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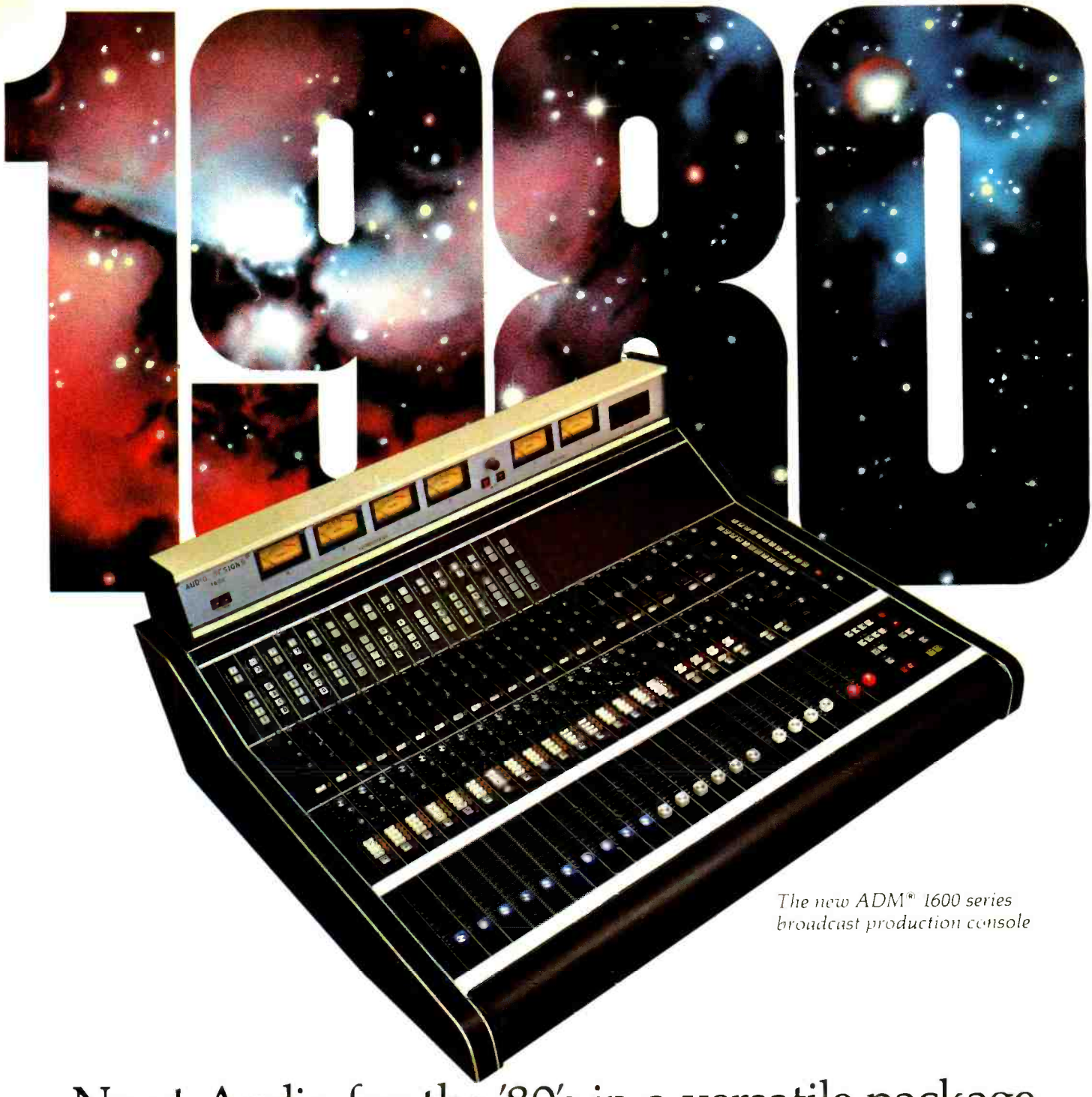

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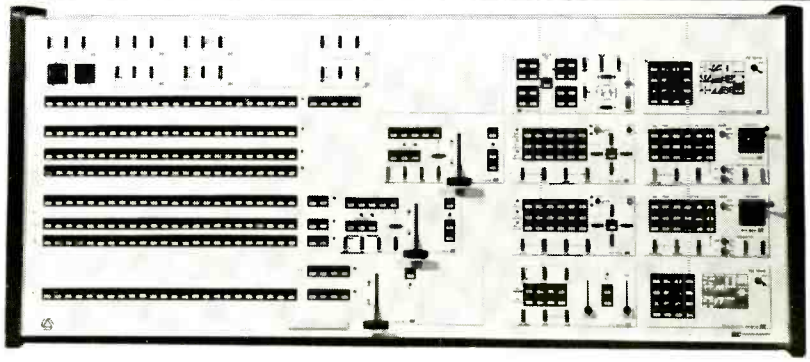

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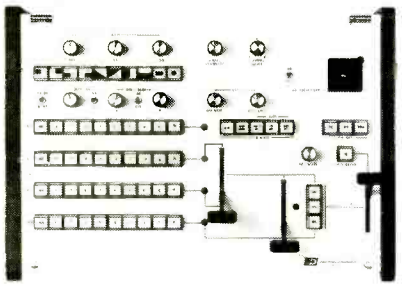

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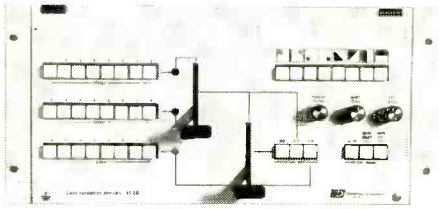

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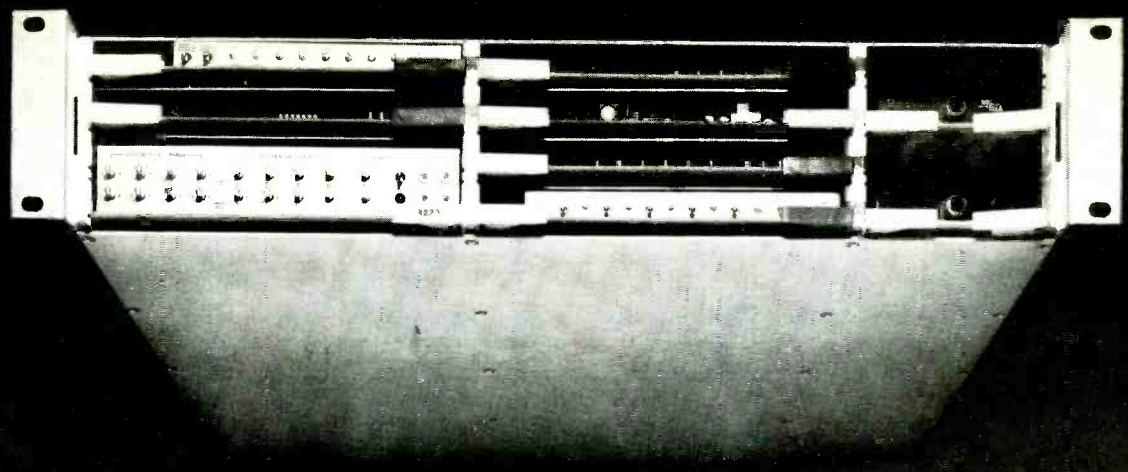

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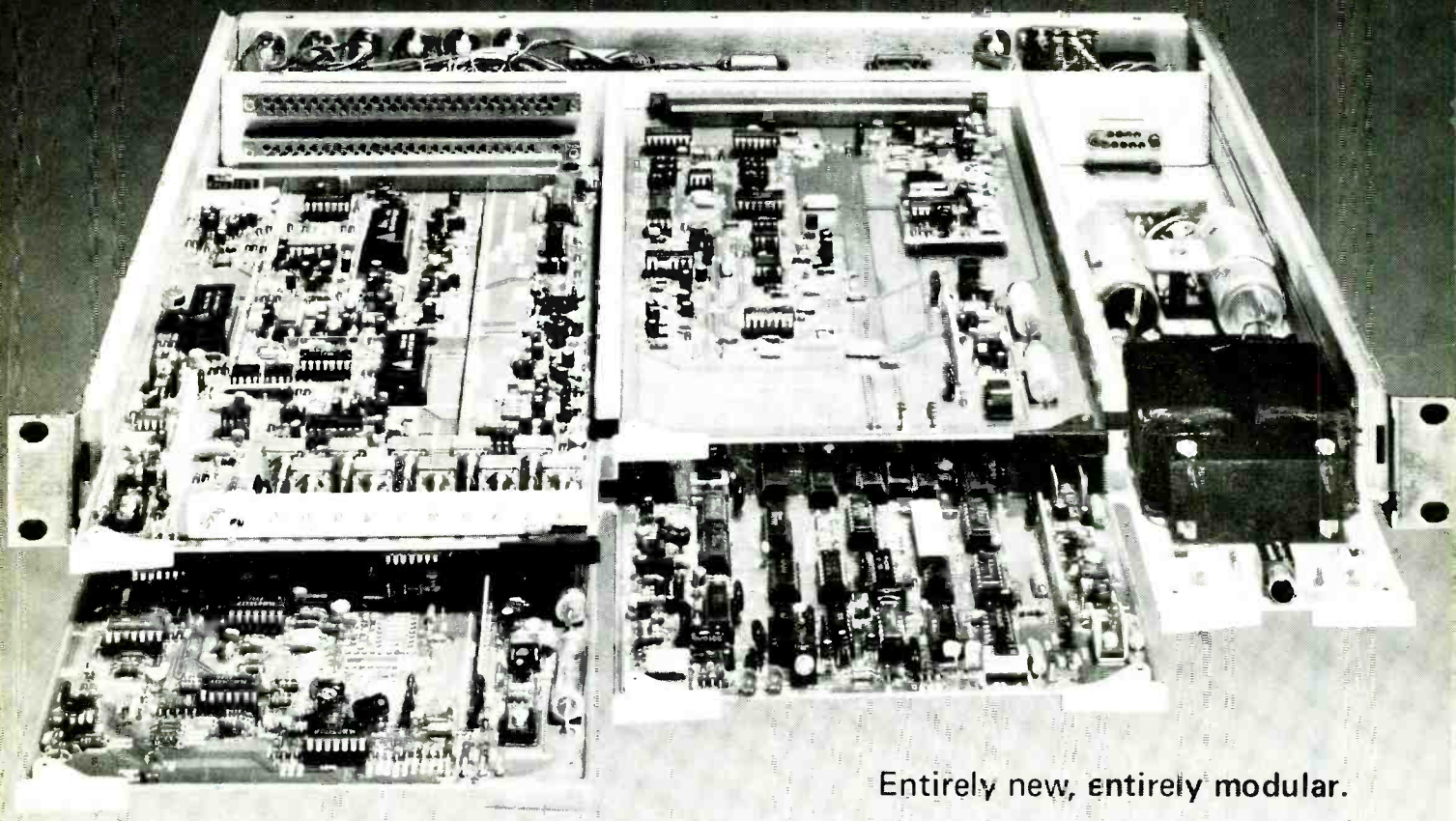

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BROADCAST INDUSTRY NEWS

UHF Channels For STL And Intercity Relay?

Moseley Associates, Inc., has filed a Petition for Rule Making with the FCC for the amendment of its rules to permit aural broadcast STLs and intercity relay stations to operate in unassigned UHF TV channels on a secondary, non-interfering basis when frequencies in the 947 to 952 MHz spectrum are unavailable.

The Commission's rules presently authorize ten 500 kHz channels for STL and intercity links for broadcast service. Each of these channels may be occupied by two separate links in order to convey the left and right audio channels for stereo FM broadcasting. The Commission allocates the entire 500 kHz spectrum to any licensee regardless of his specific requirements. The result is that an FM stereo licensee using a single STL to convey a composite stereo signal, remote control, and SCA subcarrier receives the same bandwidth as an AM licensee requiring only a single monaural program circuit. While this may seem wasteful of spectrum, there has been no compelling reason to revise the rules until now, when spectrum space is at a premium. The growth of FM service and the need for higher quality program circuits with greater reliability have resulted in a shift from land wire circuits to the use of STL equipment. As a result, all 10 channels have been assigned and are in use in major metropolitan areas, making the assignment of new links difficult or impossible.

The Moseley petition suggests that if Docket 21313, the current Notice of Proposed Rule Making (NPRM) for a standard of stereo AM broadcasting, is approved, the additional need for STL spectrum space will be immediate and great. Thus, the current 947 MHz to 952 MHz band will be totally inadequate for the larger metropolitan areas already suffering from congestion.

Engineering tests and studies made by Moseley have shown that a single 15 kHz audio program channel suitable for AM broadcast standards can be conveyed along with appropriate remote control information in a 62.5 kHz assignment. For AM stereo, a total of 125 kHz spectrum would be required. These channels need not be adjacent, but it may be desirable to consider 125 kHz blocks for AM STL service to allow for expansion to stereo service in the case of initial monaural operation. It is not practical to fragment one 500 kHz channel into four 125 kHz channels for AM stereo operation as those channels nearest the adjacent 500 kHz channels may cause interference to its operation. Such operation would be possible but certain assignment problems would prove to be an administrative burden on the Commission, according to Moseley's petition.

While re-allocation of the 942 MHz to 947 MHz spectrum, formerly assigned to broadcast STL service, on an interference free basis would help relieve the present congestion, it would not adequately meet the needs if AM stereo broadcasting is authorized. Moseley therefore recommends that the Commission assign unallocated or unused UHF TV channels for broadcast STL service.

A Faster Process For Video News Film

Penelope Hamblin, at WTEV, New Bedford/Providence, checks the mix of new Kodak chemicals entering their new Allen RVNP-82 processor

A rapid new process tested by four televison stations since last spring has nearly halved the dry-to-dry time for film while leading to some cost savings in chemicals. The process, RVNP (Rapid Video New Process) has been used with a variety of processing machines at stations WGR-TV, Buffalo; WIXT-TV, Syracuse; WTAR-TV, Norfolk; and WTEV-TV, New Bedford/Providence.

RVNP is a modification of the VNF-1 process used with Eastman Ektachrome video news film. In the new process, a faster acting formulation of persulfate bleach and bleach accelerator replaces ferricyanide bleach and a second-stop bath. According to Chip Wilkinson, project coordinator, Eastman Kodak, "The new packaged chemicals require very simple processor modifications which can be quickly made with the assistance of technical representatives from Eastman Kodak Co."

WTEV manager of operations and engineering Lee Tanner was negotiating for a new Allen processor when Kodak proposed the test. Collaboration between Tanner and Allen's engineers resulted in a new processor, the RVNP-82. The new Allen processor is handling about 3000 feet of film per day and is running at 82 feet per minute. According to Tanner, the machine has been run at 121 feet per minute with acceptable news output. Tanner reports that now when a photographer walks in the door it is a matter of only 10 minutes before the film is ready to be shown. Comparing that to the previous half-hour processing time, Tanner says that they now have more time for better editing.

All four stations agreed that the process should pay the biggest dividends to smaller television stations with lower operating budgets.

CBN To Divest Itself Of O&Os

Dr. M.G. "Pat" Robertson, president of the Christian Broadcasting Network (CBN), has announced that the network's board of directors has voted to divest itself of all its owned and operated television and radio stations and

continued on page 8

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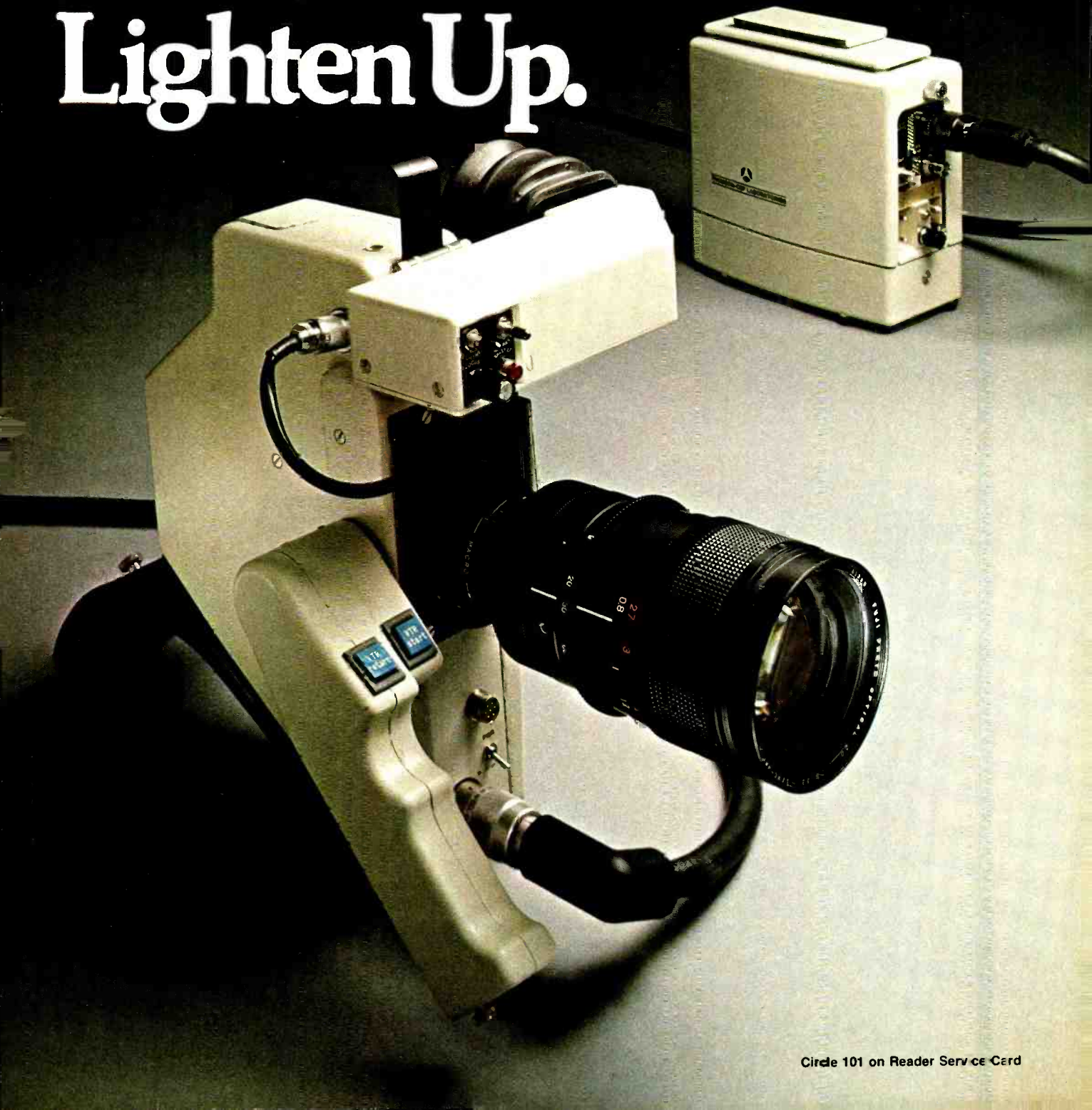

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the new fourth commercial network. These activities are to be placed in a newly formed stock corporation, Continental Broadcasting Network, Inc.

Robertson said that the aims and goals of Continental will be identical to those held by CBN, and that the only change is the corporate vehicle to be employed. He also commented that recent confusion regarding CBN's non-profit status had arisen in Boston and Virginia Beach. He said that he did not believe that non-profit entities should use any special advantage that might accrue to them in competing against tax-paying businesses. Robertson claimed, "The Christian Broadcasting Network has never done this, but our board of directors wants to make it clear, by this move, that our commercial operation will be competing in the marketplace under the identical terms and conditions as those which face any other business enterprise. It has been obvious for a year now that the fourth network would, of necessity, have to be placed in a commercial vehicle. The recent events have merely accelerated our decision to establish this new corporation."

Robertson explained that CBN "sort of backed into commercial operations." In October, 1978, monthly sales at all its O&O TV stations exceeded $1 million. Estimates reveal that sales will reach nearly $8 million in 1978, and twice that amount in 1979. With these developments, Robertson said that it was obviously time for their stations to stand on their own.

In addition to news and sports, the fourth network is developing a daily soap opera, a weekly children's program, an animated motion picture, and several situation comedies.

Although the network's final corporate financial structure is yet to be determined, it will have access to equity financing that was not available to CBN. A distinct possibility exists that financing of the new network's operations could be obtained through a public stock offering. In the interim start-up period, gifts from individuals, corporations, and foundations will be solicited through the Christian Broadcasting Network.

The television stations involved in the new corporation are: WYAH-TV, channel 25, Norfolk-Portsmouth; WXNE-TV, channel 25, Boston; KXTX-TV, channel 39, Dallas; and WANX-TV, channel 46, Atlanta.

The radio stations involved are WXRI-FM, Norfolk, and a five-station FM network in upstate New York that includes WEIV, WOIV, WJIV, WMIV, and WBIV, serving the Albany, Buffalo, Rochester, Syracuse, and Ithaca markets.

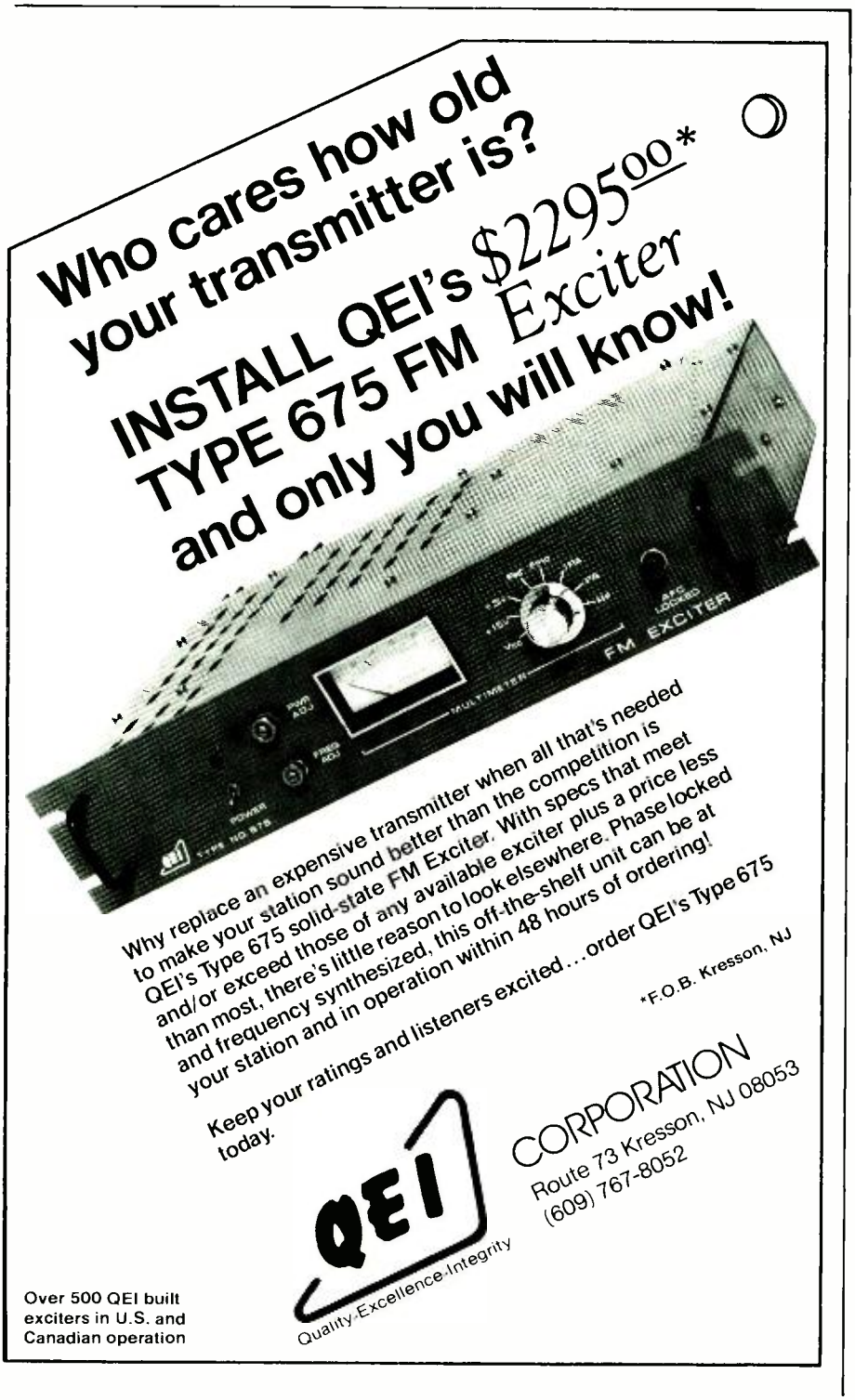
Western Union Submits Plan For Shared Use Of PB Earth Stations

Western Union submitted a plan on November 2 to the Federal Communications Commission to share public television earth stations for commercial communications. Initially, the plan would allow Western Union to use public TV earth stations in Washington, D.C., New Orleans, and Houston for video broadcasting.

Currently, the Public Broadcasting Service (PBS) broadcasts programs to 210 public TV stations via Western Union's Westar satellite system. It was expected that by the end of 1978, 277 public TV stations in the U.S., Puerto Rico, and the Virgin Islands would be linked via 149 earth stations.

The June, 1976 contract between Western Union and the Corporation for Public Broadcasting provides general terms and conditions for shared use, with rates to be paid by Western Union for transmit and receive channels.

continued on page 10



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If the plan is approved, Western Union will have to negotiate separate agreements with licensees covering the use of their earth stations. All electronic equipment needed at the public television location would be installed by Western Union.

S-A Confab Covers Satellites In Broadcasting

Scientific-Atlanta held its fourth earth station symposium last November in Atlanta. The three-day session attracted about 230 attendees, including cable operators, leasing company representatives, broadcasters, lawyers, and equipment manufacturers.

Scientific-Atlanta's president, Sidney Topol, sees a time not too far off when virtually every broadcast station, hotel, and hospital will have a satellite antenna on its roof. He indicated that his company intends to manufacture 60 percent of those antennas. Of those in attendance, Topol pointed out that most of the broadcasters represented independent stations and programming firms interested in satellites because of alternative programming now offered by such firms as Robert Wold Co. and Hughes Television. Right now there is little incentive for major network affiliates to acquire satellite earth stations, but Topol believes the time will come when more diversified programming becomes available.

One of the most recent offerings to broadcasters via satellite was extensive election coverage. Hughes Television buys 5000 hours per year on the Western Union Westar satellite and distributes tennis, football, and hockey events as well as the Jerry Lewis Muscular Dystrophy Telethon. Robert Wold Co. is also committed to about 5000 hours of yearly programming. Wold, who handles sporting events for PBS, surprised some with the announcement that ABC-TV, his largest customer, has dramatically increased its use of satellites. ABC feeds its *World News Tonight* via satellite, and even the station's promos, produced in Hollywood, are transmitted by satellite to New York.

Other than PBS, major networks have not attempted to link their stations via satellite because they already have an adequate, effective system provided by Ma Bell. The major webs are committed to satellites for their N.Y./West Coast feeds, news, and sports programming, but they are not looking to satellites for networking.

The Spanish International Network is heavily committed to satellites to receive network programming for its 11 stations via Westar. The firm also uses satellites to relay Spanish-language programming from Mexico, South America, and Europe.

The cost of delivering programming via satellite versus the AT&T system can result in savings of up to 27 percent if the station uses a common carrier downlink, and up to 53 percent if the station has its own receive terminal. Robert Wold said that satellites could be an important factor for independents that want to be competitive with network affiliates.

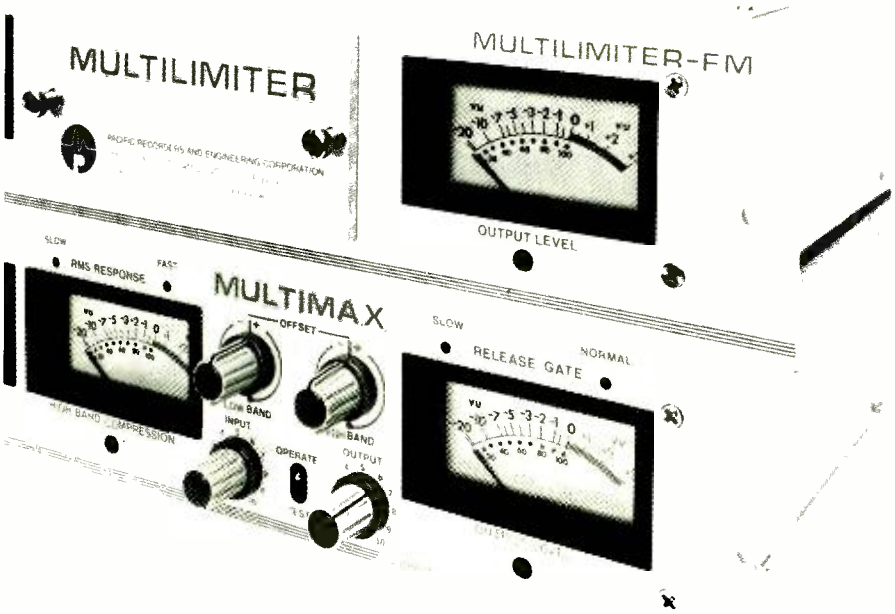
Some figures reveal that out of 785 authorized TV stations only about 6.3 percent will have satellite earth stations in use in 1979. Out of 4000 cable systems, about 20 percent will have terminals in 1979, and projections indicate that the figure will jump to 67.5 percent by 1981. Topol is confident that broadcasters will have to follow.

TV Studios And Offices For New Jersey

The Federal Communications Commission recently reversed a two-year-old decision when it resolved to require New York City and Philadelphia VHF television stations to maintain studios

continued on page 12

ATTENTION ALL TV ENGINEERS



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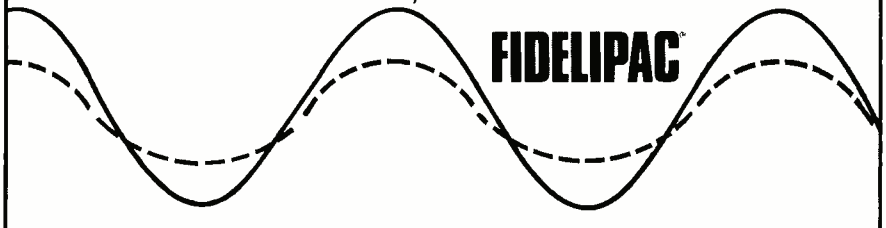

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News

and offices in the state of New Jersey. Chairman Ferris and Commissioner Brown were the dissenters in the four-to-two decision. Their disagreement was based on their opinions that the action was inadequate.

Chairman Ferris went so far as to argue that N.Y.C. and Philadelphia stations should be required to "directionalize" to keep their signals out of New Jersey so that VHF stations could be dropped in and/or to make UHF more viable. FCC staff argued that the idea would not work because TV cannot be directionalized like AM radio.

The proposal will, however, be part of an inquiry to provide New Jersey with more adequate TV service. Due early this year, the inquiry will include the possible attenuation of signals and the economic feasibility of VHF drop-ins and co-assignments.

The Commission's action in this case was prompted by petitions from New Jersey's legislature, the New Jersey Coalition for Fair Broadcasting, and others to deny New York and Philadelphia renewals for alleged failure to serve the needs of New Jersey.

In 1976, the Commission did not require stations to maintain offices in New Jersey, but it did tell them that they had special service obligations and therefore must maintain a physical presence in the state. Commissioner Washburn commented on the FCC action, saying that he was more interested in service than bricks and mortar, and that he would urge that stations be permitted to share physical facilities in New Jersey.

Wasilewski Faults Rewrite And Looks At Future

National Association of Broadcasters president Vincent Wasilewski addressed the Hollywood Radio and Television Society in November and reiterated his association's stand to deny support of the Communications Act rewrite until certain clarifications are made.

Although Wasilewski commended the rewrite's authors for their willingness to learn about the industry and their tendency toward deregulation, he underlined those ambiguities that the association found most objectionable. He argued that the proposed license fees should be precisely laid out in the bill and that the monies from the fees should not go beyond paying the bills of the regulatory commission. Wasilewski criticized the absence of federal regulation of cable TV in the bill, saying that it sets the stage for unfair competition between broadcasters, who pay full copyright royalties for the programs they run, and cablecasters, who do not.

Wasilewski expressed hope that when the rewrite is refined and introduced again next year, it will correct these faults. He said that, in the NAB's view, the only reasonable approach is to wait until the new draft is introduced in order to see if these changes are made.

In a speech at the November 15 inaugural symposium of the University of Houston's School of Communications, Wasilewski suggested that it may be time for broadcasters to consider entering other areas of communications. Referring to computer hookups delivering video data and transmitting mail and newspapers, Wasilewski suggested that such services, planned or in use, could change the way in which viewers use their TV sets.

A network of 56 FM stations currently rent their subcarriers to Digital Broadcasting Systems, McLean, Va., to transmit information at high speed to anyone equipped to receive it. Such an information system is perfectly compatible with broadcasting, said Wasilewski. He suggested that broadcasters might consider themselves in the information business, that is, the business of manufacturing, packaging, distributing, and marketing information as well as entertainment.

Wasilewski expressed the opinion that a mass audience, advertiser-supported business of providing entertainment, news, and information would always exist, but he hesitated to predict if it would be run by companies other than broadcasters.

Speaking to an audience comprised largely of students, the NAB president also addressed the issue of First Amendment rights. He warned that if broadcasters do not continuously fight for these rights, they run the risk of government interference. He also noted that "as broadcasting more and more ascends to the position of prominence in the transmission of news and ideas to the American public, it is necessary that the public be assured of broadcasting's protection against abridgement under the First Amendment." Wasilewski stated that if the courts and Congress do not fully recognize the public's right to broadcasting freedom, then "all First Amendment rights are going down the drain."

ABC Study Challenges Independent Stations

ABC has released a study, conducted in 1977 and 1978, which purports to show that viewers clearly perceive a favorable distinction between network affiliated stations and independents. ABC sees the study as proof that affiliated stations provide a "better" environment for commercial messages than do independent television stations.

continued on page 16

THINKING VIDEO?
THINK
CAMERA MART.

Because at Camera Mart, we feature an entire line of video equipment including Ikegami, Hitachi, Panasonic, Sony, Microtime and many others. The Ikegami ENG package shown here is just one of many we offer. It's got everything you need to cover the story, indoors or out.

The camera: Ikegami's HL-77, the completely self-contained, high sensitivity Plumbicon®* color shoulder camera that's light weight and easy to handle. Its low-profile, with eye-level CRT monitor (on both take and playback, by the way), gives it the convenience and maneuverability you'll appreciate during those hectic, on-the-spot coverage sessions.

The recorder: Sony's easy-to-operate VO-3800 gives you up to 20 minutes of NTSC color on a single U-Matic® cassette which can be edited on the 2860.

This custom package and *whatever* you need in video, are all available for sale, rent or through convenient lease-purchase options which can be arranged to suit nearly any budget. And we're flexible, too. If there's a special package or custom purchase option you'd like to work out, let us know.

So when your thoughts turn to video, turn your attention to Camera Mart. Whether you're equipping a studio for the future, or producing a program for tomorrow, we've got what you need. The way you need it.

*Plumbicon is a registered trademark of N.V. Phillips.

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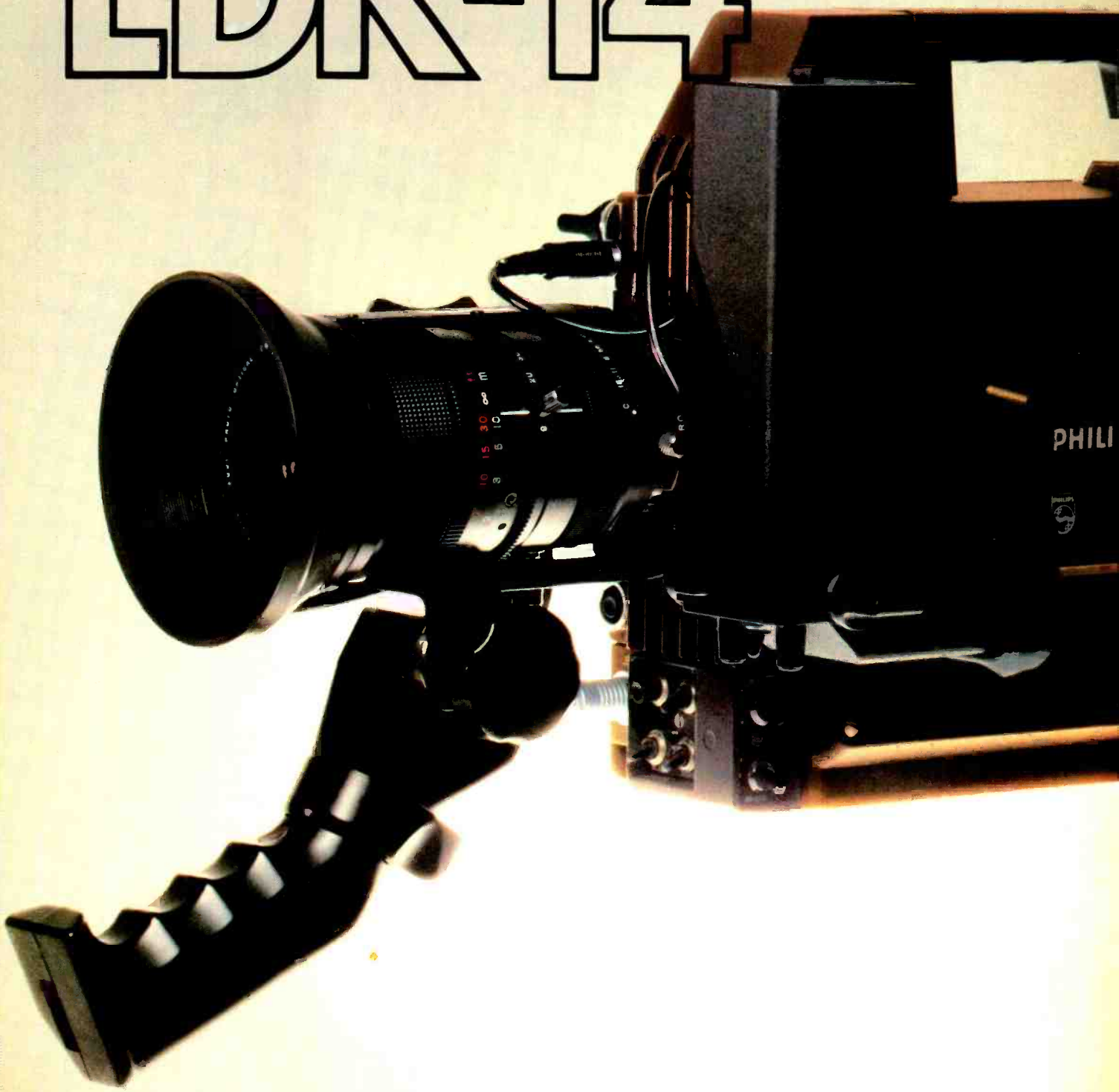
New Standard for Portables...

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)

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Transmitters Love Our Modulimiter.

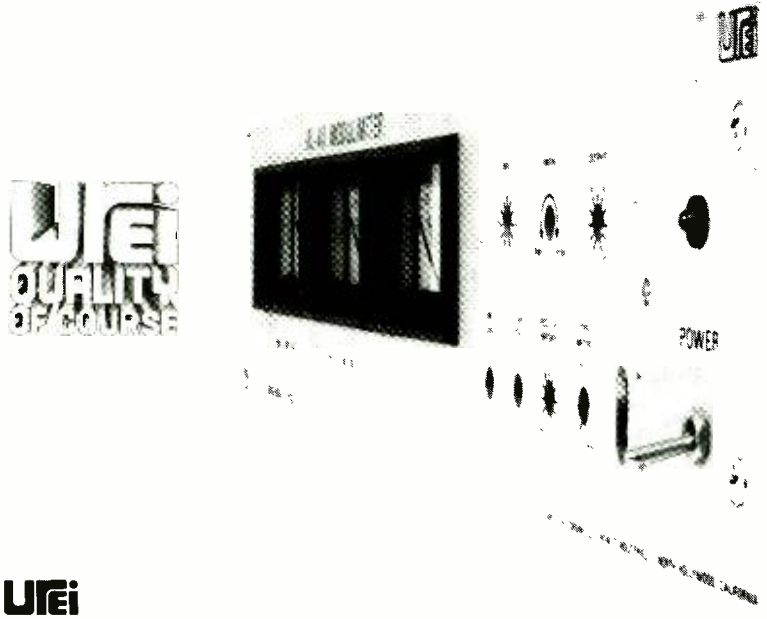
The Competition Will Hate Your New Sound.

The BL-40 Modulimiter is a unique automatic AM broadcast limiter, which will maximize modern transmitter performance. Whatever your format—hard rock to classical, Modulimiter will increase transmitter efficiency and extend coverage.

The BL-40's patented electro-optical attenuator provides smooth, unobtrusive, true RMS limiting. An ultra fast F.E.T. peak limiting section assures absolute protection from unwanted over modulation without peak clipping. Attack time is essentially instantaneous.

Three separate meters indicate RMS LIMITING, PEAK LIMITING AND OUTPUT LEVEL, simultaneously. All critical adjustments are behind a front security panel. A "phase optimizer" maintains most favorable signal polarity permitting up to 125% positive modulation without negative undershoot. " Its the limit " in todays broadcast limiters. UREI quality of course

Available from your UREI dealer.



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News

The study was conducted among 1000 female heads of households randomly selected from markets in which ABC O&O stations operate. Among its findings were that 90 percent of viewers were able to distinguish network affiliated stations from independents; affiliates were thought of as more widely viewed; audiences for affiliates were perceived as more "elite"; and commercials on affiliated stations were more highly regarded.

The study was conducted by in-depth interviews from a random cluster sample selected by Survey Sampling, Inc. of Westport, Conn. The questions regarding various stations in a market were asked using station channel numbers rather than call letters.

According to ABC Market Research personnel, Dave Johnson and Roy Paleuvoy, the study was not conducted as a response to the INTV study that showed independents and affiliates having audiences with similar demographics but rather to prove to advertisers and agencies that demographics notwithstanding, commercial messages were perceived in the context of a station's image. According to the study, viewers expected to react positively towards commercials on network affiliates by a margin of 78 percent to 24 percent for positive reactions to commercials on independents. Expectations of negative reaction to commercials was 34 percent for network affiliates and 57 percent for independents.

House Installing TV Cameras

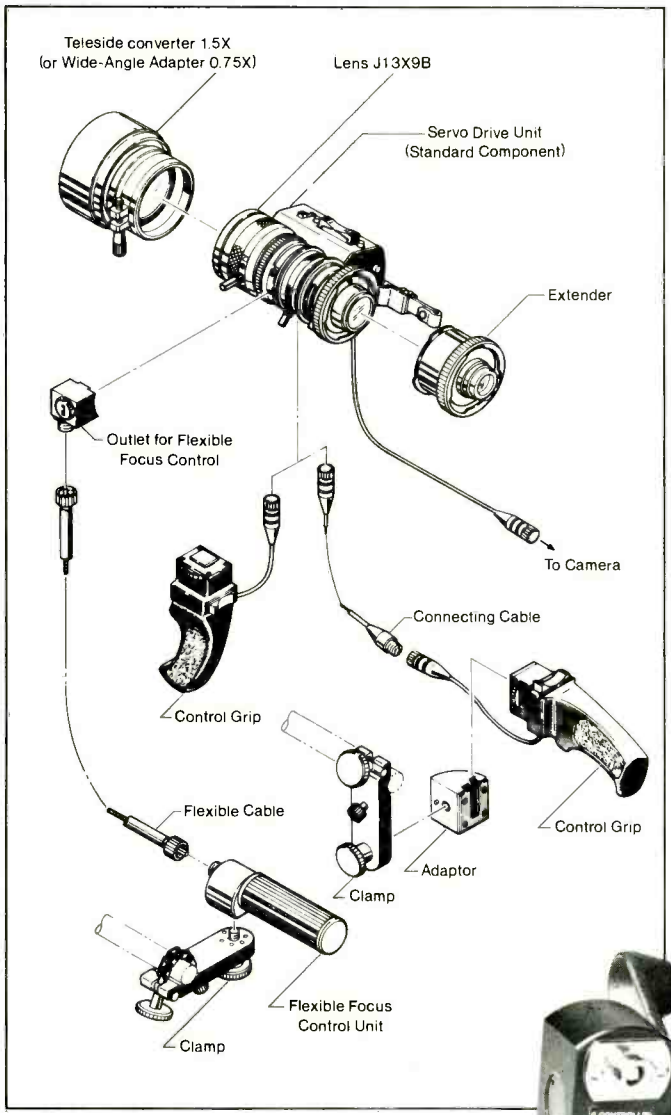
The U.S. House of Representatives is installing six studio color TV cameras in the galleries inside the House Chamber. A complete television system controlled by the House itself is scheduled to be fully operational sometime in February.

Six RCA TK-46 color cameras will be mounted on pan/tilt mechanisms remotely controlled from a newly constructed control room in the Capitol basement. Once the system has been installed and tested, complete daily coverage of House proceedings will be available to all broadcasters. Intended for news purposes, the coverage will be available for the broadcaster to edit as he chooses. It is expected that live feeds will also be available when the news value of the proceedings dictates. Joan Teague of Congressman Rose's office pointed out that the coverage is being offered to broadcasters and that its use for political or commercial ends will not be permitted.

It is expected that maximum use of

continued on page 18

IF YOU THINK OUR J13X9B IS VERSATILE, WAIT 'TIL YOU SEE THE SYSTEM.



It starts, of course, with our remarkable, lightweight 13x lens that's ideal for ENG and other field production use, yet versatile enough for the studio. Featuring a more sensitive f/1.6 aperture. Broad zoom range from 9mm to 118mm. And enough ruggedness for any application.

But that's just the beginning. By adding our accessory system, your ENG or small studio camera takes on new dimensions in versatility: Extend the focal length up to 1.5x *with no light loss*, using our teleside converter. Add a 2x rear extender, or combine with the converter for 3x extension.

For wider shots, snap on our 0.75x wide-angle attachment, which gives you a 6.75mm focal length *with no light loss*. Providing a wide-angle, wide-aperture lens with full auto-iris capabilities.

More? More. Remote focusing and zoom, manual or motorized. With easy-to-use rocker-switch controls. Or twist-handle grips via flexible cable couplings. For greater handling ease, either way you want it.

All in all, there's a lot more to our J13X9B zoom than meets the eye. In versatility, as well as performance. For more information, contact us directly, or specify the Canon J13X9B when ordering your new ENG camera.

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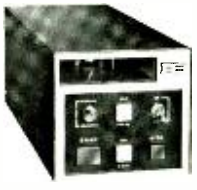
Nortronics* Duracore™ Heads	YES	YES	No
Auto/Manual Fast Forward Option	YES	YES	No
Low-Voltage Current Regulated Solenoid	YES	No	No
Models for ⅓ and ½ Rack Widths	YES	No	No
Independent Azimuth Adjustment	YES	No	No
Cartridge Brand Interchangeability	YES	No	No
Headphone Jack for Maintenance	YES	No	No
Wider Record Input Range	−24 to +20	−20 to 0	*
Solid State Switching Logic	YES	No	No
Microphone Input Option	YES	No	No

* Not specified



Model 3100 Slim Line— the space saver for A size cartridges. Available in mono and stereo playback.

Model 3300 Standard— for A, B and C cartridges. Available in mono and stereo, record/playback and playback only.

Model 3200 Compact— for A and B cartridges. Available in mono and stereo, record/playback and playback only.

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News

the House proceedings will be made by the nation's cable TV systems. A new organization called the Cable Satellite Public Affairs Network (C-SPAN) will provide subscribing systems with daily access to a continuing feed from Washington. C-SPAN will have its own earth station in the Washington suburbs, which it will use to transmit the House proceedings nationwide. Anticipating the future availability of Senate coverage, C-SPAN will add that service to its feeds as well.

Errata On VITS

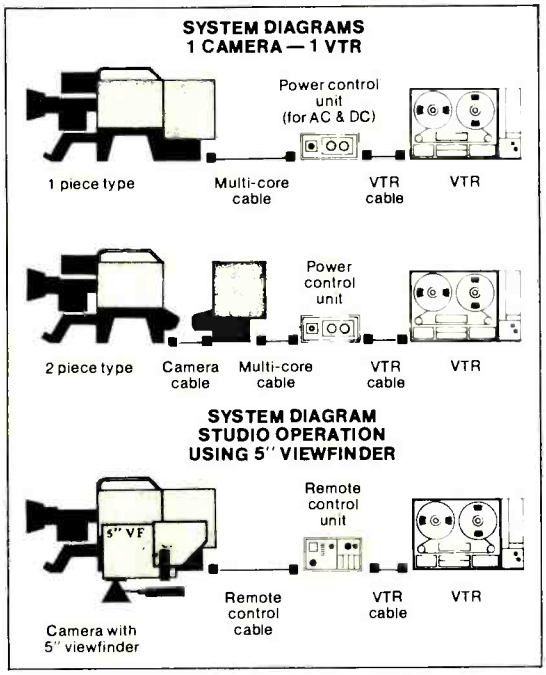
In our article "Vertical Interval Test Signal Measurement and Analysis" (*BM/E*, November, 1978) we erroneously reported that the FCC-mandated VIT signal is transmitted over lines 18 and 19 of the vertical interval. This is no longer the case. The most recent FCC Rules and Regulations (paragraph 73.699) state that the Multiburst Test Signal should be inserted on Line 17, Field 1; the Color Bar Test Signal on Line 17, Field 2; and the Composite Signal on Line 18, Field 1. Line 19 is reserved solely for the VIR Signal.

News Briefs

The **first sound-only stereo relay** transmitted by domestic satellite was broadcast exclusively for **WFMT-AM/FM,** Chicago, in November. The live program, celebrating Kurt Herbert Adler's twenty-fifth season with the San Francisco Opera, was beamed directly from the stage of the War Memorial Opera House, San Francisco, to **Western Union's** (WU) **Westar I.** A 51-foot diameter antenna at the WU earth station at Lake Geneva, Wisconsin, received the program, and **Midwestern Relay Co.** microwaved it to WFMT's studios. Western Union also demonstrated a **new single channel per carrier** (SCPC) mode of satellite relay to the WFMT staff. As the Lake Geneva station received the program, so did another WU station in Glenwood, N.J., where it was converted to the SCPC mode and sent back to Westar I, picked up by another transponder, and rebroadcast to a 10-foot antenna in Chicago. An infrared light beam carried the program, in stereo, from the antenna to a receiver in the studios.

The **NRBA** is looking for an executive director to direct the association's development and to accelerate NRBA's rapid growth. NRBA board chairman Robert Herpe stated, "We are interviewing candidates for the executive director's position and accepting applications." Applications should be

continued on page 21



A new concept in portable color TV cameras . . .

The Fatigue Fighter!

Perfectly balanced, lightweight and modular. Use as 1-piece or 2-piece. At home in studio or out on remote.

The Asaca ACC-2000 portable color TV camera was designed with its center-of-gravity conforming to human head, shoulder, arm and hand, enabling the camera to be positioned the right distance from shoulder to grip. The weight is ideally distributed. As a result, the cameraman experiences less fatigue and can still do his best after hours of work.

You'll like these features: •New modular configuration—use as 1-piece or 2-piece. Head pack and process pack can be separated with the units linked by a cable. •C, bayonet and Arriflex (replaceable adaptor) lens mounts—permit use of variety of lenses. Adapts to battery—30W with ± 7.2V Ni-Cd battery—more than 2 hours service at a stretch. Automatic white control, iris control and flare compensation. •Built-in gen-lock permits operation of multiple cameras in sync with black burst signals from external source. •Remote control—compensate for cable length with runs up to 1,000 ft. Iris, gen-lock, and master pedestal at the base station. •Three 2/3-inch Plumbicon® tubes. •Optional 5-inch viewfinder adapts for studio use. *Write for a free demonstration.*

ASACA®

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

ASACA equipment is in use throughout North America, with sales and service offices nation-wide . . . in the Los Angeles area at 1571 Parkway Rd., Tustin, California, 92680; (714) 731-3011 and in the San Francisco area at 155-B San Lazarow Ave., Sunnyvale, California, 94086; (408) 736-3600.

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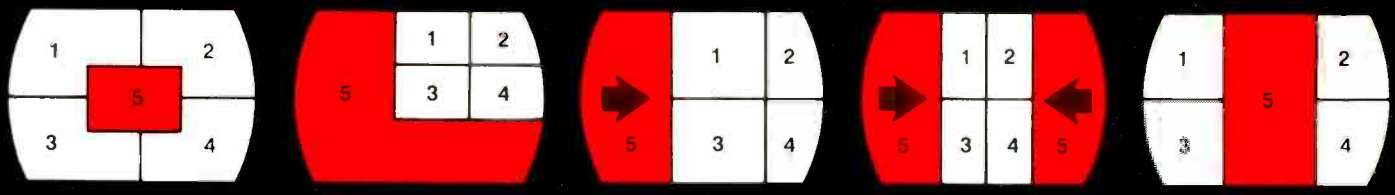
Squeeze Play



Joystick 5 compressed asynchronous images with NEC's Dynamic Quad Split®

DQS® permits you to actually use five asynchronous sources with dynamic manipulation of the fifth source from an existing signal in the quad split, or as a discrete fifth signal. This configuration permits a far more dynamic visual presentation than four sources, while costing less and permitting duality of use. NEC's market research showed that the majority of stations and production houses considering the use of a compressed quad split function desired the expansion or manipulation of only one frame of the four, one at a time, not four frames simultaneously.

DQS is comprised of two separate NEC FS-15 Frame Synchronizers, a DVP-15 Digital Video Processor, and a DVS-154 Digital Video Compressor. The use of two Frame Synchronizers allows for either combined or separate operation of the system, permitting full-time facility utilization of the equipment, rather than only specialized production use.

DQS Extras:

- ★ Combines the unique asynchronous quartering features of the DVC-154 Digital Video Compressor with the NEC DVE® System.
- ★ The two systems combined in switcher mix/effect amplifiers permit dynamic manipulation (zoom in/out, separate H and V aspect control, etc.) to completely animate a quad split compression.
- ★ Allows for dynamic zooming and positioning of a complete compressed quad-split image with virtually no loss in picture detail due to NEC's unique Spatial Filtering.
- ★ Maximum cost efficiency in that DQS System will operate as two discrete systems when not occupied with complex five input tasks. One system permits four asynchronous quad-splits in fixed quadrants or stand-alone Frame Synchronizer functions. The second system offers the full range of DVE functions, or stand-alone Frame Synchronizer operation.
- ★ All five possible inputs may be equipped with TBC capability and a single Freeze Frame Option will allow the "Freeze" of the entire compressed quad-split.
- ★ Allows for a maximum of smooth, predictable and preset image movements via interface to programmable switchers such as the GVG-1600 Series with E-MEM Options.

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800-824-0216

NEC
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News Briefs

mailed to NRBA, P.O. Box 25250, Ft. Lauderdale, Fla. 33320 . . . . A tentative order recently adopted in principle by the **FCC will require broadcasters** to file annual employment reports ranking employees by salary. In response, the **NAB** has urged stations to send telegrams to FCC Chairman Ferris telling him of the impact such a requirement would have on their operations. NAB considers the requirement an invasion of privacy and beyond the scope of the FCC's jurisdiction.

The FCC has granted final approval for **United Video, Inc.,** Tulsa, to provide Chicago's WGN, channel 9, to cable systems nationwide via **RCA's Satcom I** satellite . . . . **WXNE-TV,** channel 25, became Boston's first station to have a fully operational earth station. WXNE, a Christian Broadcasting Network O&O, will carry that network's programming, as well as live sports events from across the U.S. . . . **Reuters,** international news organization, announced the signing of a long term lease for full transponder service on **RCA's F1** domestic satellite.

NAB vice president and general manager of the Code Authority, Jerome Lansner, spent two weeks in Australia advising broadcasters there on an industry program of voluntary self-regulation. Lansner met with James Malone, director of the **Federation of Australian Commercial Television Stations** (FACTS), addressed FACTS members at their annual convention, visited member network stations, and discussed codes with the Australian Broadcasting Tribunal (similar to the U.S.'s FCC).

NAB has asked the Federal Trade Commission's permission to participate in hearings on advertising for over-the-counter antacids. The FTC has proposed that product label information be included in such advertising. In a notification filed with the FTC, the NAB pointed out that the industry's self-regulatory codes mandate that commercials include, "read the label," "take as directed," or similar messages. NAB contends, "The inclusion of detailed warnings would necessarily reduce the time afforded to communicating other aspects of the product and would impact on consumer ability to digest the product message in its entirety."

In response to the FCC ruling requiring 10-watt FM operations to increase power to 100 watts, **Allied Broadcast Equipment,** Richmond, Ind., has prepared a primer outlining the different methods of increasing power. For information, contact Jack Philips, 635 South E St., Richmond, Ind. 47374.

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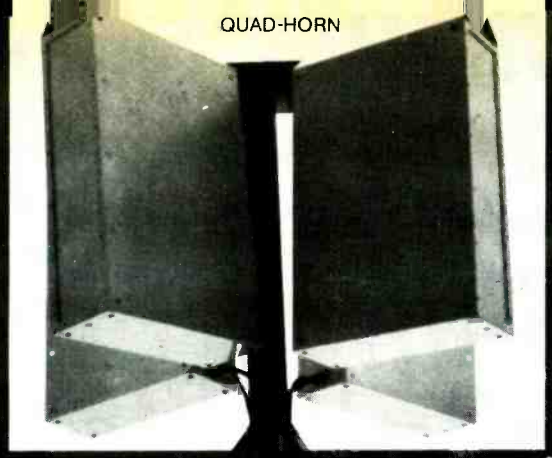
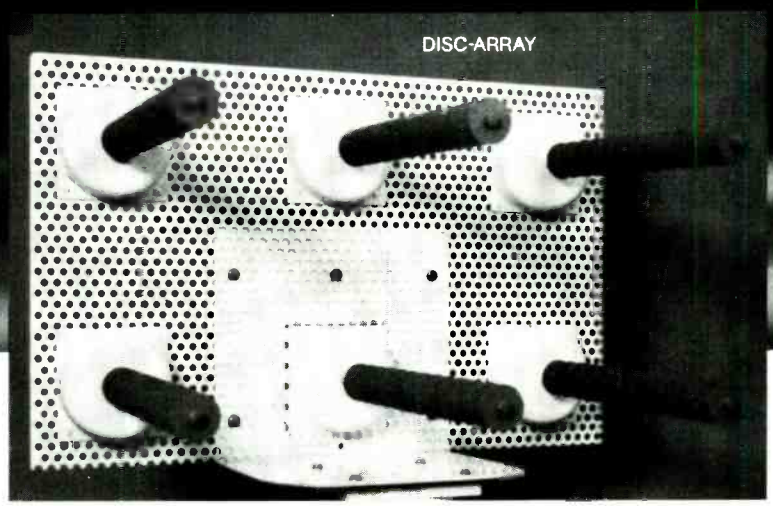
AMPEX



GOOD NEWS TRAVELS FARTHER



DISC-ROD portable transmitting antennas in single, dual or quad design with variable polarization, interchangeable elements and up to 24 dBi gain.

DISC-ARRAY receiving antennas with continuously adjustable polarizer, up to 24 dBi gain and only 30″ in diameter by 35″ high.

QUAD-HORN central receiving antennas designed for sector type coverage. Achieve superior out-of-band signal rejection, minimal wind loading.

...with new ENG antennas by Microwave Associates

We're Microwave . . . first name in ENG and now the first name in high performance antennas that extend your ENG range and minimize multi-path interference.

Give your ENG operation more clout, more reaching power with the new Microwave Disc-Rod™, Disc-Array™ and Quad-Horn antenna systems . . . the perfect performance match for Microwave ENG radios.

Antennas by Microwave Associates are designed to give you the edge in the real world of ENG with exclusive engineering features like these: Continuously adjustable polarizer lets you match the polarization of the received signal to minimize interference. With up to 24 dBi gain on transmitter and receiver, you can achieve unprecedented range fully equal to the performance of 4-foot parabolas. With less than 1/3 the surface area, there is that much less wind load.

For full details on the complete line of antennas by the ENG pioneer, write or call Microwave Associates, Communications Equipment Group, 63 Third Ave., Burlington, MA 01803 (617) 272-3000.

Field Sales Offices: Atlanta, GA (404) 455-3815, Dallas, TX (214) 234-3522, Kansas City, MO (816) 891-8538, Sunnyvale, CA (408) 734-8777, Seattle, WA (206) 232-3550, Honolulu, HI (808) 537-3991, Edina, MN (612) 831-3920, Columbus, OH (614) 451-9844.

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Microwave Associates
A M/A-COM COMPANY

THE FIRST 3-TUBE PORTABLE YOU DON'T HAVE TO BE RICH AS A NETWORK TO OWN.

Sharp's XC-320U is the first professional three-tube portable color camera for under $5,000.* A price you'd expect to pay for a good one-tube vidicon camera. But price alone isn't all you'll want the XC-320U for.

Sharp gives you the quality of three-tube performance in a completely self-contained lightweight portable. With our exclusive three vidicon tube bonded block design that eliminates mechanical registration adjustments. Making the XC-320U ideal for any ENG or field production.

The XC-320U delivers a reliable picture of broadcast caliber. With greater color fidelity, S/N ratio and sensitivity (down to 15 ft-candles with +6dB gain). Horizontal resolution is 400 lines minimum.

Add any one of our optional "C" mount lenses, viewfinders and a VTR of your choice and you're ready for action. No matter where the action takes you.

For added mobility the XC-320U operates on three power sources: AC with a standard power adaptor, battery pack or car cigarette lighter.

The XC-320U is easy to operate yet provides professional results. The electronic viewfinder has a built-in meter that helps you adjust the iris setting for optimum results.

Sharp's XC-320U. When you want three-tube professional quality like the networks. But don't want to pay for it.

For the Sharp dealer nearest you, call our Professional Products Department at (201) 265-5548 or write Sharp Electronics Corporation, 10 Keystone Place, Paramus, N.J. 07652

*Manufacturer's suggested list price for camera shown (without lens).

SHARP

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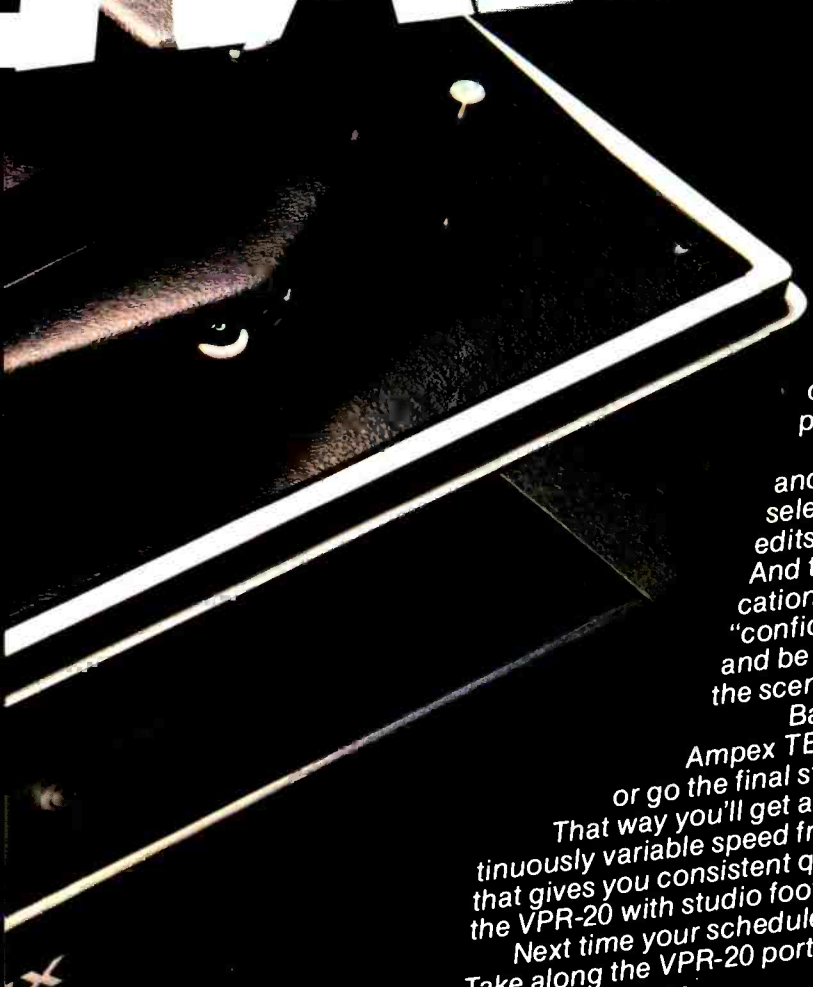
THE TRAVELER



VPR-20

You go into the field for realism and immediacy—here's how to bring back videotape that you've already rehearsed, recorded and played back on location. Ampex introduces the VPR-20, a portable, SMPTE Type C format helical recorder. There's a good hour of recording capacity and plenty of battery power to keep rolling. There's selectable automatic backspace for assemble edits. There's excellent audio and video fidelity. And the VPR-20 gives you color bandwidth verification simultaneous with record. You can feed the "confidence" signal into your camera viewfinder and be dead certain that you're actually recording the scene you're shooting.

Back at the studio, play your VPR-20 through an Ampex TBC-2 time base corrector for immediate airing, or go the final step by playing the tapes on an Ampex VPR-2. That way you'll get a full range of special effects, including continuously variable speed from real time down to still-frame. This is the team that gives you consistent quality even when you mix location shots from the VPR-20 with studio footage recorded on a VPR-2.

Next time your schedule says electronic field production, travel light. Take along the VPR-20 portable from Ampex. You'll get a world of scope on an inch of tape.

AMPEX MAKES IT EXCITING.

Ampex Corporation, 401 Broadway, Redwood City, California 94063 415/367-2011

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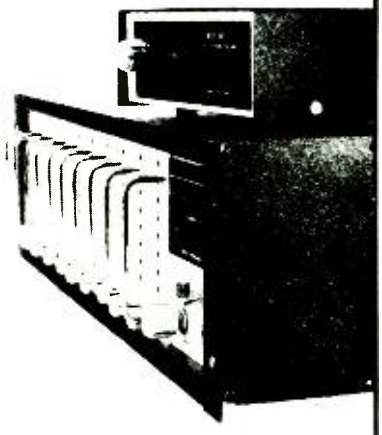
12 WAYS
TO BETTER AUDIO
DISTRIBUTION



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RADIO
PROGRAMMING & PRODUCTION FOR PROFIT

Arbitron's Rivals Look Serious and Competent, But Can They Keep Going?

LAST MONTH this column told how stations in non-rated markets convince advertisers of the worth of their audiences. *BM/E*'s conclusion was that the non-rated station frequently has a more solid set of selling arguments than one dependent on the "book."

But ratings are the facts of selling life for all the medium to large markets. Radio managements have long had to acknowledge the monopoly held by Arbitron, aptly named since it is the arbiter of success for so many broadcasters.

However, as reported in earlier columns, some half-dozen other organizations have recently launched serious attempts to become valid choices for the job of audience measurement on a national scale. A couple of them gave up during the last year, but there are four that, at the moment at least, seem to be set for a real try. It will be a long, hard, and expensive pull, because any contestant must reach something like national scale and chalk up a considerable success record before having any hope of passing the most important hurdle — acceptance by the large ad agencies that now pay attention only to Arbitron. The chicken-egg impasse facing these firms is obvious: they can't sell their services widely until the ad agancies accept them, but the ad agencies won't accept them until they have fully going operations.

The four most prominent in the running when this was written were Burke, RAM Research, Mediastat, and Trac 7. All have had long experience in audience research of one kind or another and have developed comprehensive, sophisticated plans for carrying out radio broadcast audience measurement. All have started operations and each has an initial group of clients, based on regular surveys of some fraction of the radio markets. And all say they will progressively expand the number of markets covered until they can serve enough stations to make a go of it and convince the ad agencies.

At the NAB Programming Conference in Chicago last August (see *BM/E*, October, 1978) representatives of the four "contestants" and of Arbitron described their firms' services and sketched their plans for the future. These sketches could not, of course, indicate which of the new firms will become important or even survive.

But the descriptions of services were valuable for radio managements. Radio audience measurement is far from being a fully mature technology. There are controversies among experts about every part of the technique, directed to how the inevitable sampling error can be kept to a manageable level. Each of the five firms at the NAB meeting had its own solutions.

Radio managements need to be aware of the main trend of the arguments and to know that there are alternatives for each part of the process. That we haven't reached the millenium yet is clear from the recurrent "wobbles" that turn up in today's ratings and the "bad books" that sometimes downgrade a station sharply without apparent reason.

It is plain, first, that the sample of people to be interviewed must be sufficiently large and chosen with the utmost sophistication if the results are to be valid. Avery Gibson of Trac 7 claimed that their sample is larger than that of most others, and includes one person per household for wider coverage.

Trac 7's interview method turns attention to one of the main controversies: should the telephone or a diary method be used? Trac 7 uses the telephone along with a computer system aimed at keeping the questions uniform and at speeding compilation of the results.

The interviewer has a computer readout and entry board next to the phone. The computer tells what questions to ask; the interviewer enters the answers into the computer memory in a

continued on page 26

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Radio Programming

standard notation. The computer also has information on the stations in the market, their call letters, formats, main personalities, etc. This aids in correcting answers when the interviewee gets the wrong call letters or confuses one station with another.

Compilation of statistics from the answers is carried out by the computer as the answers come in. Results of a survey are thus available in a very short time. Ms. Gibson said that Trac 7 would be surveying about 20 large markets early in 1979, and would go up from there to the top 50 markets. Trac 7 plans to get a variety of information in addition to the standard demographics and quarter-hour and cume figures, including such items as shopping habits and product preferences.

W. Bolger of Burke also endorsed the telephone interview, claiming several advantages. It is better, he said, for giving the interviewee clear instructions; information can be corrected as it comes in (in a diary it may be incomplete or illegible), with the interviewee asking for clarification if he doesn't understand; interviewee fatigue is not a factor, as it may be at the end of a week of diary entries; the telephone contact allows gathering of additional information (product preferences, etc.); and the answers are in hand immediately, and don't depend on mail delivery.

Bolger emphasized Burke's long experience in surveys for advertisers of many products, based on about 17 million telephone calls a year. He paid tribute to the crucial importance of sample size and selection. With a sample too small or poorly chosen, "we get accurate measurement of an inaccurate representation of the population." Also crucial, as in any survey, is careful phrasing of questions to get unbiased information.

Burke is getting about 60 percent cooperation from persons in the predesignated sample (a high figure), said Bolger. The interviews will develop marketing information as well as the usual demographics. Included in the sample will be unlisted phones (chosen by different methods from those used by other telephone surveys). Burke intends that its information will be more extensive than that available previously, and will help the broadcaster sell against alternative media, expecially the newspapers.

Jim Seiler of Mediastat said his firm is now surveying 17 markets regularly and about 225 at irregular intervals. He said he hopes to last until he has national acceptance at broadcast stations and ad agencies by taking one step at a time and doing mainly things for which the firm can get paid now.

He also uses telephone interviews to get 24-hour recall (all listening during the day up to the call). His regular surveys are made every two weeks and results are available one week after each survey. He claims this has high value for the ad agencies, giving them a line on trends that develop between Arbitron's half-yearly sweeps.

He too pointed out the resourcefulness of the telephone interview in developing a wide range of information, such as life styles, economics, newspaper reading, shopping habits, or any other data that an ad agency may want.

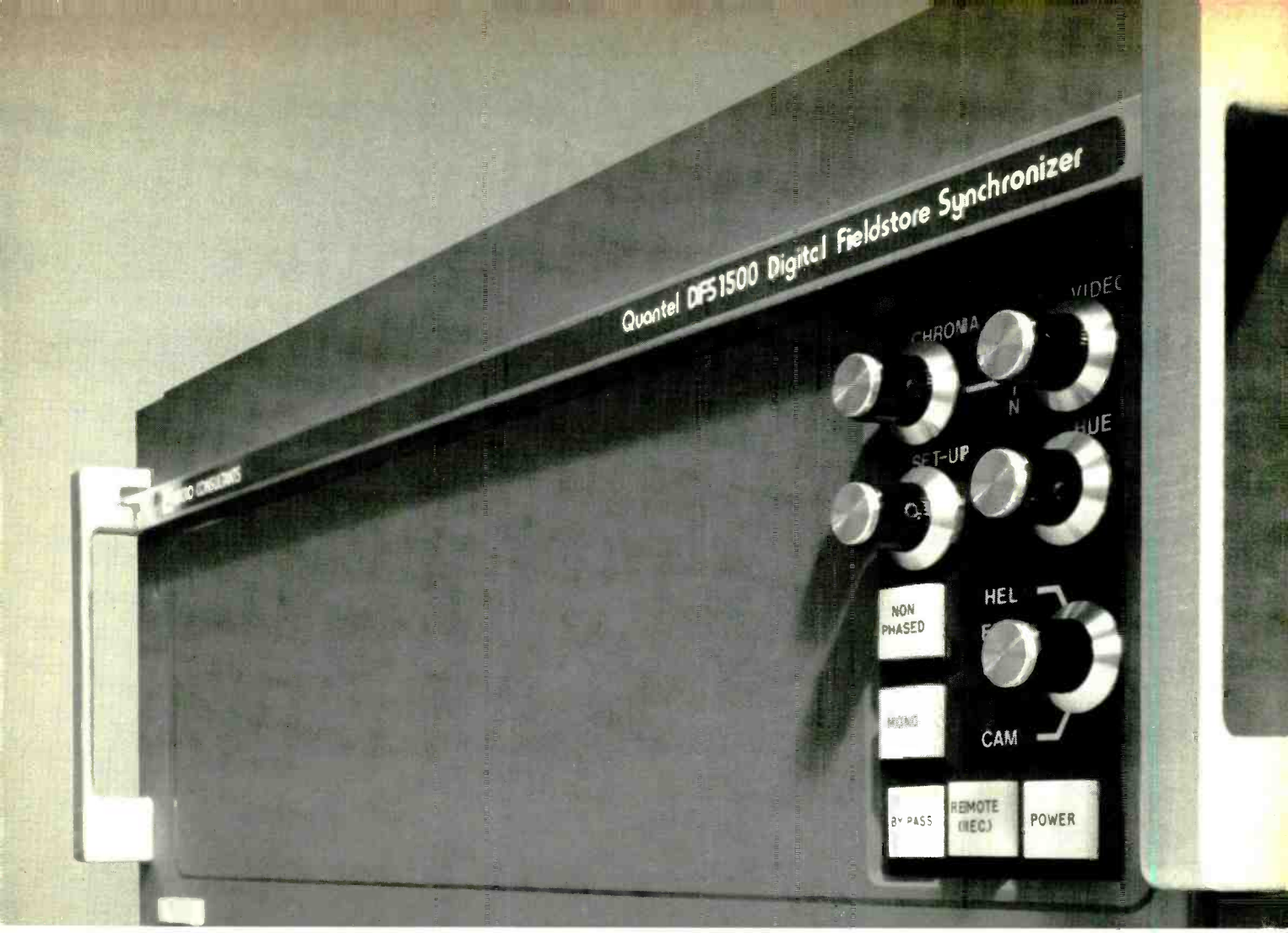
He urged radio managements to consider their strength against that of television. The latter usually has a much lower number of ad impressions per person, and has horrendously high costs for reaching any particular segment of the audience; this can be done easily and cheaply via radio. In direct comparison with television, radio comes out very strong, and should get a higher proportion of the money in national spots, now overwhelmingly in television.

He said that once a year Mediastat would do a seven-day measurement in all rated markets which would include a comparison of radio listening and TV viewing. He acknowledged the potential for error in all the ratings methods, and advised broadcasters not to depend on a single survey, but to get a series. "Ratings are good servants but poor masters," was his epigrammatic summation.

Jack McCoy of RAM said his company has started operations in 67 markets using a diary method, and has 90 stations as subscribers. RAM uses a one-day diary because of their conviction that people tend to forget their actual listening over a seven-day period. He said that RAM tried half a million telephone calls and came to the conclusion that the diary is more accurate. RAM intends to continue along this line and promises to actively expand its services for the several years ahead.

Arbitron's story, told by William Engel, indicated steady expansion in the information to be supplied to subscribers. He professed total commitment to the seven-day diary method, which he said came out best in tests by Arbitron. The Arbitron story is complex and *BM/E* wants to return to it in a later issue.

An interesting topic surfaced during the question and answer period: what about listening in cars? All the panelists said that their firms had already started to ask about car listening, or soon would. The total picture from the session was of radio audience research rapidly growing in refinement and resourcefulness, with just the potential of competition in the field forcing performance levels upward. **BM/E**



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WHEN A SYNDICATOR goes out of business it is usually because his programs did not get any takers. But when the Programme Shoppe in Hollywood decided to close down in 1977, their "Big Country" program was over five years old and doing well.

Agnes Peterson, a former Programme Shoppe employee, bought that program and set up Live Sound, Inc., of which she is owner and president, to help her market it. She kept most of the country disc jockeys who were, and are, key elements of the show.

The DJs are especially important on Big Country because of the way their voices are put into the show. All the "talk" is on a separate recording on reel-to-reel tape. This "voice tape" is made fresh for *every day of the year.* Seven days' worth of voice tracking are sent out each week to each subscriber. The DJ talk can acknowledge the date and current events because the recording is made a short time before it is to be used.

The whole program mix is put together as follows. It depends on automation, or at least automated switching under control of cue tones. The current play list is 48 songs, each on a separate cart. These go into a Carousel, Instacart, or similar machine. Two reels contain "golden oldies," three apiece, which go onto two open-reel machines. The voice track for the day goes on a third open-reel machine.

The automation is programmed to play the 48 carts in a certain order, and this is repeated each day: new current hits are simply put into the tray positions for the proper time on the air. About eight new hits a week is the average update.

The automation system is also instructed, by cue tones on the carts, when to bring in the voice track. One section of that plays, and then a cue tone puts the next cart on the air. The program also brings in six oldies an hour, three from each reel; these are put on the machines so that, with an A-B-A alternation, no oldies artist comes up in two songs back to back.

The result is a tightly controlled and professional country program that has a live sound. The DJs seem too fresh to be recorded in advance. Because of long experience on the show and on radio programs in general, the DJs are able to make the voice tape for each day with a cue sheet telling them the sequence of songs, their timing, etc. Aiding them in the recording is a digital timer that tells the DJ when he has filled the exact lead time for each song.

Big Country, now used by more than 15 stations, gets its validity from the personalities involved. Mike Carruthers, producer and "night-hawk" DJ (1:00 to 5:00 a.m.), has been a DJ in New Haven, Bridgeport, and Los Angeles; has taught radio programming at USC; and has been a consulting editor on various industry publications. Jerry Bassett, sales manager, had executive sales positions with several automation equipment makers, including Harris and Schaffer.

The team of country DJs, the on-air stars, includes Jason McCall from WMAK in Nashville; Chris Lane, named Country Program Director of the Year six times by *Billboard;* Chuck Roberts, country "voice" on many stations including KUTE, KWOW and KXFM; and Bob Morgan of KHOF and KGBS. As already noted, most were with the show when it was made by the Programme Shoppe and have a very large following across the country. That is part of the reason that several stations have had the program since it started.

Live Sound is also developing a series of specials that go free to subscribers. Every two months or so there is a one-hour program built around a particular country star who comes in to make about 20 minutes of interview material. The rest of the hour goes to the star's music. Some of those who have already been on hand are Ronny Milsap, Barbara Mandrel, Freddie Fender, and the Oakridge Boys.

Each year Chris Lane puts together a six-hour Christmas special. Two years ago *Billboard* called it the Syndicated Special of the Year. It, too, is free to subscribers, who can preempt time for it wherever they want, and sell air time in and around it.

Live Sound is currently launching another format, a beautiful music series called "Pacific Music." This is based on programs put together for KDB, Santa Barbara, by Robertson Scott, program director of that station. Judging from the skill of their handling of Big Country, Live Sound seems to have an excellent chance of making a success of Pacific Music. **BM/E**


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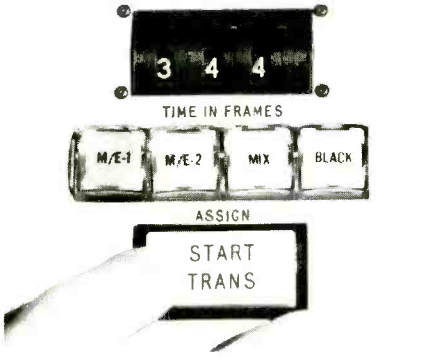

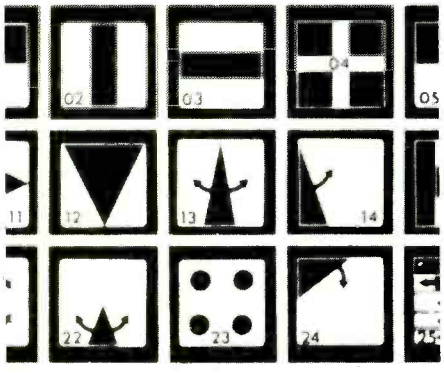

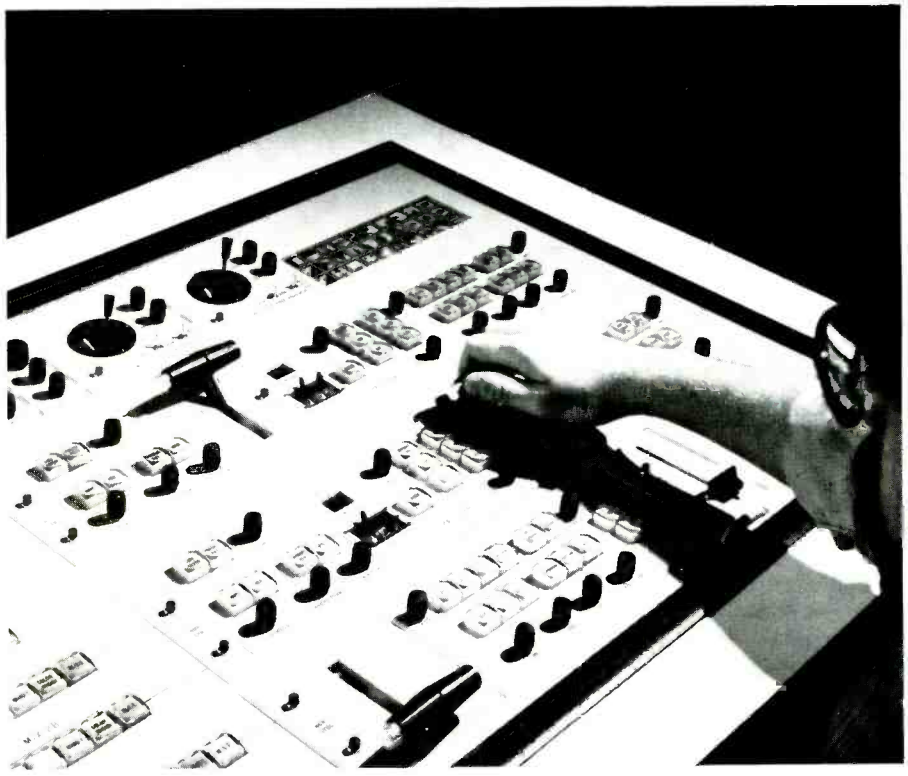

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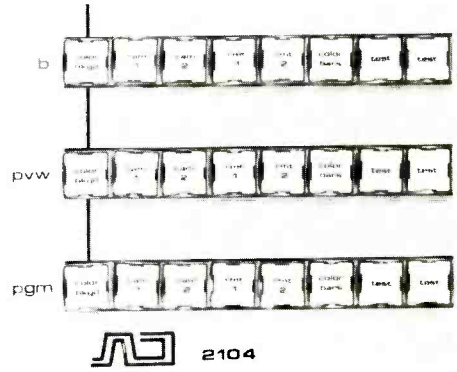

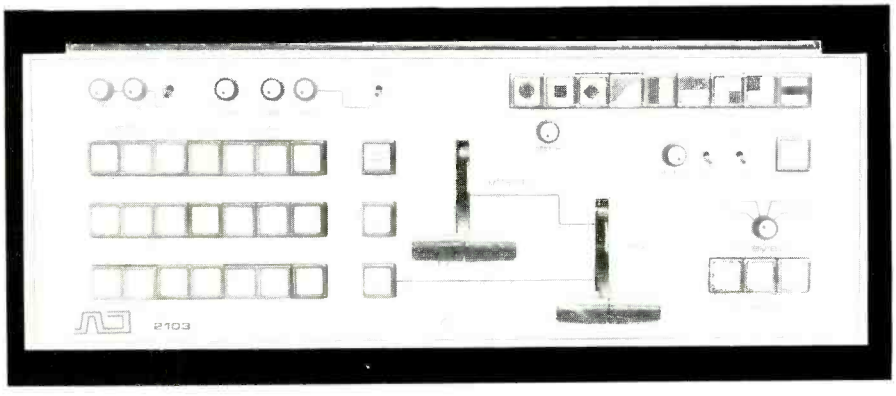

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"NATO: A View From The Inside": KHJ-TV's Fourth Overseas Documentary

THERE ARE A LOT OF STATIONS that wouldn't dream of undertaking a major documentary production overseas. The argument against it is readily apparent. It's too expensive. A local station's role is local news. The networks do a good job of providing major reports on national and international events, and good documentaries are available to independents through syndication. Besides, audiences don't really go for documentaries these days. These all seem like good reasons not to get involved in major overseas documentary work, but for some reason KHJ-TV, Los Angeles, thinks otherwise.

Four times in the past three years KHJ, with the support of its RKO corporate owners, has sent crews off to places like Rhodesia, the Middle East, South Africa, and most recently to Europe for a documentary on NATO.

RKO vice president and KHJ general manager Lionel Schaen sees such programming to be an obligation to the community above and beyond local news. He believes that the issues of the world's troubled areas affect everybody, "right down to the elementary levels in our own community." He claims that the people of each community have to be aware of what's happening in the world — they have to make decisions — and must make the government answer to them. KHJ's production of international documentaries is a part of the station's ongoing effort to bring into focus the world situation as it affects its viewers.

The burden of cost is eased somewhat since KHJ is a group station, but Schaen contends that even if this were not the case, they would still undertake such production. KHJ values this type of programming for its ability to provide the station with an added dimension — a solid news image/identity. Its involvement in projects of this magnitude presents KHJ as a station working hard for its viewing audience and identifies it as a news heavyweight.

The making of "NATO: A View From The Inside"

The show's producer/director/writer/reporter and KHJ's evening news co-anchor, Anne Kaestner, began her research last February. She started by learning all she could about NATO and the Warsaw Pact. It is Kaestner's judgment that the most abundant and reliable sources for information when researching a news/current events documentary are responsible newspapers. For this project, letters and phone calls to NATO offices in Belgium and library research into the background and history of NATO also provided her with the material she needed. It was only after research that she was able to develop the program's point of view: a look at NATO today in view of the increasing military threat from the Warsaw Pact, which includes east European countries as well as the Soviet Union.

Anne Kaestner and crew on location with troops in Grafenwoehr

The vehicle the documentary used to convey the gathered information about NATO forces was the annual Autumn Forge series of maneuvers. This event involves maneuvers of multi-national army, navy, and air troops, all under the control of Supreme Allied Commander of NATO forces, General Alexander M. Haig, Jr.

In May, Kaestner attended the NATO summit meeting in Washington and filmed parts of the conference. At that time she met with NATO officials and a State Department representative, all of whom provided her with more background material. While in Washington, Kaestner was introduced to Belgian cameraman Jos De Cock. As it turned out, De Cock had worked with NATO previously and had been through the maneuvers before. As an added advantage, the military commanders knew him, and he had top clearance to see the classified hardware that inevitably would be present.

The NATO contacts established in Washington paid off well. After viewing samples of De Cock's camera work and being favorably impressed with them, Kaestner hired him for the job. The next thing to do was find a sound man. Kaestner was introduced to Daniel Pilatte, one of De Cock's associates and countrymen. Like De Cock, he had worked with NATO before and also had top clearance. He was hired. The fact that the cameraman and sound man in KHJ's crew were known to the military commanders may have played a part in their ability to move freely among the armies on maneuvers.

Executive producer played major role

Lionel Schaen, the documentary's executive producer, also took an active part in the project's planning. He spent a few weeks in Europe scouting terrain in England, Belgium, Holland, Germany, and Italy, making contacts, meeting with military NATO commanders, and sitting in on briefings. In Belgium, NATO's headquarters, Schaen made contact with General Haig's office, the Supreme Headquarters Allied Powers Europe (SHAPE), where he obtained a complete schedule of the planned maneuvers.

Upon his return to Los Angeles, Schaen and Kaestner reviewed the schedule, determined what they wanted to film, and worked out the logistics. Once their schedule was pinned down and RKO had approved it, NATO was notified and SHAPE sent out the word to all commands. By late June, Kaestner had a day-by-day breakdown of what, when, and where she would be filming. With research and planning completed, and unit manager Edd Dawson rounding out the four member crew, the actual project was ready to get under way.

Location work begins

In September, the crew flew to Europe to begin filming. The decision to shoot in film was the result of a number of considerations. For one thing, Kaestner has extensive background in film production. Although she fully subscribes to the possibility of

KJH's crew filming maneuvers from a German army boat on the Danube

a good documentary being produced in ENG, she was also aware of the location requirements of the NATO project. A great deal of rough travel and inhospitable conditions would have to be endured. Kaestner felt that a film camera was more likely to withstand the kind of abuse she expected. They would be shooting in the field under all types of weather conditions, from patrol boats on the Rhine, and out of helicopters in order to get dramatic aerial footage of the ground action. Another factor was her confidence that in case of a breakdown, a film camera would be simpler to repair because spare parts (or even a spare camera) can be carried easily.

The filming of material for the documentary took a little over four weeks and produced about six and a half hours of film. The edited program runs just under 49 minutes and although it consists largely of action footage of the maneuvers, it also includes interviews with General Haig, NATO Secretary General Joseph Luns, and German Defense Minister Hans Apel.

The film was shot double system employing a 16 mm Eclair and a crystal sync Nagra, and four lenses, a wide angle, a 300 mm, and two most useful zooms, a 12:120 and a 12:240.

Technical problems were few

The technical problems encountered on location were few. Radio interference picked up on the Nagra while recording near the Eiffel Tower resulted in some of the original sound track being scrapped. A second audio problem reared its head when the crew was in the field recording in close proximity to radar-equipped tank forces. The Nagra picked up the radar blips. Since it added a degree of "in the field" realism, the interference was left in.

Besides weather conditions (rain, fog, sleet, and cold), the biggest problem the crew encountered was one of communications. Plans, even military ones, change quickly. Unit manager Edd Dawson, responsible for the crew's transportation and accommodations, often found it impossible to telephone alterations on the erratic and often overburdened telephone system.

In one interview, General Haig said that the opportunity to improve "interoperability" was a valuable aspect of the manuevers. But the documentary crew felt more like German Defense Minister Hans Apel, who said that "interoperability" — learning to work together — was a nice idea but they ought to get the telephone systems between armies straightened out first.

Apel had another appeal during the interviews that the crew could sympathize with. He wants more common manufacture of arms and equipment for NATO forces. One episode made his point clear to the film crew. They boarded a German helicopter in order to rendezvous with an American general in the field. When they failed to find the general at the appointed place they spent nearly 90 minutes flying around the area trying to raise him by radio. The American general was aboard an American helicopter equipped with a

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radio using a different crystal — one incapable of getting the German military frequency. So much for "interoperability."

Things were not all that bad, though. Sometimes the crew was truly impressed, if not enamored, with the efficiency of NATO forces. There were times when the crew had to catch up with a unit in the field, but when the unit had camouflaged its position, finding it often proved difficult.

During the filming process, the KHJ crew followed the movement of troops throughout Europe. They travelled with the British, Dutch, U.S., German, French, and Belgian armies on maneuvers. They investigated NATO's air defenses and sea power. In the Mediterranean, the crew acquired aerial footage of the aircraft carrier USS John F. Kennedy and was able to document its activities from on board. In the course of the maneuvers, the crew filmed a commando drop into the Rhine from a French helicopter, aerials of Berlin from a U.S. helicopter, and maneuvers getting under way from a German helicopter. They often dangled from chopper doors to get dramatic views of the action below.

Annual NATO maneuvers have taken place for the past dozen or so years. Every year they get bigger and longer, this year engaging over 300,000 military personnel for more than three months. The maneuvers do not occur without criticism. Farmland and village property sustain annual damage as the multi-national troops carry out their missions in what the German press has come to call "Haig's circus." The documentary does not avoid this aspect of the controversial maneuvers. It points out that NATO will have to pay substantial compensation to European civilians.

Other material adds depth

With the exception of about a minute of film obtained from NATO and some stock U.S. Air Force footage of postwar Berlin, all of the material was shot by KHJ specifically for this documentary. All of the Eastman Kodak 7240 and 7250 film shot in Europe was also processed there. Kaestner says that she prefers to find good labs wherever she works and have the processing done as soon as possible. This allows her to spot check her material in the field and lessens the possibility of the exposed film suffering color changes as a result of sitting too long unprocessed.

In Europe there was no problem, as the quality of processing available there was equal to that in the U.S. A lab just outside Paris processed the first half of the film, and Kaestner spot-checked it by simply holding it up to the light. The second half of the film was processed in Brussels and checked out on a bench.

Project complete, first showing is aired

The first overseas filming of "NATO: A View From The Inside," took place on September 14, 1978 and the last filming occurred on October 16. In just over four weeks, with location work completed and film processed and checked, the material was packed up and on its way to KHJ, Los Angeles for editing by staff editor Dave Wrath.

After about four weeks in the KHJ editing room, after spending a little over $50,000, the bulk of which went for travel, lodging, and film, and after a promotion campaign that included newspapers and magazines as well as their own on-air, KHJ was ready to air their fourth of what has come to be the *View from the Inside* series of documentaries. The show aired on Saturday night, December 2, from 6:00 to 7:00 p.m. Overnights gave the program a seven share — not spectacular but acceptable to the station. Eventually the program will be shown on other RKO stations including CBS affiliate WNAC in Boston, ABC affiliate WHBQ in Memphis, and independent WOR in New York. After that there is hope for syndication and perhaps even international distribution. **BM/E**

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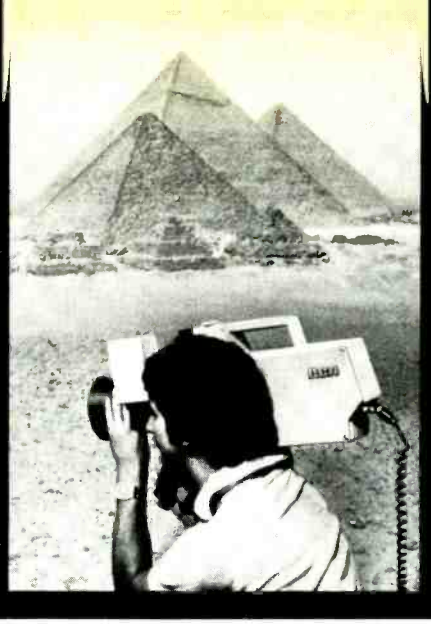

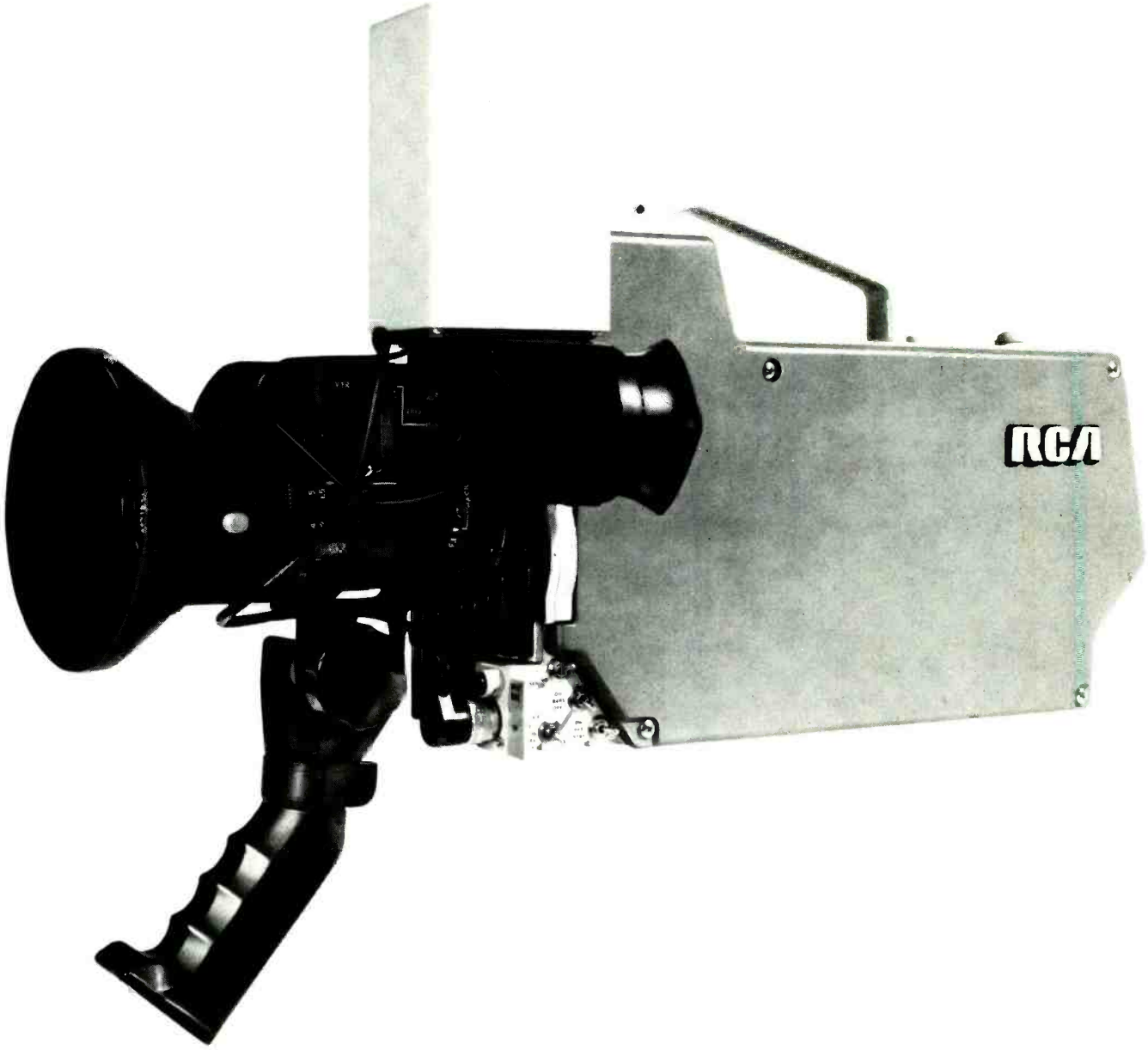

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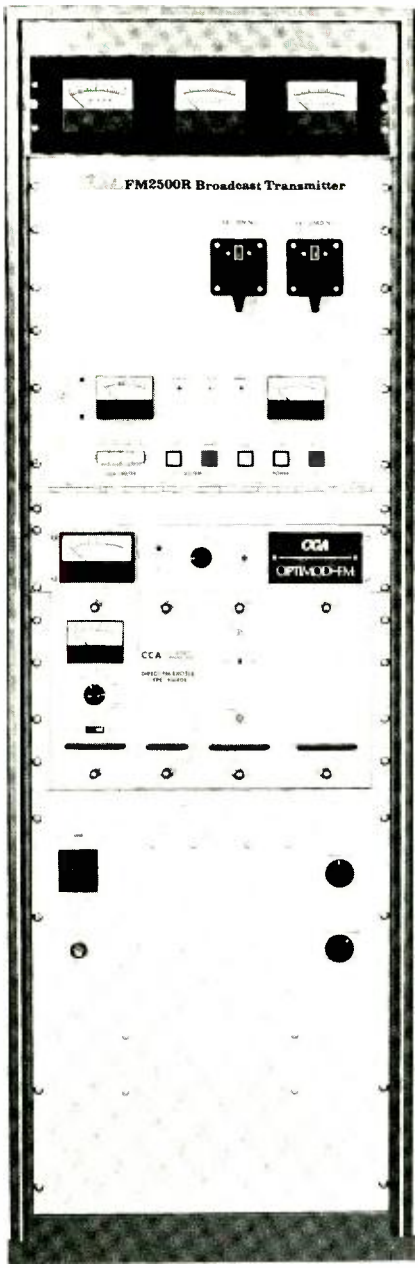

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TV Stations With More To Cover Turn To Microwave-Linked News Bureaus

In large markets and small, TV news departments are finding that microwave-linked news bureaus give them flexible, responsive, and reliable coverage. Some stations are integrating these bureaus with little fanfare, while others give them a high profile.

IN MANY MARKETS around the country television news programs are routinely including live and taped reports originated from their stations' own news bureaus located in distant cities. Some stations have routinely maintained a bureau connected by telco lines or microwave at state capitols or other likely news centers for years. Now, with the advent of improved microwave systems, stations are setting up bureaus in other cities of their ADI in order to respond to population shifts and provide more comprehensive coverage.

One of the first stations to articulate the role that news bureaus could play was KRON, San Francisco, which we reported on in last January's ENG report. At the time of that report, KRON had firmly established just one of its six bureaus. Work has continued since then and KRON now regularly goes live to their Sacramento and Contra Costa bureaus, in addition to the Santa Clara bureau that was completed last year. Three additional bureaus are yet to go on line.

The decision to go to a bureau setup was mandated by a population shift in the San Francisco area that has seen the five counties surrounding San Francisco grow rapidly in both population and industry, while the city and county of San Francisco has declined. Of the six counties in the Bay Area ADI, San Francisco is rapidly heading towards third place in size and economy. According to Mitch Farris, KRON news director, an ever-increasing portion of the KRON audience is living, working, and shopping outside city limits.

Another important factor that made the news bureau approach attractive to KRON was that the station's news programs had been sitting dead last in the ratings for some time. Since the news bureau concept has come into being, KRON has securely wrested second place and occasionally finds itself in first place. There has been steady growth in the KRON audience, and achieving first place ultimately is not beyond the station's expectations.

Technically, KRON was a latecomer to ENG, but as often happens in such situations, coming late allowed the station to opt for the latest in equipment. One aspect of getting a late start was that KRON found the 2 GHz microwave band overcrowded and had to go to a combination of 7 and 13 GHz equipment. This has not turned out to be a disadvantage since, according to KRON chief engineer Larry Pozzi, their microwave links tend to be interference free.

KRON's installation on Mt. Loma Prieta is the latest to bring on line additional news bureaus. Visible are the steerable dish for pickup of ENG feeds and the fixed 13 GHz return link

During the recent elections KRON got an opportunity to see how its full bureau system might work under actual conditions. For election night coverage, KRON established microwave links with six bureaus (San Mateo County, Alameda County, Contra Costa County, Santa Clara County, Marin County, and Sacramento). In addition, KRON had a mobile unit on election night that moved around the areas.

The bureaus were all equipped with 7 or 13 GHz Microwave Associates transmitters. The transmit dishes are all Nurad, while the steerable transmit/receive dishes are Tayburn. The longest hop for the KRON system is from Sacramento, some 60 miles northeast of San Francisco. This hop is a 7 GHz link coming from Sacramento to the steerable Tayburn dish on Mt. Diablo. From Diablo, the signal goes out over a 13 GHz link to Mt. Sutro, some 28 miles in distance, and is then relayed from Sutro to the

Microwave-Linked News Bureaus

KRON studios on a 7 GHz link. According to Pozzi, the 13 GHz link "goes against all thoughts of what you use 13 GHz for, but if it works you shouldn't complain. It doesn't hold with all the theory about microwave that I learned in school, but the one watt unit 28 miles away is a very reliable link."

For the long haul from Sacramento, KRON employs a 10 watt travelling wave tube amplifier under a temporary authorization that it hopes will soon receive permanent approval. The Contra Costa bureau is also hopped to Diablo and relayed to Sutro on the same diplexed 13 GHz link.

The handling of these signals, once received at KRON, is also innovative. Two NEC frame syncronizers, an FS-15 and an FS-12, equipped with TBCs, velcomp, and a host of other options, handle the bulk of the incoming signals. All signals are available to the GVG 1600 production switcher with DVE (Digital Video Effects) and E-MEM (Events Memory) through an elaborate GVG routing system. Incoming signals can be selected from the switcher, assigned to any frame synchronizer, and aired. On election night, KRON was able to display four remotes in quad spilt by using the two frame synchronizers plus a DVP-154 and routing them through quadrant compressors. This allowed three signals to be displayed in three of the quadrants with the fourth remote routed through the switcher's DVE package, where it could be compressed to any size and placed in the fourth quadrant. With the use of the E-MEM package (see *BM/E*, June 1978) smooth expansion of any of the quadrants to full frame in a wipe along both the H and V axis was possible.

WAFF's 7 GHz equipped van is the first in what will be a long line of WAFF microwave units, including as many as three permanent news bureaus

Another technical innovation at KRON has helped reduce the time required to establish a link to under 60 seconds in most cases. When any of the KRON microwave-equipped mobile units head into the field, they inform KRON of their approximate position. The Tayburn steerable dishes are rotated into the approximate sector from which a signal is expected. The SCA is used as a tuning system. A single chip oscillator in the tuning system generates a 400 Hz tone at rest frequency. As the engineer at the transmit site pans his dish toward the receive point, the increased signal level causes the oscillator to generate a higher frequency tone until, at peak signal strength, the tone reaches 2500 Hz. The operator listens for this tone or watches it on a meter.

Pozzi says that his field microwave technicians have become masters at reading terrain maps and can provide the base station with a very accurate estimate of where they are likely to transmit from. "They tell us where they are going to be and we point in the general area and start feeding the rest frequency tone," said Pozzi. "All he [the operator] does is look into the SCA and, many times, they'll be up before they even call in. Suddenly, the picture will just be there."

News bureaus aren't just for big markets

"Huntsville," said Paul McCaye, news director for WAFF, Ch. 48, "is very much like any market that is 90 or below. It covers a great deal of geographic area and if you are going to be successful in your market, you must operate under a regional news concept." According to McCaye, 75 percent of the population in the ADI lives outside of Huntsville. This area of Alabama encompasses a number of metropolitan areas almost as large and as important as the city of license. Huntsville has some 200,000 residents and just 25 miles down the road, Decatur has another 50,000. Then, nearly 63 air miles away to the west, an area known as Quad Cities which includes Florence, Muscle Shoals, Tuscumbia, and Sheffield, has another 150,000 people. To the south is Cullman and to the southeast is Guntersville, both major population centers. East of Huntsville, Scottsboro is another important town, and 52 miles farther lies Ft. Payne. All in all, Ch. 48's coverage must include some 10 counties and numerous communities. From this large chunk of real estate, said McCaye, "You're going to have to get, not necessarily equal coverage, but at least representative coverage."

"We are in the process of setting up our news department into four separate bureaus," explained McCaye. The near term plans call for the establishment of bureaus in Decatur and Florence, with possibly a third bureau to go on line before the close of 1979. Shortly after the first of this year, WAFF should be able to go live out of at least the first two bureaus.

Although WAFF is just now getting into ENG, it is the first station to do so in its market. The station, formerly known as WYUR, came under new management in June of last year after being purchased by American Home Corporation of Columbus, Georgia. Broadcasting is new to American Home, but it moved quickly to put ENG into practice and will introduce it later at its other broadcast holdings.

Currently, WAFF is using a single van equipped with a Tayburn transmitter on 7 GHz. A steerable Tayburn dish at the antenna site currently permits WAFF to cover most of its area. Shortly, however, a second van with microwave is scheduled to go into operation. The station will shortly get a 2 GHz backpack unit that it hopes will make it

continued on page 42

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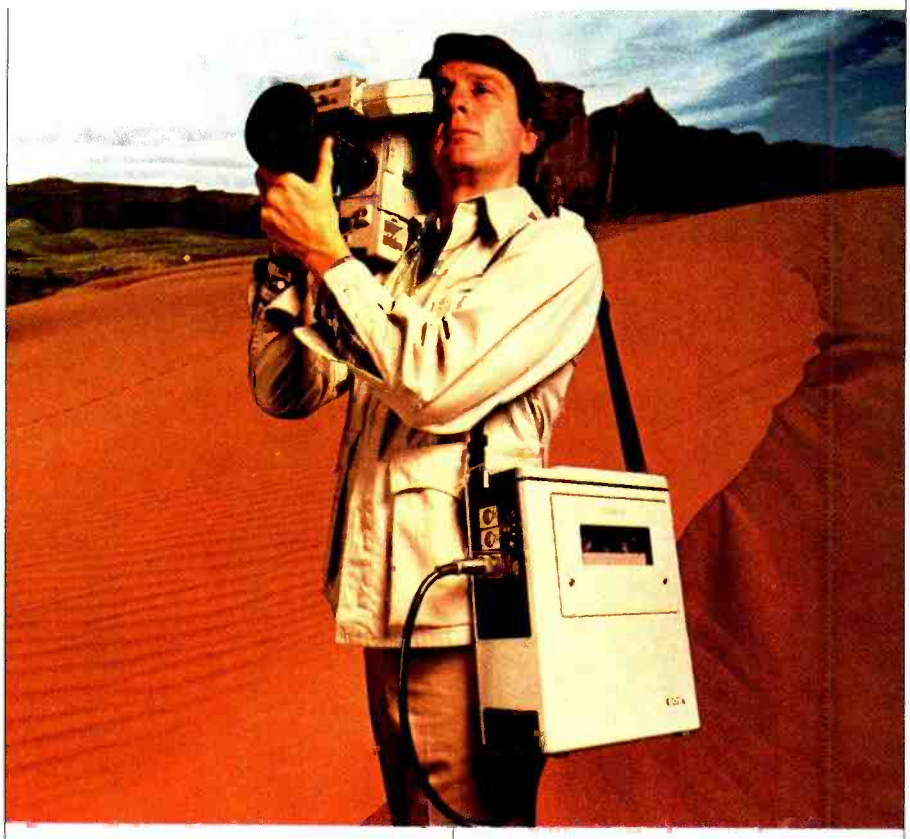

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Microwave-Linked News Bureaus

easier to cover the area to the east. Huntsville sits in a valley just west of the Appalachian and Smokey mountain ranges. The plan is to use one of the vans as a relay point when WAFF news crews have to work out of the cities to the east. The 2 GHz backpack unit will be set up at the location. It will beam to the truck positioned on top of one of the mountains and then be beamed down to Huntsville.

Right now, WAFF is gaining experience with its live capability and is already seeing the effects immediacy can have on its news program. When McCaye came to Huntsville July 5, the station was in the process of turning around its position in the market that had its 6:00 p.m. news program resting on a dismal 3 share in the ratings. Already, said McCaye, the audience feedback indicates that people are turning to Ch. 48's news program in order to "get the news when it's still news."

McCaye cited the recent municipal employees' strike in Huntsville as probably one of the most disheartening things that can happen to a community, "but from a news standpoint it's probably the best damn thing that could have happened to us."

"This was the first real breaking news opportunity to use our live equipment in the sense we feel it can be used," he said. By being live, Ch. 48 was able to carry some dramatic and key action. For example, Ch. 48 was live when both the firemen and policemen voted to go on strike. They carried live the police union officials being served a court injunction enjoining them from using more than four pickets at any one location. WAFF's news crews

continued on page 44

Field Anchor By Microwave At KGTV

"At the outset," said Ron Mires, KGTV news director, "almost everyone was looking for something to do 'live' during the newscasts. That ended up with some things that were, perhaps, not worthy of being covered live." KGTV decided that one way out of the conundrum was to establish a "field anchor" as a regular part of the program.

Now, KGTV's evening news at five uses two anchors in the main news studio, does updates on the news and breaking stories from its newsroom set, and has field anchor Jack White "live" from just about anyplace in or near San Diego via microwave.

According to Mires, KGTV research shows that the audience recognizes that Jack White is someplace different every night. The KGTV van and field anchor setup is a fairly well known sight to San Diego's citizens. By establishing White's role clearly, KGTV has avoided having to justify his location. When, however, there is a legitimate newsworthy event that can be covered live during the newscast, White and his technical crew are dispatched to that location. While White has sometimes achored the news from a hillside overlooking San Diego for the sake of the view, he has also anchored the news from such dramatic locations as the site of the tragic PSA jetliner crash in September.

White is not expected to cover breaking news at a location and anchor too. When he is on site of a developing story, another reporter is assigned who will cover that particular aspect. White's relation to the story is often one of introducing the main report for the location, providing updates on the story, or interviewing some newsmaker on the scene.

A DLT screen on the main news set provides the key area for White's image in the studio. The other two anchors, Marty Levine and Susan Farrell, can interact with White during the program.

KGTV currently operates two microwave receive points. One is located on Mt. Palomar and the other on Cowles Mountain; both are rotatable Tayburn dishes. The microwave transmitters are Microwave Associates 2 GHz units, sometimes used in conjunction with an MA 13 GHz "shoebox" transmitter for getting out of difficult locations and back to the truck. The truck uses a Tayburn dish on top of a 40 foot extension ladder. With this complement of equipment, KGTV is able to cover most of its San Diego county area. The only important area from which KGTV cannot now get a live feed is the north county region. Currently, a north county news bureau files about three filmed news stories a day by courier service, though it too will be brought on line with microwave in the near future. Some thought is being given now to the possibility of anchoring the news from the north county bureau as well, when it is fully equipped.

Field anchor Jack White (left) reports the news from various locations in and around San Diego. White is pictured here with photographer Jeff LeValley (center) and KGTV10's Insta Cam engineer, John Preves

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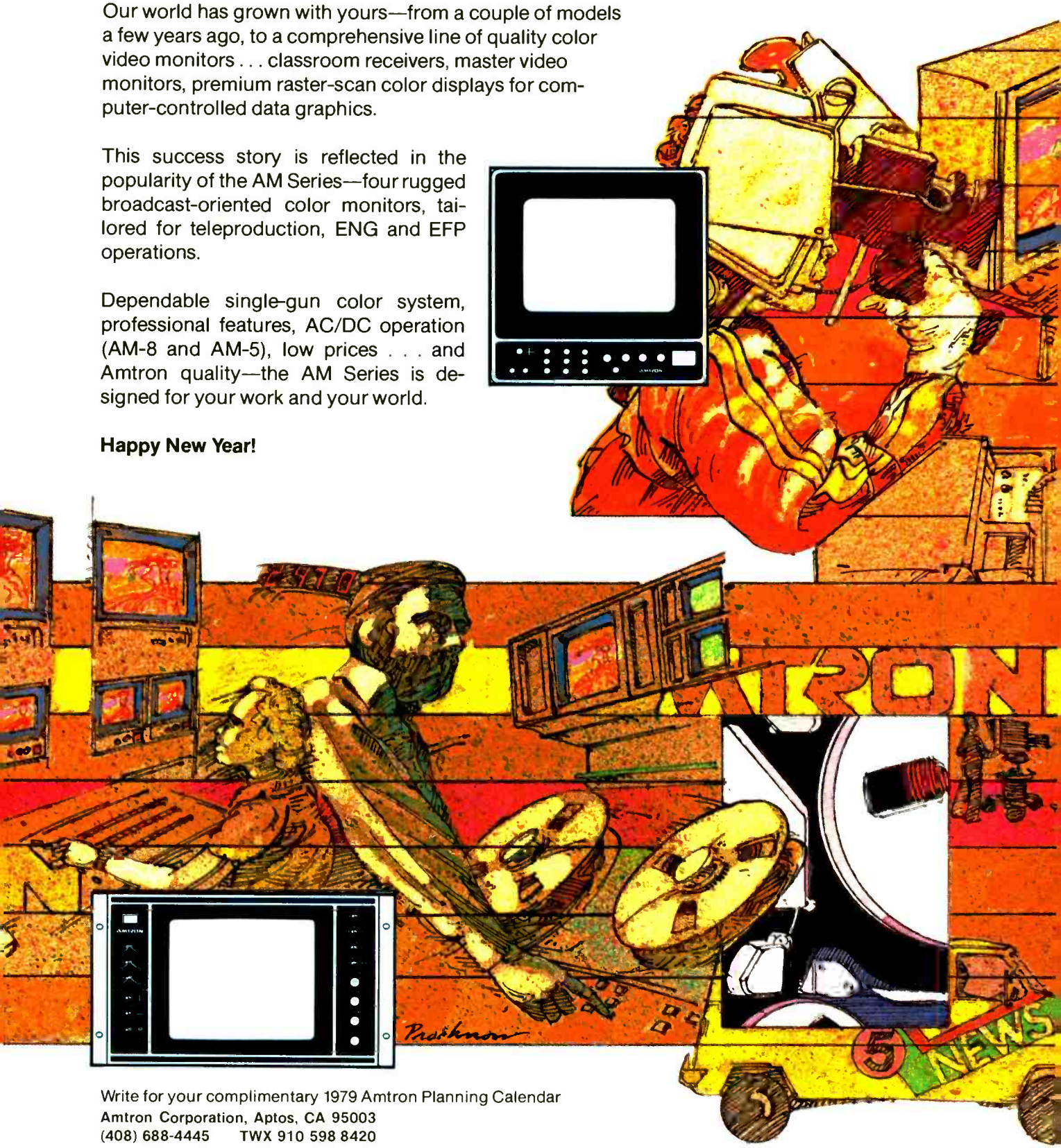

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Microwave-Linked News Bureaus

One of WCKT's two microwave-equipped RVs. Units are dispatched occassionally in support of the Ft. Lauderdale bureau

also managed to carry live some of the outbursts of violence that occurred during the strike, and according to McCaye, was the only station to fairly present both the city's and employees' sides of the story.

McCaye feels strongly that WAFF's coverage of the strike brought the station many new viewers. "From what we've heard from the man in the street, we really wiped out our competition." said McCaye.

As important as the immediacy of the WAFF coverage has been the regional capability of the microwave system. In the past few months, WAFF has carried live coverage from Florence, some 63 air miles away, and managed to beat its competition to air from Cullman, Alabama even though Cullman is out of range of their microwave system. McCaye sent a crew into Cullman to tape an important trial and then had them drive the taped material to a microwave van just a few miles closer in, where a link had been established to the station.

WAFF is gearing up to go even further into ENG. Currently working with one TK-76 camera and two Hitachi FP-1020s, WAFF will soon add another two 1020s when the second microwave van is completed. With the results achieved thus far, McCaye is uncertain of what the limits might be. At the time of this writing, McCaye was planning to dispatch the live unit to Birmingham, Alabama — some 80 or 90 air miles distant — to try and cover portions of the Alabama-Auburn football game.

Other types of bureaus and approaches to "Live"

There are about as many reasons and ways to use microwave for news as there are stations. At KOLD, Tuscon, for instance, news director Lou Waters will soon establish a live link to a bureau yet to be established in Phoenix. This will be a cooperative effort with KOLD's sister station in Phoenix, KOOL. When the link is completed it will be a two-way closed circuit system to permit each station to cover additional territory.

At WCKT, Miami, Fla., a news bureau has been in operation for more than 15 years. This area is the classic hyphenated market, Miami-Ft. Lauderdale, and as the south Florida area becomes increasingly built up a regional approach to the news becomes more and more important. News director Gene Strul has given marching orders to his staff that they are to look for possible regional angles in any story they do.

Unlike KRON, which promotes its news bureaus, the Ft. Lauderdale bureau receives little attention that distinguishes it from the home station in Miami. Though a "super" or "lead" often identifies the story as coming from the Broward Bureau (Ft. Lauderdale is the county seat for Broward), the bureau news set is almost identical to the Miami news set. George Crolius, Broward Bureau chief, feels that most people, especially Broward government officials, are clearly aware of the existence of the bureau but that newcomers may not be conscious of the fact that the bureau is distinct from the Miami news center.

The news bureau approach has been used in south Florida for some time and the other two stations both maintain a bureau in Ft. Lauderdale, though only one of them uses it on a continuous basis. The market is highly competitive, and like many other markets where ENG is in full sway, there is some trouble with crowding in the 2 GHz band. WCKT, however, is on 7 GHz for all of its microwave operations including its STL. Bob Paasch, chief engineer for WCKT, says that he has experienced absolutely no interference problems.

Currently, WCKT operates two camper type vehicles equipped with Microwave Associates 7 GHz transmitters. The dishes are on 40-foot extension ladders and, given Florida's flat terrain, WCKT has been able to get shots from considerable distances.

The Ft. Lauderdale bureau provides the six o'clock news block with about three stories per day, on the average. These stories are used within the program as complete packages since all editing is accomplished at the bureau on its Sony BVU-200 and Sony BVE-500 editing system. Additional "word stories" are broadcast live from Ft. Lauderdale during the news program. Right now, the Ft. Lauderdale bureau is staffed by five people, including one technician who operates the RCA TK-44 camera in the news bureau's set. Camera setup is remotely controlled from Miami.

The Broward bureau supplies stories to Miami in three basic ways: taped and live via microwave, and filmed stories taken to Miami by courier. There are no live Broward stories during WCKT's 11:00 news block, though earlier stories are rebroadcast. This will be altered shortly, however. Bob Paasch explained that lighting and camera operations at the bureau will soon be remoted to the Miami studios via telco lines, using a touch tone system. When this is completed Broward will be able to go live at any time, day or night.

There are, to our knowledge, at least a dozen more stations around the country now using bureaus or preparing to establish bureaus within the next year. Many of the existing bureaus are located at state capitols or in downtown areas if the station's studio is located far outside the downtown area. One thing is certain — the concept of news bureaus is a growing and effective technique. As the American population continues to settle away from the center cities, television stations will find themselves operating farther and farther away from home base. With the cost of telco lines and the expense of operating vehicles for courier services, the regional news bureau will increase in its importance. **BM/E**

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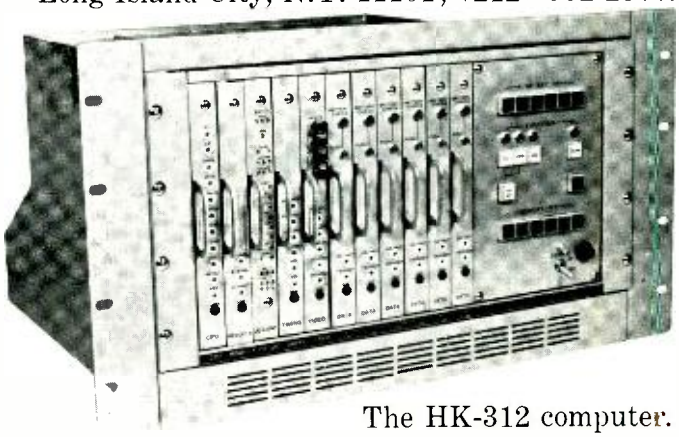

The HK-312 computer.

Ikegami

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ENG Camera Survey

A STATION'S CHOICE OF ENG CAMERAS becomes, ultimately, a delicate juggling act in which factors such as price, weight, performance, versatility, power consumption, automatics, etc., must be carefully weighed against each other and against the station's needs. Defining those needs is the first step in deciding which camera is right.

To help in this process, we sent out a uniform questionnaire to manufacturers of NTSC ENG cameras asking them to specify their currently available models. Their claims are printed alphabetically in the following chart, made as uniform as possible to aid in comparison. It should be emphasized, however, that the chart is designed for quick reference only; each camera has its own unique characteristics, many of which do not become apparent in a presentation such as this. Select the cameras which fall within your price range, performance criteria, weight, or combination of these factors, then by all means call the manufacturers for demonstrations.

	Ampex BCC-14	Asaca ACC-2000	Bosch Fernseh KCA-90	Cinema Products MNC-71CP	Commercial Electronics CEI-310
Electronics	self-contained	detachable	self-contained	self-contained	detachable
Weight[1]	12 lbs.	19 lbs.	18.9 lbs.	18.7 lbs.	23.5 lbs.
Viewfinder: in. Diagonal	1.5 in.	1.5 in.	1.5 in.	1.5 in.	3 in.
Resolution	I/NA	400 lines	500 lines	500+ lines	400 lines @ 50 fc
Indicators	tally/VTR; batt. condition; color bal.; auto centering	tally; VTR; batt. warning; video level	tally; VTR; cam. batt.; white bal.; video level	tally; VTR batt. & tape warning; white bal.	tally/call; VTR record; batt. condition; white bal.
Temp. Range	−20 to +45°C	−20 to +50°C	−20 to +45°C	−20 to +45°C	−15 to +50°C
Power Consumption	27 WDC	30 WDC	30 WDC	30 WDC	72 W @ 12 VDC
Voltage Range (±)	11 - 17 VDC	7 VDC nominal	6.8 - 8.3 VDC	6.8 - 8.4 VDC	12 VDC nominal
Standby Power Consumption	6 WDC	I/NA	2.5 WDC	<3 WDC	50 WDC
Warmup Time From Standby	2 s	2 s	2 s	<2 s	7 s
Tube Configuration[2]	3 x ⅔" Plumbicons	3 x ⅔" Plumbicons or Saticons	3 x ⅔" Plumbicons or Saticons	3 x ⅔" Plumbicons or Saticons	3 x ⅔" Plumbicons or Saticons
Optical Configuration	f/1.4 prism	dichroic	prism	f/1.4 prism	prism
Color Temperature Balancing	clear; .6 ND; 85B; 85B + .9 ND; cap	3200K; 6000K + 25% ND; 6000K + 10% ND; cap	3200K; 4700K; 6500K + 25% ND; cap	3200K; 4700K; 6500K + 25% ND; cap	clear; 85B; 85B + .6 ND; cap
Automatics	white balance; black balance; iris; centering; beam control; momentary iris switch; 2-line aperture correction	white balance; iris	white balance; black balance; iris	white balance; black balance; iris; flare	digital white balance; pedestal
Auto White Balance Time	I/NA	1 - 2 s	2 s	2 s	1 s
Signal Outputs	comp. video; video monitor; mic	comp. video; video monitor; demodulation control; mic	comp. video; video monitor	2 comp. video; video monitor	2 comp. video; video monitor; 2 mic
Genlock	H: ±3μs sc: >360°	black burst	H: phase sc: phase	H: ⩾4.5μs sc: >360°	H: ±1.5μs
Video Gain	+6, +12 dB	+9 dB	+9 dB	+6, +9, +12 dB	+12 dB
Standard Sensitivity[3]	I/NA	f/4 - 5.6	f/4	f/4	f/4
Minimum Sensitivity[4]	7 fc	10 - 12 fc	11.5 fc	10 fc @ +9 dB gain	15 fc
S/N—Max. Sen.[5]	40 dB	41 dB	I/NA	42 dB @ +9 dB gain	40 dB
S/N[6]	50 dB @ 110 fc, f/2.8	50 dB	50 dB	>57 dB	52 dB
Center Resolution	600 lines	500 lines	500 lines	>500 lines	550 lines
Corner Resolution	I/NA	400 lines	I/NA	>400 lines	500 lines
Price[7]	$34,500*	$29,600*	$26,000	$32,900*	$25,375

The 23 cameras from 17 different companies presented here represent virtually every ENG camera on the market today for over $5,000. Cameras under this price range will probably not satisfy "broadcast quality" standards, although both Hitachi and Panasonic offer extremely low-cost color cameras and should be contacted for more information on their complete product lines. It is also important to note that our interest was in hand-held, battery-operated cameras which did not necessarily have to go through a CCU before recording. Several of the cameras in the chart — such as the Ampex BCC-14, Asaca ACC-2000, Bosch Fernseh KCA-90, Commercial Electronics CEI-310, IVC 7000P, JVC CY-8800, Philips Video 80 and LDK-14, RCA TK-76B, and Thomson-CSF Microcam MC-601 and MC-602 — are also adaptable for field production or studio use. Again, the manufacturers should be contacted for their literature or demonstrations.

Notes

[1]Listed weights are, in all cases, for camera head without lens or battery. Weights for cameras with detachable electronics for EFP or studio use are shown in their self-contained versions. For cameras with separate electronics, add the following weights for electronics packs: IVC 7000P – 18 lbs.; Thomson-CSF Microcam Mark II – 3.6 lbs.

[2]As used in this section, "Plumbicon" is a registered trademark of NV Philips Corp; "Saticon" is a registered trademark of Hitachi Denshi America Ltd.

[3]Standard sensitivity is defined as the lens opening required for 2000 lux illumination, 60% reflectance, unless otherwise noted.

[4]Minimum sensitivity is defined as the scene illumination required for an f/1.4 lens opening, with maximum available video gain, reflectance as noted.

[5]S/N at maximum sensitivity is measured with maximum available video gain unless otherwise noted.

[6]S/N as measured with gamma correction and contours off, bandwidth 4.5 MHz and G channel signal current 180 nanoamps, unless otherwise noted.

[7]Prices listed are for camera alone, excluding tubes and lens, with the following exceptions: *denotes price including tubes specified in "Tube Configuration" above; **denotes price including tubes specified above, plus zoom lens.

Tables continued on page 50

	GBC CTC 7X	Hitachi FP-1020	Hitachi SK-80	Hitachi SK-90	Ikegami HL-79A
Electronics	self-contained	self-contained	self-contained	self-contained	self-contained
Weight[1]	17.5 lbs.	15.4 lbs.	17 lbs.	18.7 lbs.	11.2 lbs.
Viewfinder: in. Diagonal	1.5 in.	1.5 in.	1.5 x 2 in.	1.5 x 2 in.	1.5 in.
Resolution	500 lines	270 lines	300 lines	400 lines	400 lines
Indicators	tally; VTR; low batt.; high peak; video level	tally; low batt.; white bal.; over-modulation	tally; low batt.; video level; pedestal	tally; low batt.; overmodulation; white bal.	tally; operate/ standby; batt. condition; white bal.
Temp. Range	0 to +40°C	−5 to +40°C	−10 to +40°C	−20 to +50°C	−20 to +50°C
Power Consumption	48 WDC	22 WDC	35 WDC	35 WDC	23 WDC
Voltage Range (±)	11.2 - 14 VDC	11.5 - 14 VDC	12 VDC ±5%	11.5 - 14 VDC	11 - 16 VDC
Standby Power Consumption	8.4 WDC	I/NA	5 WDC	I/NA	1.8 WDC
Warmup Time From Standby	1 s	I/NA	5 s	5 s	3 - 4 s
Tube Configuration[2]	3 x ⅔" Chalnicons	3 x ⅔" Saticons H-9300	3 x ⅔" Saticons H-8397A	3 x ⅔" Saticons H-8397A	3 x ⅔" Plumbicons or Saticons
Optical Configuration	prism	f/1.8 dichroic	f/1.8 dichroic	f/1.4 prism	R,G,B prism
Color Temperature Balancing	3000K; 4000K; 5000K; 6000K; 7000K	3200K; 4000K; 6000K + 25% ND; cap	3200K; 4000K; 6000K + 25% ND; cap	3200K; 5500K; 6500K + ND; cap	clear; .6 ND; cap + 3000K; 4200K; 5600K
Automatics	digital white balance; VIT color bars	white balance; black balance; iris	white balance; iris	white balance; iris; automatic beam optimizer	white balance; iris; iris close when camera off; beam overload stabilization
Auto White Balance Time	2 s	5 s	5 s	2 s	.5 s
Signal Outputs	comp. video; R,G,B non-comp.	2 comp. video	2 comp. video	2 comp. video	2 video (comp. or non-comp.); monitor (comp. or non-comp.); individual R,G,B
Genlock	I/NA	H: phase sc: 360°	H: phase sc: 360°	H: +3 to −.5μs sc: 360°	H: +5 to −2μs
Video Gain	+6 dB	+6 dB	+6 dB	+6, +12 dB	+18 dB
Standard Sensitivity[3]	f/4	f/4	f/4	f/4	f/4.1
Minimum Sensitivity[4]	25 fc	15 fc	15 fc	7 fc	2 fc
S/N—Max. Sen.[5]	45 dB	42 dB	45 dB	40 dB	42 dB
S/N[6]	50 dB	48 dB	50 dB	51 dB	54 dB
Center Resolution	500 lines	500 lines	500 lines	500 lines	500 lines
Corner Resolution	400 lines	400 lines	400 lines	400 lines	400 lines
Price[7]	$19,995**	$17,115*	$28,728*	$36,685*	$30,000

ENG Camera Survey

Ampex BCC-14

Bosch Fernseh KCA-90

Hitachi FP-1020

Asaca ACC-2000

CEI-310

	International Video Corp. IVC 7000P	JVC CY-8800	NEC MNC-61A	Panasonic WV-3800	Panasonic AK-750P/EN
Electronics	separate	self-contained	self-contained	self-contained	self-contained
Weight[1]	17 lbs.	13.9 lbs.	17 lbs.	10 lbs.	16 lbs.
Viewfinder: in. Diagonal	3 in.	1.5 in.	1.5 in.	1.5 in.	1.5 in.
Resolution	650 lines	400 lines	500 lines	400 lines	400 lines
Indicators	tally; low batt.; overexposure; auto balance in progress	tally; VTR; batt. warning	VTR; batt. warning	tally/VTR; batt. warning; white bal. meter	tally/VTR; batt. warning/standby; light level indicator
Temp. Range	−20 to +50°C	−5 to +45°C	−10 to +45°C	0 to +40°	0 to +40°C
Power Consumption	120 WDC	34 WDC	33 WDC	14 WDC	23 WDC
Voltage Range (±)	10.5 - 15 VDC	12 VDC nominal	9 VDC nominal	11-15 VDC	11 - 15.2 VDC
Standby Power Consumption	—	3 WDC	100 μWDC	—	14 WDC
Warmup Time From Standby	—	10 s	5 s	—	2 s
Tube Configuration[2]	3 x 1" Plumbicons	3 x ⅔" Plumbicons or Saticons	3 x ⅔" Plumbicons or Saticons	1 x 1" stripe filter Vidicon	Industrial grade or Saticon
Optical Configuration	prism with bias light	new dichroic system	dichroic	integrated stripe filter	dichroic
Color Temperature Balancing	clear; 1.0 NV; 85B + 1.0 ND; cap	3000K; 6000K; 18% ND; cap	85B; 85B + .3 ND; 85 + .6 ND	color conversion; ND	3200K; 4700K; 6000K; 6000K + 25% ND; 7500K
Automatics	digital white balance; digital black balance; iris	white balance; iris	white balance; black balance; iris	—	white balance
Auto White Balance Time	6 s	2 s	0.5 s	—	2 s
Signal Outputs	comp. video; separate R,G,B,G; switched R,G,B; sequential R,G,B	comp. video; R,G,B	comp. video; video monitor; audio	2 comp. video	2 comp. video; video monitor
Genlock	H: ±5μs sc: 360°	I/NA	−2 to +4μs	I/NA	I/NA
Video Gain	+6, +12 dB	+6, +12 dB	9 dB	6 dB	+6 dB
Standard Sensitivity[3]	f/4 @ 360 nA G channel current	f/4 @ 70% refl.	f/4	f/4 @ 1400 lux, 90% refl.	f/4
Minimum Sensitivity[4]	8 fc	30 fc	3 fc	15 fc @ f/2	20 fc
S/N—Max. Sens.[5]	39 dB	49 dB	40 dB	41 dB	43 dB
S/N[6]	51 dB @ 360 nA	I/NA	48 dB	47 dB	49 dB
Center Resolution	650 lines	500 lines	500 lines	260 lines	500 lines
Corner Resolution	600 lines	I/NA	450 lines	I/NA	400 lines
Price[7]	$47,500	$16,945*	18,918	$5000 range (prelim.)	$18,550*

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Hitachi SK-80

Sharp XC-3200

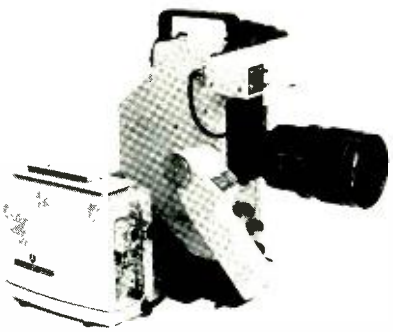
Philips LDK-14

Sony BVP-300

Panasonic WV-3800

	Philips Video 80	Philips LDK-14	RCA TK-76B	Sharp XC-320U	Sharp XC-530
Electronics	detachable	self-contained	self-contained	self-contained	self-contained
Weight[1]	20 lbs.	12.1 lbs.	17.3 lbs.	10 lbs.	10 lbs.
Viewfinder: in. Diagonal	1.5 in.	1.5 in.	1.5 in.	1.5 in.	1.5 in.
Resolution	400 lines	400 lines	400 lines	400 lines	400 lines
Indicators	tally; standby; low batt.; white bal.; black bal.	tally/VTR; low batt./ call; white bal; black bal.; iris; auto centering; video level	tally; VTR batt. & run-out; cam. batt.; tape motion	tally; level indicator; VTR start/stop; batt.	batt.; tally; illumination level; VTR start/stop
Temp. Range	0 to +45°C	−20 to +50°C	−20 to +50°C	0 to +40°C	0 to +40°C
Power Consumption	22.8 WDC	27 WDC	42 WDC	22 WDC	22 WDC
Voltage Range (±)	9.7 - 13 VDC	11 - 17 VDC	11 - 14 VDC	12 VDC nominal	12 VDC nominal
Standby Power Consumption	2 WDC	6 WDC	I/NA	—	—
Warmup Time From Standby	1 s	2 s	2 s	—	—
Tube Configuration[2]	3 x ⅔" Plumbicons	3 x ⅔" Plumbicons XQ-1427	3 x ⅔" Plumbicons or Saticons	3 x ⅔" bonded Vidicons	3 x ⅔" bonded Saticons
Optical Configuration	prism	prism	prism	dichroic	dichroic
Color Temperature Balancing	—	clear; .6 ND; 85B; 85B + .9 ND; cap	clear; 85B; 85B +.8 ND; cap	—	—
Automatics	white balance; black balance; iris; registration; gain; bandwidth limiting	white balance; black balance; iris; registration; color bars	white balance; iris; flare correction	—	iris
Auto White Balance Time	2 - 3 s	1 s	2 s	—	—
Signal Outputs	comp. video; R,G,B; R −G or B −G	comp. video; video monitor; mic	comp. video; video monitor (R,G,B or −G)	comp. video; VTR video; mic	comp. video; V/F; mic
Genlock	I/NA	H: ±3μs sc: >360°	H: ±2.5μs	—	I/NA
Video Gain	+12 dB	+12 dB	9 dB	+6 dB	+6 dB
Standard Sensitivity[3]	f/3.7	f/2 @ 600 lux	f/2.8 @ 1250 lux	f/4	f/4
Minimum Sensitivity[4]	5 fc	7.5 fc	15 fc @ f/1.7	15 fc	10 fc
S/N—Max. Sen.[5]	I/NA	40 dB	I/NA	42 dB	44 dB
S/N[6]	44.6 dB	50 dB	51 dB	46 dB	47 dB
Center Resolution	600 lines	600 lines	600 lines	400 lines	500 lines
Corner Resolution	I/NA	I/NA	I/NA	350 lines	450 lines
Price[7]	$17,730	$41,200**	$38,400*	$5,000	$9,875*

ENG Camera Survey

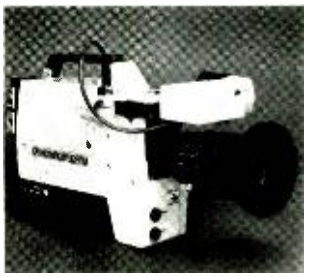


Thomson-CSF MC-602

Philips Video 80

Ikegami HL-79A

Cinema Products MNC-71/CP



Thomson-CSF MC-601

	Sony BVP-300	Thomson-CSF Microcam MC-602	Thomson-CSF Microcam MC-601
Electronics	self-contained	detachable	self-contained
Weight[1]	12.4 lbs.	11.7 lbs.	12.3 lbs.
Viewfinder: in. Diagonal	1.5 in.	1.5 in.	1.5 in.
Resolution	I/NA	300 lines	500 lines
Indicators	tally; VTR; low batt.; white/black bal.; iris; skin tone video level	tally; VTR tape; iris; video level; low batt. warning; color bal. warning; VTR status	VTR; low batt.; white bal.; black bal.; iris; skin tone video level
Temp. Range	−20 to +50°C	−30 to +50°C	−20 to +50°C
Power Consumption	21 WDC	24 WDC	<21 WDC
Voltage Range (±)	10 - 17 VDC	10.8 - 20 VDC	10 - 17 VDC
Standby Power Consumption	I/NA	4.2 W	4.2 W
Warmup Time From Standby	2.5 - 3 s	3 s	3.5 s
Tube Configuration[2]	3 x ⅔" Plumbicons	3 x ⅔" Plumbicons	3 x ⅔" Plumbicons or Saticons
Optical Configuration	f/1.4 prism	prism	prism
Color Temperature Balancing	3200K; 5600K; 5600K + 25% ND; cap	3200K; 5200K; cap	3200K; 5600K; 5600K + 25% ND; cap
Automatics	digital white balance; digital black balance, iris; black level; automatic beam optimizer	color balance; iris close on black level, open on white	digital white balance; digital black balance; iris; automatic beam adjustment; iris close on BB, open on WB
Auto White Balance Time	2 s	3 s	3 s
Signal Outputs	comp. video; registration (R,G,B or R-G, B-G); R,G, B color bars	comp. video; VTR; registration (R, G,B or −G)	2 comp. video; test (comp. or non-comp); mic
Genlock	I/NA	H: +3 to −1.5μs	H: +3 to −1.5μs
Video Gain	+9, +18 dB	+12 dB	+18 dB
Standard Sensitivity[3]	f/4.7	f/4 @ 89% refl.	f/4 @ 89% refl.
Minimum Sensitivity[4]	2 fc	2 fc	3 fc @ 89% refl.
S/N—Max. Sen.[5]	55 dB	52 dB	53 dB
S/N[6]	>53 dB	53 dB	54 dB
Center Resolution	≥500 lines	300 lines	500 lines
Corner Resolution	≥400 lines	I/NA	400 lines
Price[7]	$41,900*	$39,485	$43,060

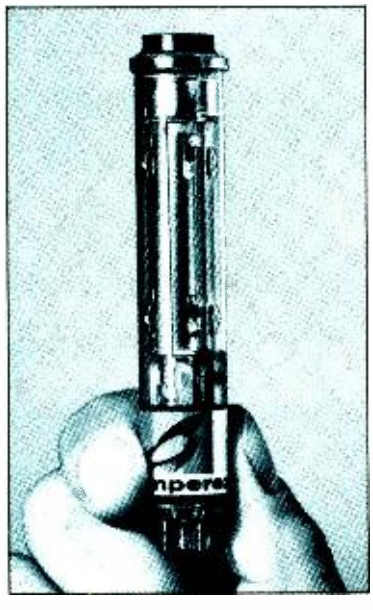
IVC 7000P

Panasonic AK-750

NEC MNC 61A

Hitachi SK-90

Regardless of who made your 2/3-inch Plumbicon* TV camera, or where it was made— Amperex has the exact replacement for the tube that came with the camera.



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For more information on Plumbicon TV camera tubes, write or phone: Amperex Electronic Corporation, Slatersville Division, Slatersville, Rhode Island 02876. Telephone: 401-762-3800.

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After The Gathering: How ENG Material Gets On The Air

Stations around the country have solved the problem of getting news to air in a variety of ways. Editing, routing, and playback get original treatment from place to place.

ENG IN 1979 IS NOT THE SAME as it was in 1978; in 1980 it will probably be different again. It is safe to say that no other area of broadcast operations has ever offered such a rapidly developing technology or presented the broadcaster with so wide a choice of how to apply it to his particular station's needs. But then, nowhere else are the competition and the stakes so high.

ENG began barely 10 years ago with the introduction of the first relatively lightweight color cameras and battery-operated recorders; today, broadcasters have their choice of some 25 high quality portable cameras (some weighing less than 12 pounds) and battery-operated videocassette recorders from a number of different manufacturers. Notwithstanding these important developments in the "gathering" end, however, the greatest evolution in the ENG process has been in the post production process by which the news gets on the air.

Despite its many problems, ¾-inch technology is here to stay in news operations for some time to come. Three-quarter-inch videotape technology can be forgiven its sins since it was broadcasters who pressed these industrial grade machines into broadcast service. Once adopted, however, it was up to broadcasters to make it into an acceptable image.

How does a station organize itself to take advantage of the technology? In remote areas of the country with sparse, scattered viewers and little broadcast competition, a news department may still find that an all-film or mostly film operation with a small ENG supplement will more than adequately serve its viewers. In large urban areas, on the other hand, where competition among broadcasters necessitates "getting the scoop" on the other stations, and where microwave bounces from tall buildings make the entire coverage area accessible to microwave, the station will often find itself having to go all-ENG, with as many as six or seven remote live feeds during its local evening news. The solutions are as diverse as broadcast philosophies themselves.

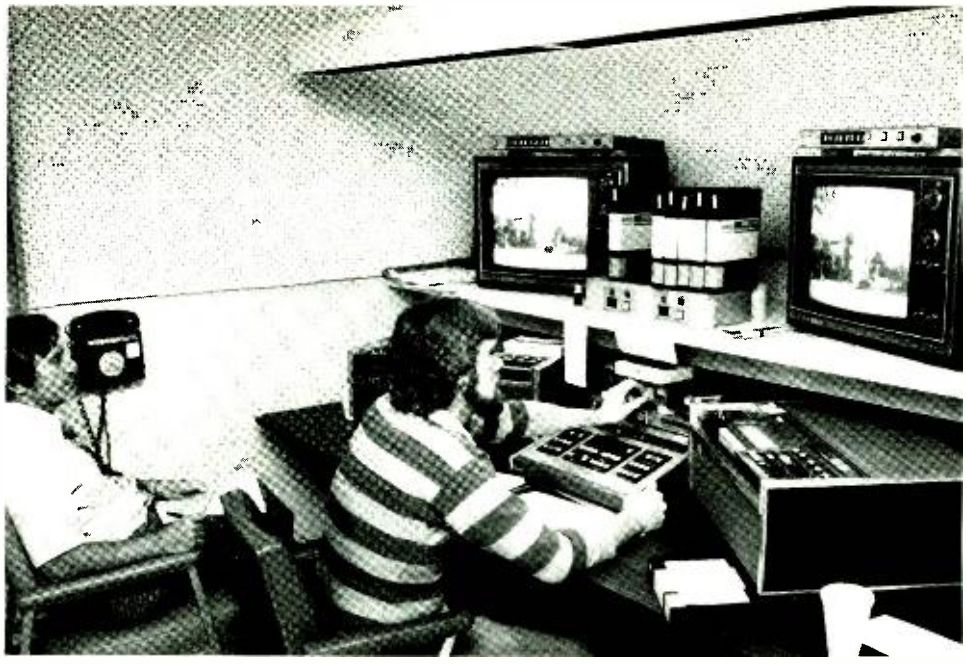
There are some clearly discernible trends in ENG operations — referred to by many broadcasters as "generations." In fact, in the 10 short years since ENG became a reality, there are already three generations of complexity which can be seen in stations throughout the country. Like generations of equipment, they have followed an evolutionary path over the years, so that a station which five years ago may have had a few ENG crews to supplement its film operation may now have a better than 75 percent ENG operation with extensive microwave, and a station which made an early committment to a 50/50 split between film and ENG may now be totally ENG. Unlike generations of equipment, however, a station may have the very latest time base corrector and an ultra-sophisitcated ENG camera without necessarily being antiquated simply because it has no microwave. Operational generations are more like degrees of complexity; they reflect a station's needs in a particular area.

The first generation: some ENG, some film — but no microwave

Within any of the levels of sophistication of ENG operations there will be a variety of approaches to problems such as videocassette playback quality, synchronization of different source materials, the fastest route for getting stories through editing into the playback area, and so on. Many times compromises are struck, particularly in smaller markets where stations cannot afford the full range of equipment they might like to have under "ideal" circumstances. Thus, while some stations consider image enhancement and chroma noise reduction essential, station WCAX in Burlington, Vermont uses a $50,000 digital TBC/frame synchronizer to simplify its operation.

WCAX prides itself on offering news coverage of the entire state of Vermont, which presents extremely difficult, mountainous terrain. For this reason, microwave transmission is virtually impossible and, according to chief engineer Charlie Lease, the station has no plans to install any. Instead they rely on three "bureaus" to supply them with filmed news which is physically brought back to the station (from as far away as 100 miles) and processed there on a Jamieson processor, edited on flatbed editors, and aired directly through a two-projector RCA TK-27 telecine. For ENG operations closer to home base, they use four RCA TK-76 cameras and JVC 4400 videocassette recorders.

For a small market, the station has a remarkably busy news department, producing an hour of local news from



KNBC-TV, Los Angeles/Burbank, has one of the most advanced news operations in the country. Each of the four editing rooms is equipped with Sony BVU-200s and a BVE-500 editor, and has full access to the news department's 40 input/20 output American Data routing switcher. Editors use time code readers, located above monitors, to reference material

6:00 – 7:00 p.m., a half-hour from 11:00 – 11:30 p.m., and 10 minutes at 1:00 a.m. Four Convergence editors — two ECS-1s interfaced with Sony VO-2850s and two ECS-1Bs interfaced with Sony BVU-200s — handle the editing workload. One of the ECS-1B systems is assigned to the production area, but is frequently called into use for news starting around 4:00 in the afternoon when most of the tapes have arrived at the station. Each of the four editing systems gets at least five hours' use a day.

All four Convergence editors are equipped with optional PC-3 computer/time code units. Though time code is not recorded in the field, some of the station's editors, such as Chuck Callahan, use the time code option whenever possible for automatic, time code-cued insert edits, sound under, overlapping pictures, and so on. Not all the editors use the computer interface option, however, preferring to "play it by ear"; in any event, the choice is left up to the individual, who must also take account of the fact that editing with time code can impose extra complications and possibly delay a late-breaking story. Editors are also given their choice of whether to work on the ECS-1 or 1B system, subject to availability. Callahan personally prefers the ECS-1 with the VO-2850s because of their faster shuttle speeds. He points out, however, that the 2850s do tend to slip by as much as three or four frames after being cued — particularly after they have been on and heated up for a while. Lease also claims the BVU-200s are far more gentle with tape, particularly at the edges.

Each story is edited onto its own videocassette for on-air playback. Except in an extreme emergency, all material for the news program is aired from film or videocassettes. For playback, two JVC decks, with a third as backup, are fed through a Quantel 3000 digital framestore and TBC, and then on to the switcher. By waiting until the very last minute, WCAX is not only able to eliminate blanking width problems and insure synchronization of its videocassette material, but can also add live, on-air special effects such as freeze frames. Interestingly enough, the station was one of the first to add a digital framestore to its on-air system (they installed it over three years ago) and has therefore never had a blanking width problem.

The second generation: microwave enters the picture

The use of microwave in an ENG operation may result from the need to cover a wide geographic area, a desire to do live remotes, or a variety of other factors. Whatever the motivation, the capability of microwave transmissions adds an entirely new dimension to a station's news operation, at the same time considerably complicating the process by which material gets from the field to air.

Station KTRK in Houston, Texas provides a sterling example of an operation which, without unlimited funds, maximizes its available resources.

By mid-1979, the station will be up to its full complement of six RCA TK-76 cameras and will have increased its present two microwave trucks to four. The operation will remain basically the same as at present, however, with the cameraman/reporter team going out separately with a camera and recorder, then meeting up with one of the microwave vans in the field. Each van is equipped with full microwave facilities, including a three-channel 2 GHz transmitter, window unit, and camera umbilical cord for live transmissions. Though the station had originally planned to install on-board editing in the vans, the idea was dropped because of the complexity.

A major problem with microwave is that several other stations in the area — all using the 2 GHz frequency — have the same idea. Added to this crowding is the fact that the area's stations are all using STLs, also on the 2 GHz frequency, as is NASA for some of its space launch communications. The STL and NASA problems were solved several years ago when all the station engineers met and agreed on the spacings of the STL transmissions and to cooperate with NASA when necessary. Real problems occur, however, when the stations are all trying to cover the same event. Since all the stations have Nurad microwave receiving horns on the same downtown tower,

continued on page 60

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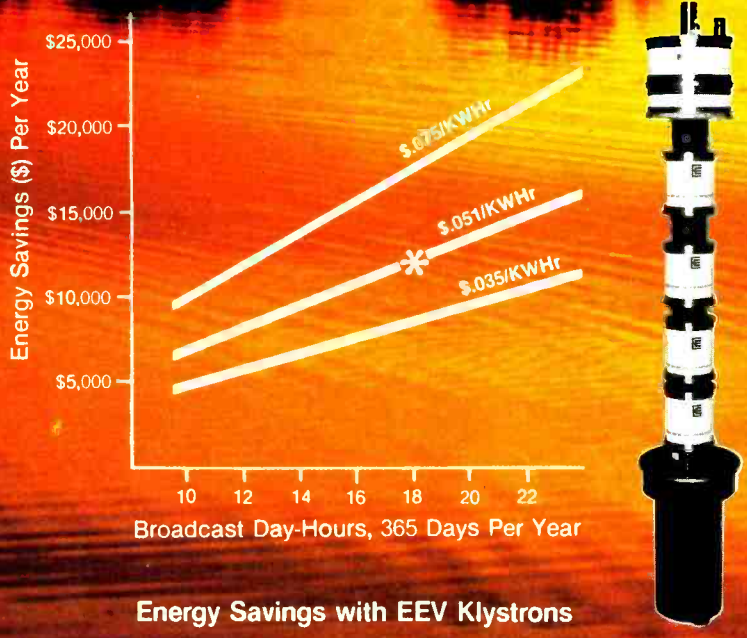

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there is frequently adjacent channel interference. For this reason, KTRK has installed a rotatable dish antenna at its studio facility.

Though used primarily for live feeds for its half-hour news segments at 7:00 a.m. and 6:00 and 10:00 p.m., and a magazine-type "soft news" show at 5:00 p.m., microwave is also used to speed the process of getting news back from outlying areas such as Galveston, 50 miles distant. In these cases, the microwave van will meet the reporter/cameraman team and plug the team's portable recorder into the van's microwave transmitter (since the van does not have its own playback deck). A window unit is permanently installed in a large insurance company building in Galveston for this purpose. Back at the station, a small routing switcher sends the signal to a BVU for recording onto videocassette.

Though network news feeds are recorded upstairs on the control room's two-inch decks, with two-inch editing if necessary, all local news is edited on videocassettes and then transferred to two-inch carts and programmed into the TCR-100 for on-air playback. Only in cases when the story breaks so late that there is no time for the two-inch dub is the videocassette played on-air.

Editors at KTRK are not prone to using time code, even though the station has two Datatron Newsmakers. Instead, the bulk of the news is edited on two Sony BVE-500/BVU-200 systems and two Convergence ECS-1/Sony VO-2850 systems. Studio engineer Jess Mitchell reports no difference in tape handling between the 2850s and the BVU-200s. One concern with the 2850s is, however, that with their sometimes "random" switch points, "a little illegal stuff does get on the air from time to time." For this reason KTRK will shortly upgrade all its 18-plus videocassette units to BVU-200s.

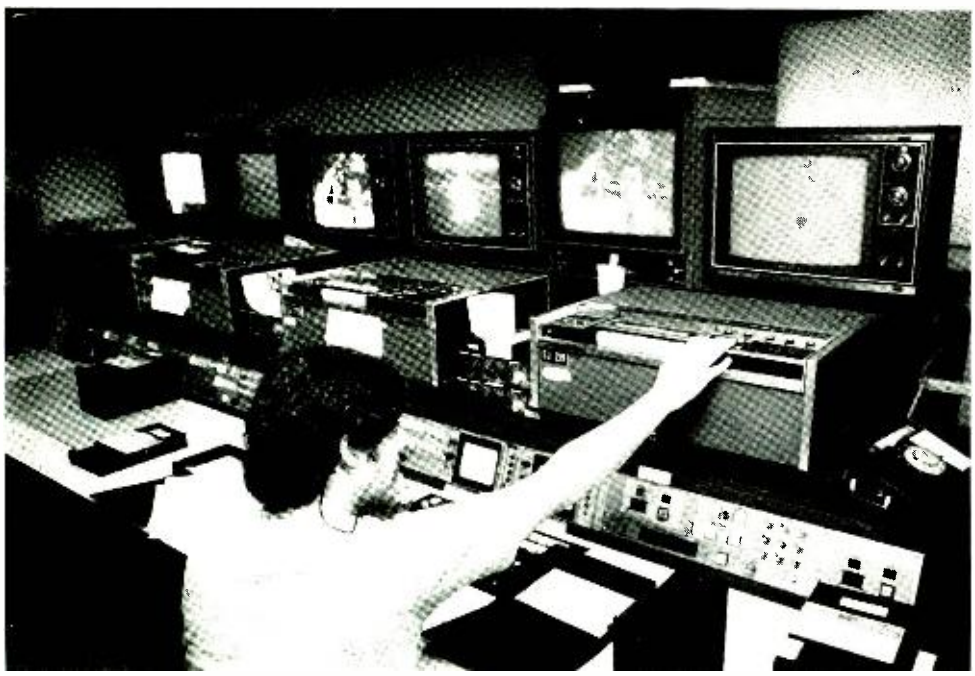
At present, the news department, a virtually self-sufficient operation located on a lower floor, uses no time base correctors or image enhancement for its edited tapes. Instead, all material is run through one of the two Microtime 2020 TBCs during the dub to quad carts. If necessary, of course, videocassettes can also be played directly through the 2020. In addition to the TBCs, the control room contains a Micro Consultants DFS-3000 digital framestore synchronizer which is tied into the system before the production switcher to allow synchronization of all incoming source material. In the near future Mitchell will add two additional Microtime 2020s to be located in the news area. This will enable most of the material to reach the control room already time base corrected. An additional time base correction as the quad dub is made will insure optimum quality of the videocassette material.

Another fine example of this type of operation is seen down in Orlando, Florida at WDBO. Chief engineer Stromberg says the heart of his system is two TBCs — a Microtime 2020+ and the CVS 520. Unlike the situation at KTRK, there is no dub to quad; news material is played back on either of two JVC ¾-inch decks directly onto the air through one of the TBCs. Stromberg especially sings the praises of the Microtime system which, according to him, "provides significant advantages of signal-to-noise and makes a significant improvement in the quality of the picture." This is particularly true when the material has originated from one of the two Hitachi FP-3030s which supplement two RCA TK-76 cameras. Stromberg also finds the 2020+'s built-in chroma noise reduction unit extremely valuable when having to use file tapes which may be three or four generations away from the original.

For video editing, WDBO has one station with a Convergence ECS-1 interfaced with 2850s and one of the new Convergence ECS-100s, which editors find useful for its ability to do fades and "cut/laps," simulating dissolves. This second system uses Panasonic 9500s as its decks. The editing machines are in use approximately five hours a day each, producing material for half-hours at 12:00 noon and 6:00 and 11:00 p.m. Stromberg estimates that the average story runs two minutes and takes 25 minutes to edit.

Like any good engineer, Stromberg is at least two steps ahead in his thinking about the news operation; in his plans, at least, he has already made the switch to the next generation of operations. With 40 percent of the station's news coming from outside the Orlando area, he hopes to see the day when several additional microwave vans will

continued on page 62



KNBC's record/playback room contains four BVE-200s. Three decks, routed through Microtime 2020+ TBCs and the ADC switcher, are used to originate videocassette playbacks for local news programs. Fourth deck, connected to routing switcher outputs, records incoming feeds from the six microwave links, telco lines, East and West Coast NBC network feeds, etc. Almost all taped material used on local news programs is recorded, edited, and played back on ¾-inch videocassettes

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After The Gathering

KNBC's news control room. Technical director has remote start control over the VTRs in the record/playback room, which are cued up to five-second pre-rolls. KNBC's news department is a virtually self-contained operation within the station

be added. Equipped with full editing facilities, they would serve as mobile "news bureaus," each assigned to a particular quadrant of the coverage area. The same expansion would also dictate a frame store synchronizer and probably a routing switcher, both of which are in Stromberg's recommendations.

The third generation: the best that money can buy

"Our ENG operation has just entered its third generation," says Len Eden, director of engineering for Post-Newsweek stations and chief engineer for Post-Newsweek's WDIV, Detroit. "When Post-Newsweek took over the station we made a complete committment to ENG. The news department now has the full responsibility for everything that goes on the air, including ¾-inch videocassette playback from the newsroom."

John Baker, executive producer for news, echoes Eden's feelings precisely: "Anything short of total committment to ENG will lead stations to one troublesome and costly situation after another." When installing an ENG system, Baker recommends three guidelines to station management: "First, avoid taking shortcuts with equipment. Using the excuse that the station will use less than the state-of-the-art equipment initially and upgrade or modify it later is a terrible mistake for anyone getting into ENG. Second, realize that ENG requires constant, preventative maintenance. Stations cannot rely upon ordinary engineering channels to keep it working properly. At WDIV, we have assigned two-and-a-half technicians whose sole responsibility is the maintenance of ENG equipment. Third, decide very early whether to put emphasis on live, microwave coverage or on pre-recorded material. WDIV has elected to put primary emphasis on pre-recorded material, though we also maintain a microwave operation to use when the story warrants live reporting."

In essence, WDIV has created "a miniature television studio within the news department." There are five editing stations, each equipped with BVU-200A decks and a BVE-500A editor. Eden sees a "significant improvement" with these new Sony systems in the quality of the end product. Each editing room is itself a production facility, including a microphone, turntable, audio cart machine, and small two-channel audio mixer. There are seldom any more "down and dirty" wrap-ups recorded by reporters at the scene. Instead, almost all stories are brought back to the station where the reporter, producer, and editor can closely supervise the final product.

A key element in the station's ability to spend more time in editing is an extremely efficient routing switcher — a 20 x 20 Comtech unit. The switcher, located in the news department, can be accessed from any of the editing suites and also from Baker's office, and can be patched to any of the department's input or output sources. Incoming microwave transmissions, however, are recorded in a separate microwave record area on two BVU-200As and then physically carried to an editing booth.

The news department originates all its own programming, routed from the department's playback room through the Comtech switcher and up into master control. The playback area contains three BVU-200As. Although the three input sources from these three units to the Grass Valley 7K switcher are all ultimately time base corrected and frame synchronized, they follow slightly different paths. Two of the BVU-200As are first fed into CVS-516 TBCs located in the playback area, then fed to small looping switchers which route them to the Grass Valley switcher. The third playback output is fed directly to the Quantel 3000 frame store synchronizer in master control as a remote ENG input and then on to the production switcher. In this way, there are three synchronous ¾-inch videocassette inputs into the switcher, all of them time base corrected, and all capable of being used in the switcher's effects buses.

"Most everything we do now is back at the station," concludes Baker. "I believe that most stories can be better done and better produced with a professional editor working with producers and reporters where we have the facilities to take advantage of the story."

KNBC in Los Angeles/Burbank is one of the most advanced news operations in the country today, and is certainly a model for any station with its eyes set on becoming "big time" in the news area. To begin with, KNBC has a manager of electronic journalism operations — Steve Orland. The use of an EJ operations manager is, of course, a developing trend in stations with large operations; at KNBC it is already a full-fledged reality. Another trend — the establishment of the news department as a completely separate operation within the station — is also a full-fledged reality, similar to the situation at WDIV. Further, KNBC's extensive use of microwave and integrating of material from NBC network news programs adds new dimensions to even WDIV's operation.

A first hint at the size of KNBC's operation is the 40 input/20 output American Data routing switcher located

continued on page 64

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After The Gathering

within the news department itself. Coming in are: six microwave links fed from the four mobile vans which can do live remotes, play back pre-recorded material to be taped at the station, and even, in emergencies, roll pre-recorded tapes directly to air through an on-board Microtime 2020 TBC; four trunks from the telecine area for transferring film to tape in the event that the film is to be integrated with EJ material; lines from the two-inch VTR room for pulling news material into the news department for editing into the local news; feeds from other local TV stations for sports highlights; lines from several in-plant studios; East Coast and West Coast NBC network feeds; telco feeds from affiliates, etc.; and a variety of test signals.

Unlike WDIV which uses no time code editing, KNBC time-codes all material. KNBC's four editing rooms, each equipped with BVU-200s and a BVE-500 editor, all have time code readers to reference material. Each editing room has full access to all the inputs of the routing switcher, including incoming microwave feeds, so that an editor can record a microwave piece in his own booth and begin to edit it immediately. The routing switcher is also used to get the material from the playback machine to the record machine in the editing rooms, and also from an announce booth used for doing voice overs.

Adjacent to the four editing rooms is a fifth record and playback room containing four BVU-200s. In addition to its access to the routing switcher permitting recording of incoming feeds, this area serves to originate videocassette material for the on-air news programs. Three of the BVUs are used for this purpose, routed through the Microtime 2020+ TBC and image enhancers to the local news control studio — again a self-contained operation. The technical director has remote start control over the BVUs, which are cued up by a technician to a five-second pre-roll. Almost all taped material to be aired on the local news programs is recorded, edited, and played back on ¾-inch videocassettes.

Even a station as advanced as KNBC looks towards the future, and there is probably a lesson to be learned by all from Orland's thinking. More microwave is certainly a part of the scenario at KNBC. With three microwave receiving stations located on three mountaintops around Los Angeles — each with a minimum of three antennas and two receivers — the station has the ability to cover an enormous range and is steadily increasing the amount of live material in its news programs. A little farther down the road, Orland is thinking about the possibilities of introducing one-inch equipment. No engineer we talked with was as seriously looking at one-inch for news as Orland, but even he has some major reservations. The size and weight of the portable recorders still make them too bulky for use in the fast-paced life of an EJ camera team, he feels. He also questions the speed with which an open-reel VTR can be threaded during a fast-breaking story. On the other hand, he looks forward to the day when lightweight, more portable Type C one-inch recorders, possibly with cassette or cartridge loading, will make field use more practical. "The use of one-inch recording and editing to help cut down on the image degradation found with ¾-inch videocassettes, particularly after two or three generations," says Orland, "would obviously give us a substantially better end product. It's only a matter of time." **BM/E**

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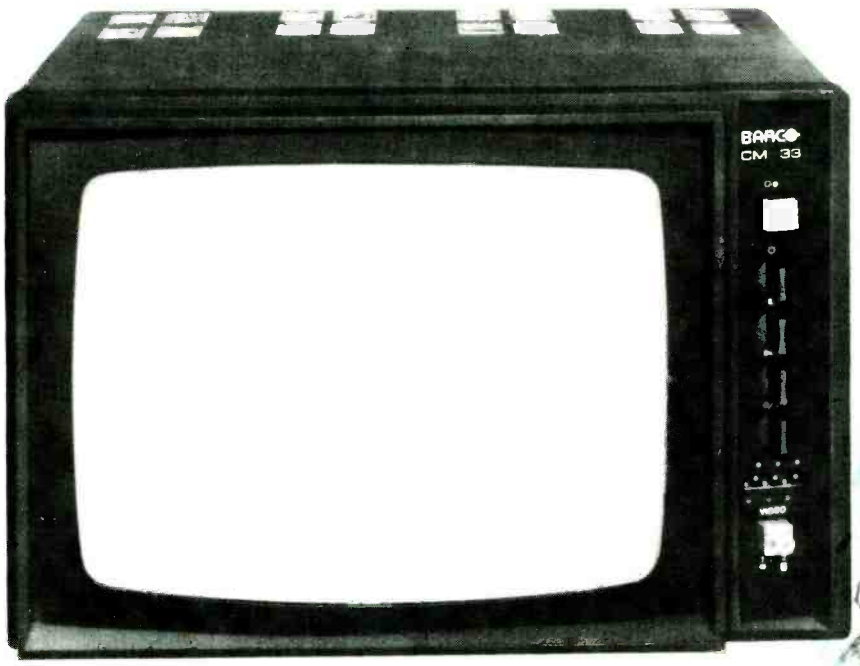

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Assignment, The World: How The CBS Radio Net Gets The News Back

For its hourly newscasts, CBS Radio needs swift live pickup from London, Rome, Hong Kong, Guyana, and other far-flung places. Satellites play an increasing role, both in gathering the news and in distributing it.

THE ON-THE-HOUR NETWORK NEWSCAST, a staple in the life of every radio listener, depends on an electronic news gathering operation with a world-wide arena. To get a close view of this specialized kind of radio news gathering, *BM/E* recently toured the Washington and New York headquarters of the CBS Radio Network, which is currently feeding some 275 affiliates in this country. Other important on-the-hour news suppliers include, of course, NBC, Mutual, ABC, AP, and UPI.

BM/E found the CBS operation, as expected, quite different from that of a radio station with an active local news operation. CBS must have full-time correspondents in strategic points around the world. Each city with a permanent correspondent has a bureau with facilities for recording, editing, and producing news programs on tape. Cities with CBS bureaus now include London, Paris, Rome, Tokyo, Hong Kong, Moscow, and Tel Aviv. Reporters can be sent from these cities to cover breaking news wherever it may be.

In addition to its regular reporters, CBS has some 200 stringers in smaller cities who can be called on for reports when needed. And finally, the radio network can have news fed in by any network affiliate with suitable facilities close to the scene of breaking news.

Almost all news comes into the New York headquarters and is distributed from there to the affiliated stations in the U.S. Obviously, no one in this army of reporters, correspondents, and stringers is sent out to interview shoppers in a supermarket on a local tax bill, or to describe a fire in a brewery. Network news tends to have "weight" and often involves high government officials and organizations, top personalities in industry, the arts, and other major areas. This kind of news tends to be centralized in standard locations. Great disasters or other events of significance in strange places (e.g., Guyana) require one or more correspondents rushed in by plane, who must then get reports to New York headquarters by any available means, most often international telephone lines.

For these reasons the foreign bureaus do not ordinarily make use of microwave or UHF radio to get instant news in from outlying spots. The personnel at the bureaus use portable tape recorders, Nagras or cassette types, for interviews. They can bring the recordings into the production facilities at the bureau for editing before the story goes on the phone to New York, or they can telephone the story into the bureau for editing and transmission to New York. When the news is most urgent it can be telephoned directly to New York from its source; New York records and edits so the news can be put into U.S. distribution.

The one exception to this general scheme is the CBS Washington network headquarters, where UHF radio is used to help get the news in from around the city. As

On-the-hour newscast from CBS headquarters with control room operator (foreground), program producer, and newscaster (l. to r.) in live studio. Large editing room is beyond rear window; master control beyond left window

CBS Radio Net

described in detail in the March, 1977 *BM/E*, the CBS Radio net has UHF repeaters at strategic high points around Washington which can relay the signal from hand-held transmitters back to CBS headquarters on M Street. So much important news develops from so many different spots in Washington that this city-wide instant pickup system was considered necessary for efficient operation.

The Washington headquarters has much more elaborate production facilities than any of the foreign bureaus. In addition to the radio pickup system, there are dedicated telco lines to many key points in the city, including the Capitol, the White House, and a number of the departments and bureaus. There are five production recording rooms, into each of which the UHF radio and the telco lines feed for recording and editing. In an adjoining large editing room, a battery of writers and editors produce copy for the newscasts. The copy is put together with the telephoned-in report in one of the production rooms to make a finished program that then goes by telco line to New York. Depending on the material, an "actuality" may take up most or all of the time in the broadcast, or may constitute only a short part of it.

The Washington plant is designed so that the radio and television operations can back each other up on sound. Editing and recording booths of the CBS television news operation are just across the large writing room from the radio booths. Audio lines are installed so that any aural program brought in by the radio correspondents can be fed across the room and incorporated into the sound track of a TV news spot if the radio sound seems better than what the TV men have brought in. Conversely, any sound track picked up by the TV correspondents can be piped the other way for editing into a radio newscast.

To get the news from any foreign bureau to the New York headquarters, CBS Radio ordinarily uses international telephone lines, which means the news often crosses oceans and continents by satellite. For improved quality, CBS is using Comrex low-frequency extenders (see *BM/E*, August 1978). All the foreign and domestic bureaus were being equipped with the Comrex encoders at the time this story was written, and the recording booths at New York headquarters have the decoders. CBS, like the other news networks, is fully committed to the idea that high technical quality is essential in radio newscasts: the old low-level telco or carbon mic sound is no longer considered attractive by the listening public.

Great improvement in quality is another motivation for the push toward satellite use in program distribution. CBS news already goes from New York by satellite to the West Coast for distribution in the west, and to Chicago for distribution in the midwest. Like Mutual, AP, UPI, and the others, CBS is looking toward steadily expanding use of satellites in gathering the news and distributing it. (Mutual plans to go to each affiliate directly by satellite, as described previously in *BM/E*.)

Lowered costs and increased quality and reliability are some of the advantages of satellites. Mortimer Goldberg, engineer in charge of New York operations, pointed out another: the ease of setting up duplex operation on a single channel. Communication in both directions is often of great value in news gathering, but getting two-way transmission with land lines is awkward and expensive. The satellites do it with no fuss.

CBS New York has seven recording/production rooms into which incoming material is fed for original recording and editing. The news editor listens to each report as it

All net newscasts are prepared in this edit room. Studios adjoin it on two sides; newscaster can write copy, be at mic in seconds

comes in and quickly decides how it will be used. The material is recorded as he listens and then immediately transcribed, and the editor gets a copy of the transcription. He then makes the final decision on use — cutting, combination with other material, or whatever — and prepares a complete cue sheet for the broadcast, which goes to the technicians.

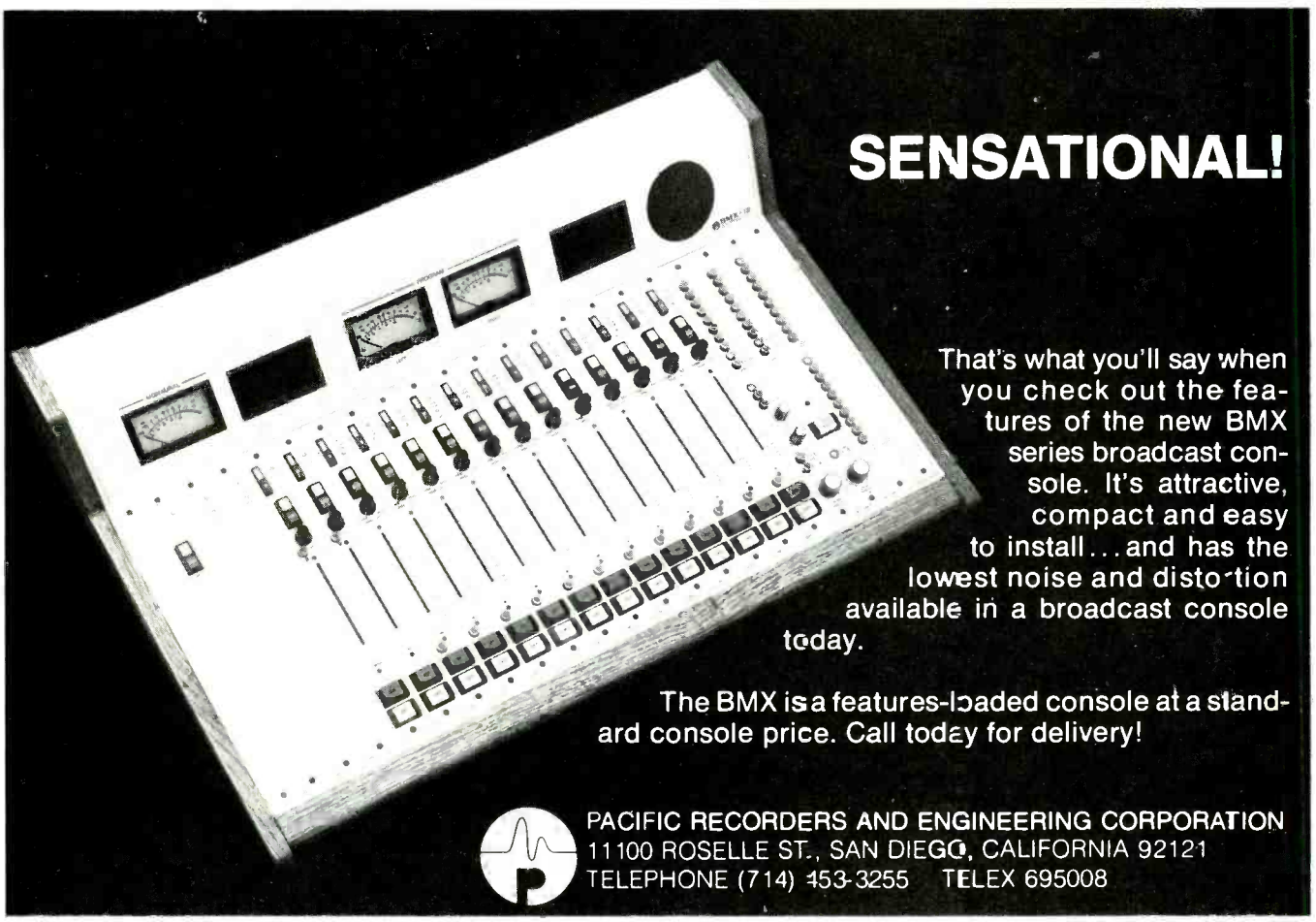
The recording operation is a 24-hour-a-day business since news is received from every time zone in the world. An executive news editor is on duty at all times; with today's pressure, editing decisions have to be made constantly as news comes in.

Each of the recording/production rooms also functions as a control room for an adjoining live studio in which the newscast is originated, with the newscaster for that session on mic.

Not only the content but the technical quality of incoming material is carefully monitored. If the original transmission is poor, New York may interrupt the reporter at the sending end to try for a better transmission path. If improvement cannot be arranged in that way, the recording will be processed, using equalizers and other equipment, in an attempt to make it acceptable.

The installation also includes a master control, which sets up incoming feeds — to various recording/production rooms — and outgoing feeds to the network lines. The latter operation is often complex because programs are fed

continued on page 70



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CBS Radio Net

to different parts of the country — different "legs" of the net — at different times.

The control of outgoing lines is further complicated by the fact that the on-the-hour six-minute newscasts are not by any means the only distribution operation. There are 15-minute round-ups twice a day. There is "Speed Feed," a compilation of raw news sent to affiliates at various times for recording by them and use as each sees fit. There is "News Feed," a series of prepared ten-minute newscasts sent out six times a day, consisting of hard news that did not make it into the hourly newscasts. Again, the affiliate records it and has the choice of using it or not.

At the receiving end the affiliate has a special "alert receiver" permanently connected to the CBS dedicated telco line, which has a series of lighted number signals for upcoming feeds. On this receiver, developed especially for the purpose by CBS Laboratories, a No. 1 signal, for example, means that the time to join the net is imminent. Each signal, cued by tones from New York, also activates a relay which can be used for an external alarm, to start recording equipment, to carry out any other switching operation, or all three. The alert receiver also handles, with the No. 11 signal and associated relay points, another feature of the network operation — the break-in bulletin with top-priority news. New York puts in ten seconds of silence after each bulletin alarm to give the station operator time to make an "interrupt" announcement and do the necessary switching.

The alert receiver also gives signals for local cutaway (for local commercials), network rejoin, and the end of the newscast. The receiver has been extremely useful in making the network feed operation accurate, errorless, and efficient.

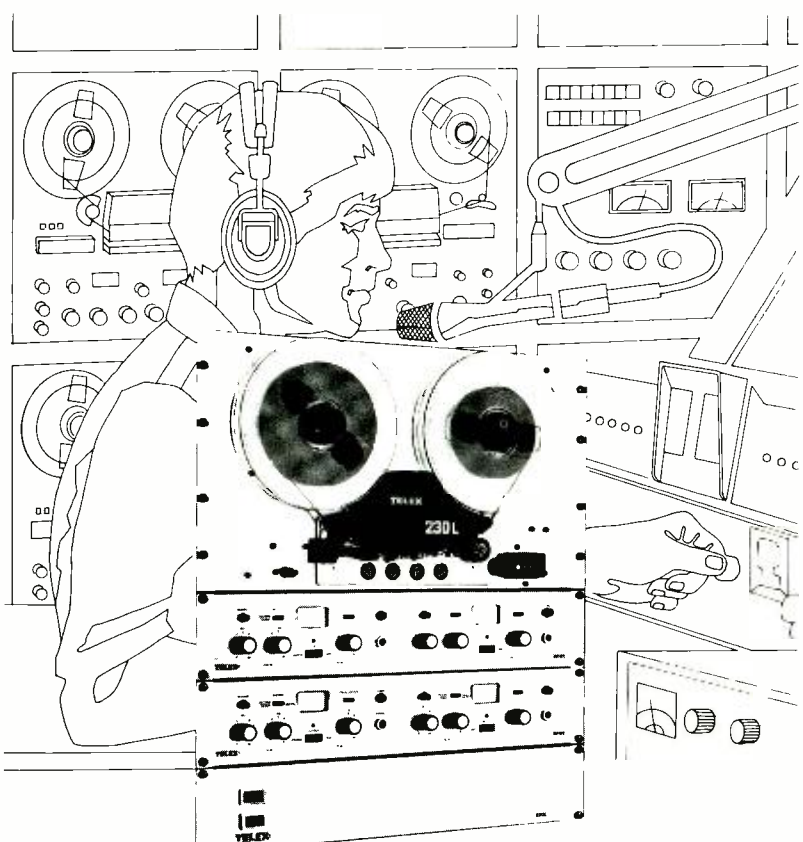
BM/E watched from the control room as an 11:00 a.m. newscast was put on the outgoing network line. Involved were recording/production room No. 5 (acting as the control room), the adjoining live studio, and, of course, master control. Three of the tape machines on the back wall of the control room had actualities on tape cued up for the broadcast. In master control the CBS commercials were cued up on cart players.

The program producer and the newscaster sat in the live studio. At 11:00 a.m. the producer signalled the operator in the control room to give them the microphone; the actual switching onto the outgoing line was done by a clock in master control for timing precision. An on-air light told the newscaster when to start. At the proper times, the commercials and acutalities were rolled in by the control operator; after each recording was played cue tones switched the microphone back to live and the spoken newscast resumed.

CBS will shortly install a computer that will take over the whole job of switching at the proper times and making the right connections for each newscast. The program for each newscast can be put into the computer in a minute or less, in advance of the operation.

The actual airing of the newscast would be familiar to the producer, newscaster, and control room operator of any moderately large radio station. The differences, of course, are in the world-sized news pickup operation behind the material put on the air and in the transmission of the newscast to several hundred broadcast stations via land line, satellite, and microwave. Syndicated electronic news gathering for radio, as of late 1978, is a highly efficient operation of *very* large scale. And technical efficiency and quality will further rise as satellites take over more and more of both ends of the operation. The effects on what the listener tunes in are bound to be positive. **BM/E**

Our Logger is a Turtle!



It's slow, slow moving but it wins the race when it comes to recording information. All kinds of information; broadcast logging, telephone messages, fire or police dispatcher record, surveillance, medical emergency room or analog recording in surgery, court reporting and transcription or space and military analog recording.

Our 230L logger records a lot of information; over twelve and one half hours on 3600 feet of tape at 15/16 ips; over six hours at 1-7/8 ips. And it's available in one, two or four channel configuation with professional solid state record/reproduce preamplifiers. So now you can win almost every race with a Telex 230L logger.

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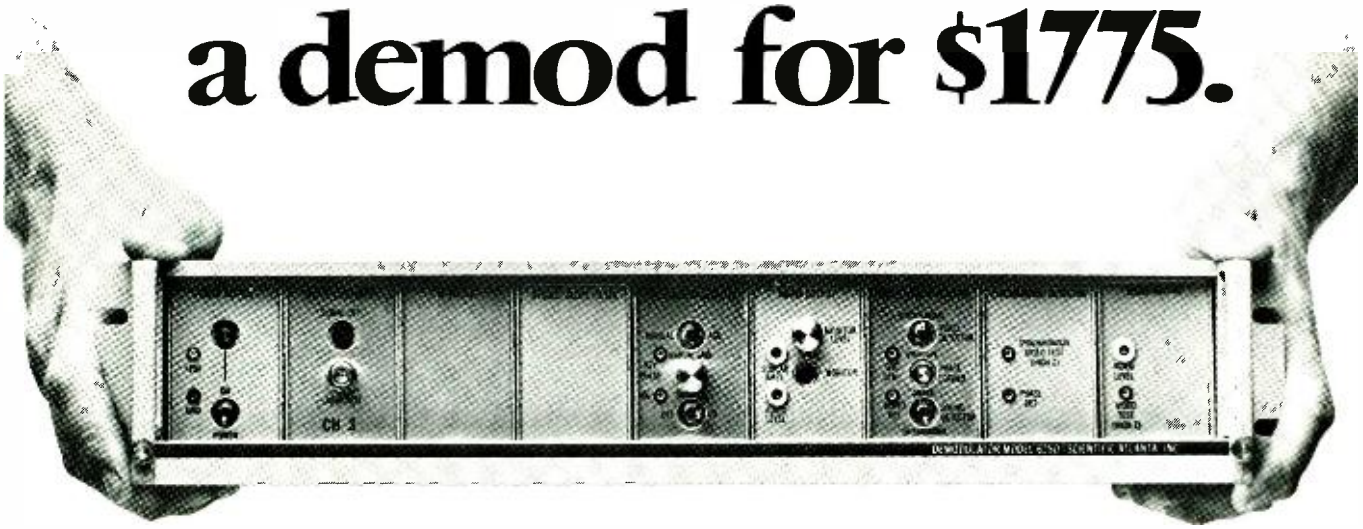

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Europe: 1-7 Sunbury Cross Centre, Staines Road West, Sunbury on Thames, Middlesex TW16 7BB, England, Telephone Sunbury on Thames 89751, Telex 896015

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Voice Of America's "Bubble" Manages Worldwide Actualities

By Maximillian Swoboda

A network of correspondents at home and abroad regularly file actualities via the telephone system to VOA headquarters in Washington, D.C. To record, route, and duplicate these reports for VOA's worldwide audience a unique installation, the "Bubble," has gone on line.

AT ANY TIME OF ANY DAY, from anywhere in the world, a Voice of America correspondent can pick up a telephone and file his voiced report to VOA headquarters. Within a few minutes or a few hours that report can be heard by millions of listeners in almost any country and in any one of 36 languages.

News gathering at this scale is a monumental task at a level of complexity rarely seen in most radio operations. Part of the operation involves a constant monitoring of news sources including AP, UPI, Reuters, Agence France Presse, the three major U.S. television networks, and many of the regional services of these organizations. In addition, 40 to 50 VOA correspondent reports are generated each day. VOA's News Division's staff of 56 writers and editors work around the clock, seven days a week, to produce an average of 260 newscasts and summaries every broadcast day.

On a busy news day as many as 65 to 70 reports may be filed by VOA's staff of correspondents. Six correspondents are assigned to cover the White House, the State Department, the Pentagon, and Capitol Hill. Another seven correspondents are stationed in U.S. bureaus located in New York (including the United Nations), Chicago, Los Angeles, Boston, and Miami. Overseas there are 15 staff correspondents working out of bureaus in Munich, London, Paris, Brussels, Vienna, Johannesburg, Bangkok, Hong Kong, Tokyo, Jerusalem, Athens, Panama, Abidjan, and Nairobi. Added to this is a staff of stringers around the world from Geneva, Switzerland, to Melbourne, Australia. At any time of the day, from these or other locations where news stories are breaking, a VOA correspondent can pick up any telephone and dial direct to VOA's Washington headquarters to file his report.

A correspondent's report usually originates in English, but a stringer's report may originate in either English or some other language for use in that language service broadcast. For instance, the Hong Kong stringer may file his report in Chinese for VOA's Chinese-language broadcast. The content of the report, however, may be of interest to other language services, so after it is received a copy of it is made available for translation and transcription. A taped copy also goes to the regional desk for translation and review. So, depending on its content, a story may originate in one language, be translated into any or all of the other 35 languages, and be broadcast via any or all of VOA's 109 short wave transmitters located in the U.S. and abroad with a total power of 21,840,000 watts.

Chief audio news editor, John Moore, mans the "Bubble." The six telephones handle both domestic and international calls from VOA correspondents

Not every incoming report gets the full treatment. A duty editor supervises the operations of the various regional desks — national, East Asian and Pacific, European, Near East and South Asian, African, and Latin American — and determines the ultimate distribution of the report.

Given the demands of this situation VOA, commonly

continued on page 74

Mr. Swoboda is project manager, Special Projects, for VOA and was to a great degree responsible for the design and installation of the "Bubble."

Voice of America

known as "the Voice," needed a highly sophisticated system for receiving and distributing incoming correspondent reports. The answer to these needs grew into the ingenious "Bubble," — a humanly engineered system that ties the worldwide direct-in-dialing system into a single communications console capable of making the correspondent and his report available to any or all other aspects of the Voice. Once the correspondent reaches the Bubble, his report can be recorded on one to eight recorders depending on the need for copies, copied on cassette for transcription, put in communication with an editor for discussion of his report, or even switched through to master control for on-air broadcast. It is this characteristic, placing the correspondent in *potential* contact with any other aspect of the Voice, that gives the Bubble its name.

The Bubble is the heart and mind of the broadcast recording room. It consists of a communicator's console, operated by one person who directs the report to its destination, and a one- to three-person engineering area where the recording is controlled.

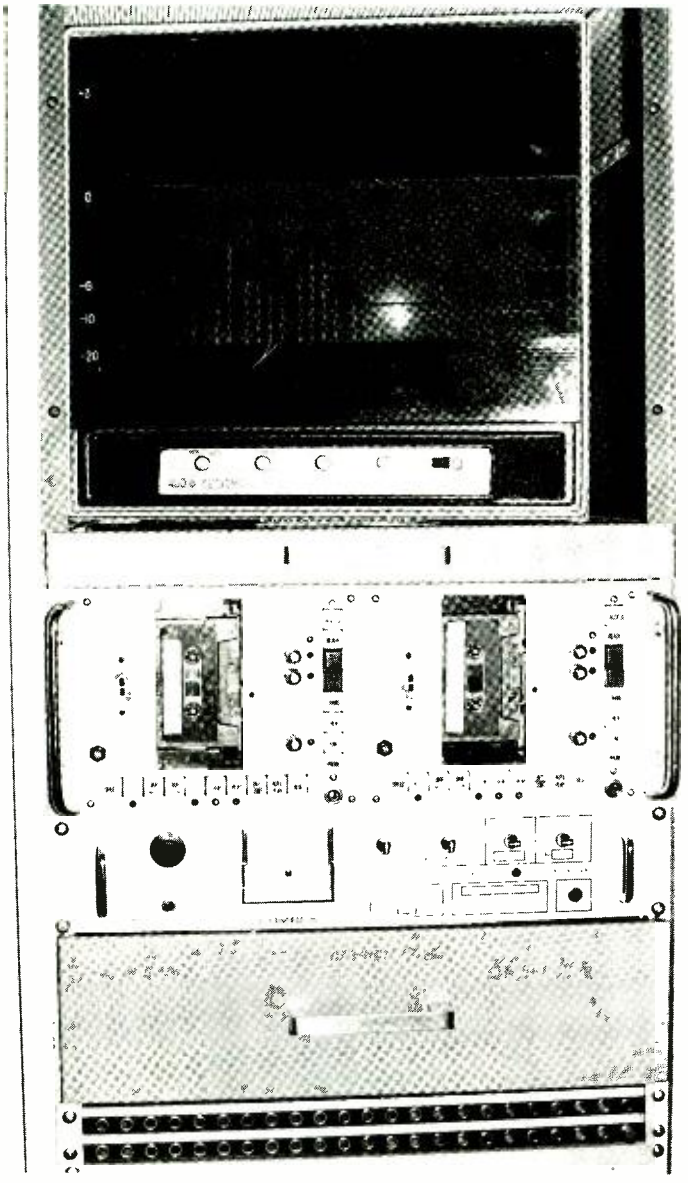
The Chesapeake and Potomac Telephone Company provided a "Special Assembly" interface to the console. The couplers are designed to receive and transmit programs with AGC and limiting and to equalize the level at the "send" end with that of the "receive" end. Automatic bypass switches are provided to eliminate interference when incoming calls are being recorded. Push-to-talk handsets with dynamic microphones minimize feedback. The entire system is fed to the C&P Electronic Switching System (ESS) exchange with access to AT&T's International Direct Distance Dialing via circuits to their Long Lines division.

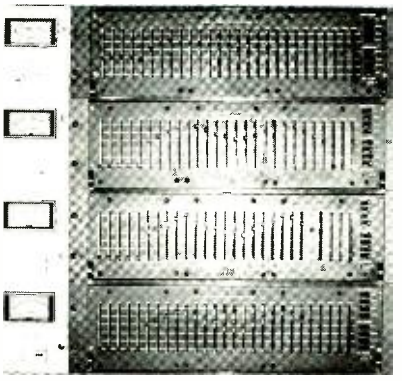
The nerve center is a 24 by 20 matrix switching panel with selection programming to receive, route, and send program material to specific locations — for example, a tape recorder, live-on-air broadcast, or elsewhere in the VOA organization.

The Bubble design

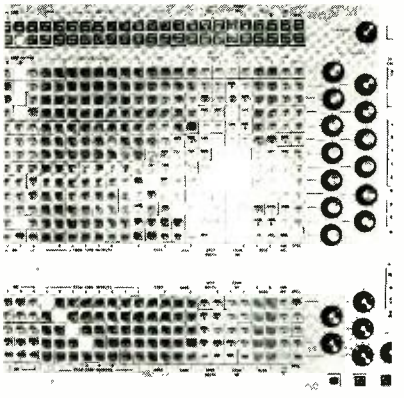
The engineering design utilizes a "man-computer" relationship. It has the infallability of a PROM (Programmed Read-Only Memory) and the speed of a RAM (Random Access Memory), and there is operator interface with automation. The operating engineer serves as the stimulator to the "computer," and the equipment is his

continued on page 76





Altec ⅓ octave filters and EQ assure highest quality on incoming signals

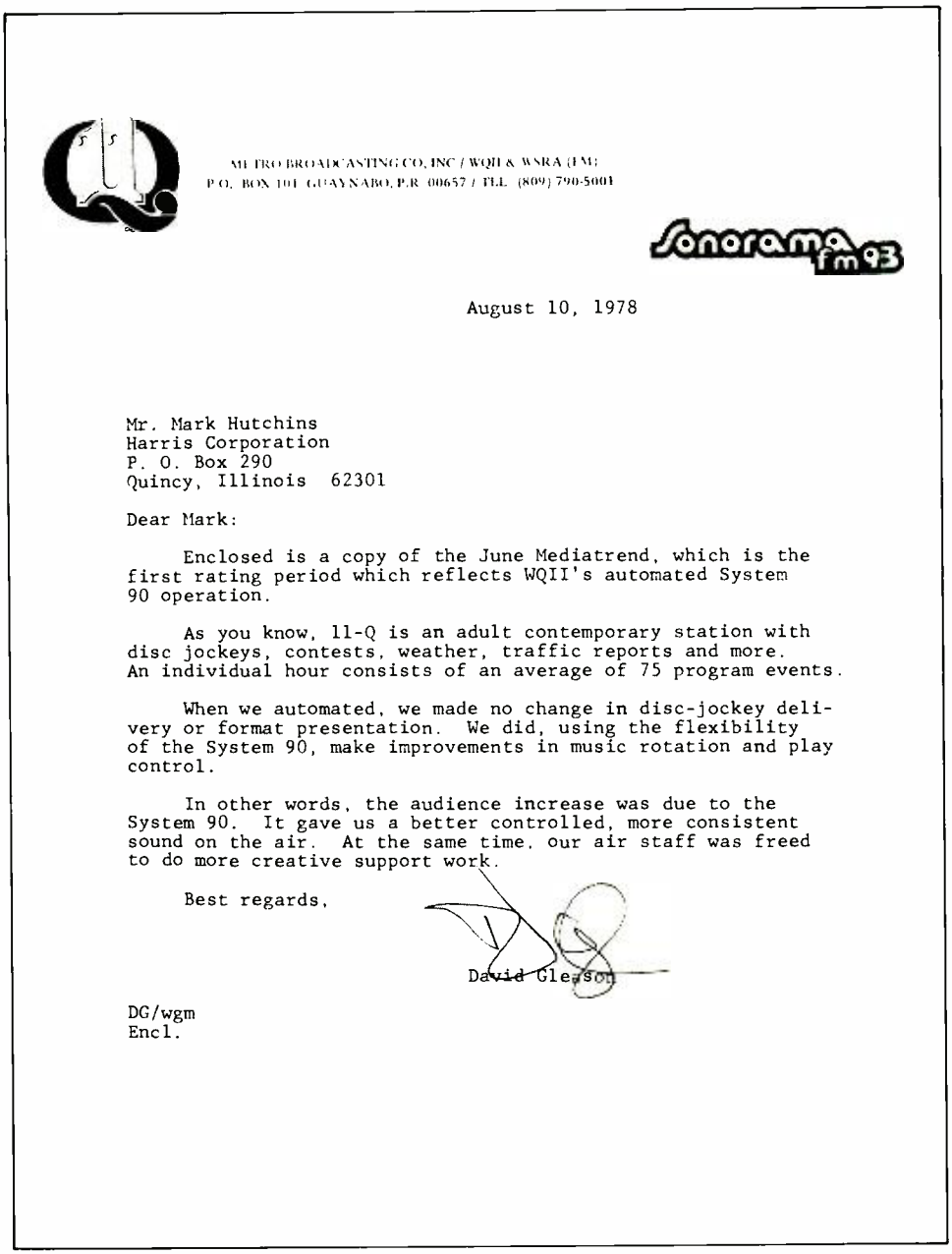


The heart of the routing system is this 24 x 20 matrix, equipped to provide both pre- and post-monitoring of audio

Equipment rack includes an ADM Vue-Scan spectrum analyzer and Comrex low frequency extender. Accurate Sound cassette recorder is used to record reports for transcription

Harris Automation Increases WQII's Ratings

Mr. David Gleason, General Manager of WQII, confirms that Harris program automation equipment can increase your ratings, increase staff production and creativity, control and optimize your format...even busy ones.



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Sonorama fm 93

August 10, 1978

Mr. Mark Hutchins
Harris Corporation
P. O. Box 290
Quincy, Illinois 62301

Dear Mark:

Enclosed is a copy of the June Mediatrend, which is the first rating period which reflects WQII's automated System 90 operation.

As you know, 11-Q is an adult contemporary station with disc jockeys, contests, weather, traffic reports and more. An individual hour consists of an average of 75 program events.

When we automated, we made no change in disc-jockey delivery or format presentation. We did, using the flexibility of the System 90, make improvements in music rotation and play control.

In other words, the audience increase was due to the System 90. It gave us a better controlled, more consistent sound on the air. At the same time, our air staff was freed to do more creative support work.

Best regards,

David Gleason

DG/wgm
Encl.

In addition, with better sound you get a bigger audience.

For Information, Write: Harris Corporation, Broadcast Products Division, Quincy, Ill. 62301.

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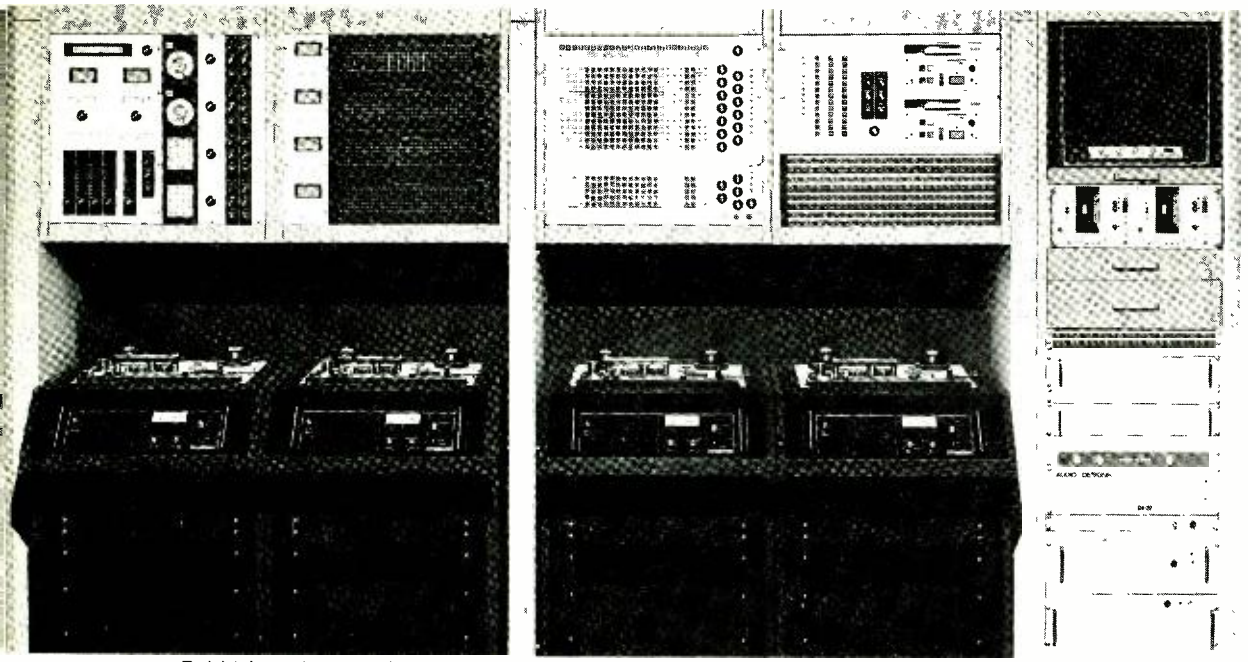

Bubble's main recording area. Equipment is located centrally, making it possible for one engineer to run entire recording operation. Four additional Scully/Metrotech recorder/reproducers are located adjacent to this setup

"slave." Errors and false demands are locked out by fail-safe devices. The routing path is depicted by tally lights in the matrix buttons. Once the master-execute button is pressed, interruption is impossible.

The final recording or broadcast equipment must also be in full-ready condition, or the safeguards will not allow the chosen function to begin. Failure of the tally lights to come on alerts the operating engineer to equipment failures. A new mode can be ordered only if the stop button is pressed. This switching matrix and its principal controls can be viewed as the exposed "brain" of a computer, with the operating engineer as the stimulator.

Audio Designs and Manufacturing, Inc., was chosen by VOA to build the full system. VOA's own design engineering section was responsible for the installation, and VOA's technical support personnel assembled the system after delivery and brought in the interconnects to telephone company terminals.

VOA designers called on Scully/Metrotech for eight custom-built full-track combination tape recorder/reproducer/duplicators. These are of special height for operation while standing. They have front-mounted amplifier/control/monitor speaker components, 7.5 and 30 ips speed selection, and dc servo-controlled motors. The machines may be individually or group-started, as can the two Ampro full-track cartridge tape recorder/reproducers and two Accurate Sound Corporation half-track cassette recorder/reproducers. The capability exists for 12 simultaneous record or play functions, or any combination desired. The cassette machines are used mainly for monitoring and production of transcriptions. This written material is distributed to the language translators at the Voice for broadcast to various world target areas.

Since most VOA broadcasts are on short wave, concern for voice quality at this input end runs high. Processing is aimed at improving the sound as well as maintaining it. This is done in several ways. One-third octave, ±14 dB filters reduce or amplify aural voice or music frequencies from 20 Hz to 20 kHz. The filters can also be used in conjunction with the Comrex low frequency extenders when sending to or receiving from a Comrex-equipped VOA bureau. A Vue Scan Real Time Spectrum Analyzer is also available to give the operator instant analysis of the energy content displayed visually on the unit's CRT. Eventually, VOA correspondents will be equipped to generate "pink noise" in order to help get full use out of the spectrum analyzer.

An announce booth is also at hand. From this noise-free environment two-way conversations for interviews and question-and-answer programs can be conducted. Program material can be recorded, or the booth can be the anchor position for pool reporting in live-on-air situations. A six-second digital delay amplifier is utilized as a precaution against undesirable language.

The booth is further used for re-voicing below-standard and non-processable program material and rapid recording of in-house correspondent reports. It can be switched directly to virtually any place in the world where there is a telephone. The whole complex has four main outgoing program lines.

The center has provisions for future electronic communications not yet possible for VOA, such as direct UHF radio feeds from mobile remote locations and microwave and infra-red transmission systems from on-the-scene news events. In addition, it can listen to competing international broadcasters.

The center's three Sony Trinitron color video monitors give VOA reporters an accurate-as-possible image of a televised news event. When the newsroom installs alphanumeric keyboards and word language processing the graphic output of these systems will be superimposed on the video screens for ultimate broadcast use by an-

continued on page 78

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On a recent visit to the U.S., Sadayuki Ikeda (right), Supervisor of NEC's Video Development Dept., Broadcast Equipment Division, and Cinema Products' Chief Engineer Robert Auguste exchange views on ENG/EFP practices and equipment requirements.

Ideally suited for American television industry needs, the MNC-71CP incorporates many design features based on CP inputs gathered from our extensive experience in the TV-news/documentary field. The MNC-71CP is so rugged and reliable, it is covered by the standard Cinema Products full one-year warranty (unprecedented in the broadcast industry!).

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At the recent NAB Conference, Ed DiGiulio (right), President of Cinema Products Corp., and R. Dennis Fraser, Vice President and General Manager, Broadcast Equipment Division, NEC America, Inc., display the Oscar and Emmy awards won by their companies for their respective "state of the art" contributions to the motion picture and television industries.

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If it's you, great! Because you know professional scopes are expensive, not very portable, and take lot's of skill to obtain the correct measurements.

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LOW COST: You will like the low price of the Model 4000 at only $1295, which is a lot lower in price than those professional scopes, more accurate and easier to use.

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Voice of America

nouncers.

A main patch bay gives access to all equipment. It is designed for flexibility in special news situations and for possible equipment failures. The patch bay makes isolation of components for routine maintenance and testing simple. There is also some built-in test equipment. The bay can also be used under operating conditions, so shutdowns for servicing are not always needed. During a failure, there is complete input and output patching so operations can continue. Spare noise suppressors and limiters are built-in and are also available through the patch bay.

VU meters are switchable to adjust Pre and Post equalization levels. There are two main five-source buses which are capable of being mixed.

Power supplies for the complex are dual. There is an on-line spare for each, with microsecond automatic switch-overs and alert-lighting to signal a problem. Should the whole power supply system fail, a battery-powered backup holds the logic on the matrix switch panel in memory for up to an hour, or until normal power is restored. VOA uses public utility power, but also has an emergency auxiliary diesel generator.

The operating engineer also has two 20-selection switch panels for designated sources. These come from the White House, domestic broadcast networks, Congress, the Pentagon, the State Department, VOA's New York operations center, the United Nations, and other news centers. One "special" button among the 20 is for other-than-regular sources. This sub-system utilizes three pre-programmed mini-computers for selection of sources.

Six outside telephone lines terminate on the communicator's console, where the communicator receives and controls all incoming calls from reporters. All six lines can be handled and recorded simultaneously, or they can be routed to other destinations in the VOA news operation. The communicator and the operating engineer can select incoming programs from a total of more than 100 regular sources.

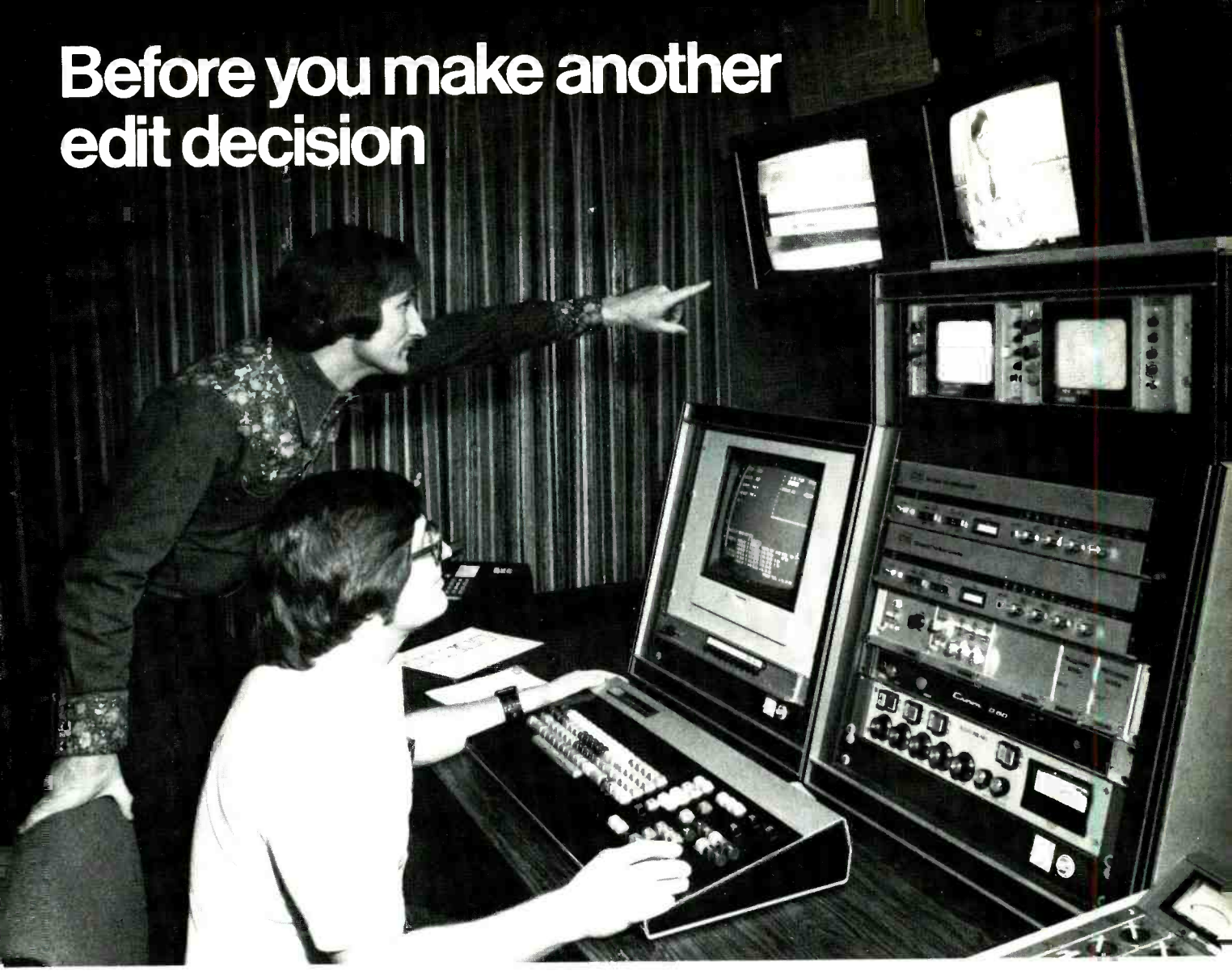
For high-speed tape duplication, the Scully machines can be set at 30 ips. There is a 16-times high-speed cassette duplicator available.

The communicator has individual telephone speakerphones, an all-call intercom and paging facility for public address into the newsroom, and a standard business telephone. He is also tied to the newsroom desks, so writers and editors can speak directly with correspondents when necessary.

Creation of this one-of-kind complex cost a surprisingly low $120,000 for equipment and fabrication. The costs were kept down by designing the system to use readily available standard components. Printed circuit boards are used extensively, along with plug-in connectors. The thousands of connections in the system result in an 80,000-foot wiring network, including special VOA internal monitoring networks tied to the system and the newsroom. Computer room-type access flooring greatly reduces the difficulty of working with such an extensive network.

The Bubble has made VOA's Broadcast Recording Room a leading candidate for the title of "Best Connection in Washington." Through it, day in and day out, flows information to keep the world informed. **BM/E**

Before you make another edit decision



see the CVS EPIC

EPIC is a computer-aided editing system designed by professional video editors for just one purpose—to turn editing decisions into action. Fast. Without a lot of steps in between. And without tying up a lot of capital.

The key to EPIC's speed and cost effectiveness is a fully developed software package. It has just about every function needed for on-line or off-line editing with multiple format video and audio recorders. Full switcher control is also available.

This software approach not only holds down system costs by reducing hardware requirements, but also makes the editing process a lot easier and faster.

For example, the only thing the editor interacts with is a free standing keyboard. It features pushbuttons that are delegated to specific functions and labeled in editing terms. As a result, there's less to learn and remember.

Flexible list management is another benefit. Change edits. Move them. Delete them. It's all done immediately and easily with EPIC. Lists are stored on floppy discs, and can be printed out or punched on industry-compatible paper tape.

Editors can also do more than one thing at a time with EPIC. For example, they can be editing with some VTRs while writing time code on others. This feature, alone, can substantially reduce total production costs.

Furthermore, adding VTRs to EPIC requires minimal VTR modification, and no loss of VTR features. EPIC's base price also includes a full year of software updates.

In short, the CVS EPIC is the best editing decision you can make. For complete details and user references, call or write today!

Photo courtesy of Television Associates, Mountain View, California.

CVS Consolidated Video Systems, inc.

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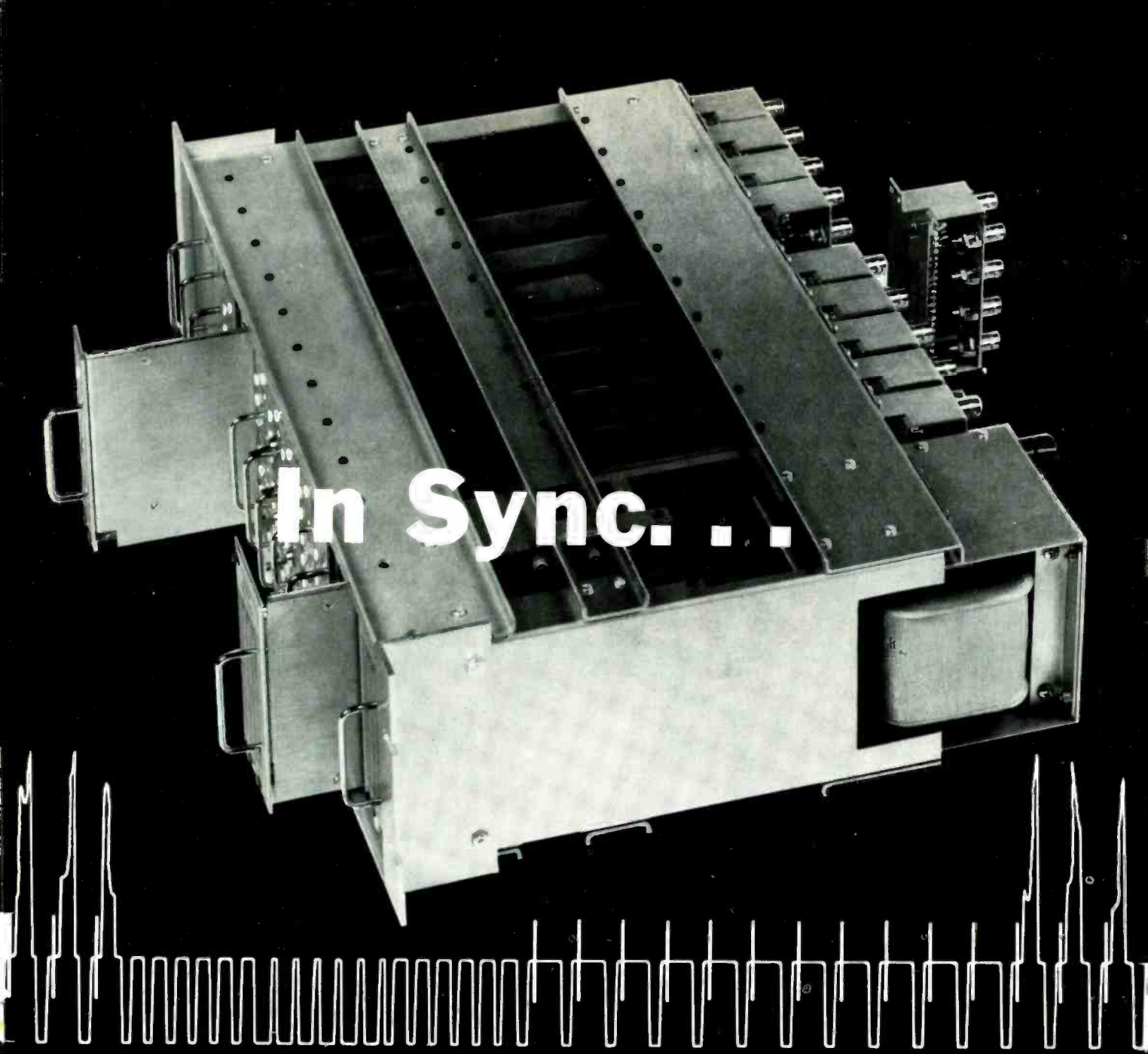

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Start A Local Emergency Net— Give Your EBS Equipment A Vital Community Job

Nearly 900 "activations" in less than two years prove the need for and the worth of the Operational Area Emergency Plans, the local broadcast nets that warn and direct the public during emergencies, using EBS equipment to alert other stations and the listener. Here is how the local nets work, with examples of their valuable services and a guide to starting one if your community is not already covered.

LAST MARCH 26 at 11:30 a.m. the duty staff at WFIR, Roanoke, Virginia, got an urgent call from the U.S. Weather Service in Washington — after 6½ inches of rain in 24 hours, the Roanoke River was starting to flood. Thousands of people in low areas near the river had to be warned quickly to get ready for the move to higher ground.

The Weather Service called WFIR because the station is the Common Program Control Station (CPCS) for the Roanoke Operational Area Emergency Plan. Roanoke is one of about 550 such areas marked off in the U.S. by agreement among the FCC, the U.S. civil defense organization, the U.S. Weather Bureau, and local broadcasters, to act as emergency warning nets. WFIR's first responsibility was to push the button on the EBS encoder, alerting the ten or so area stations assigned to monitor it that an emergency announcement was coming. Then the Weather Bureau's warning went on the air from WFIR and, by repeat or rebroadcast, from the other stations. Any station on an EBS net has automatic FCC authority to rebroadcast EBS material.

Only around one-half of the 550 Operational Areas now have fully worked out plans, although new ones are arriving almost daily. But they have produced nearly 900 alerts in the last 18 months, and the broadcast managements involved, the FCC, the local civil defense and governmental authorities, and the U.S. Weather Bureau, are all gratified with the success of the operation.

The growth of the EBS into the fastest, most effective nation-wide emergency alerting network ever created began with two changes. One was the two-tone alerting system, which gave EBS engineering respectability. The old interrupted one-tone method suffered from so many false alarms and failures that many engineering staffs simply turned the equipment off, removing the station from any part in the operation. But the two-tone system, which all stations had to adopt on April 15, 1976, has worked well. Engineers' attitudes have changed from disgust to acceptance.

The other big change was the decision at high levels to push for the establishment of local and state nets. The idea had been around for some time. But the realization came about two and a half years ago that local nets could meet an enormous need without interfering with the national function of the EBS — to allow the President or other federal official to reach the entire country quickly in a national emergency.

There has been no national alert so far, but the EBS will

A Receiver For Automatic Connection to NOAA Weather Alerts

A new special receiver makes it easier than ever for a broadcast station to maintain an instant alert for, and reception of, all NOAA weather announcements in the 160 MHz service. Transmitters are now being installed for this in many areas. The receiver is the Model CRW of Gorman-Redlich, and it is designed to use the two alerting tones sent out by NOAA, 1050 Hz and 1650 Hz, to make sure the broadcaster gets the reports.

The 1050 Hz tone is sent out for special weather warnings; the 1650 Hz tone for routine updating of the weather report. With no report coming through, the Model CRW is on standby. When the 1050 Hz tone comes in from NOAA, the receiver is demuted so that the report can be heard on the receiver's own speaker. At the same time a relay closes, with contacts brought out to terminals on the rear of the receiver. Thus, the relay can be used to activate any kind of alarm, as well as to start a tape machine to record the special message.

The receiver does not demute with reception of the 1650 Hz tone, but the relay closes so that the message can be recorded. This system warns the broadcaster of weather emergencies; he may need to convert the warning into an EBS alert. He also can get a complete recording of the ongoing NOAA forecasts. Any part of these can be aired directly — FCC authorization is automatic if this is done within an hour of getting the report.

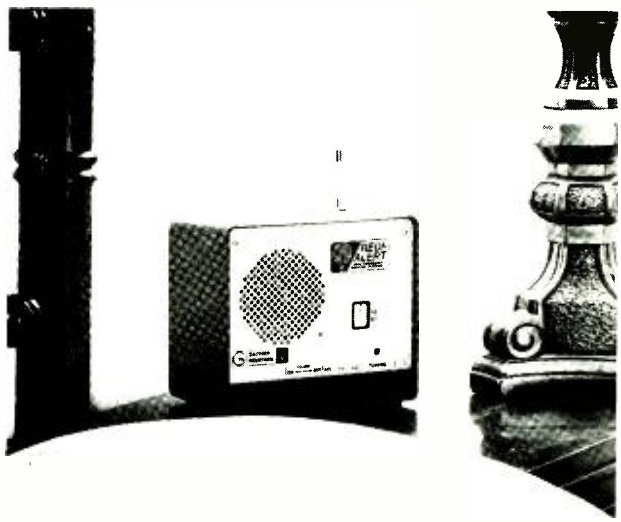
The Model CRW has a switch for tuning to any of the three NOAA frequencies. It is supplied with a whip antenna and has connections for 300 ohm TV lead and for 50 ohm coaxial input. The back panel has terminals for continuous audio, for alarm audio (activated on receipt of the 1050 Hz tone), and for mute-demute, so that any other device can be started. Sensitivity of the receiver is .25 microvolts/meter, and audio output is one watt into eight ohms. Spurious responses are down by 60 dB.

continue to be ready for it. EBS has already proved its tremendous value to the whole country through the local and state operations.

EBS operates with high value in areas even more restricted than Operational Emergency Areas. This brings the station in a small community to center stage. For example — last May 27, at 3:04 p.m., station KTUE in Tulia, Texas, the only station in town, got word on their direct line to the Tulia police department that a tornado was on the ground a few miles southeast, and moving toward the town. The duty operator immediately pushed the EBS button, then went on the air with the tornado warning. Luckily, the tornado dissipated before it hit the town, but the area had received a timely warning of a very real potential danger.

Small-community stations have, of course, issued hundreds of such warnings in the past without the help of the EBS encoder. But the EBS tones have two important values. One results from the spread of small, inexpensive monitoring receivers designed to alert schools, hospitals, factories, businesses, and homes, whether listening to the station or not (see "Valuable Emergency Alert Net," *BM/E*, March, 1978). These receivers stand by in a muted condition, just as the decoder in a broadcast station does, until the two-tone signal comes in. That signal automatically turns the receiver on to bring in the emergency broadcast. In addition, a large industrial plant or other commercial or governmental unit may want to buy a broadcast-quality receiver and EBS decoder of the kind approved by the FCC for station use.

Homes, businesses, schools, etc. can be brought into an EBS net inexpensively with "alert" receivers like this one, turned on by the two-tone EBS signal



Another inexpensive alert receiver which stands by in mute mode until the EBS signal comes in. The one in top photo is by FixTune, this one by Gauthier Industries

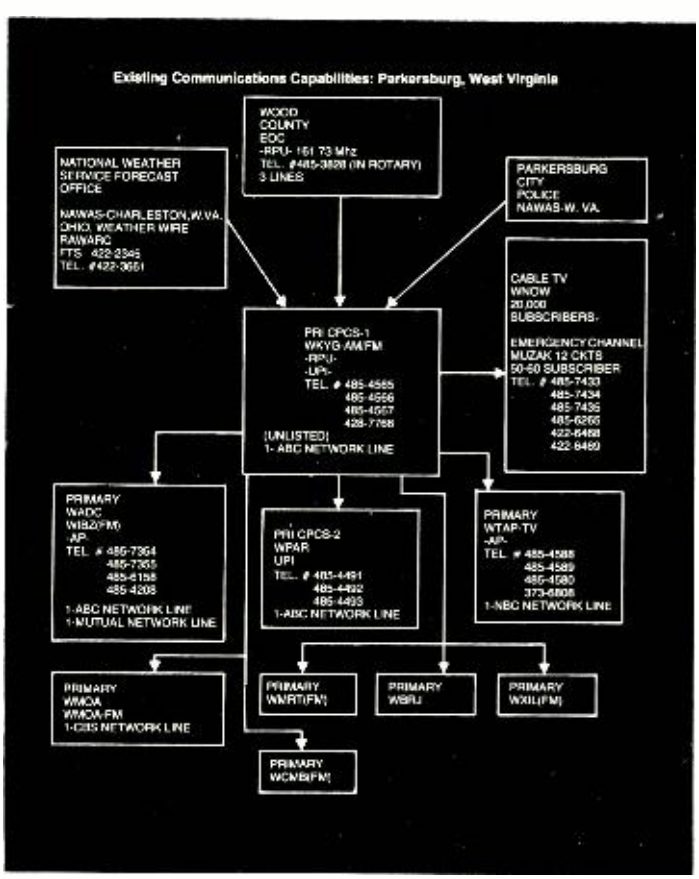
But even without special monitoring receivers, if a great many people in the area listen to the one station, simply having the two tones come on the air will warn most of the community that an emergency broadcast is imminent. The radio stops being a background to other activities; the listener pays attention. The station can obviously train the community to recognize the signal, with demonstration broadcasts and on-the-air explanations. An educational program of this type could enhance the community's respect for the station. The FCC, Civil Defense, and the Weather Service all encourage this kind of single-station origination for purely local emergencies.

The EBS equipment at KTUE naturally looks beyond the community, too. It monitors KGNC, Amarillo, Texas, the CPCS for the Amarillo Operational Area. When KGNC pushes the EBS button, KTUE and about a dozen other stations are lined up to carry a message that concerns the whole area.

The net can be state-wide, too. In this case, one station, ordinarily in the state capitol, will be the originating station. Others will function in their assigned Operational Area roles as relay stations, picking up the message and getting it out to other stations in their respective areas. Again, pushing the EBS button at the originating station starts the train of events that lines up the whole state for the emergency broadcast.

A large proportion of local alerts so far have been for

continued on page 84



The Parkersburg EBS Operational Plan, used as a model for many of area plans, shows the CPCS stations, sources of alerts, and other stations in net, including cable TV and Muzak services

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weather emergencies, including tornados, severe snowstorms, hurricanes, floods, icing conditions, etc. Other alerts have concerned widespread power failures, industrial explosives, derailed or damaged transport vehicles with dangerous cargoes, and civil disorders. A state-wide EBS alert in Virginia in March, 1977, for example, was credited by the governor and other high state officials with helping the state come through a severe power shortage with minimum damage and loss.

continued on page 86

The State Committee Chairmen

Following are the State Emergency Communications Committee Chairmen for each state. Each knows the status of EBS nets within his or her state.

Alabama	James A. Hudson, WHMA, 1330 Noble St., Anniston 36201
Alaska	Alvin O. Bramstedt, Sr., KENI, P.O. Box 1160, Anchorage 99501
Arizona	Kenneth Heady, Arizona Broadcasters Assoc., P.O. Box 654, Scottsdale 85252
Arkansas	Dan L. Winn, KARN/KARN-FM, 1001 Spring St., Little Rock 72003
California	James Gabbert, KIOI-FM, 700 Montgomery St., San Francisco 94111
Colorado	Harry W. Hoth, KRDO, P.O. Box 1457, Colorado Springs 80901
Connecticut	Michael Rice, WILI, P.O. Box 496, Willimantic 06226
Delaware	Sally V. Hawkins, WILM, 1215 French St., Wilmington 19801
District of Columbia	Granville Klink, Jr., WTOP, Broadcast House, Washington 20016
Florida	William J. Ryan, Radio Television Centre, 333 8 St. S., Naples 33940
Georgia	William G. Sanders, Georgia Assn. of Broadcasters, 6065 Roswell Rd. NE, Suite 604, Atlanta 30348
Hawaii	Lawrence S. Berger, KHVH, 1060 Bishop St., Honolulu 96813
Idaho	James A. Johntz, Jr., KBCI-TV, P.O. Box 2, Boise 83701
Illinois	Vernon A. Notle, WROK-AM/WZOK-FM, 1100 Tamarack Ln., Rockford 61125
Indiana	Donald Morgan, WTTV, 3490 Bluff Rd., Indianapolis 46217
Iowa	Keith K. Ketcham, WOI-AM/FM/TV, Iowa State University, Ames 50010
Kansas	Paul A. Winders, WIBW, P.O. Box 119, Topeka 66601
Kentucky	J.T. Whitlock, WLBN, P.O. Box 680, Lebanon 40033
Louisiana	Raymond L. Boyd, KNOE, Knoe Rd., Monroe 71201
Maine	Carlton D. Brown, WTVL/WRVL-FM, 36 Silver St., Waterville 04901
Maryland	Morris H. Blum, WANN, Box 631, Annapolis 21404
Massachusetts	Roger Allan, WRKO, Government Center, Boston 02114
Michigan	Leonard Eden, WWJ, 622 Lafayette Blvd., Detroit 48231
Minnesota	Norman P. Gill, KBJR-TV, 230 E. Superior St., Duluth 51802
Mississippi	Charles B. Cooper, WKOR, 201 Lampkin St., Starkville 39759
Missouri	G. Pearson Ward, KOLR-TV, P.O. Box 1716, S.S.S., Springfield 68505
Montana	Richard S. Kober, KGHL, P.O. Box 1657, Billings 59101
Nebraska	Roger T. Larson, KFOR, Box 80209, Lincoln 68501
Nevada	Lee D. Hirshland, KTVN-TV, P.O. Box 7220, Reno 89510
New Hampshire	Frank G. Estes, WKXL, Box 875, Concord 03301
New Jersey	Arthur A. Silver, 300 Millbridge Apts., Clementon 08201
New Mexico	Mike Langner, KRKE, P.O. Box 737, Albuquerque 87103
New York	Charles B. King, GE Broadcasting Co., 1400 Balltown Rd., Schenectady 12309
North Carolina	Carl V. Venters, Jr., WPTF, P.O. Box 1511, Raleigh 27602
North Dakota	Robert W. MacLead, Meyer Broadcasting Co., Box 1738, Bismark 58501
Ohio	Tifford Carpenter, WCOL-AM/FM, 195 E. Broad St., Columbus 43215
Oklahoma	J.R. Bellatti, KSRO, P.O. Box 231, Stillwater 74074
Oregon	Larry Gordon, KWIL, P.O. Box 278, Albany 97321
Pennsylvania	Cary H. Simpson, WTRN, P.O. Box 247, Tyrone 16686
Puerto Rico	Ray Owen, WAPA, P.O. Box 4563, San Juan 00905
Rhode Island	Lincoln W.N. Pratt, WEAN, 10 Dorrence St., Suite 940, Providence 02903
South Carolina	Mel Black, WORD, Box 3257, Spartanburg 29304
South Dakota	Dean Sorenson, KCCR, P.O. Box 309, Pierre 75701
Tennesse	Len Hensel, WSM, P.O. Box 100, Nashville 37202
Texas	William Bradford, KSST, P.O. Box 284, Sulphur Springs 75482
Utah	Henry Hilton, KSOP, P.O. Box 25548, Salt Lake City 84125
Vermont	E. Dean Finney, WTWN, P.O. Box 249, St. Johnsbury 05819
Virgin Islands	Herbert Schoenbohn, WSTX/WIVI-FM, P.O. Box 2570, Christiansted, St. Croix 00820
Virginia	John B. Tansey, WRVA-FM, P.O. Box 1516, Richmond 23212
Washington	Dave Crockett, KOMO-TV, 100 4 Ave., Seattle 98109
West Virginia	Robert B. Harvit, WBTH, P.O. Box 261, Williamson 25661
Wisconsin	Hugh W. Dickie, WTMB, P.O. Box 588, Tomah 54660
Wyoming	Robert D. Price, KTWO, P.O. Box 2720, Cooper 82602

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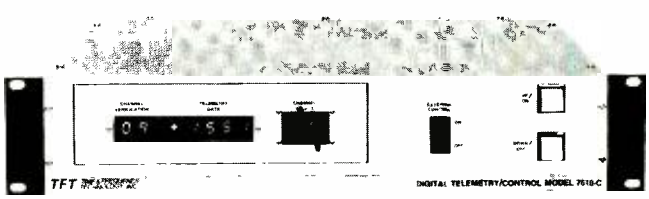

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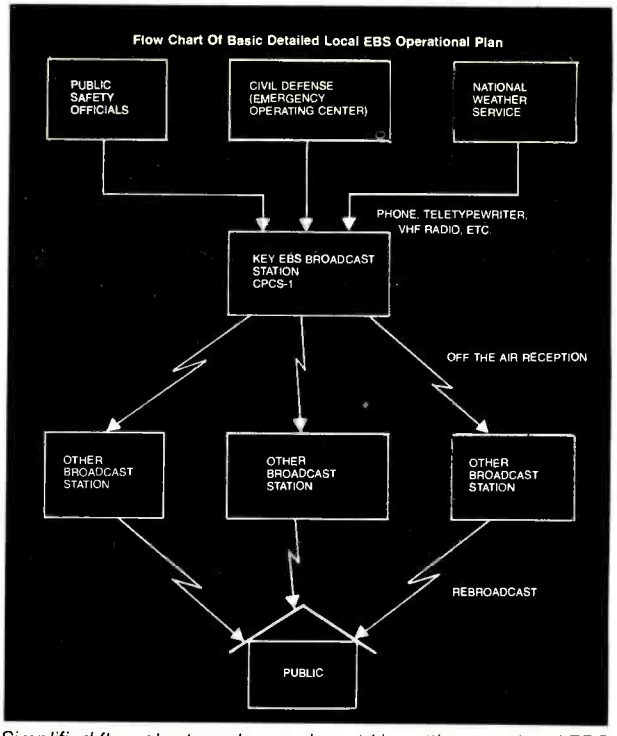
EBS Equipment

The primary initiative for setting up an Operational Area Plan or state-wide plan falls on the area involved, where it obviously belongs. But the FCC and other federal agencies concerned have developed a model Area Plan, easily modified to meet differences in local conditions. Over the last year representatives of the FCC, the U.S. Weather Service and the civil defense organization have met with relevant persons in every one of the states, describing the value of a local-state EBS plan and offering help in starting one. The hope is that the present 50 percent coverage will increase steadily into the coming year.

Although plans vary, there are some principles that are clearly necessary for success. There must be a definite assignment of responsibilities; the persons authorized to call for an alert should be clearly designated; and the methods for authenticating a call for an alert must be clearly specified.

The accompanying flow chart shows the basics of an Operational Area plan. The Common Program Control Station receives a request for an alert from an authorized public official, from designated officials of Civil Defense, or from the National Weather Service, again by a previously authorized channel. The request can come by a variety of routes: telephone, teletypewriter, VHF radio (the new NOAA system), etc. The person in the station authorized to order the alert will know in advance how to authenticate it. In many cases the identity of the requester is all that is needed; or the authenticator word, a periodically renewed code word, may be required.



Simplified flow chart can be used as aid in setting up a local EBS net. State Committee Chairman, FCC, Civil Defense, and local broadcasters agree on stations

After the two-tone signal lines up the stations on the net, the CPCS broadcasts the emergency message, for rebroadcast or repeat by the other stations. Each station in

continued on page 88

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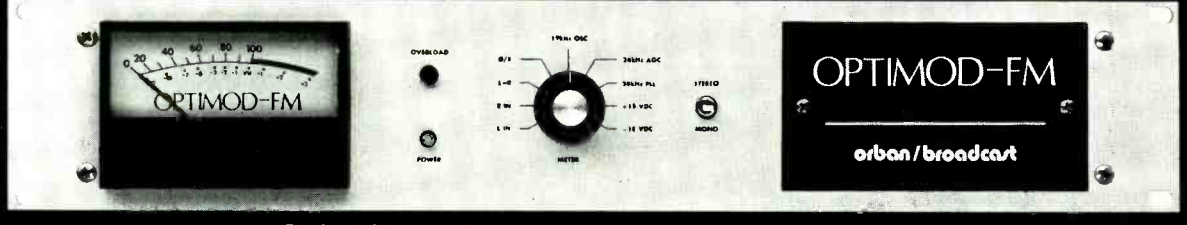

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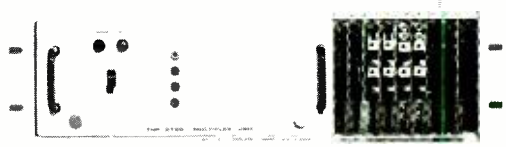

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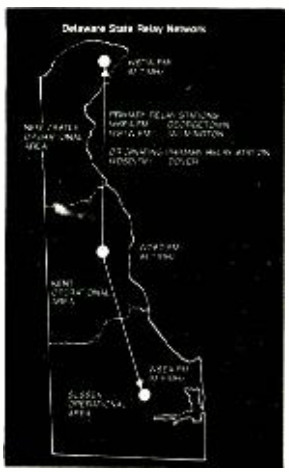
an EBS net has an EBS checklist, supplied by the FCC, which tells exactly how to proceed when a two-tone alert comes in. The net stations must follow closely the instructions of the CPCS until the alert has been officially terminated.

The one-station, one-community alert, like the one at KTUE, can be initiated by the station management. The within-the-station lines of authority for this purpose must be clearly laid out, and the operating procedure fully developed.

Raymond Seddon, chief of the FCC's Emergency Communications Division, emphasized to *BM/E* the necessity for regular tests of EBS functions at every level of activation. Throwing an alert to an EBS local net that has had no practice is like putting a play on the stage with no rehearsals.



Typical state-wide net is exemplified by this one for Delaware. Stations are assigned job of relaying warning to various parts of state

A broadcaster in an area without a plan might well get in touch with his State Emergency Communications Committee Chairman (SECCC); all are listed in the accompanying box. Because of the missionary activities of the FCC and the other agencies, it is almost certain that some preliminary conversations, at the least, have occurred in his state. The SECCC's office can tell him how things stand. The local broadcaster's interest is one of the most effective forces toward developing a plan, if none exists.

Like the national EBS plan, the state-local plan is purely voluntary. Moreover, a station does not have to be part of the national plan to join in a state-local plan, or vice versa. The management can decide which to join.

As with all organizations of individuals, the quality of performance varies from area to area. *BM/E* has learned that in at least two states (there are probably a number of others), relevant state officials and broadcast managements meet annually to discuss the year's experiences with the EBS nets, to review performance and consider how it might be improved. Excellent! A broadcaster in another state complained to *BM/E* that there had been no local rehearsals for a long time; he rightly feared the results.

For the broadcaster, the bottom line on EBS is the rewarding sense of community service it creates. The dozen or so participants that *BM/E* interviewed were uniformly proud of their EBS work, and there is every reason to believe that several thousand other U.S. broadcasters have the same pride. **BM/E**

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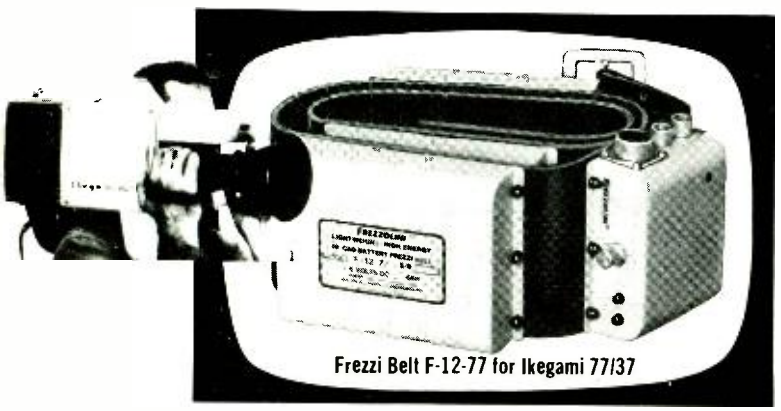
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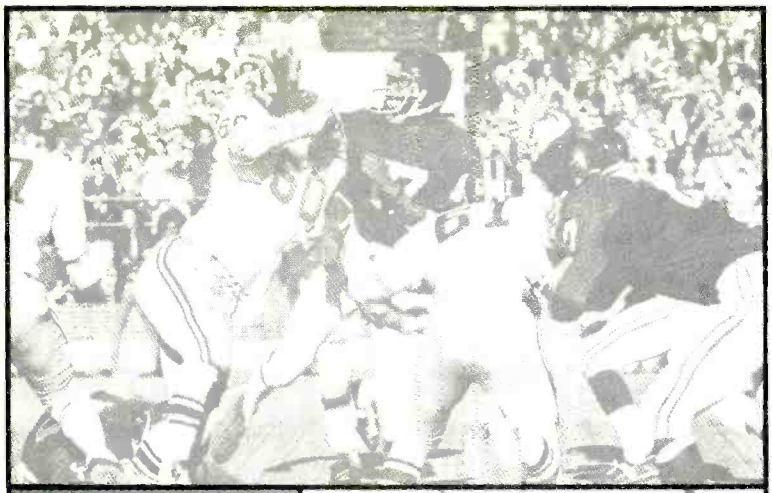

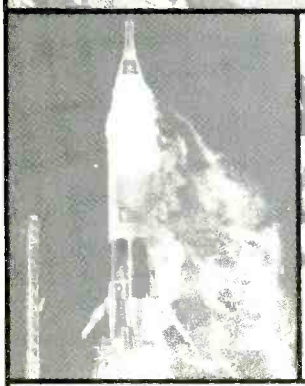

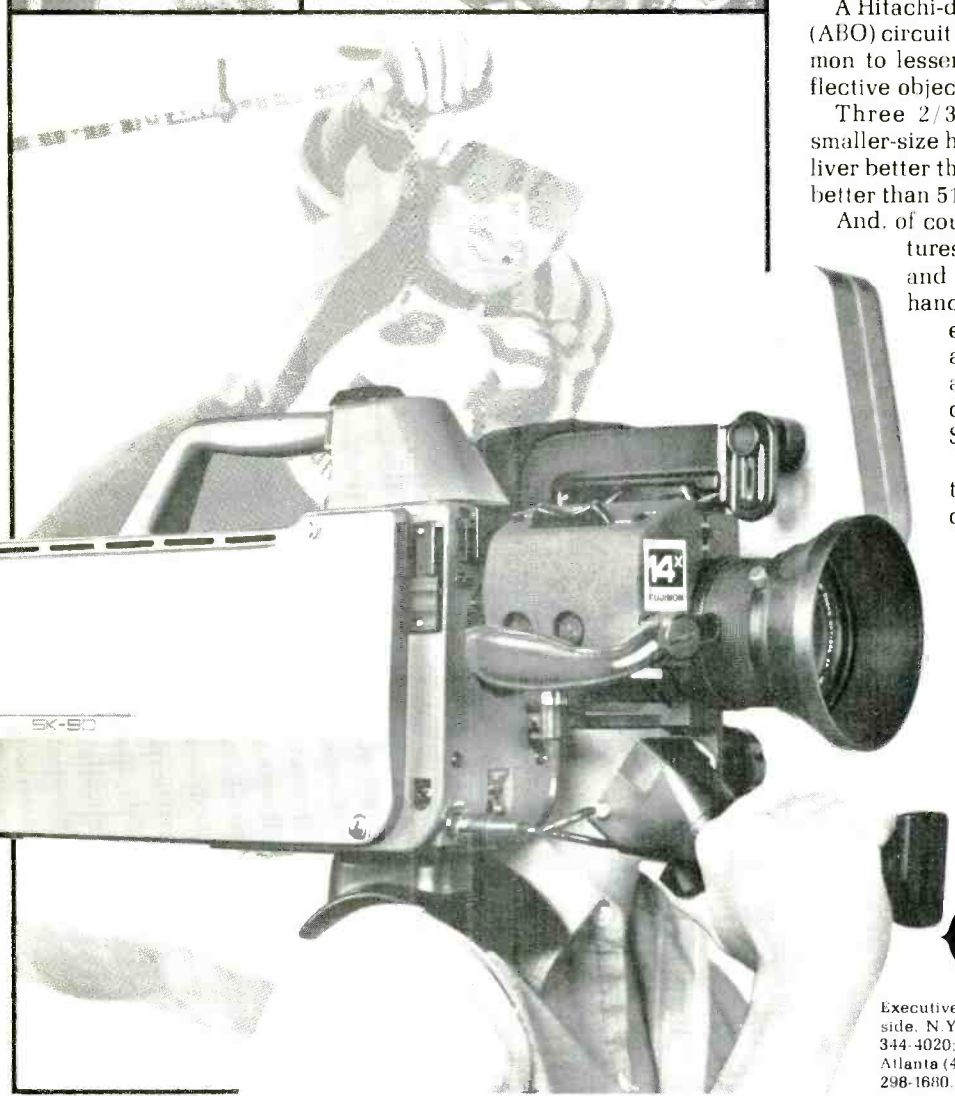

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Audio Is More Alive Than Ever At AES New York Convention

New digital techniques and devices gave the AES New York show its main excitement, but there were other advances on a broad front that will help push up the quality of audio in broadcasting. More than 6700 persons came to the show, an all-time record.

THE AUDIO ENGINEERING SOCIETY'S biggest convention to date, running November 3 to 6 in New York, showed digital audio growing very swiftly with a number of manufacturers bringing prototypes of new digital machines. In addition, there were advances in tape recorders, consoles, microphones, processors, special effects systems, and especially in automated multi-test systems, that every broadcaster ought to know about in planning for better audio.

The 6700 attendees (including the press), the 77 technical papers, and the 136 exhibitors all expressed the rising level of activity in audio, both as a technology and as an industry.

New: three-inch videotape

MCI introduced a new tape format: three-inch tape, running at 20 ips (with 15 ips and 30 ips also available on the same machine). MCI claimed, with 32-track recording, a better relation of signal/noise to tape economy at 20 ips than at 15 ips or 30 ips. The three-inch tape is already marketed by 3M.

MCI also brought new auto-location systems and sync systems, and there were similar new systems from BTX, Neve, Automated Processes, and others. These advanced tape machine control systems further raise the efficiency and accuracy of tape recording, with easier synchronizing of audio/audio or audio/video pairs, triplets, etc. Especially attractive for general control and synchronization was the new Model 4600 from BTX, which uses SMPTE code and includes memory for programmed production sequences.

Another new tape system, this one focused on new electronics, was shown by Tandberg. A major virtue claimed by Tandberg is adaptability to the new metal particle ("Metafine") tape announced by 3M and available so far only in samples. The characteristics of this tape, as demonstrated by Tandberg with its new recording system, appear to be dramatically above current tapes in signal/noise at both low and high frequencies, and in total signal capacity.

On the digital front, there were prototypes of new reel-to-reel machines from Sony and Panasonic, of new laser disc machines from Sony, JVC, and Philips, and of a new PCM adaptor for VTRs from Panasonic. Several firms now have prototypes or developed models for all three main forms of digital machines currently in the making: reel-to-reel, adaptors for putting PCM audio onto videotape machines, and PCM laser disc machines. All three forms have immense potential for broadcasters.

Digital audio standards needed

Actually on the market now are the VTR adaptors of Sony and the reel-to-reel machines of 3M and Soundstream (the latter two on lease arrangements, as described in earlier issues). The main roadblock to the marketing of additional machines and to the general realization of digital potential now appears to be the total lack of standardization in the field. No two of the dozen or so machines so far announced are compatible with each other. Several firms with prototypes at the show told *BM/E* that they were holding up final development until there was enough standardization to make marketing attractive. A digital standards committee of the Audio Engineering Society, under the chairmanship of J. G. McKnight, new president of the AES, is now earnestly seeking ways to clear the road for industry moves toward standardization.

The more than 20 technical papers on digital audio showed great development activity in big-industry laboratories around the world; the technology is being pushed ahead intensely and on a wide scale. The general acceptance of the importance of digital techniques could be seen also in a tutorial seminar on the topic conducted by Dr. Thomas Stockham of Soundstream at the convention. The three-hour session drew an over-capacity crowd, with frequent interruptions for knowledgeable questions and contributions from the audience. *BM/E* hopes to present a summary of this session in a later issue.

Special effects are booming

Prominent on the exhibit floor was a new generation of special effects and processing systems of higher sophistication than earlier models, from Marshall, Lexicon, Orange County, Audioarts, Klark-Teknik, dbx, MXR, Ashley, Orban, and others. In magnetic tape, in addition to the new three-inch tape, there was an evident trend toward professionalization of audio cassettes, by Ampex, 3M, TDK, BASF, and Agfa; and the loading and duplication of cassettes was very strong from Infonics, Audico, Pentagon, and others.

Consoles, as usual, were more common on the floor than any other audio component. Automation for consoles got new boosts from MCI, Neve, Allison, Automated Processes, and Harrison. Irving Joel Associates, a newcomer in console manufacture, introduced a 12-channel model aimed specifically at broadcasters, with controls well thought out for broadcast operations. There was a spate of smaller consoles and mixers from a dozen or more firms; and very large models (mainly for recording studios) from firms long established in this area: Ward-Beck, McCurdy, Auditronics, and others, in addition to those already mentioned.

continued on page 92

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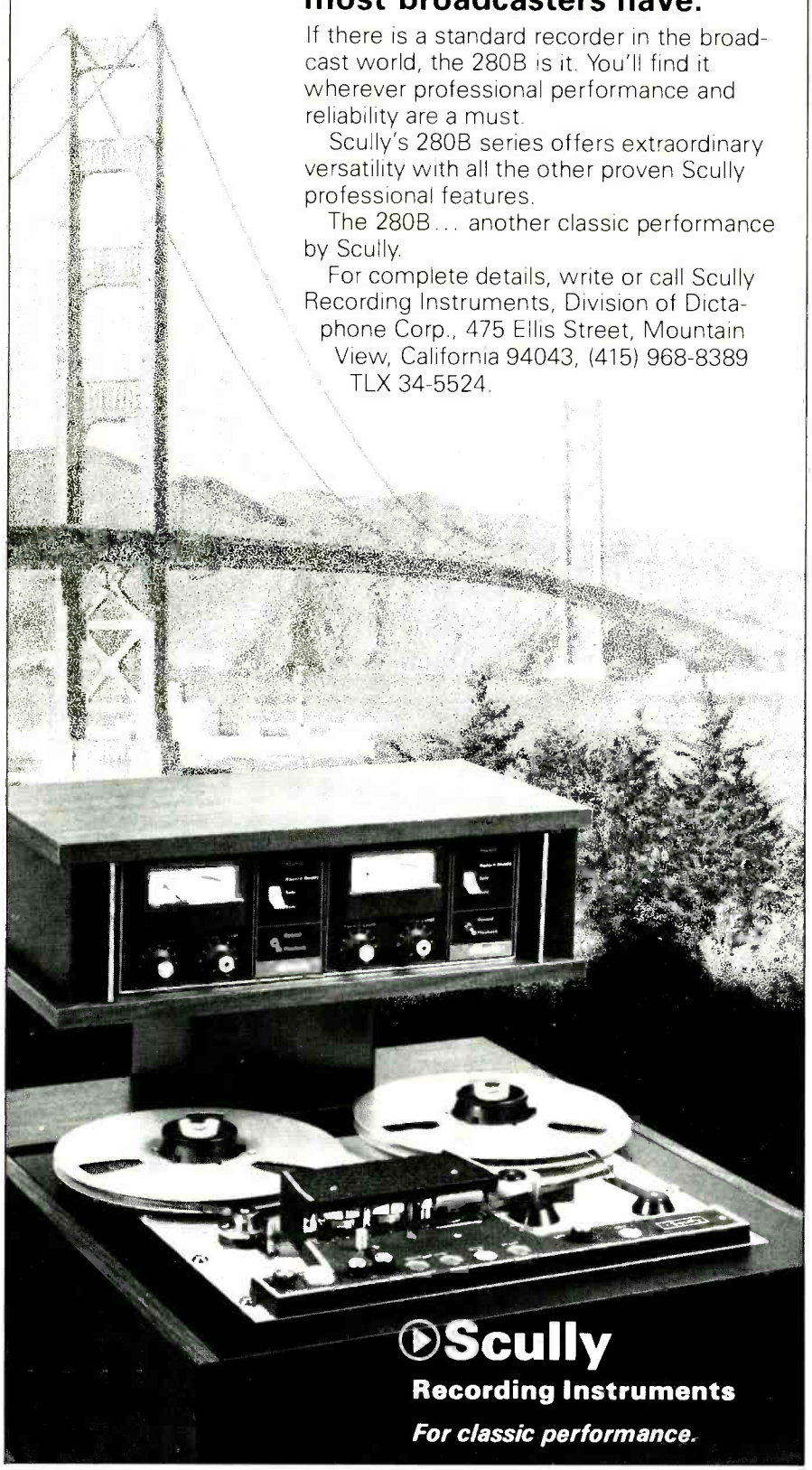

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AES Convention

A most important trend for broadcast audio quality, continuing developments of the last several years, was toward ever more efficient, accurate, and resourceful automated test and analysis equipment. The family of advanced spectrum analyzers is now huge; new or recent ones were displayed by Crown, Kenwood, Acoustilog, Shure, White, Amber, and Ivie (the latter two in combination with distortion analyzers using microprocessor control). Barclay Analytical showed early models of their Badap, an analysis system also with microprocessor control, allowing for an extremely long list of software-established functions. In addition to the usual spectrum, distortion and frequency analyses, software will be available for displaying information as the "fatigue factor" in a radio signal, or peak versus average factors for mixdown control.

Consumer goods makers go pro

Another marked trend was the movement of firms from consumer hi-fi manufacture into professional lines. Panasonic has been an outstanding example over recent years, and new recruits included Kenwood and SAE. These and other firms showed many super-grade audio amplifiers, for example.

The technical program included dozens of papers of interest to the broadcaster alert to audio progress. A session on audio in broadcasting brought, among others, a paper by Ed Greene, audio consultant, and Richard Burden, of Burden Associates, on the need for standardizing television audio practices. Also in the session was an excellent discussion of microphone techniques for broadcasting symphonic music live, by Carson Taylor, longtime recording and broadcast producer for NBC and other firms, and a theoretical description of an FM multiplex broadcasting system for 2/2½/3 channel surround sound, by Michael Gerzon of the National Research Development Corporation in England.

The technical program as a whole was extraordinarily rich in stimulating and important papers. Broadcasters are urged to get the AES's list of "preprints," papers available ahead of publication in the AES Journal. The 52 preprints on the list constitute a comprehensive account of the present forward edge of audio technology. Write the Audio Engineering Society, 60 E. 42 St., New York, N.Y. 10017. **BM/E**

Don't Limit Yourself.

Dolby Laboratories' Model 334 FM Broadcast Unit is the only additional station equipment needed for Dolby FM

Conventional methods of limiting and compression limit the sound quality of FM signals. Non-symmetrical signal processing, by definition, means that the signal at the listener's receiver can not be the same as the signal which left the studio. Yet, with today's increasing audience sensitivity to good sound, and with AM stereo waiting in the wings, limited FM signal quality could very well put a limit on FM audiences. That's where Dolby FM comes in.

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S78/1070

INTERPRETING THE FCC RULES & REGULATIONS

Commission Reduces Application Requirements For Transmission Equipment Modifications

By Frederick W. Ford and Lee G. Lovett; Pittman, Lovett, Ford and Hennessey, Washington, D.C.

THE COMMISSION, in its continuing campaign to reduce the paperwork for broadcasters as part of its on-going re-regulation of radio and TV broadcasting, has amended its rules to reduce or eliminate application requirements for modification of existing broadcast transmission equipment.

In taking this action, the Commission noted that the newly revised rules will decrease application burdens on licensees as well as reduce the workload of FCC staff members in processing applications.

The Commission's order[1], together with an appendix of rule changes, is quite detailed. Broadcasters should review the rules carefully for particulars. The scope of this article is limited to an overview for the purpose of acquainting broadcasters with the specific areas in which the rules have been changed.

The rule changes affect ten specific areas of regulation:

New Transmitter Installation. Previously, a licensee, upon installation of a replacement transmitter, was required to submit a written notice to the FCC. This was necessary because the FCC then issued a modified license.

The notification is no longer required. A licensee is free to install an identical replacement transmitter or install a different transmitter that is FCC type accepted. If a licensee wishes to use a transmitter of its own design and construction, it must submit an application requesting permission to do so from the Commission.

Despite elimination of the notification requirements, the licensee must still make equipment performance measurements to verify that the transmitter is functioning correctly. These measurements must be maintained in the station files.

Multiple Transmitters. Previously, a station's main, alternate main, and auxiliary transmitters were each covered by a separate license. Each licensee made technical tests and submitted the results to the FCC before being granted authorization for use of the transmitter.

From now on, all co-located transmitters using the same antenna system will be covered by one license. Multiple licenses are no longer necessary since very few licensees construct their own transmitters.

Auxiliary Antennas. The Commission did not eliminate licensing requirements for auxiliary antennas. While it is true that an auxiliary antenna is utilized when a station's main antenna is inoperational due to repairs or maintenance, the differing location, radiation characteristics, or coverage area of the auxiliary antenna mandates that it be subject to Commission approval via licensing.

As part of its re-regulation, the Commission added Section 73.1675 to clarify the licensing procedures for auxiliary antennas. This rule applies to AM, FM, and TV.

Emergency Antennas. Previously, the rules only specifically permitted use of an emergency antenna (for use when the station's main antenna is damaged) for commercial FMs on a temporary basis. In practice, emergency antennas were authorized for AM, FM, and TV stations on the same temporary basis.

Now, the Commission has specified procedures in respect to emergency antennas in one provision, Section 73.1680, for all broadcast services.

FM Stereo Conversion. In the past, an FM station had to notify the Commission in writing when converting from mono to stereo.

The Commission no longer keeps statistics on the number of FM stations that broadcast in stereo. Accordingly, a broadcaster converting to stereo does not have to submit written notification to the Commission. Nonetheless, equipment performance measurements are still required in order to assure that conversion has taken place satisfactorily.

Remote Control Authorizations. Until now, a broadcaster was required to receive prior authorization from the Commission to operate a transmitter by remote control. FMs and non-directional AMs submitted an application containing the address of the control point. Directional AMs and TVs were required to submit more detailed technical exhibits.

Non-directional AMs and all FMs no longer must apply for remote control authorization. Instead, the licensee must notify the Commission in Washington, D.C. of the remote control location. In addition, the licensee must notify the engineer in charge of the radio district in the station's area of remote control points if located at a place other than the authorized transmitter or the studio.

Directional AMs must request remote control authorization on FCC Form 301 (Form 341 for non-commercial educational). TV's must submit an application on FCC Form 301-A.

FM Subcarriers Used for Remote Control. In the past, an FM station wanting to use its FM subcarrier to broadcast transmitter data to an automatic transmission system (ATS) monitoring point or to a remote control point was required to obtain a Subsidiary Communications Authorization (SCA). In addition, the FM station had to maintain a log just as it would if the subcarrier frequency was used

continued on page 96

[1]FCC 78-788, released: November 14, 1978.

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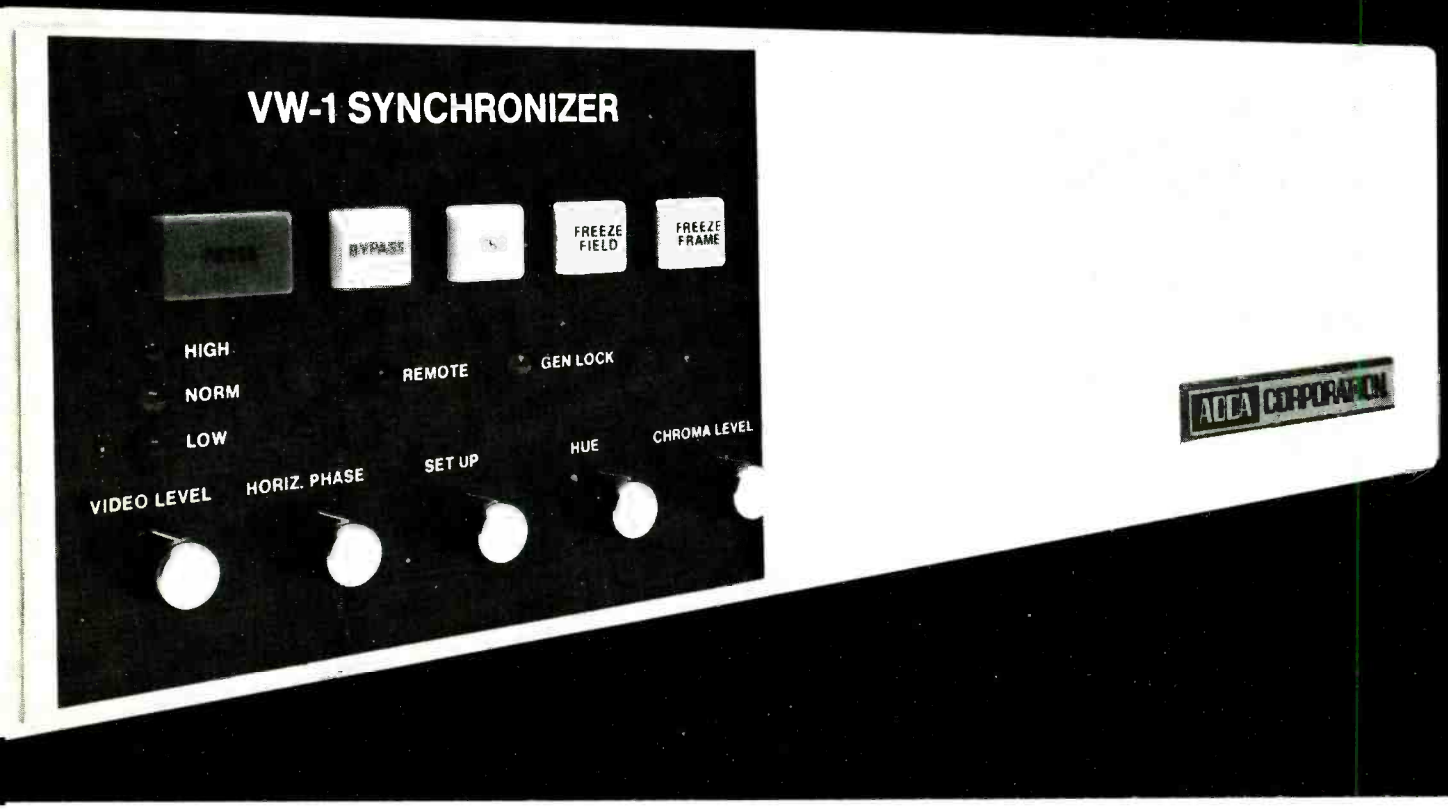

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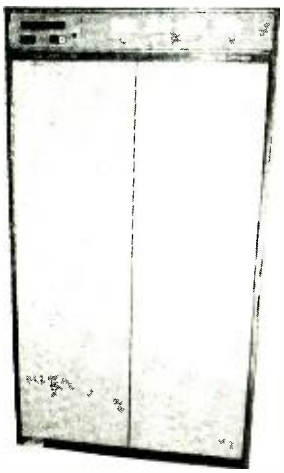

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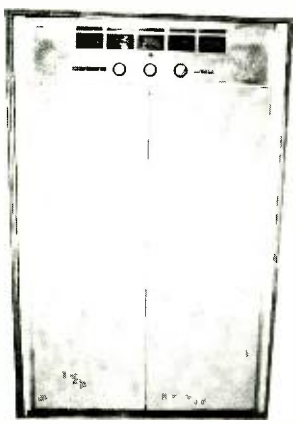

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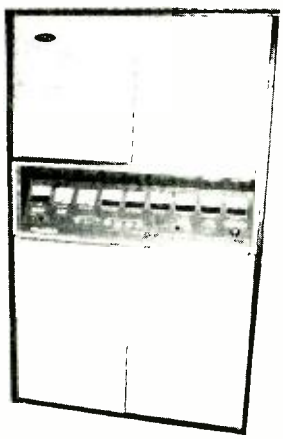

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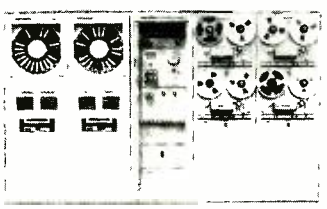

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The Commission felt that prior authorization and logging should not apply to remote control telemetry transmissions that are not intended for use by the general public. Accordingly, no application must be filed for use of an FM subcarrier and no logging is required for subcarrier telemetry operations. A station need only transmit on the subcarrier when its initial automatic transmission system is in operation or when utilizing a remote control point.

FM Subcarriers and AM Subaudable Tones For ATS. An FM station may now use an FM subcarrier and an AM station may use AM subaudible tones for an automatic transmission system monitoring point without filing an application and receiving authorization.

Replacement of TV and FM Antennas and Transmission Lines. Until now, a broadcaster desiring to replace an existing antenna or transmission line which connects the station's transmitter to an antenna has been required to file an application for a construction permit. This was required even if the replacement equipment was identical to that currently in use. Similarly, the application had to be filed even if installation of the new equipment would not affect the station's effective radiated power. Finally, until now, a construction permit application was necessary when a broadcaster wanted to use circular polarization.

Henceforth, an FM station or a television station may make an antenna and transmission line replacement or substitution without filing an amendment if the change does not affect the station's effective radiated power or antenna height. Furthermore, in cases in which effective radiated power or antenna height are affected, the station does not file an application with the Commission until *after* the transmission system modifications have been completed. The application is also required if the new transmission system is different from that previously identified in the station's license.

These rule changes do *not* apply to FM directional antenna systems, to TV directional antennas systems, or in situations in which the change may affect the operation of a co-located or nearby AM station.

A station licensee may make an informal request to the Commission for authority to operate with a temporary antenna arrangement while modifications are being made.

FM and TV Transmitter Upgrading. In the past, broadcasters had to file an application with the Commission for authorization to replace components of FM and TV aural transmitters, such as stereo generators, intermediate power amplifiers, final power amplifiers, and FM exciters.

The Commission revised this requirement. FM and TV stations may replace modulation exciter units without prior Commission authorization if the new equipment has been type accepted by the Commission or has been demonstrated to be compatible with the transmitter in use. Similarly, FM stations may replace stereo generators without prior Commission approval on the same basis.

A station continues to remain responsible for compliance with normally required transmission standards via measurements mandated by the Commission's rules.

These new rule revisions lift a substantial burden from broadcasters by decreasing unnecessary paperwork. Careful review of the rules is necessary, however, to preclude inadvertent violations of the filing and notification requirements that remain. **BM/E**

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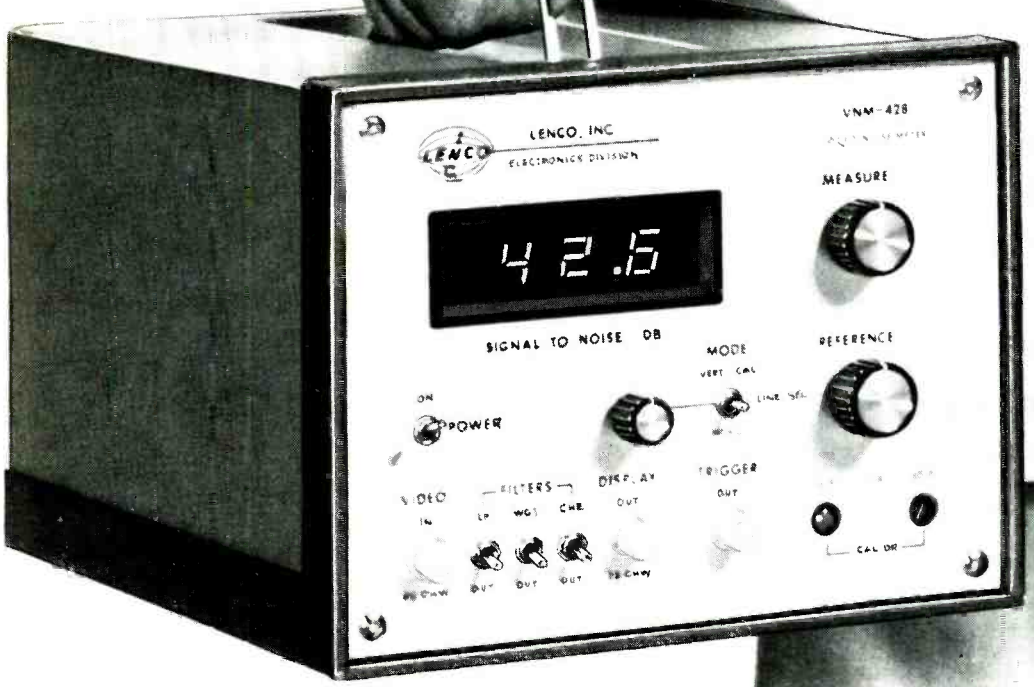

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SPEAK OUT

"7 GHz ENG Systems Really Work"

By Vincent E. Rocco and Leslie K. Lear

With the proliferation of microwave in ENG operations, broadcasters have been forced to find alternatives to the severe overcrowding on the 2 GHz band, particularly in large, multi-station markets. This is true not only for stations first entering the microwave field but also for stations which have had microwave operations for some time. The solution proposed by the authors of this Speak Out is for some stations to move to the 7 GHz frequency, using today's more efficient amplifier and antenna systems. Considerable controversy still surrounds this practice, however, in spite of the apparent successes of stations such as KRON and WNBC.

Leslie K. Lear (left) is director of marketing for Nurad, Inc., Baltimore, Md. Vincent E. Rocco (right) is director of Microwave television systems for Nurad

SOME TWO HUNDRED 2 GHz microwave television systems are now in operation in the United States. Because many metropolitan areas have two, three, four, or more stations using 2 GHz for their ENG operations, and because of the very nature of such operations in which competing stations often cover the selfsame news events, signal interference has become a severe problem.

In order to alleviate that problem, certain expediencies have been tried, singly or in combination, with varying degrees of success. These include the use of single-channel filters for the purpose of eliminating adjacent-channel interference. Such filters are costly and are not foolproof. Another approach lies in the use of "split-channel" receivers to increase separation from adjacent operating channels. As with single-channel filters, split-channel receivers, while helpful, do not provide a complete answer.

In certain metropolitan areas, competing television stations have established working arrangements whereby, for example, each station covering an event where interference is likely to occur agrees to operate on a single assigned channel separated as far as permitted from the other station or stations. Also, in those cases where the competing stations utilize circularly polarized ENG systems, signal separation can be greatly enhanced by their transmitting signals of opposite polarizations. Of course, this solution is effective only if no more than two stations are involved.

Going to another of the designated auxiliary broadcast bands (7 GHz and 13 GHz) would obviate the 2 GHz problem entirely. The state of the art is such that the 13 GHz band is not at present a feasible alternative for long-range ENG operations. Such is not the case at 7 GHz. 7 GHz systems really work!

Until very recently — and with certain noteworthy exceptions (WNBC-TV in New York, WMAQ-TV in Chicago, and KRON-TV in San Francisco) — there has been a reluctance on the part of the television industry to use the 7 GHz band. This reluctance stemmed partly from the fact that reliable, effective, high-performance 7 GHz ENG equipment was not generally available from manufacturers' standard product catalogs, and partly it was due to widespread uncertainty and misconception about the use of higher frequencies for such operations. As the successful results being achieved by the "pioneer" stations cited above become more generally appreciated, much of the apprehension over the prospect of using 7 GHz is being dissipated; moreover, significant advances in equipment design and availability have

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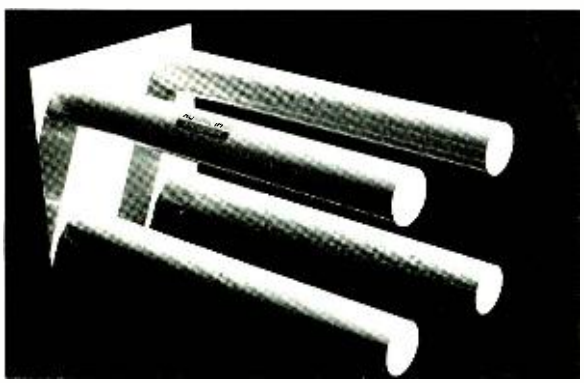

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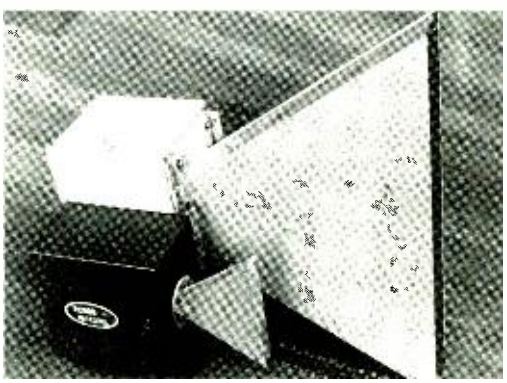

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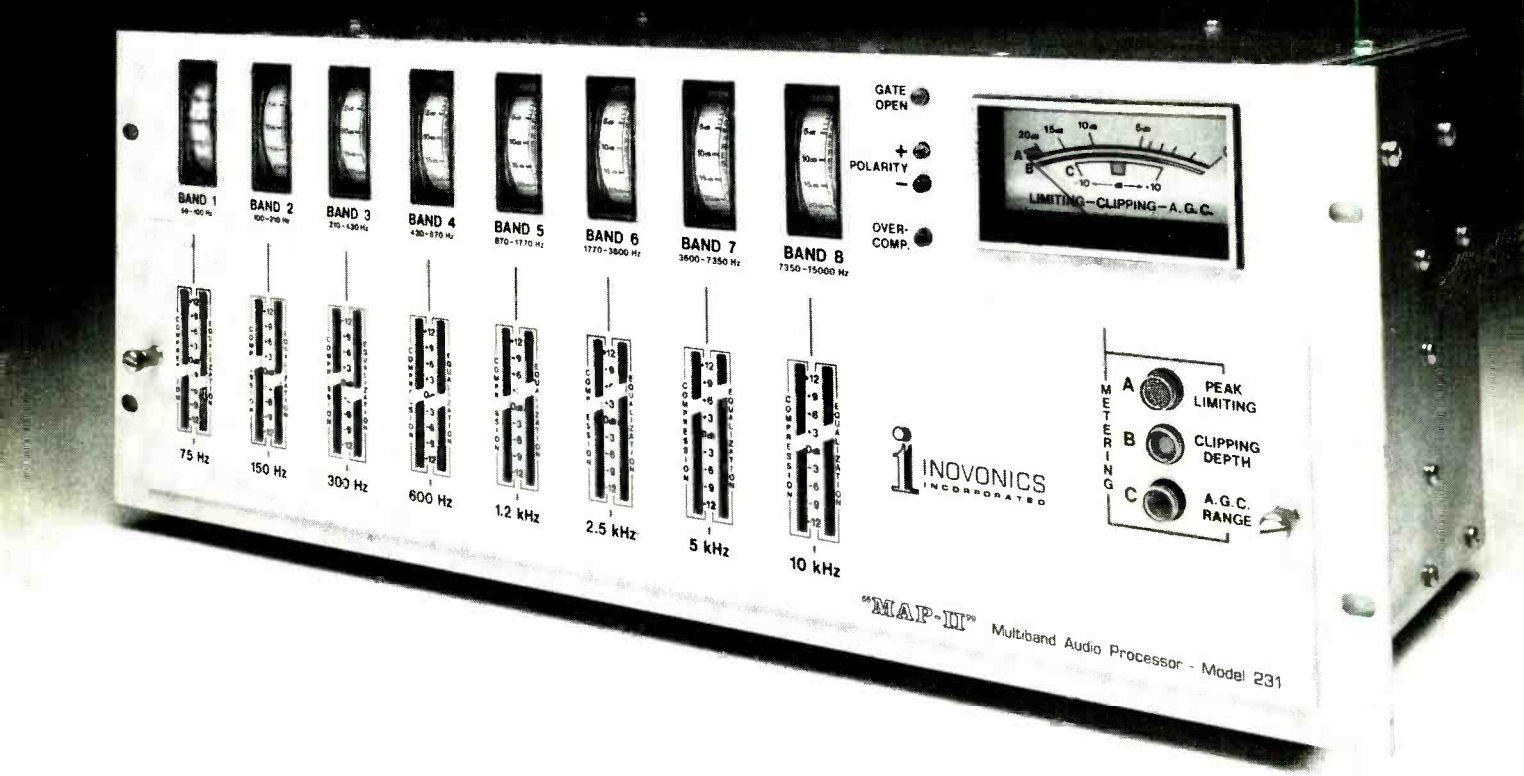

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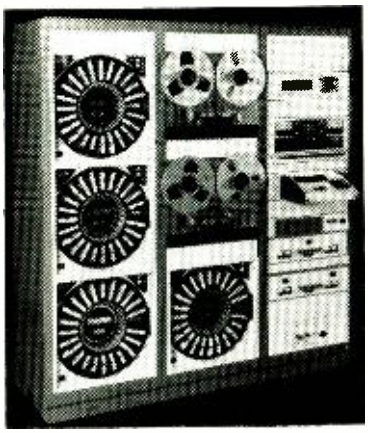

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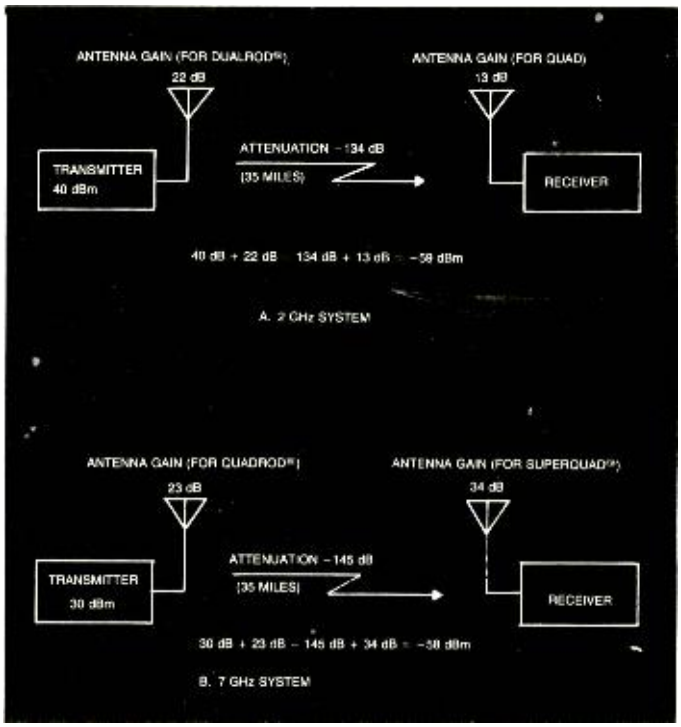


Figure 1. Signal level for TV microwave systems at 2 GHz and 7 GHz

prompted broadcasters to take a closer look at extending their ENG operations into that range of the spectrum.

At least part of the hesitancy regarding operation at 7 GHz came from a notion concerning the space attenuation of microwave signals. Conventional wisdom states that space attenuation increases with increasing frequency. This is not strictly true. What is being referred to as attenuation is in reality the thinning out of the radiated electromagnetic field intensity of an antenna as the radiated beam spreads with increasing distance. It follows then that a decrease in the angle of the antenna radiated beam, which occurs with increasing antenna aperture, has the effect of increasing the radiated field intensity at a given distance. The end-result is that the so-called space attenuation is overcome. For some classes of microwave antennas (e.g., parabolic reflector types), the decrease of radiated-field intensity at a given point within the beam as frequency increases is exactly offset by the increase in focusing power or gain occurring at the increased frequency.

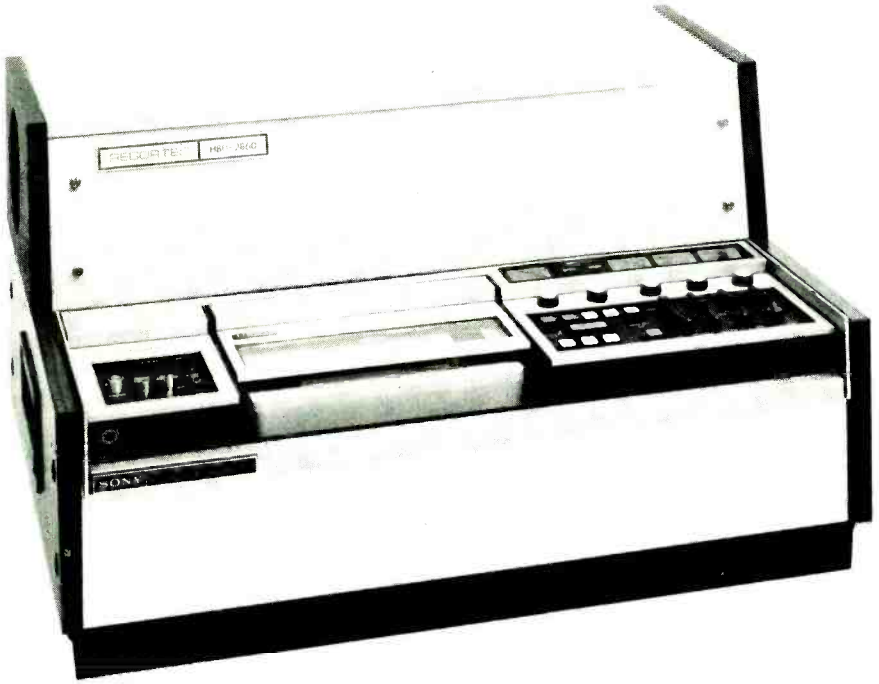
With the foregoing in mind, consider what is needed to make a 7 GHz ENG microwave system equivalent in operational range to a conventional 2 GHz system of the type currently in wide use. The system depicted in Figure 1-A shows a transmitter at 2 GHz and a power output of +40 dBm (10 watts). The gain of the most widely used ENG receive antenna, the Nurad 20 QP1 QUAD, is 13 dBi. When used in conjunction with the 22 dBi-gain Nurad Model 20 HE2 DUALROD™ and a 40 dBm (10-watt) transmitter, it can be shown that the nominal range for the system is 35 miles. The "space attenuation" for 35 miles at 2 GHz is −134 dB. A simple arithmetic process of adding and subtracting the decibels of Figure 1 yields a received signal level of −59 dBm. This level of signal is well above (approximately 20 dB) the 33 dB S/N (weighted) threshold of −80 dBm associated with a modern receiver.

Repeating the process for the 7 GHz case (Figure 1-B) and postulating the 23 dBi 70 HE1 QUADROD™, the 34 dBi 70 SQ1 SUPERQUAD™, and a 30 dBm (1-watt) transmitter results in a signal level of −58 dBm. Again, this level is well above the threshold values of standard receivers. It will be noted that the signal level obtained in the latter case is 1 dB greater than that of the 2 GHz system. This is so even though the computed "attenuation" at 7 GHz for 35 miles is greater by 11 dB (−145 dBm) than in the 2 GHz case. The reason is that the higher gain of the newly designed Nurad 7 GHz QUADROD™ and SUPERQUAD™ antennas more than offsets the lesser gain of the 7 GHz transmitter.

The foregoing analysis has made no direct mention of other factors that may affect the range of a television microwave system. Obviously, the receiver noise figure and bandwidth have a great bearing on system performance. Another consideration affecting perceived performance is the television viewer's subjective judgment of what is

continued on page 102

HI-BAND U-format VTR



"Quad" Quality in a ¾" Format

The model HBU-2860 (Hi-Band U-format video cassette recorder) is a modified SONY VO-2860 with Recortec electronics mounted on top of the unit. The modification provides direct hi-band video recording made possible by tripling the scanner speed and the linear tape speed.

Quality—At the 1200 ips head-to-tape speed the HBU video quality is as good as the "quad" or the new one-inch format. Professional audio quality is also obtained with this modification.

Convenience—Standard and widely available 3/4-inch video cassettes for the HBU allow for simple loading, handling and storage.

Dependability—The HBU does not alter the U-type recording format and thus takes advantage of the proven interchangeability of the U-type recorders.

Economy—Lowest cost in equipment, media and operations for any Hi-Band VTR.

Availability—Ready for delivery at the introductory price of $14,500 direct from Recortec.

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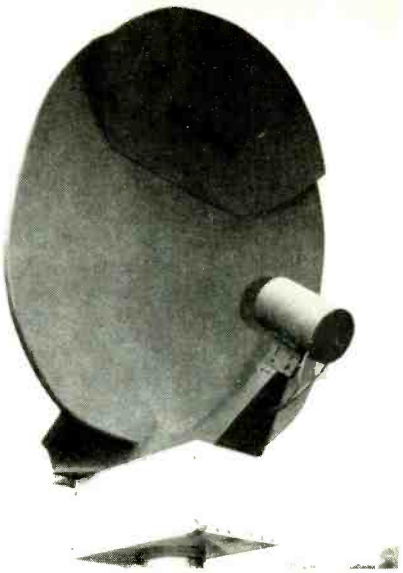
considered an acceptable picture. Unfortunately, there is no way of rigorously quantifying such subjective factors even though they can lead to a wide variation in interpretation of what a system's range really is. The noise-bandwidth factors, on the other hand, can readily be measured and their effect on range closely predicted. Since they are closely related to the signal threshold obtainable from a receiver, they have not been totally ignored in this discussion. Rather, in discussing basic receiver signal threshold, their contribution to a given system's range has been taken into account.

It is significant that present-day designs for 7 GHz preamplifiers incorporate noise figures (e.g., 4.5 dB) that are somewhat lower than those of 2 GHz preamplifiers of just a few years ago (6 dB). The benefit of the lower noise figure is that, assuming proper care is taken in the selection of components, 7 GHz systems can now be made to operate more efficiently than many of the 2 GHz systems presently in use. Thus, a feasible, practical means now exists for extending or expanding any station's ENG capability.



Nurad SUPERQUAD™ 2 GHz receiving antenna

At this writing, at least two major manufacturers of microwave transmission equipment have developed lightweight one-watt 7 GHz transmitters suitable for mounting on an extension mast close to their 7 GHz compact antenna for low-loss operation. These manufacturers are Farinon Video with its FV6MP and Microwave Associates with its MA-7EP1. The FV6MP and MA-7EP1, together with mini-antennas such as the QUADROD™, are well suited to the new, compact, fast vehicles that are expected to become prevalent in the ENG mobile systems of the future.

With 7 GHz preamplifier noise figures fast approaching the 3 dB level and lower, it appears that further shrinking of the size of microwave system components is in the cards. Of the available choices (e.g., longer range or smaller components) made possible by the advent of the super-sensitive receiving systems, it seems likely that the trend will almost surely be toward the smaller, more agile systems.

The question of interference from other 7 GHz sources inevitably arises. In responding, one should take into account the fact that the vast majority of 7 GHz television systems are fixed intercity links, STLs, and TSLs. As such, they of necessity involve narrow-beamwidth confined transmissions of known location that are unlikely to interfere with mobile operations. Obviously, as 7 GHz ENG systems become prevalent, the probability of interference will inevitably increase. By that time, new technology may have devised other solutions; further, the FCC may at long last have decided in favor of additional frequency allocations for auxiliary broadcast operations. **BM/E**

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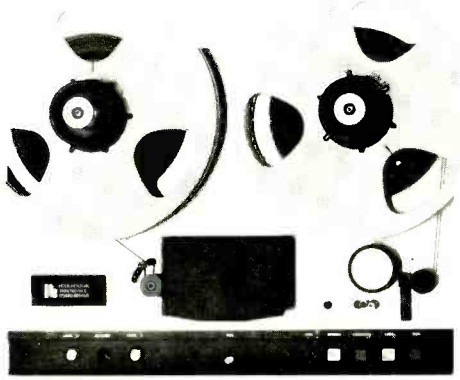

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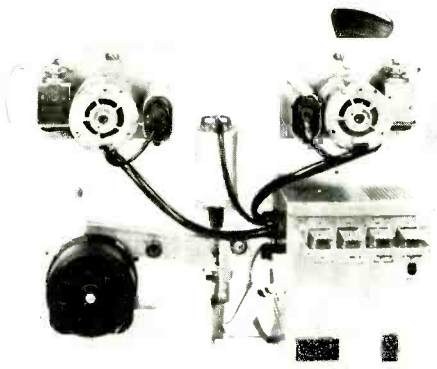

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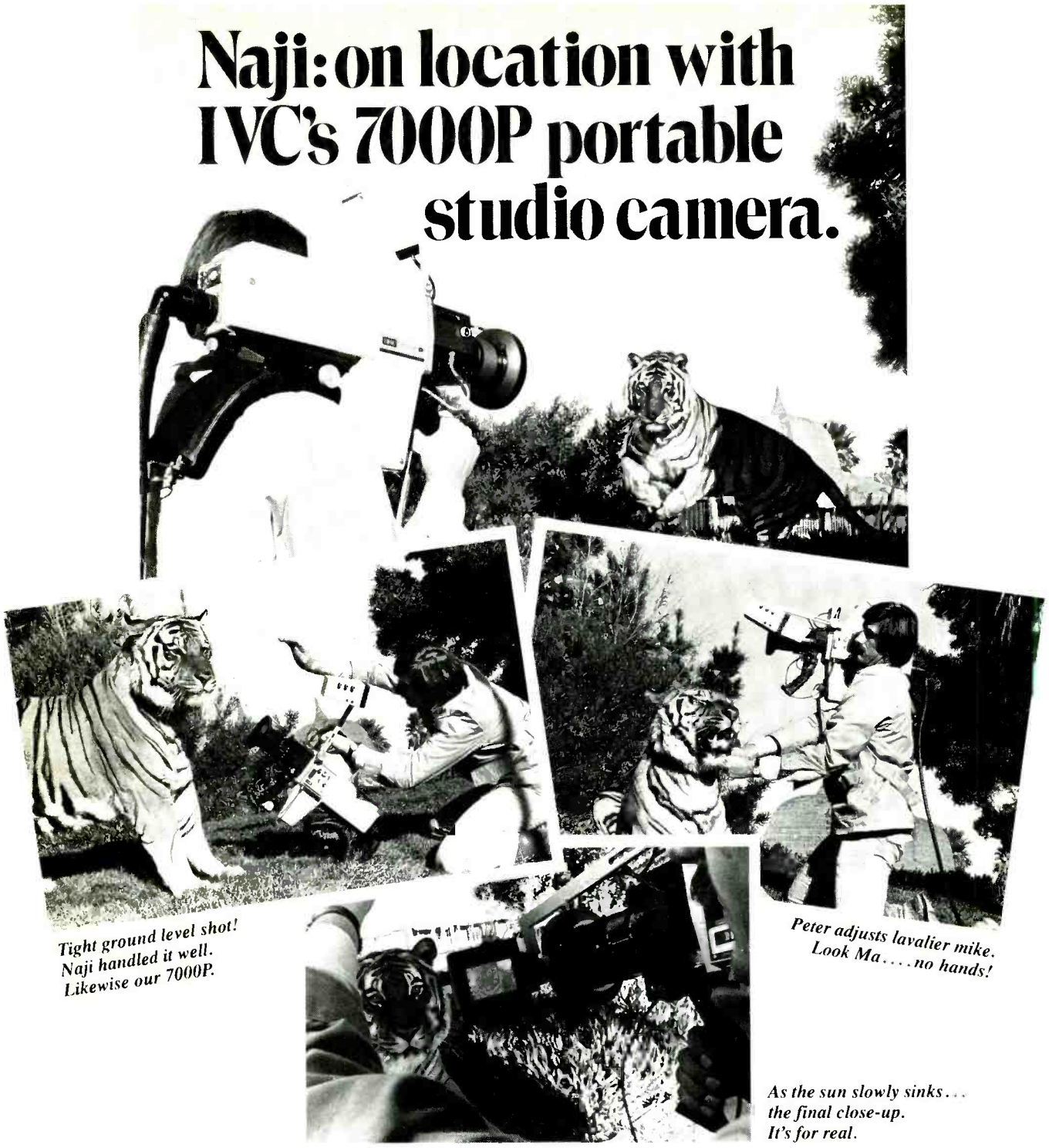
Naji: on location with IVC's 7000P portable studio camera.



Tight ground level shot! Naji handled it well. Likewise our 7000P.

Peter adjusts lavalier mike. Look Ma . . . . no hands!

As the sun slowly sinks . . . the final close-up. It's for real.

We, and Naji, had a ball. IVC's 7000P field production camera has the performance and flexibility you need when the going gets tough. Studio quality pictures from a package that really lets a cameraperson perform—yes, it fits the ladies too! Accepted as the world's best EFP camera, the 7000P is standard equipment with many of the most prestigious broadcasters and production houses in more than 24 countries. We don't have the space to even begin to tell you what the 7000P is capable of achieving. But we would like to. Drop us a line or give us a call. We'll even send you an autographed, color photo of Naji. Naji would like that.

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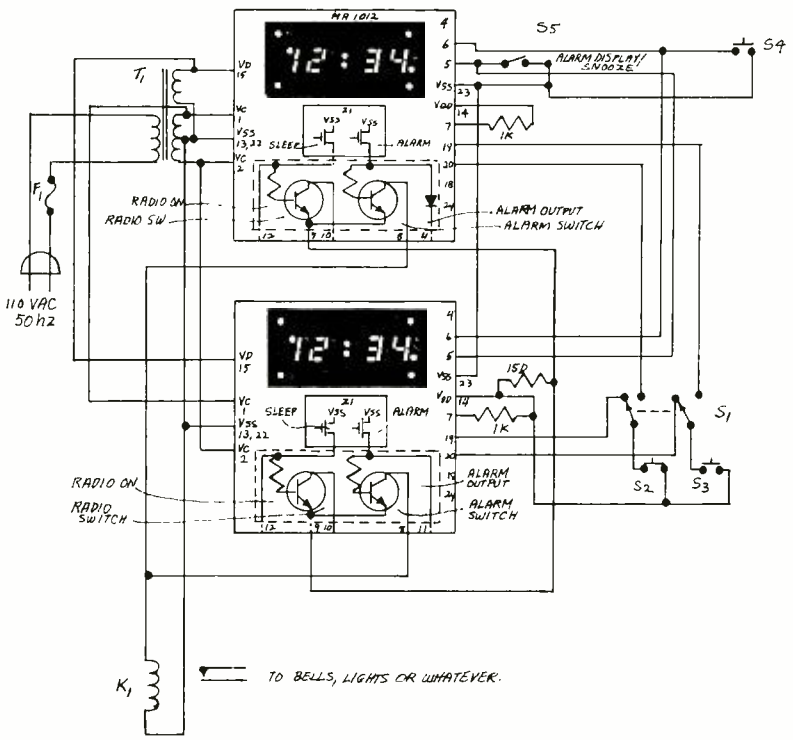
GREAT IDEA CONTEST

The Great Idea Contest continues to be a "great idea" as more of you send in original solutions to everyday engineering problems. BM/E is delighted to continue this feature to convey to the industry the ingenuity of individual broadcast engineers. We hope you will participate again this year. Rules for entry are on page 106. Remember to vote on all published ideas. It's your contest. 1978 winners will be announced in the March issue.



Kelly's circuit for "time to switch" alarm

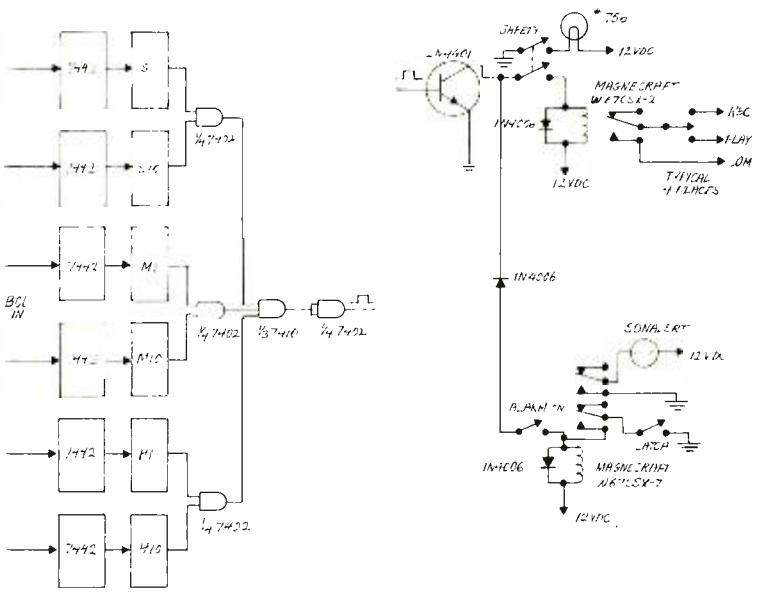
1. "It's Time To Switch" Alarm

Chuck Kelly, Chief Eng., KIUP/KRSJ, Durango, Colo.

Problem: To alert operators when it is time to switch to low power/ directional at dusk and to high power/ non-directional at dawn.

Solution: Because the time at which this occurs varies with the time of year, it is difficult for operators to remember to make this change regardless of how many signs are posted. An alarm clock module (available from Radio Shack) was found to be readily adaptable to our needs. Using two of them as alarms, one transformer, a light duty relay, and a handful of assorted switches and components, a clock can be built that will light a light or buzz a buzzer twice a day. It will easily re-program, and costs less than $45.00.

The following is a list of parts and their schematic designations: two MA1012-L clock modules, M1, M2; one transformer, T1; one 6 Vdc SPDT relay, K1; two NO pushbuttons, S2, S3 (fast and slow set); one DPDT center SW, S1 (clock set select); one SPST S (alarm display); one big red NO , S4 (alarm reset); and one fuse, F1. All parts are Shack.



Kesti's VTR auto roll circuit: Figure 1 (left) and Figure 2 (right)

Editor's Note: The FCC has recently expressed concern over Great Idea entries that provide for the automation of EBS tests. The purpose of such tests, says the FCC, is to train the station staff in the procedures to activate the EBS in the event of an actual emergency, and as the automation of the tests defeats that purpose, a rule making proceeding has begun to amend the EBS rules to clearly state that all tests must be manually initiated.

2. Auto VTR Roller

Michael Kesti, Staff Eng., WNMU-TV, Marquette, Mich.

Problem: To automatically roll VTRs at a preset time to record network feeds.

Solution: The circuits of Figures 1 and 2 were constructed. Figure 1 is a time coincidence detector. The 7442s convert the BCD output of our TFT Model 725 clock to one of 10 lines, which are connected to thumbwheel switches used to select the desired time. The gates form a six-input NOR gate whose output goes high for one second at that time.

Figure 2 is the interface to machine control we used, which could be altered to suit other station's needs. When the selected time occurs, the 2N4401 is turned on, pulling in two relays. The first is a 4PDT and is used to provide contact closure for the VTRs through four SPDT center off switches. These closures are then wired in parallel to existing machine controls, paying particular attention to polarities, due to the record and play contacts using a common line. The safety switch guards against accidental tripping, and the lamp provides visual indication of being "armed."

The second relay is a DPDT and is used to control a Mallory Sonalert. The on switch selects alarm operation and the latch switch allows continuous alarm until reset. A diode prevents latch-up of the machine control relay. This allows the operator to use the alarm as an indication that an automatic event has occurred or as an "alarm clock."

The system was constructed on a blank rack panel with provision made for mounting the relays and input/output connectors. The ICs, transistor, and steering diode were mounted on two "wiz-boards" with flat ribbon cable used to connect to the thumbwheel switches and the 50-pin

continued on page 106

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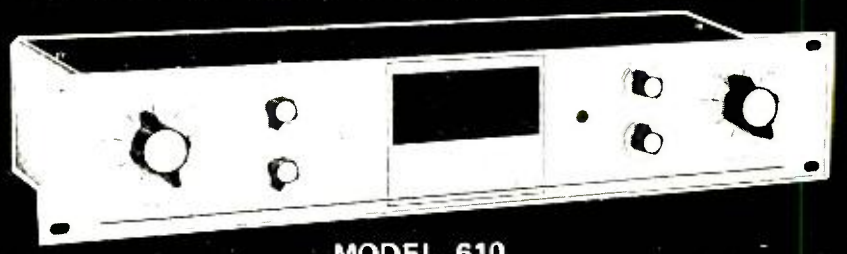

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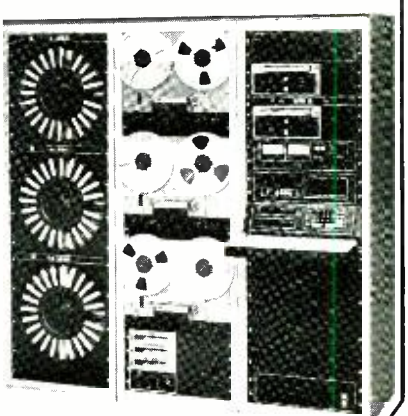

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Great Ideas

BCD input connector. Three eight-pin blue ribbon connectors were used for record and play outputs and the 12 Vdc which was taken from an external power supply. Five Vdc for the logic was available on the BCD input connector from the TFT clock.

3. Turntable Remote Control

Tom Lewis, Chief Eng., WNFL-AM, Green Bay, Wisc.

Problem: To remote start and stop turntables with console delegation switch.

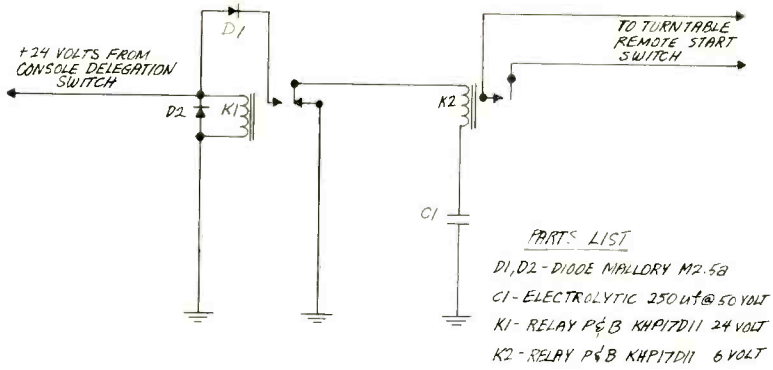
Solution: We recently purchased two Technics SP-10MKII turntables for our control room. Our old turntables were remote started with the delegation switch on the console. This switch is an on or off 24 volts which controls a relay to turn the turntable on or off.

I installed the new turntables using the remote start switches supplied. No one was happy with this installation so, using parts I had on hand, I built this circuit to solve the problem.

When K1 is energized, 24 volts is applied to K2 in series with C1. As C1 charges, K2 is momentarily energized, starting the turntable. When the 24 volts is removed from K1 one side of K2 is grounded, discharging C1 and momentarily energizing K2, which stops the turntable.

D1 stops the discharge of C1 from holding K1 in. D2 stops the voltage from the collapse of the field around K1 from getting to the delegation switch.

Parts used in this circuit are: D1,D2: Diode Mallory M2.5a; C1: Electrolytic 250 μf @ 50 V; K1: Relay P & B KHP17d11, 24 V; K2: Relay P & B KHP17d11, 6 V.



Lewis's circuit for turntable remote control

Rules For BM/E's Great Idea Contest

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.

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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 1980 and announced in the March 1980 issue of BM/E.

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1979 Entry Form

Name _____ **Title** _____

Station Call Letters _____

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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* _____

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, one 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).

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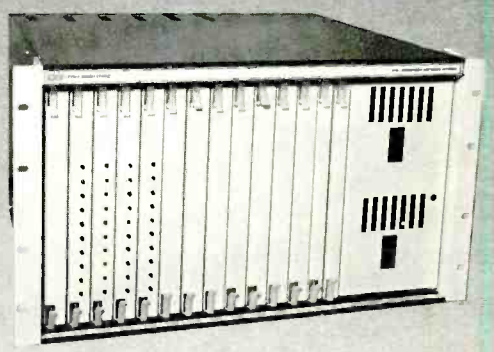

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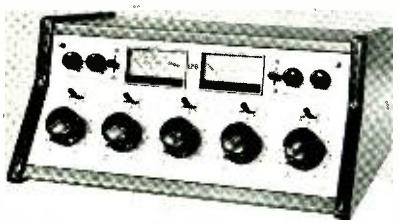

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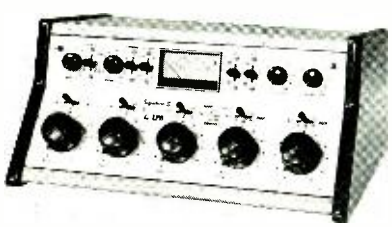

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Audio Op-Amp 251

Model 1000 is designed as a replacement for API, Melcor, and similar op-amps. The unit features low noise and distortion, high output capability and fast slewing characteristics. Reverse polarity is a built-in feature, and provision is made for external offset voltage trim. Specs include: less than 0.5μV RMS input noise, a slew rate of 13 volts/microsecond, and distortion of 0.1 percent THD at +20 dBm. The unit is designed to operate off ±12 to ±20 V dc bipolar power supply (15 V dc nominal) drawing only 4 mA quiescent current. PROTECH AUDIO CO.

Microwave Power Amp 252

The PCR-11 Impatt power amplifier is an externally mounted unit that may be used on all microwave communications systems. It may be mounted on the tower or at the equipment mounting rack, and operates on its own self-contained 117 V ac power supply. The criteria for use in any microwave communications system are that the system must be FM and operate in the frequency range of 10,700 to 13,250 GHz. The PCR-11 will convert half-watt systems to one watt, and 100 milliwatt microwave systems to one watt. INTERNATIONAL MICROWAVE CORP.

Stereo Power Amp 253

The SA-400MC is a direct coupled stereo amplifier offering 200 watts per channel RMS into eight ohms with THD and IM of .05 percent or less, a

100 dB SNR, 40 V/microsecond slew rate, and frequency response of ±0.1 dB from 20 Hz to 20 kHz. The unit features an internal cooling fan, optional dc "crow bar" protection, and current limiting which is activated when terminated into loads of two ohms or less. The rack-mountable unit is totally modular and weighs 37 pounds. It can be purchased with or without metering. $775 to $908. SOUND SOLUTIONS.

NOAA Weather Receiver 254

Model CRW weather receiver with tone decoding has switch selectable reception on all three NWS weather frequencies, 162.400, 162.475, and 162.550 MHz. The unit features 0.3 μV sensitivity, 70 dB adjacent channel rejection, and −60 dB maximum spurious response achieved with a six-pole crystal filter at first IF, a four-pole ceramic filter at second IF, and a dual-gate MOSFET RF amplifier. An alert tone at 1050 Hz demutes the receiver, gates the audio to a rear terminal for remote alarm, energizes a flashing LED, and closes a relay. Also featured is a special signaling tone at 1650 Hz which closes a relay for automated recording of an updated forecast. The unit may be rack mounted, and has terminals for an external antenna and additional terminals for remote mute/demute and remote relay reset. GORMAN-REDLICH.

Turntable Preamp 255

The ESP-38 utilizes a new low noise solid state device, and reportedly ex-

continued on page 110

fact: this condenser microphone sets a new standard of technical excellence. & it sounds superb!

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- WIDE RANGE SIMPLEX POWERING includes DIN 45 596 voltages of 12 and 48 Vdc.
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- 10 dB CAPACITIVE ATTENUATOR accessible without disassembly and lockable.

Outstanding Ruggedness

Conventional condenser microphones have gained the reputation of being high quality, but often at the expense of mechanical and environmental ruggedness. This no longer need be the case. The SM81 transducer and electronics housing is of heavy-wall steel construction, and all internal components are rigidly supported. (Production line SM81's must be capable of withstanding at least six random drops from six feet onto a hardwood floor without significant performance degradation or structural damage.) It is reliable over a temperature range of −20° F to 165° F at relative humidities of 0 to 95%!

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Manufacturers of high fidelity components, microphones, sound systems and related circuitry.

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hibits about 10 dB less noise than previously possible. Features include pushbutton activated scratch, brilliance, and rumble filters, and a mono output pushbutton. The pushbutton switches are on a front-panel plate that may be removed and mounted remotely from the unit. Front panel controls also allow for the adjustment of levels and high and low equalization. Also featured are a remote turntable start/stop relay and input component sockets for exact cartridge impedance loading. Specs include −90 dB SNR, typical distortion of 0.015 percent, gain adjustable to 60 dB, and RIAA tracking of ±0.5 dB. $325. RAMKO RESEARCH.

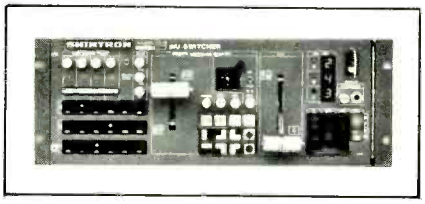
Color Bar Generator 256

The Model PCB-320, specifically engineered to conform to EIA-RS-189-A and NTSC specifications, is reportedly the only American-manufactured encoded CBG to include the new SMPTE alignment color bar test signal with chroma and black set signals. The generator provides a full-field bar signal which includes a white bar and a black bar along with the standard split field signal. The PCB-320 also offers

an exclusive composite video delay circuit which allows system timing of test signals up to 1.5 μs. Other features include: luminance-to-chrominance timing, black level between the I, white, and Q signals for sharp clear viewing, and a fixed relationship of burst phase and amplitude to chroma. $750. LENCO, INC.

IPU Switcher 257

Model 373-NU production system includes a switcher, sync generator, and DAs. It is specially designed for ENG and EFP applications. The system is entirely equipped with BNC connectors, enabling it to interface with any



color camera on the market. Two special features are an output for color black and a switchable color bar/color black output. SHINTRON.

Video Processor 258

The CVS-310 Image Enhancer/Noise Reducer is designed for standalone use with any analog or digital TBC, or other video sources, in broadcast, CATV, and CCTV applications. Reducer and enhancer modes can be used simultaneously or independently. In the reducer mode, the unit reduces luminance and chrominance noise by 6 dB and chroma-to-luminance crosstalk by 20 dB. It also corrects chroma/luma delay errors up to ±350 ns, and minimizes fine grain noise, streaking, and moire. In the enhancer mode, the unit provides both horizontal and vertical enhancement. Vertical detail range is adjustable from zero to 100 percent, and the horizontal detail range is zero to 50 percent overshoot on a stairstep having a 230 ns rise time. The CVS-310 features "automatic enhancement limiting," in which "intelligent" circuitry automatically adjusts the amount of detail generated to match the amount preselected by the front panel. CONSOLIDATED VIDEO SYSTEMS.

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Edit Controller Modification 259

The VM 95UA is a modification package for Panasonic's NV-A950 ¾-inch Editing Controller. It is designed to allow interface with Panasonic NV 9200 and NV 9500 and Sony VO 2860 VTRs without the need for mechanical alterations and without affecting VTR

factory warranties. The unit reportedly cuts editing time by as much as 40 percent by providing bi-directional joystick control of all key editing functions, simplified activation of all modes including pause, single control for all VTR search modes, and logic reset buttons which enable the operator to cancel logic on either side of the machine. Other features of the VM 95UA include programmable-previewable timed inserts, start and end; automatic return to edit point; and 2x forward search and cue speeds. Options include an add-on dual tape timer with random search control, dual LED readouts, and reset, preset, and hold and search functions for each VTR. $1750. VIDEOMEDIA.

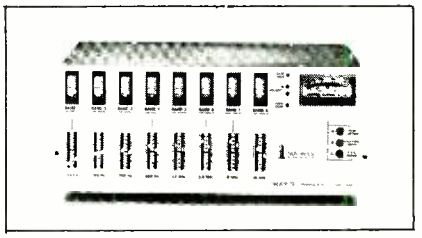
Election Reporting 260

E.R.S. is a comprehensive election reporting system which accumulates race results and produces rapid, accurate election returns through use of the station's Chyron graphics and titling system (or similar CGs). The package includes station hardware, local and remote data communications links, and software programming which utilizes a national network of time share computers. The system, which is totally in-station controlled, will accomodate an unlimited number of races and candidates per race, and an unlimited number of stringer data entry terminals. A self-contained microcomputer (TTC-400) provides the controls interface with the time share computers. The E.R.S. package also provides a complete guide with detailed instructions on election planning, file building, vote collection and display, hardware installation, and program operation. CHYRON TELESYSTEMS.

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

Multiband Processor 261

The MAP-II is designed to assure optimum transmitter modulation in AM and AM stereo broadcast service. The unit features: a gated, gain-riding AGC amp to erase long-term program level variations, and provide subsequent processing stages with a constant pro-



gram level; an eight-band "open-loop" compressor section equipped with individual, calibrated input/output controls for full program equalization flexibility; and selectable high and low pass filters for user control over bandwidth restriction. An integrated peak controller contains a true peak limiter and a hard clipper circuit. An optional accessory chassis permits removal and re-

continued on page 112

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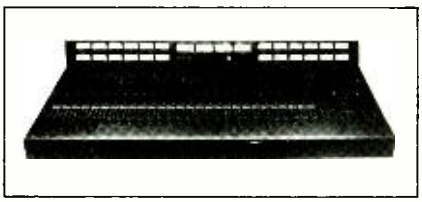
Broadcast Equipment

mote operation of the peak controller card for split studio/transmitter installations. $1670. INOVONICS.

Audio Console 262

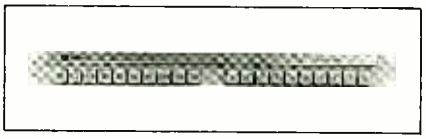
The Syncon is modular in design and can be updated from eight to 24 tracks in a matter of minutes. The unit can drive quad, stereo, and monaural tape machines simultaneously. Tape monitoring is switchable from 24 or 16 tracks to quad, stereo, or mono. All multi-track studio requirements are present, including four-band equalization and dual parametric controls which overlap in the critical mid-range region. Standard features include: +26 dBm



maximum output level; equivalent input noise of −127 dBm; and interchangeable piggyback line amplifier modules. Built-ins include talk-back circuit routing with a 20 Hz oscillator in the Slate mode, and separate monitor level controls for studio, solo, and control room. Each module also features quad panning using left-right and front-back pots (monitor and remix). $12,000-$22,500. AUDIOMARKETING. LTD.

Control Panel 263

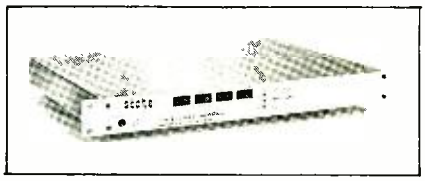
The CP-1010 category/number control panel can switch any one of 100 inputs to a single output bus, and is designed for use with the TeleMation TVS/



TAS-1000 video/audio distribution switcher. To select an input, the operator first presses one of the category buttons (cam., VTR, film, etc.). The button will blink until one of the number keys is pressed, completing the switch command. When the selected crosspoint is closed, the lamps in both buttons light continuously. Model CP-1011 includes a "take" key that blinks when category and number of the desired input are selected. When the "take" key is pressed, the crosspoint is closed. With the addition of a CP-1012 A/V breakaway panel, both models can be used for video-only, audio-only, or for audio-follow-video switching. TELEMATION.

Time Code Reader 264

Model TCR-80 features include: reading and display of time and user data at search speeds from hand-turn reel speeds to more than 40 times play speed; drop frame indicator; detection and bypass of code errors; automatic selection of record bias filter; and seven-segment LED displays with contrast enhancing filter. Options can be installed on a plug-in basis, and include a data output module for external jam sync operation and a video character generator with an integral insert keyer that can simultaneously insert and position time and user data into the video of



a work print or on a monitor. The unit may be remotely operated. $2,100-$2,985. SKOTEL.

Flanger 265

The Dynaflanger features control voltage (CV) tracking reversal which allows an increase in CV to cause either a higher or lower fundamental flanging frequency in the output. This feature can be operated in all modes, and extends the unit's capabilities when it is controlled by a synthesizer, operated in the modulator mode, or slaved to the CV of a second Dynaflanger. A front panel switch allows the unit to be operated in either the normal flange mode, the direct (bypass) mode, or the delay mode only. The delay mode feature enables dynamic time base modification and thus allows for the application of dynamic frequency or amplitude-controlled pitch bending and doubling. A pair of these units can provide "dynamic cross flanging" where there is a zero delay at the fundamental flanging frequency, which permits high dramatic effects. $895. MICMIX.

Semi-Auto Cart Playback 266

Playmate is a self-contained, logic-controlled, semi-automatic system for the playback of pre-recorded audio tape cartridges with commercial, promotional, or program material. It is designed to minimize the actual handling of carts by allowing for the pre-loading of up to 24 pre-recorded messages in the sequence in which they will be played. The system also allows simultaneous random access to the carts from

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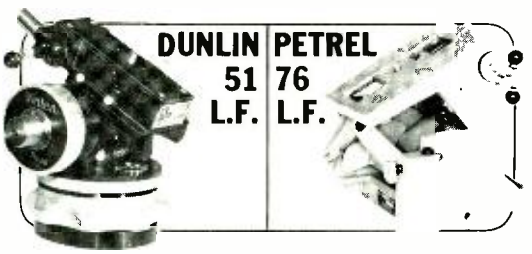

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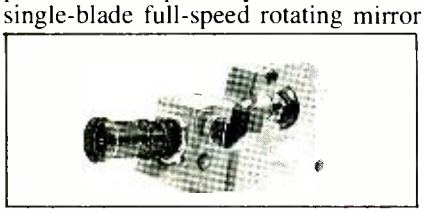
up to five remote control console/panels which are plugged into the main equipment rack (which contains all of the system's logic circuitry, switching electronics, and Beaucart cartridge playback decks). UMC ELECTRONICS.

Time Announce Controller 267

The TAX 161 is designed for automated broadcast control situations where it is desired to announce the correct time of day. The unit interfaces with a great number of automation program systems and features one or two cart machine operation, stereo audio, built-in cue amplifier and speaker, and relay isolated balanced audio switching. The unit is self-contained with its own power supply and time base and is enclosed in a 1¾-inch high rack-mount chassis. Its audio switching permits the time announcements to share one of the automation's inputs with another source. Internal jumper connections permit the user to tailor the TAX 161 to meet the particular interfacing requirements of his automation and cart machines. $375. HALLIKAINEN & FRIENDS.

16 mm Reflex Camera

The GSMO is an extremely compact camera outfit with battery pack, 12x viewfinder, loaded 400-foot magazine, and zoom lens weighing in under 12 pounds. The optical system features a single-blade full-speed rotating mirror



shutter set at a 45 degree angle. The drive system employs a miniaturized crystal-controlled motor and gear train embedded in a solid aluminum block to achieve maximum noise attenuation. Sync-sound speeds of 24 and 25 fps are featured, as well as crystal-controlled step-variable speeds ranging from 12 to 64 fps. Circuit board electronics provide auto slating and pilotone outputs, as well as an electronic digital footage counter. Magazines feature loop-forming devices for easy loading and are available in 100, 200, and 400-foot sizes. Available options include CP semi-automatic exposure control system and J-5 zoom control. The complete camera package includes camera body, viewfinder, 400-foot magazine, two battery packs and chargers, shoulder pod with adjustable handgrip and on/off switch, fitted Halliburton carrying case, and Angenieux 17.5 to 70 mm T2.5 zoom lens with 12.5 to 50 mm retrozoom attachment. $8,275. CINEMA PRODUCTS CORP., 2037 GRANVILLE AVE., LOS ANGELES, CA 90025.

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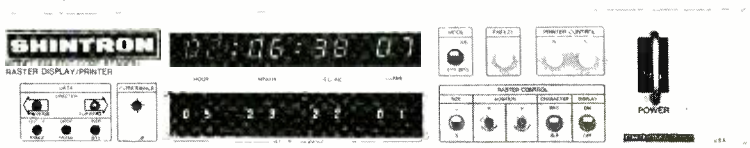

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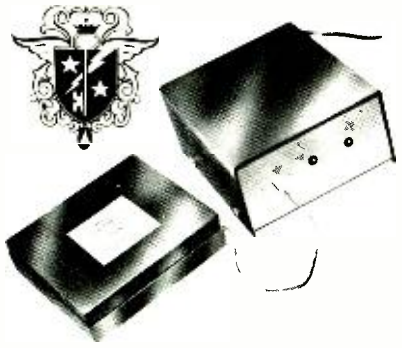

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Business Briefs

It has been announced that **ABC-TV will purchase Ikegami HK-312 studio color cameras.** The order for the computer-controlled cameras is valued at over $4 million. ABC-TV already has 32 HK-312s in operation in its O&Os in New York, Chicago, Los Angeles, and San Francisco . . . . **Coastcom** has received a letter of intent from the **Collins Division of Rockwell International** to purchase nearly $1 million worth of Coastcom's model 412 single channel per carrier (SCPC) receivers (demodulators) during 1979.

RCA announced an average 8.1 percent price increase for its broadcast equipment effective August 15, 1978 . . . . RCA also announced sales of $1.2 million worth of studio and transmitting gear to **Nationwide Communications, Inc.,** which will use the equipment to upgrade its television stations in Richmond-Petersburg, Ga., Knoxville, Tenn., and Green Bay, Wisc.

Springfield TV Corp., Springfield, Mass., has ordered more than three million dollars worth of broadcast equipment from **RCA** for installation in two new TV stations. One of the new stations is in Jacksonville, Fla., and is licensed to Crown Broadcasting Corp. The other station, in Salt Lake City, Utah, is scheduled to begin broadcasting this fall on channel 20 . . . . A new **RCA** Tetra Coil circularly polarized highband broadcast antenna was purchased by **WTVD,** Durham, N.C. The TCL-16 antenna has a CP power gain of 16 and, in conjunction with the station's 50 kW transmitter, will enable WTVD to broadcast at maximum authorized ERP.

Forward Communications, Warsau, Wisc., **has ordered one-inch VTRs from RCA** valued at $900,000. The order includes 10 TH-100 helical scan recorders and five TH-50 portable models, as well as associated equipment . . . . Bob Liftin's **Regent Sound Studios**, N.Y., has ordered an **Ampex VPR-2** type C recorder.

Miami radio station **WKAT** has been sold for one million dollars to Nevada State Senator William H. Hernstadt and Mrs. Judith F. Hernstadt, pending approval by the FCC. The Hernstadts currently own a Las Vegas TV station which will soon transfer ownership to a group of investors headed by NBC-TV personality Johnny Carson . . . . **WRET-TV,** Channel 36, Charlotte, N.C., has abandoned its independent status to become an **NBC** affiliate. The station will also launch its first full-fledged news operation this September, and has appointed veteran newsman Hal Suit to be news director.

Oak Industries has separated its traditional manufacturing operations from over-the-air subscription television and other communications activities, in a major restructuring of its corporate organization . . . . **Time and Frequency Technology** has moved into new facilities in the Oakmead Village Industrial Park at 3090 Oakmead Village Drive, Santa Clara, Calif. 95051.

CFI (Consolidated Film Industries) has signed a million dollar-plus, multi-year videotape agreement for the purchase of "Scotch" brand video products for **3M Corp.** . . . **Rupert Neve, Inc.** announced the sale of several of its Neve recording consoles. **Electric Lady Studios** of New York City purchased a Neve equipment package, including the NECAM computer-assisted mixing system, for $400,000. **The Village Recorder** of Los Angeles purchased a Neve Model 8078 with NECAM for $200,000 and the **Caribou Ranch,** a Rocky Mountain recording studio, purchased another 8078 with VCA sub-grouping for a reported $140,000.

IVC has been awarded a contract by the Ministry of Information, Government of Malaysia, to supply six IVC 7000 color studio cameras, and two portable IVC 7000P color television cameras . . . . **Ampex Corp.** announced that it has received an order from **KOLO-TV,** Reno, Nevada, for a variety of videotape production equipment worth almost $500,000. The order calls for the delivery of three VPR-1 helical scan videotape recorders, two AVR-2 quadruplex VTRs, and an ACR-25-B automatic video cassette recorder/reproducer . . . . Ampex also announced that **Leroy C. Cochran** has been named general manager of audio products for Ampex's audio-video systems division. Cochran was also named president of **Duca-Richardson,** a recently acquired subsidiary of Ampex.

ADDA Corp. has installed its second ESP (Electronic Still Processor) at NBC, New York. The new NBC installation is the fifth ESP system to be put into operation . . . . **Didier/Denver** of Evergreen, Colo., has been named to represent ADDA Corp. in the midwestern states of Colorado, Kansas, Montana, Nebraska, North Dakota, South Dakota, and Wyoming.

The **Outlet Company has selected Rosner Television Systems, Inc.,** N.Y., to provide the engineering design and implementation for the TV production facilities of its Broadcast Division's new broadcast house in Providence, R.I. . . . Radio station **KTER,** Terrel, Texas, has been purchased by **Gale Broadcasting Co.,** Inc. The $300,000 sale is subject to

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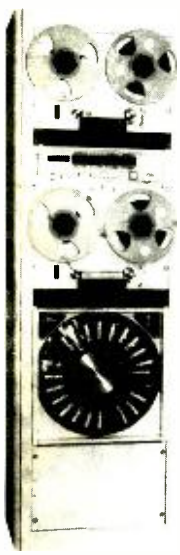

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FCC approval . . . . **WTOP-AM**, 50 kW news radio in Washington, D.C., will become a **Mutual Broadcasting System affiliate** on January 1, 1979 . . . . **Seaway Communications, Inc.**, has signed a contract with **Northland Television, Inc.**, for the purchase of **WAEO-TV**, NBC affiliate in Rhinelander, Wis. Upon FCC approval, Seaway will become the **first 100 percent minority business group** to own a network-affiliated VHF TV station in the U.S.

A new $1.5 million "turnkey" CATV system is being built by **Magnovox CATV Systems, Inc.** for American Television and Communications Corp., Denver, Colo. The new system will include a two-way capability that will allow signals to be transmitted back to the cable system head-end or distribution point on the same cable from any point in the system. This will open the way to a hardwired ENG service and other applications . . . . **Harris Corp.,** Broadcast Products Division has moved its Houston office to 7000 Regency Square Blvd., Suite 200 . . . . **Auditronics Corp.** has announced that William S. Sadler has been elected president and chief operating officer of its subsidiary, **SC Electronics, Inc.,** manufacturers of Setchell Carlson video monitors and CRT displays.

Microwave Associates has announced sales of $179,000 in microwave equipment to **Northern Cable Services, Ltd.**, Ontario, and $250,000 in microwave equipment to **North Dakota Cable Services,** Minot, N.D.

National Cable Corp. has signed with **C-COR Electronics, Inc.**, for system design and electronic equipment for about 60 miles of cable TV plant in Dayton, Penn. . . . **Southern Illinois Cable TV** has purchased an estimated 191 miles of plant serving 9400 subscribers in southern Illinois.

Videotek, Inc. has opened a new branch office and distribution center at 2115 West Mountain View Road, Phoenix, Ariz. . . . Motion Picture Laboratories' professional motion picture equipment sales/rental operation has been purchased by its former manager, William M. "Bill" O'Rork, who will operate it at the former location under the name of **Media Equipment Center.**

Cetec Audio, a division of Cetec Corp., **has been renamed the Cetec Gauss Division** . . . . **Conrac** has opened a sales office for TV products in Dallas . . . . **Chyron Corp.** has moved to new and larger quarters at 265 Bethpage-Spagnoli Rd., Melville, Long Island, N.Y. 11746 . . . . **Victor Duncan, Inc.**, midwest film equipment rental and sales house, has formed a video division. Offices are located in Chicago, Dallas, and Detroit. **BM/E**

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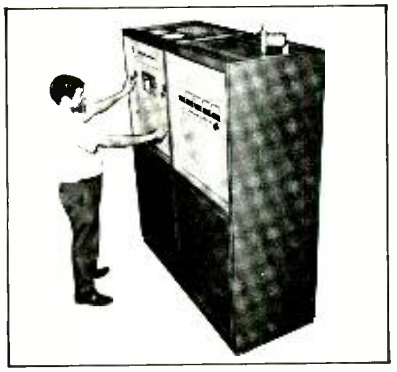

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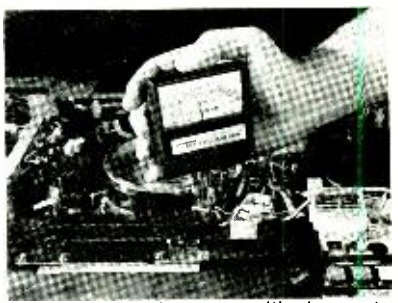

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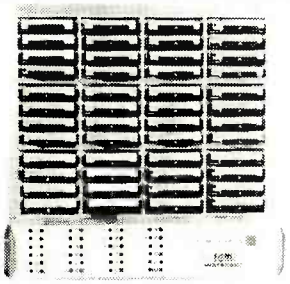

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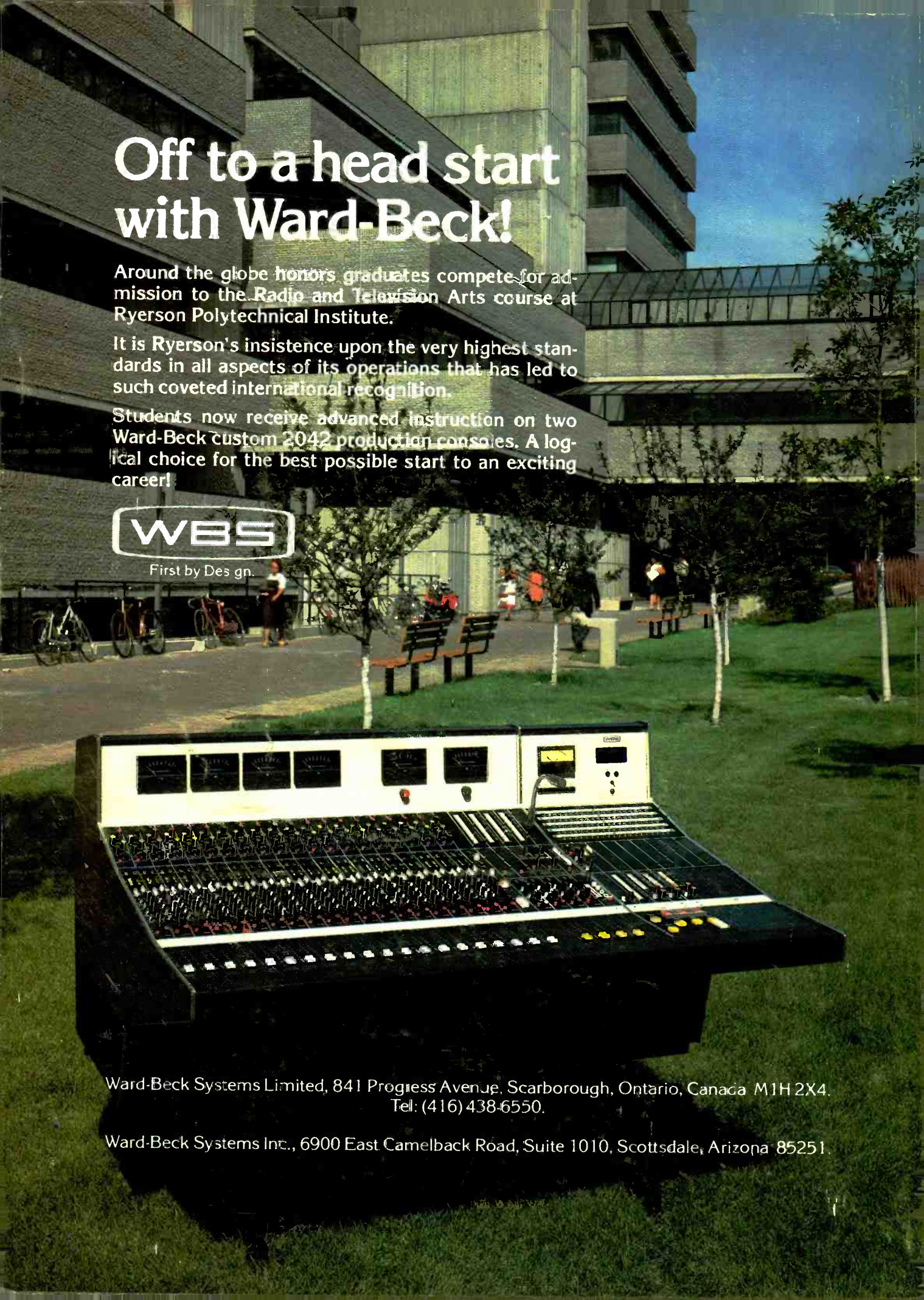
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