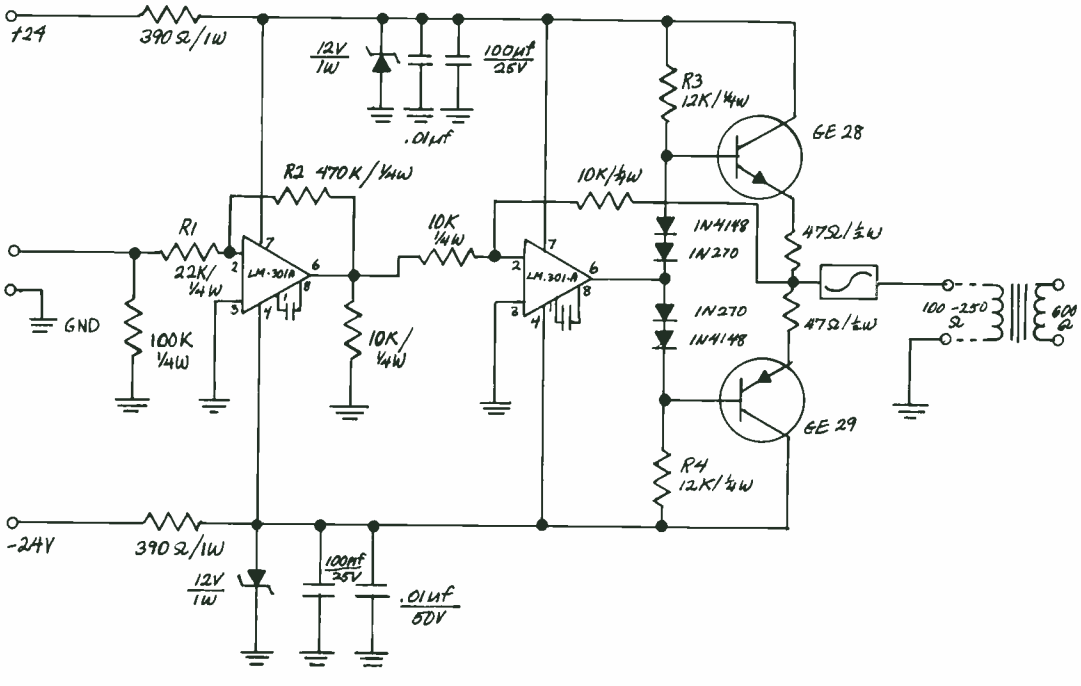
Solution: The schematic shown is the circuit designed for use as a line amplifier. The circuit was designed to extend the output circuitry of the operational amplifier to allow a higher level of output drive. Providing the operational amplifier approximates an ideal differential amplifier over the frequency range of interest (namely audio), the use of negative feedback will eliminate any nonlinearities or dominant frequency characteristics of the output transistors, diodes, and the like. In simple language, the whole circuit exhibits the characteristics of the operational amplifier. By choosing a good operational amplifier, very good frequency response and distortion characteristics may be obtained with low noise. This may be mathematically shown.

I used LM-301 operational amplifiers with 10 pF and 33 pF compensation capacitors. The frequency response measured "flat" from near L.C. to 70 kHz when driving a 120 ohm resistor as a load. When the load is changed to a transformer, this may degrade a bit.

Voltage gain is set with the first operational amplifier while the voltage gain of the actual line driver is held near unity to insure stability by providing an adequate gain margin.

The circuit shown has a voltage gain of 21.4 as established by the ratio of R2 to R1. R3 and R4 are made small enough to achieve minimum crossover and harmonic distortion. If R3 and R4 are made too small, poor efficiency and warm transistors will result. Any complementary pair of silicon transistors may be used having free air dissipation of 1 W and breakdown voltages of 24 V or more. Also, any type of diode may be used other than those specified, provided one silicon and one germanium are used on each side of pin 6 of the operational amplifier. R3 and R4 will probably have to be adjusted to compensate for any different characteristics of the new diodes or transistors over those specified in the diagram.

Minor changes in the circuit result in an excellent 10 W audio power amplifier capable of driving an 8 ohm speaker. This amplifier seems to be quite RF-proof as well. Additional information and circuit boards are available upon request.



Schematic for Barrett's line amplifier module

Great Ideas

5. Disable Edit Suite Remote Position

Ken Garber, AV/TV Technician,
St. Clair College TV Facilities, Windsor, Ont.

Problem: To disable the remote position of our Sony VO-2860 edit suite without having to repatch cables between the edit console and the remote station.

Solution: Under normal editing conditions, the VCR operator uses an RM-430 positioned between the two VO-2860s. In the studio at the switcher position are two RM-420s for remote operation of the VCRs when there isn't an operator. However, when both facilities are being used on different productions, the VCR operator doesn't want a surprise command coming from video control, especially in the middle of a critical edit.

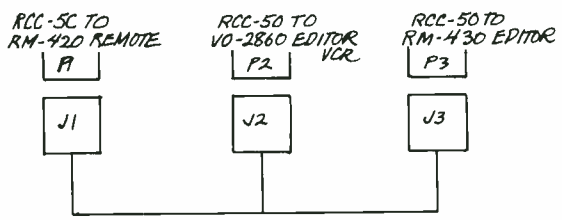


Figure 1. All contacts are paralleled except pin 14 between J1 and J2

By using an appropriate number of Sony RCC-5C extension cables and the adapters that come with them, I was able to come up with a disabling circuit to solve the problem.

Two adapters will be required for each machine, along with two RCC-5C cables for the local wiring and whatever is required for the run to the remote panel. The adapters must be taken apart and two female and one male connector saved. The second male connector will not be used and can be put away as a spare. The screws from the assembly are metric and could be replaced with standard thread hardware. Since the adapter case would not be used again, the brackets were cut up and the end pieces used as washer/nuts for the metric thread. The three connectors were mounted side by side on a chassis and, using ribbon cable or similarly gauged wire, all contacts were parallel-wired except contact 14 between the male connector coming from the VCR and the female connector coming from the remote RM-420. Because of the closeness of the connectors and the pin arrangement of the *20-pin* connectors, a bus-type wiring system was used to minimize the amount of wiring around the connectors. In most cases insulated wires were not required. To power

Rules for BM/E's Great Idea Contest

Mail to:
Editors, BM/E
295 Madison Avenue
New York, New York 10017

1980 Entry Form

Name _____ **Title** _____
Station Call Letters _____ **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* _____

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 and 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: Top rated entries in the year-long tally will become winners in each of the three major categories (AM, FM, TV). Final winners will be picked in February, 1981, and announced in the March, 1981, issue of *BM/E*.

6. Prizes and Awards: Three top prizes will be awarded: a programmable electronic calculator will be awarded for the highest rated entry in the respective categories of AM, FM, and TV. Ten engineering slide rule calculators will be awarded as secondary prizes for the highest rated entries in the following additional categories (top three winners are not eligible for these prizes): audio (three prizes, one each in the AM, FM and TV categories); RF (three prizes, on each in the categories of AM, FM, TV); Control (three prizes, one each in the AM, FM and TV categories); Video (one prize in TV).

How to get as much switcher as you need without getting switched off by the price.

Switch to Panasonic. Because Panasonic gives you your choice of four versatile switchers/special effects generators (SEG's). So, depending on the size of your studio and your budget, you only have to buy as much switcher as you need.

For broadcast studios and production control centers, there's the AS Series. The AS-6000, with seven program inputs, 14 wipe patterns and a fully adjustable colorizer, lets you add color to your supers or fade to a solid color. And it has many other features that you have to see to believe, especially at such a low price—only $6,000.*

You have to see the AS-6700 to believe it. It's the most advanced Panasonic SEG. It features 10 program inputs, two external key inputs, two downstream key inputs, and three auxiliary inputs for film chains and VTR's. 17 inputs in all. Plus a "spotlight," downstream mixing for up to three cameras, and a fully adjustable colorizer. Yet the price is only $7,500.*

For creative color production in smaller studios, the Panasonic WJ-4600A at $2,095* is an excellent choice. And for more versatile special effects, the WJ-5500A at $3,950* is even better. Both units offer important features: An internal EIA RS-170A sync generator with genlock, color bar generator and vertical interval switching. Plus internal and external keying. And a back burst for fades to black.

The WJ-4600A has six program inputs, six wipe patterns in the normal/reverse mode, two effects buses with a fade-wipe lever, and a preview/program bus.

The WJ-5500A has even more. Eight program inputs. Downstream mixing for three video signals. Nine wipe patterns, a wipe positioner and your choice of sharp or soft edges. Plus normal, normal/reverse and reverse modes.

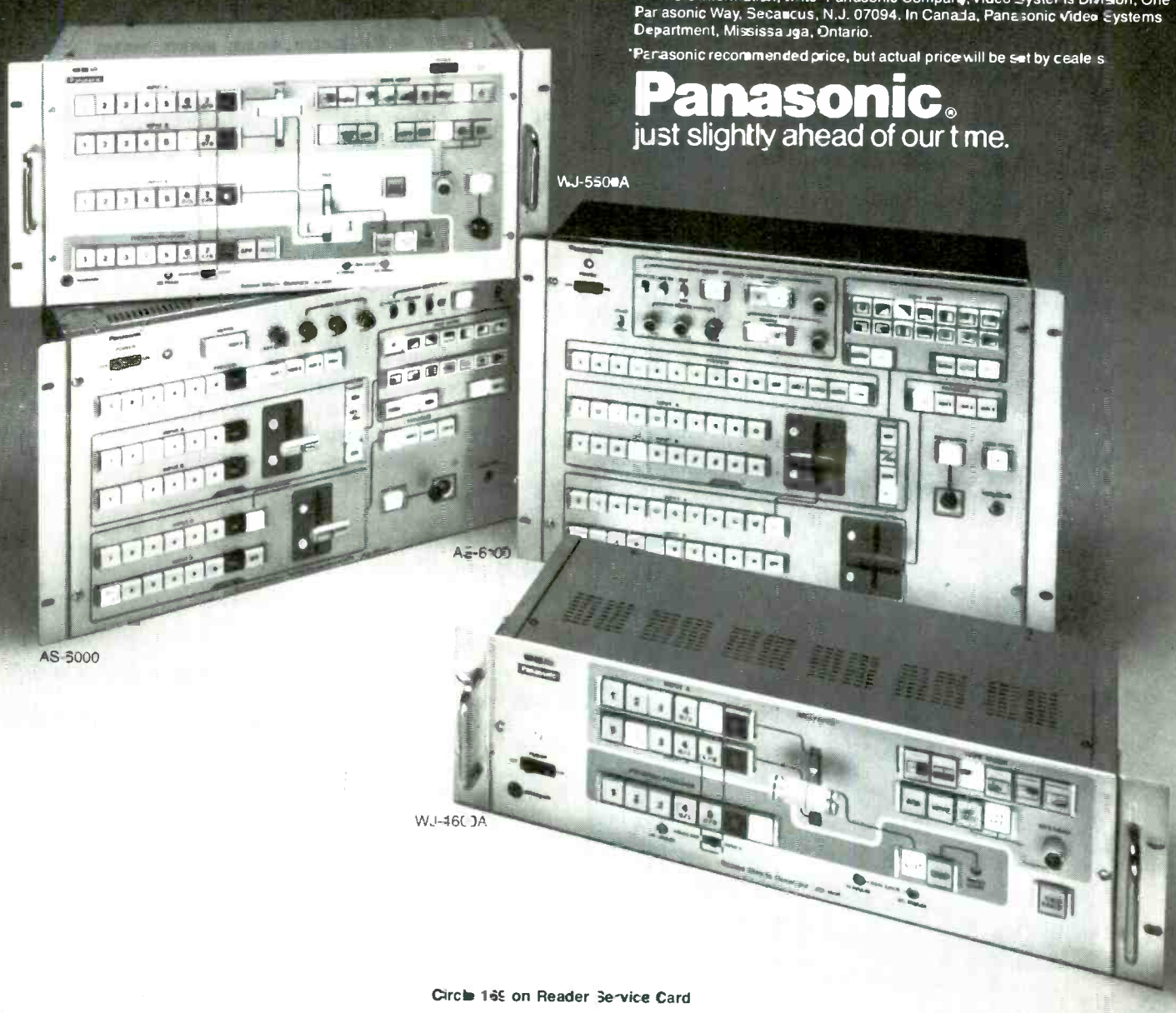
All four switchers are compact, self-contained and have illuminated pushbuttons.

Take a close look at them. And you'll get switched on to Panasonic.

For more information, write Panasonic Company, Video Systems Division, One Panasonic Way, Secaucus, N.J. 07094. In Canada, Panasonic Video Systems Department, Mississauga, Ontario.

*Panasonic recommended price, but actual price will be set by dealers.

Panasonic.
just slightly ahead of our time.



Circle 165 on Reader Service Card

Great Ideas

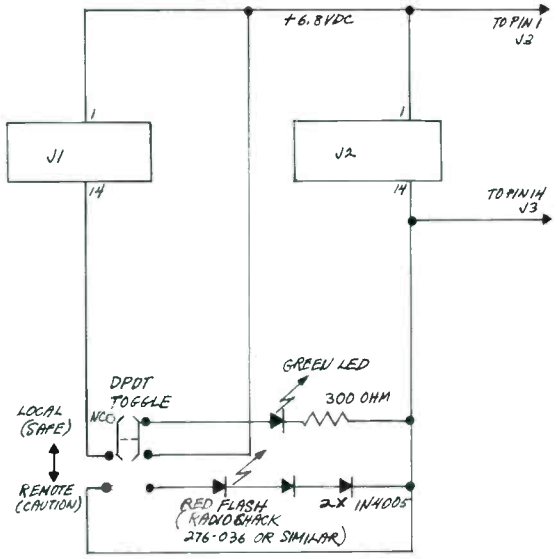


Figure 2 for Garber's Great Idea

the LED indicators on the front panel, 6.8 V dc was taken from pin 1 of the male connector and the components arranged as shown.

The components were assembled onto a 1½-inch reinforced 19-inch rack panel and installed into a turret in front of the VCR operator.

In normal operation, if the remote station has been disabled the panel at the edit desk will show a steady green light: if the remote control is "live" the VCR operator will see a flashing red light warning him that someone else has control. If you find the flashing LED too distracting, substitute a standard LED and its associated resistor.

Besides disabling the RM-420, this project has two beneficial features. First, no matter which station is used, the RM-430 digital counter will continue to read out for logging or searching purposes (also, function control is still available). Second, even with the remote control RM-420 disabled, the indicator lights on the unit continue to operate properly so that studio personnel can see what the machine is doing, yet not interfere with the VCR operator's control.

6. Crystal Baud Rate Generator

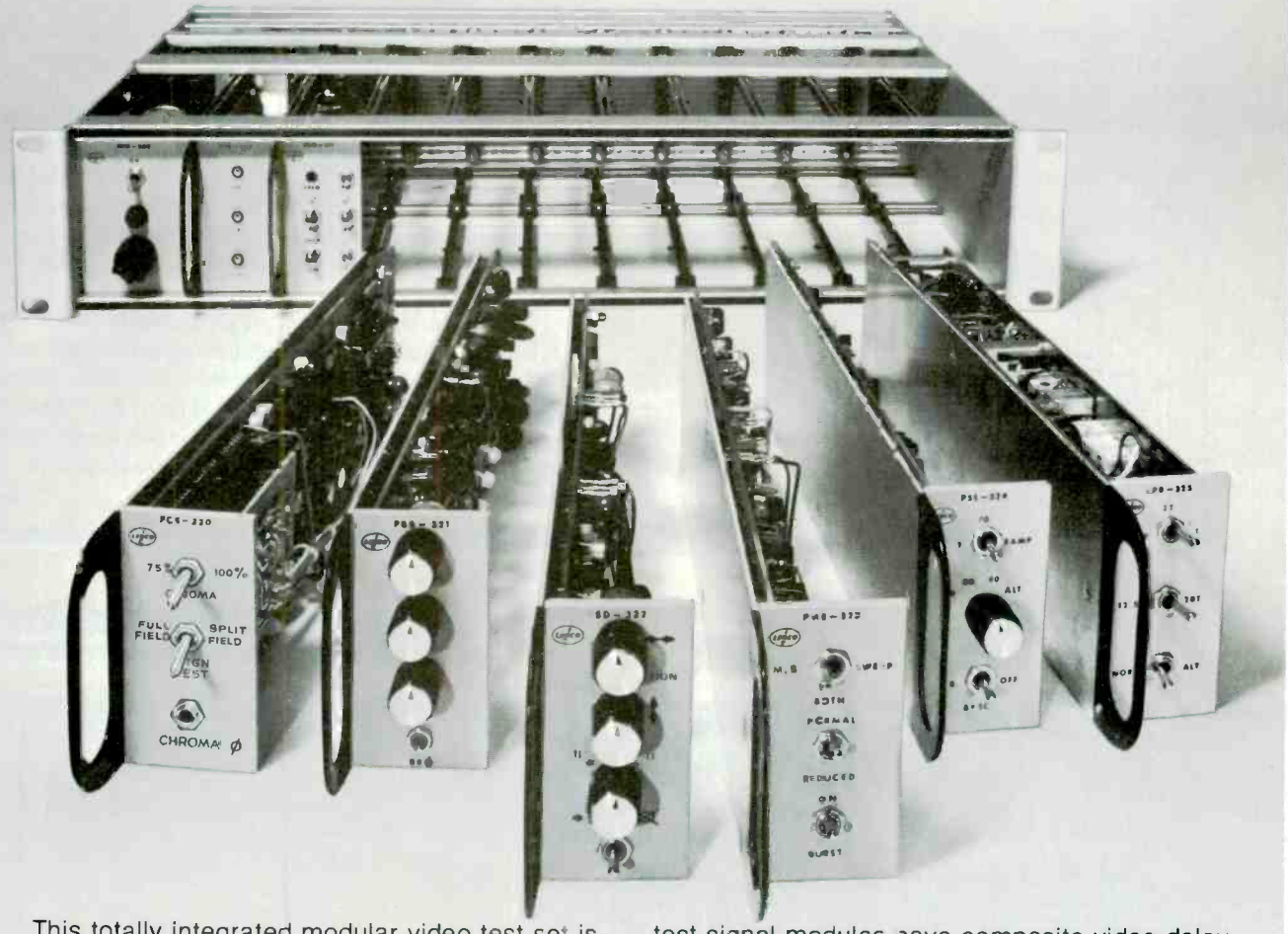
Andrew Ellis, Maintenance Engineer, KCBS-AM/FM, San Francisco, Calif.

Problem: Data transmission errors due to drift in baud rate clocks in the station's remote control units.

Solution: Shortly after we started using Time and Frequency Technology model 7610/7615 remote control units at KCBS, we began to have data transmission errors. These problems were traced to drift in the baud rate clocks in these units.

The TFT design uses an LM-567 tone decoder as a free-running baud rate generator. In the KCBS units, this clock runs at 9600 Hz, although older units may run at 4800 Hz. We found that a comparatively small drift in these oscillators would cause framing errors in the UART chips and cause data errors.

The Professional's Choice- the you-name-it, you-got-it video test set.



This totally integrated modular video test set is designed for the discriminating professional. The Lenco 300 System lets *you* specify video test signals to meet *your* system requirements, not the manufacturer's.

Use the Lenco PSG-310 Digital Color Sync Generator, or one of your own generators, with any one, a combination, or all of the test modules. Mix 'em or match 'em any way you want. There are 29 test signals available to answer *all* of your system test specifications.

With the Lenco 300 System, you get a lot more for a lot less. For instance, all of our advanced test signal modules have composite video delay, making Lenco the *only* manufacturer that can *individually time* the test signals to your system.

And we're the only American manufacturer that supplies a color bar generator with the new SMPTE alignment test signal (reverse bars).

We're so sure of your acceptance of Lenco equipment that we offer a *two-year* warranty on all parts and labor—and that includes freight to and from our factory!

Call or write for a demonstration today. You'll find Lenco to be your first—and only—video test set alternative.

LENCO

LENCO, INC., ELECTRONICS DIVISION

300 N. Maryland St., Jackson, MO 63755, (314) 243-3147

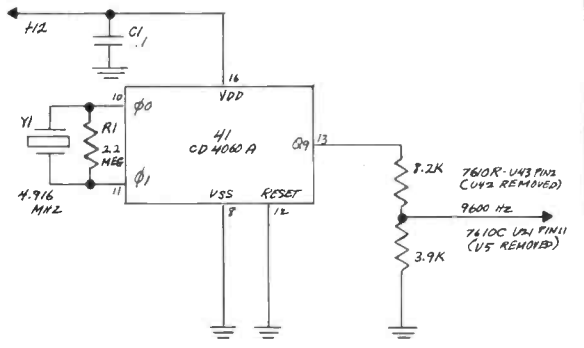
13620 Littlecrest Dr., Dallas, TX 75234, (214) 241-0976 • Post Office Box 301, Atchison, KS 66002, (913) 367-1146
Box 404Z, Albany, GA 31706, (912) 436-4927 • 7303 Poplar Lane, Middletown, MD 21769, (301) 371-5588
5456 Blossom Acres Drive, San Jose CA 95124 (408) 356-0221

Circle 171 on Reader Service Card

Great Ideas

In the National Semiconductor *CMOS Data Book*, communications link baud rate clocks are mentioned as one application where crystal-controlled oscillators should be used. We decided to design and build a replacement time base oscillator for our units and have not had trouble of this type again since the modifications were made.

The new circuit uses a single IC and an off-the-shelf crystal frequency that keeps parts costs below $10.00. The crystal and IC are both widely available. We bought ours from Jameco Electronics in Belmont, Calif.



Ellis's crystal-controlled time base oscillator

The CD-4060A is a CMOS oscillator and powers-of-two divider. Outputs are available at the crystal frequency divided by 2^4 to 2^{14}. In our circuit, a standard 4.916 MHz crystal frequency is divided by 2^9 to yield 9600 Hz.

The logic driven by the time base in the TFT units is CMOS operating on a 5 V supply. Unfortunately, the CD-4060A operating speed is limited at low supply voltages. The oscillator will run up to 10 MHz typically with a 15 V supply, but is only good to 3 MHz at 5 V. At KCBS, we run the chips at 12 V, since a regulated supply is available in the TFT units, and use a voltage divider on the outputs to reduce the voltage swing to that needed for 5 V-supply logic.

In the circuit, C1 serves as power supply decoupling. R1 biases the internal oscillator and R2 and R3 form the voltage divider. The circuit was built on a 2½-inch by one-inch piece of perfboard and mounted on existing internal standoffs. In both the studio and remote units, the original 567 oscillator chips are removed from their sockets.

The wide flexibility in divide ratios provided by the CD-4060A means other crystal frequencies could be used. Indeed, if a 2.458 MHz crystal were available, the circuit would probably work off a 5 V supply. Note that if this circuit is used in units with TTL logic, some buffering would be needed to drive higher-current TTL inputs. **BM/E**

VOTE NOW!
Ballot On Reader Service Card

Get a clear picture of the 1980 Olympics... with the Oki 1980's technology.

Oki LT1015Σ high resolution TV converter.

In 1980, probably the most important TV transmissions will be the Olympic Games, with their attendant problems of converting differing TV standards—SECAM, PAL, PAL M, NTSC. The Oki technology, the most advanced in the world, has the solution to those problems—the LT1015Σ high resolution TV standards converter. The LT1015Σ features: Digital processing with a large capacity storage and Intraframe interpolation for improved vertical resolution—Adaptive interpolation for discrimination between moving and still pictures.

Other outstanding features of the LT1015Σ are the one touch operation; just switch on and it's ready for service—the **SYNCHRONIZER**, synchronizes the frames between Local and Network transmissions—the **FREEZE**, for one-field still pictures—and the **TIME BASE CORRECTION**, eliminates jitter from signals from less sophisticated VTR systems. All this plus Built-in Monitors, Compact Construction, and Low Cost.

And for that VTR location work, the Oki **LT1200** portable TV converter is also available.

OKI
electric industry company, ltd.

For more information, contact:
International Division:
Private Systems Dept.:
10-3 Shibaura 4-chome, Minato-ku,
Tokyo 108, Japan
TEL Tokyo 454-2111
TELEX J22627

Circle 175 on Reader Service Card

BROADCAST EQUIPMENT

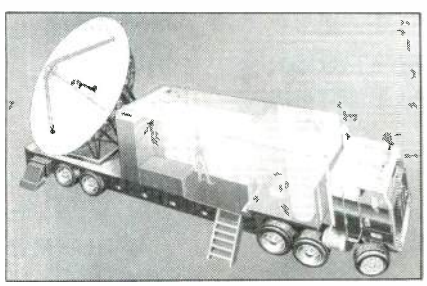
One-Inch VTR 250

The Model TT-7000 one-inch high-band helical scan VTR features an aided-track-following option that allows precise editing and speed variation with no loss of sync, when combined

with optional NTC-10 TBC. Speed may be varied from one-quarter reverse to twice forward; still-frame capability permits study and small-increment editing motion. Designed for use in production studios, TV remote vans, and TV studios, the unit uses the full-scan Type C format compatible with SMPTE standards. Other features include optional tape timer counter and built-in FM calibrate oscillator/marker. Base price, $42,000; aided-track-following option, $10,000; NTC-10 TBC, $21,950. 3M COMPANY.

Mobile Production Vans 251

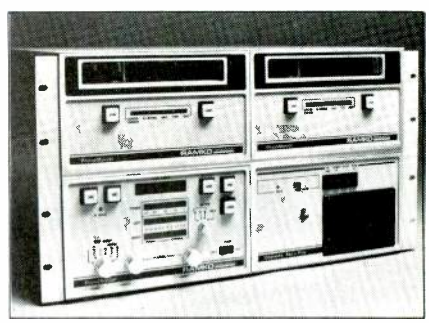
This standard line of mobile location production units is intended to eliminate the need to design, engineer, and build custom units from scratch. It consists of five basic models. Compact 15



is a 15-foot Ford van with one broadcast-quality camera and one VTR, for use as an inexpensive ENG microwave unit. Compact 20, a 318-cubic inch Dodge Wide Van with front-mounted generator, contains up to four cameras and two VTRs. Compact 27 contains up to six cameras, three one-inch VTRs, intercommunications equipment, A/V monitoring, and telecommunications equipment in a Ford C8000 van with diesel engine. Compact 40 is a 40-foot trailer that can accommodate a staff of 10; it features eight cameras and five VTRs. Compact 42, a two-thirds semi, features a portable earth station with five-meter dish. COMPACT VIDEO SYSTEMS, INC.

Cartridge Recorder 252

The PhaseMaster Cart/Cassette Recording Center is designed to eliminate the stereo phase shift problem in recording cartridges. The stereo signal is mixed on the upper track before it reaches the head or tape, with decoding information on the lower track, and then decoded and phase locked after it leaves the head and tape. According to



the manufacturer, this results in recording/reproduction/duplication free of phase error, with no holes in mono reception and no stereo side-to-side shift. The unit consists of four modules: an electronic control center, two A and B size cart decks, and a cassette deck. It may be used to make multiple, simultaneous recordings on all three decks from an external source or to duplicate from one deck to the other two. Features include: built-in automatic four-digit solid state timer; three LED meters for left and right channel audio and phase analysis; crystal-controlled brushless dc motor for timing accuracy of 0.05 percent or better; field-adjustable speeds of 3¾,

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

Fuji. The professional tape no matter what your profession.

Whether you're in features, commercials, documentaries, sales or education—no matter how you use video—you and your job demand perfection. And for that, you need the truly professional tape. Fuji.

Networks rely on us for everything from specials to fast-breaking news. As do independent producers, corporations and institutions, for all kinds of applications. In 2″ quad, 1″, 3/4″ U-matic® and 1/2″ VHS or Beta videocassettes.

They know Fuji stands up to the most stringent demands. Providing clearer, sharper, crisper pictures. More accurate, intense and consistent color. Plus unexcelled freedom from dropouts, particularly important with slower speeds and repeated edits. And all with the kind of reliability and durability that keep productions looking as good on the hundredth pass as they do on the first.

So, no matter what your profession, get Fuji. The professional tape professionals depend upon.

FUJI TAPE

One brand fits all. Better.

Magnetic Tape Division, Fuji Photo Film U.S.A., Inc.
350 Fifth Avenue, New York, New York 10001 (212) 736-3335

Broadcast Equipment

7½, and 15 ips; and maximum wow and flutter of 0.095 percent. A plug-in compander is optional; individual PhaseMaster playback units are available, as is a matrix decoding unit for use with a user's present playback decks. RAMKO RESEARCH.

Portable VCR 253

Model HBU-4400 is a portable high-band U-format cassette recorder that features 10 minutes maximum recording time on standard U-format minicassettes, with quad-quality playback on

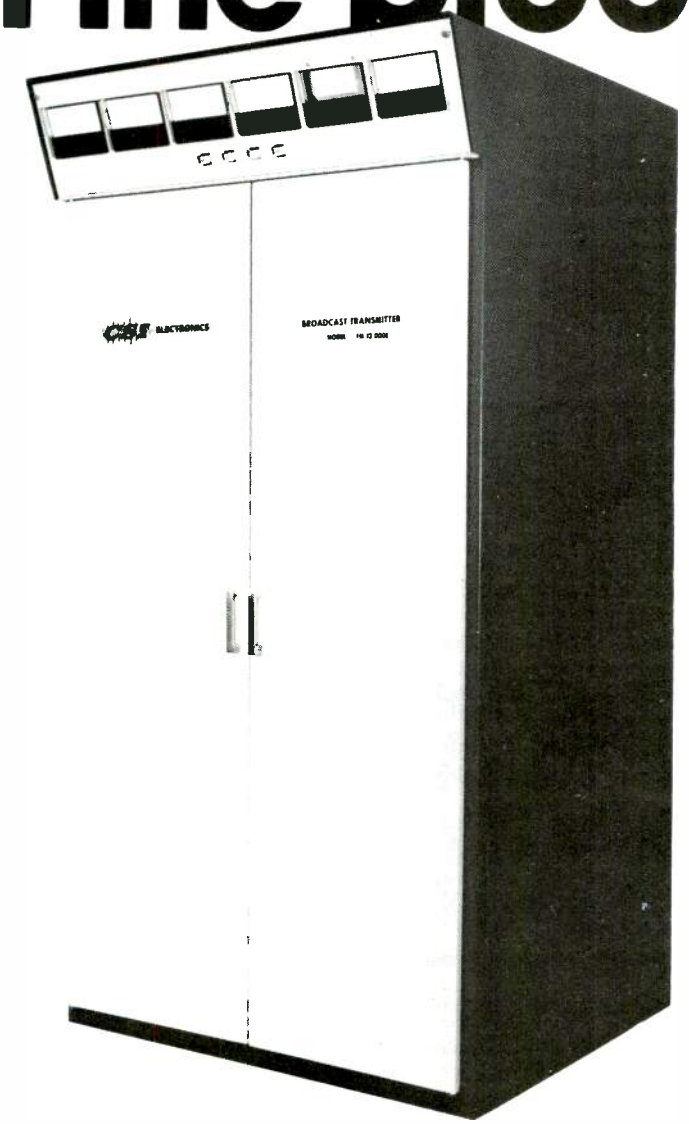
companion HBU-2860. Base machine for the acquisition HBU is the JVC 4400; the HBU uses all normal JVC accessories and provides confidence playback. Picture quality is equal to quad or one-inch, according to the manufacturer. Head-to-tape speed is 1200 ips (three times scanner); this, with a threefold increase in linear tape speed, preserves U-format mechanical recording specifications and assures interchangeability between machines. Weight is 25 pounds. $8500. RECORTEC, INC.

Diversity Mic System 254

This new mobile diversity system, used with the manufacturer's 100 Series wireless microphone system, is in-

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

The toughest five-year-old on the block!



Five years ago, CSI attended its first NAB convention in Las Vegas.

In 1980 — five years and over 450 installations later we're back in Las Vegas with a full line of broadcast transmitters.

Be sure to stop by our Booth, #106 and get acquainted with our full line of broadcast transmitters.

CSI ELECTRONICS INC.

3800 South Congress Street • Boynton Beach, Florida • Phone 305/732-0300 • Telex 513458

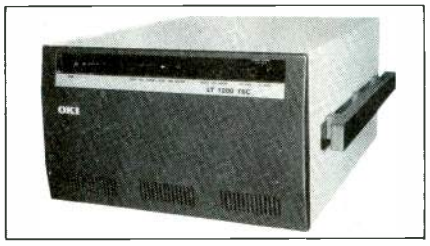
IN CANADA, contact Peter MacFarlane, CSI Electronics, Pointe Claire P.Q. Phone 514-695-8130 or 514-484-6601

Circle 177 on Reader Service Card

tended to help eliminate "dead spots" (signal dropout). Used in tandem with two or more receivers, the system automatically selects the strongest available signal and "fills in the dips." The heart of the system is the MDU 101 combining unit, which compares signal strength from each receiver, combines these signals in a buffer amplifier, and rejects any signal that is significantly weaker. MICRON AUDIO PRODUCTS.

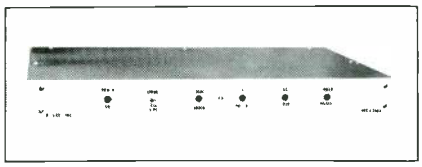
TV Standards Converter 255

The LT1200 portable TV standards converter is small in size and light in weight due to the use of highly integrated printed circuit boards. A one-chip LSI is used for the A/D converter, and a 16K bits dynamic RAM is mounted for the memory circuit. All circuitry is solid state; mode conversions are obtained by changing the appropriate decoder and encoder modules. Time base corrector, frame synchronizer, and image enhancer are built-in. OKI.



VIRS Generator 256

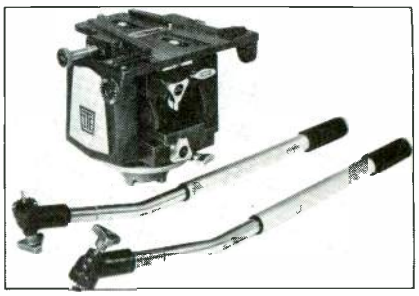
This compact VIRS generator automatically adds the vertical interval reference signal to line 19 or 20 in either or both fields when its output is bridged across the composite program line. The one-line reference signal comprises a



three-level stepped luminance signal with 70, 50, and 10 percent picture levels. Video level, setup, chroma gain, and chroma phase can be adjusted automatically or manually following program recording or transmission. An automatic line sampler disables the generation of local VIRS if another signal is already present. Front-panel status lamps indicate the presence of program video, subcarrier lock, external or local VIRS, and power. $960 to $1200. TELEVISION EQUIPMENT ASSOCIATES.

Fluid Camera Head 257

The ITE-H6 Hydrocam™ television camera head incorporates a viscosity drag system that affords extremely smooth pan and tilt action, according to the manufacturer. Independent lock-in friction controls are featured for pan

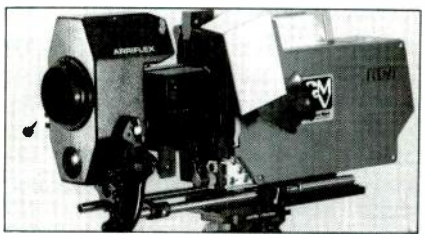


and tilt; the unit is also equipped with wedge adaptor and dual telescopic handles. Tilt angle is up to ±50 degrees; pan rotation is 360 degrees. It can support cameras weighing up to 125 pounds; dimensions are 9 inches high by 9 inches wide by 9½ inches deep. The unit weighs 23 pounds and is constructed of cast aluminum. $1875. INNOVATIVE TELEVISION EQUIPMENT.

Image Stabilizer 258

This image stabilizer for film or video

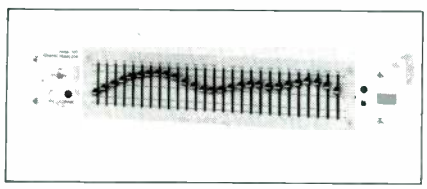
cameras consists of an optical system governed by a precise battery-powered gyroscope. No special lens modification is required for the self-contained unit, which weighs less than six pounds. It equalizes vibration frequencies of 1 kHz and higher and may be used in airborne applications. There is no light loss or image degradation



through the system, according to the manufacturer, and no special training or techniques are required in its use. Focal lengths of 35 mm and longer may be used with the ENG/EFP format; lenses of 75 mm and longer may be used with the studio broadcast video format. ARRIFLEX CORP.

Low-Noise Equalizer 259

The Model 537 equalizer, successor to the maker's Model 527-A, boasts a signal-to-noise ratio better than 110 dB at maximum output. It provides 12 dB



of boost or cut at each of its 27 frequencies, centered at ISO ⅓-octave increments from 40 Hz to 16 kHz. Input capability is +20 dBm; output is +24 dBm. The unit's 27 filters are active, minimum phase L-C networks that offer minimum ripple and phase shift when used in combination, according to the maker. Up to 20 dB gain is available with a front-panel adjustment. The 537 is completely self-contained with a regulated power supply. $796. UREI.

Amplifier Power Supply 260

BPS-1208 is a solid state low-noise amplifier power supply for LNAs and satellite earth stations that replaces the maker's older discrete-type model with the same designation number. Its noncorrosive Gell Cell batteries are kept at peak voltage by solid state charging and voltage regulation. A VU meter switches between volts and milliamps readout; sensing and charging circuits are all solid state. The 3½-inch by 19-inch rack-mount unit has output voltage under full charge at 13.8 V dc with maximum output current of 500 mA. Standby capacity is 24 hours at 300 mA

Broadcast Equipment

and 48 hours at 150 mA. Required input power is 105 to 125 V ac, 60 Hz, single phase at 0.8 A. $199.95. UNITED STATES TOWER CO.

Lighting Controller 261

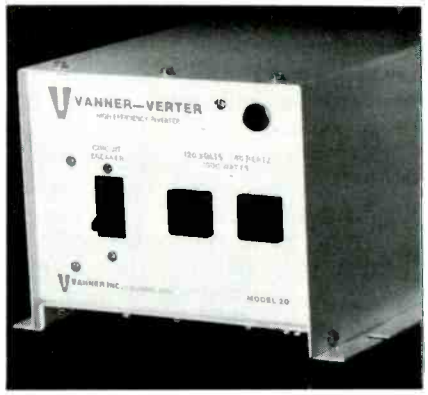
The ElectroFlash ™ Controller SC-205, designed for use with the maker's FAA L-856 obstruction lighting system, regulates beacon synchronization and intensity for systems with up to 28 beacons. It monitors and displays individual beacon condition, day/twilight/night system status, and system fail. Each display indicator can be provided with an optional interface to allow complete unmanned and remote site monitoring. Also optional is a provision for monitor function and individual beacon tests. Applications include AM, FM, TV, and microwave communications towers. Base price, $5080. FLASH TECHNOLOGY CORP.

Video Filters 262

BAL low-pass video filters are recommended for installation at the output of character generators to eliminate spurious spikes occurring above the normal video pass band. The passive filters feature phase equalization, low insertion loss, and better than 45 dB rejection above cutoff frequency with extremely fast roll-off, according to the manufacturer. Available with cutoff frequencies from 0.5 MHz to 10 MHz. BROADCAST VIDEO SYSTEMS, LTD.

1000 W Inverter 263

Vanner-Verter, a highly regulated 1000 W dc to ac inverter intended for use in TV and radio remote vehicles, is over 90 percent efficient and capable of driv-



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

ing all on-board equipment. Normal draw, with everything on, is between 6 and 7 A at 120 V. No additional filtering is necessary to produce a clean waveform with little distortion. The unit measures six by eight by 13 inches and weighs 24 pounds. Model 20-10Q is 12 V dc and produces 1000 W at 120 V ac. Model 24-15, for helicopter use, is 24 V dc at 120 V ac. Both are equipped with battery quick connectors and remote control lighted switch. VANNER, INC.

ENG Mixer 264

This three-input mobile audio mixer for ENG use is compression amp-equipped with fully adjustable input and output levels. It can handle cassette inputs ranging from 250 mV to 12.5 V (average values). A two-position switch permits headset monitoring of tape feed into the mixer or studio cue, and a gain control on the front panel adjusts audio level to all currently used headsets. Also featured are a 1 kHz test tone actuated by a front-panel momentary switch and automatic mic interrupt of tape feed input when the PTT button is depressed. CIRCUIT DEVELOPMENT CO.

Audio Test Set 265

Recorder test set RTS2, intended to perform the full range of performance tests on tape recorders, audio amps, preamps, and turntables, contains a low-distortion audio oscillator, stepped

attenuator with 100 dB output range, precision voltmeter, distortion meter, and wow and flutter meter. Only a single input and output lead are needed; setup is via front-panel pushbuttons and results are read out directly in percent or dB. The single instrument can test frequency response, S/N, wow and flutter, input sensitivity, and gain. It weighs 14 pounds and can be calibrated in the field without reference to auxiliary equipment. NEAL FERROGRAPH U.S.A., INC.

RF Wattmeter 266

Model 4381, first in the 4380 RF Power Analyst™ series, is a portable, multi-

Broadcast Equipment

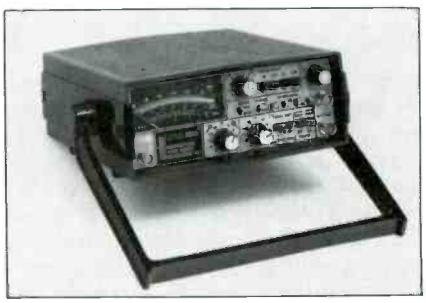
purpose digital directional RF wattmeter for power levels from 0.1 W to 10,000 W and from 0.5 to 2300 MHz. Features include CW or FM power displayed in watts or dBm; continuous cal-

culation of VSWR and dB return loss, and indication of peak envelope power (in watts) and percent modulation. For tuning transmitters, matching antennas, or tweaking RF components, a delta function identifies either rise or fall in displayed values, while a minimum or maximum memory recalls optimum conditions during adjustments. Accuracy is rated at ±5 percent of nominal full scale; VSWR is 1.05 max to 1 GHz in 50 ohm systems. $595.
BIRD ELECTRONIC CORP.

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

Distortion/Noise Measuring Set 267

Model 3500 portable distortion and noise measuring system incorporates an ultra low-distortion sine wave oscillator, THD analyzer, wideband and weighted true rms level meter, and tuneable bandpass filter. It will measure signal lock, frequency response,

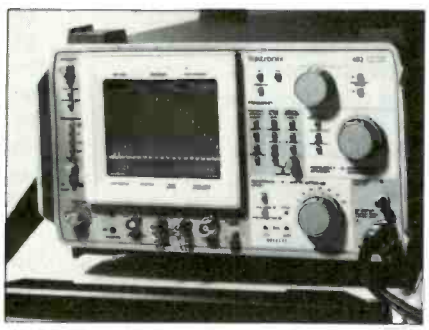


wideband noise, weighted noise, narrow band noise, crosstalk, THD, and, optionally, IM distortion. Auto set level and auto nulling are included. THD can be measured to below 0.001 percent. At the system's upper limit of 100 kHz, measurements can be made to below 0.01 percent. Oscillator setting time at the low frequency limit of 10 Hz

is below three seconds. The unit requires less than 10 W and can be completely floated on a single optional rechargeable internal battery; alternatively, it uses an external 12 V wall-plug transformer. $1600 without options. AMBER ELECTRO DESIGN, LTD.

Spectrum Analyzer 268

The 492 portable spectrum analyzer offers users the ability to go beyond 60 GHz. Stated coverage is 50 kHz to 21 GHz with internal mixers, 21 GHz to 60 GHz with the maker's external waveguide mixers, and to 220 GHz with commercially available waveguide mixers. Performance levels include:



−123 dBm average noise level at 100 Hz resolution; on-screen dynamic range of 80 dB, with 100 dB measurement capability in preselected ranges; and 70 dBc low phase noise at 3 kHz offset. The instrument uses a three-knob sequence for frequency, frequency span, and reference level settings and offers easy operation, according to the manufacturer. Options include phaselock stabilization, digital storage and signal processing, front-end preselection, and removal of the external waveguide mixer connection. Also available in an IEEE-488 programmable version, 492P. Model 492, from $17,850; Model 492P, from $20,850. TEKTRONIX, INC.

Edit Controller 269

This microprocessor-based edit controller is capable of interface with most modified and unmodified VTRs. Its unique software program allows mixing or matching of edit and source VTRs by type and manufacturer. The microprocessor automatically detects the type of VTR connected to the edit controller and selects the proper software program. The editor features a two-level counter to hold the program time in memory and to time short inserts, edits, or other segments within the program. It also features multimode insert, random access to any point on the VTR, single-button return to edit and end of insert, and full remote control of edit and source VTR. Under $5000. DYNASCIENCES.

Advertisers Index

SALES OFFICES

BM/E

BM/E—Broadcast Management/Engineering
295 Madison Ave.
New York, New York 10017
Telex: 64-4001

Eastern & Midwestern States
295 Madison Avenue
New York, New York 10017
212-685-5320
Kevin J. Condon
James C. Maywalt

Western States
353 Sacramento Street
Suite 600
San Francisco, CA 94111
415-421-7330
William J. Healey

3420 Ocean Park Blvd., Suite 3020
Santa Monica, CA 90405
213-450-7181
Neal Wilder

United Kingdom/Europe
Chilberton House
Doods Road
Reigate, Surrey, England
Telephone: Reigate 43521
Derek Hopkins
Bronwyn Holmes

Japan/Far East
Eiraku Building
1-13-9, Ginza,
Chuo-Ku, Tokyo 104 Japan
03 (562) 4781
S. Yasui
K. Yamamoto

BM/E READER SERVICE CARD February 1980 Issue

NAME _____

TITLE _____

STATION OR COMPANY _____

ADDRESS _____

CITY _____ *STATE* _____ *ZIP* _____

PHONE # ( ) _____

Tell us what you like or dislike about the issue

_____

_____

What articles would you like to see?

_____

_____

GREAT IDEA BALLOT *Fill in entry number of ideas you rank 1, 2, 3*					
No.	Rank	No.	Rank	No.	Rank
	1		2		3

100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119
120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139
140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179
180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199
200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219
220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259
260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279
280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299
300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319
320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339
340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359
360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379
380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399

Use until May 30, 1980

BM/E READER SERVICE CARD February 1980 Issue

NAME _____

TITLE _____

STATION OR COMPANY _____

ADDRESS _____

CITY _____ *STATE* _____ *ZIP* _____

PHONE # ( ) _____

Tell us what you like or dislike about the issue

_____

_____

What articles would you like to see?

_____

_____

GREAT IDEA BALLOT *Fill in entry number of ideas you rank 1, 2, 3*					
No.	Rank	No.	Rank	No.	Rank
	1		2		3

100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119
120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139
140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179
180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199
200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219
220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259
260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279
280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299
300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319
320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339
340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359
360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379
380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399

Use until May 30, 1980

COMPLIMENTARY SUBSCRIPTION QUALIFICATION CARD

1. I would like to receive BM/E (Broadcast Management/Engineering)
☐ YES ☐ NO

2. Please check your business classifications

☐ AM Station/Network/Group
☐ FM Station/Network/Group
☐ TV Station/Network/Group
☐ Non-broadcast TV
☐ Campus Limited Radio
☐ CATV Facilities
☐ Microwave, Telephone, Satellite Company
☐ Recording Studio
☐ Teleproduction Facility
☐ Government
☐ Consultant
☐ Lawyer
☐ Manufacturer/Distributor/Dealer
☐ Other (please specify) _____

3. Are you responsible for more than one station or facility?
☐ YES ☐ NO

4. My primary area of responsibility is: (please check one)

☐ Corporate Management — Board Chairman, President, Owner, Partner, Director and VP or General Manager (other than in charge of engineering or station operations management)

☐ Technical Management & Engineering — VP Engineering, technical/engineering director, chief engineer, engineering supervisor, other engineering or technical titles

☐ Operations & Station Management/Production & Programming — VP operations, operation manager/director, general manager, station manager, production manager, program manager, news director, and other operations titles

5. Signature _____ Date _____

Name _____

Title _____

Station Call Letters or Company _____

_____

Street _____

City _____ State _____ Zip _____

Is this your business address? ☐ YES ☐ NO

If not, please give us your business address below so that we can avoid sending duplicate copies

Name _____

Station Call Letters or Company _____

Street _____

City _____ State _____ Zip _____

Place
Postage
Here

BM/E
BROADCAST MANAGEMENT ENGINEERING

Broadband Information Services, Inc.
P.O. BOX 6058
Duluth, Minnesota 55806

Place
Postage
Here

BM/E
BROADCAST MANAGEMENT ENGINEERING

Broadband Information Services, Inc.
P.O. BOX 6058
Duluth, Minnesota 55806

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY CARD
FIRST CLASS PERMIT NO. 665 DULUTH, MINNESOTA

POSTAGE WILL BE PAID BY ADDRESSEE

BM/E
BROADCAST MANAGEMENT/ENGINEERING

Broadband Information Services, Inc.
P. O. BOX 6056
Duluth, Minnesota 55806

SS 8650
STEREO AUDIO CONSOLE

A new standard modular audio console offering full facilities, quality circuitry of proven reliability, comprehensive features and a range of standard, pre-wired options. A maximum of fourteen channels are available along with a convenient centrally-located script board and input and accessory modules to satisfy any requirement. Standardization allows these features to be incorporated into a well engineered, compact, functionally styled package at an unusually economical price.

McCURDY

McCURDY RADIO INDUSTRIES

TORONTO [416] 751-6262 • CHICAGO [312]640-7077 • NEW YORK [201]327-0750

Circle 190 on Reader Service Card

Fall into AM Stereo!

Ward-Beck brings you unexcelled quality in the versatile R1200 and R2000 Series radio consoles.

Designed for AM and FM, Mono or Stereo applications, engineered AM Stereo ready, this is truly contemporary radio.

WBS

First by Design.

Standard R2000
with some options.

Ward-Beck Systems Ltd., 841 Progress Avenue, Scarborough, Ontario, Canada M1H 2X4.
Tel: (416) 438-6550.

Ward-Beck Systems Inc., 6900 East Camelback Road, Suite 1010, Scottsdale, Arizona 8_251.