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

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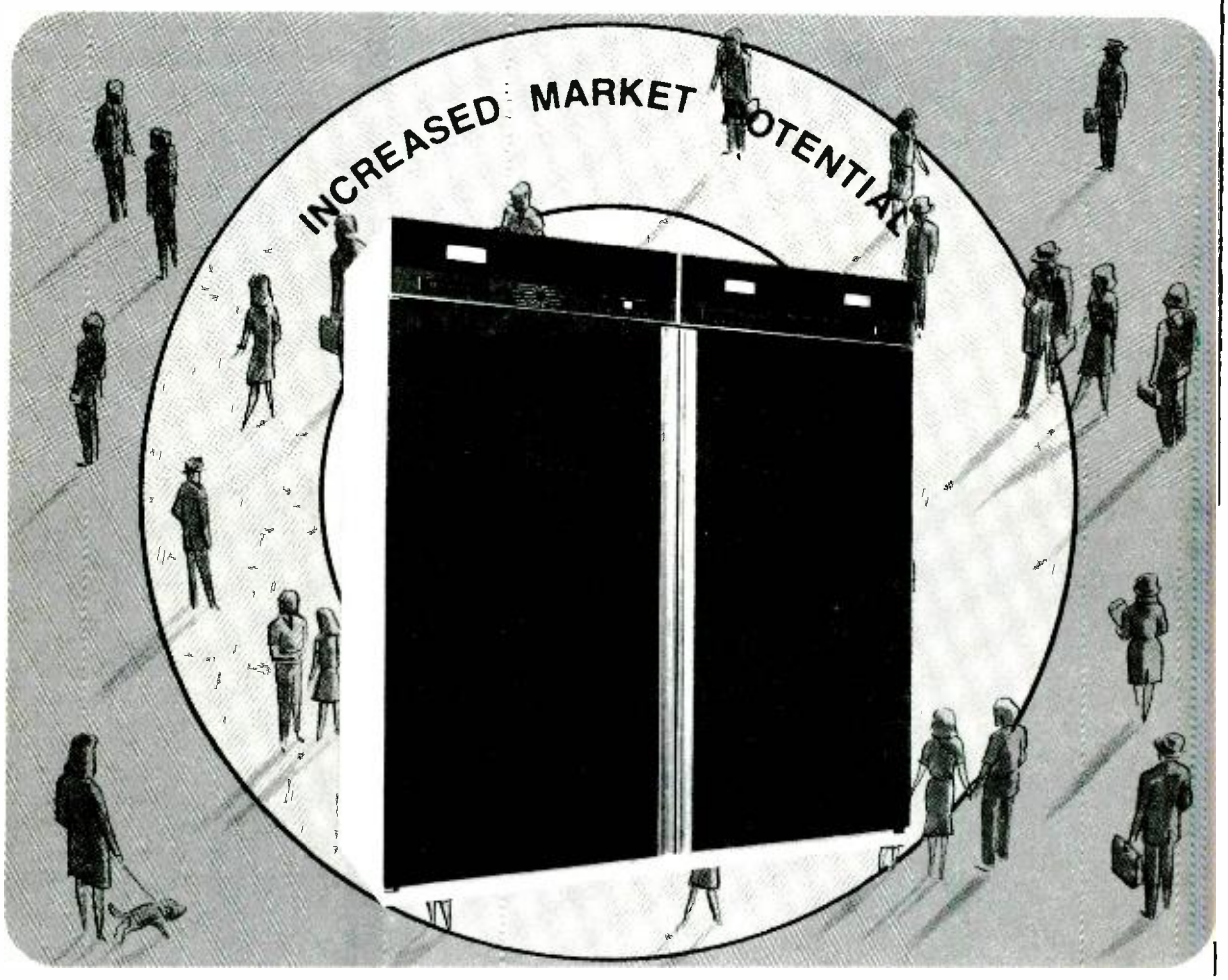
Ratings, Listeners, Loudness Increase With Harris MW-10 10,000 Watt AM Transmitter



The new Harris MW-10 with Pulse Duration Modulation (PDM) offers far reaching benefits to both you and your listeners. PDM, a DC coupled circuit that faithfully reproduces complex audio, provides an increased loudness that can expand your coverage area while maintaining a high quality sound.

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ENG/EJ: WHEN TV AND RADIO ARE THE LIFELINE.

With the explosion in ENG equipment and technology over the recent past, broadcasters have never been better able to serve their communities when crisis is imminent. But the technology is never better than the people who use it or the planning that goes into its application

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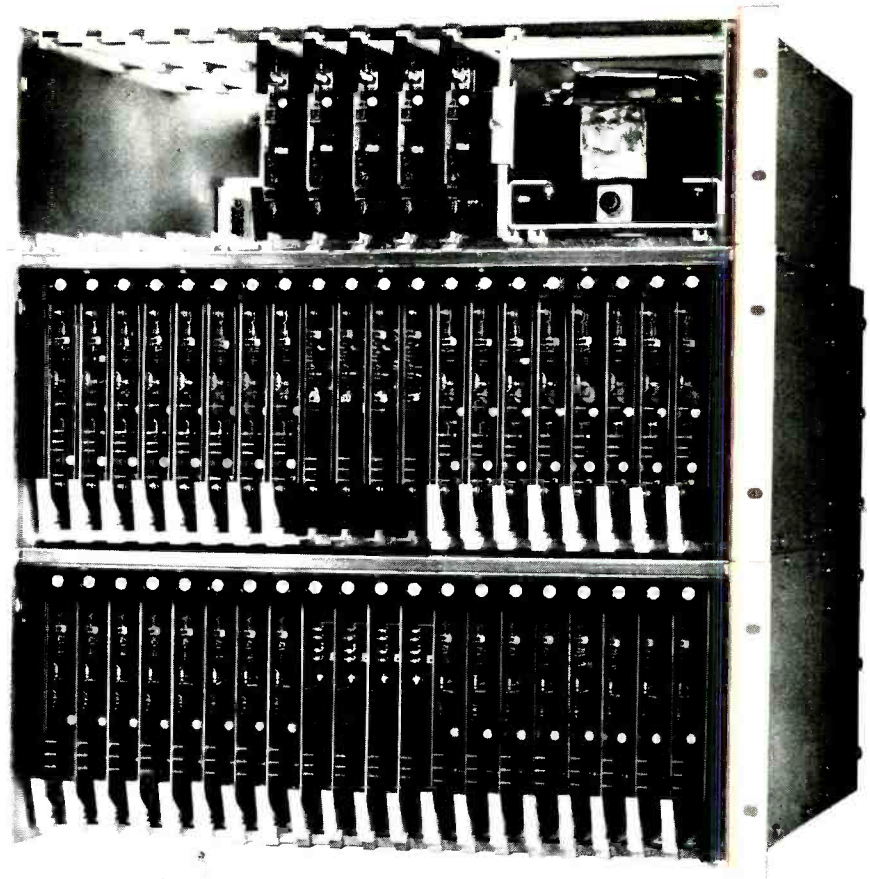

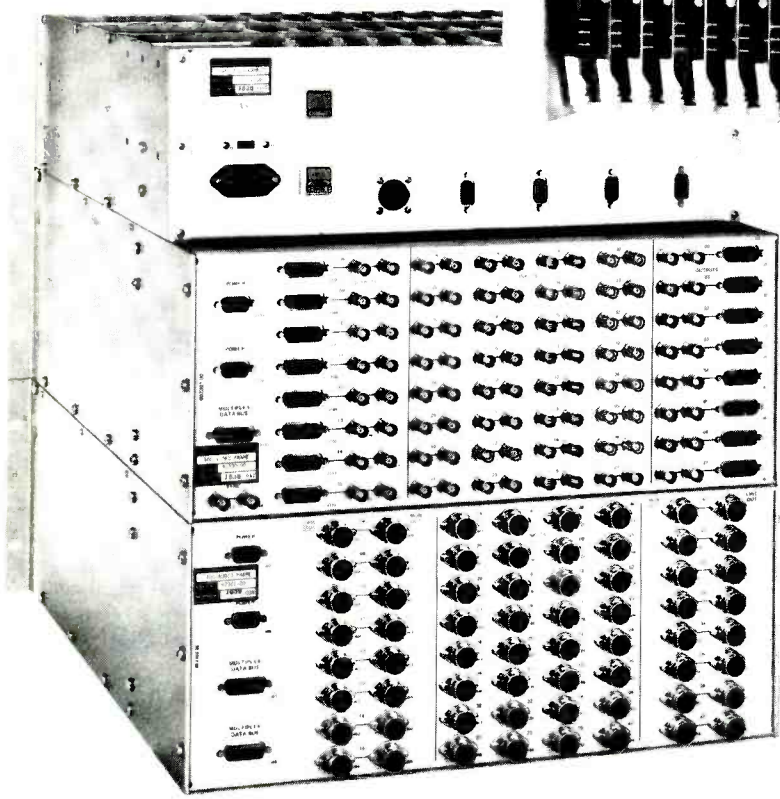

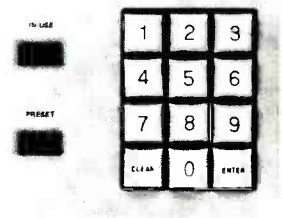

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BROADCAST INDUSTRY NEWS

Shiben Redesigns Broadcast Bureau

The FCC has approved a major reorganization of its Broadcast Bureau, authored by bureau chief Richard J. Shiben. The plan calls for the creation of several new branches and the streamlining of existing branches.

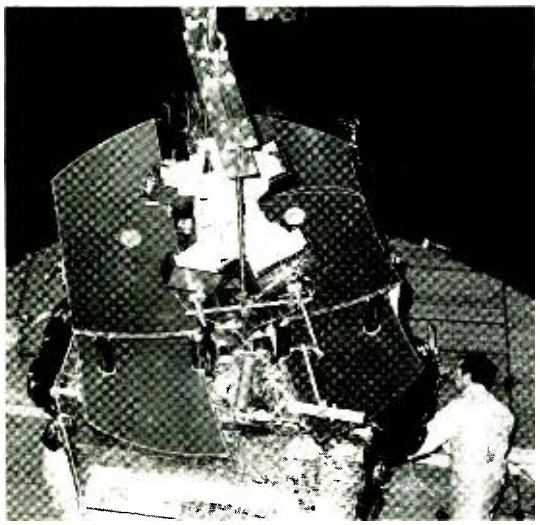
Established in the restructuring were a Program Planning and Evaluation staff within the office of the bureau chief, a Technical and International Branch in the Policy and Rules Division, and an Equal Employment Opportunity Branch within the Renewal and Transfer Division. The Office of Network Study was abolished and its functions reassigned to the Legal Branch of the Policy and Rules Division.

According to Shiben, the new Program Planning and Evaluation staff will assist the bureau in keeping up with technological advances in communications, evaluating the impact of new technologies and recommending appropriate policies and procedures.

Major restructuring will take place in the Broadcast Facilities Division. The Aural New and Changed Facilities Branch and the Aural Existing Facilities Branch will have their functions combined; separate AM and FM branches will be established. The Television Applications Branch will be renamed the Television Branch; all personnel not involved with television matters will be transferred into a separate Auxiliary Services Branch, which will handle all translator and auxiliary services applications. The Technical and Allocations Branch will be abolished and its functions reassigned to the Policy and Rules Division's new Technical and International Branch. Also abolished was the Educational Broadcast Branch; taking over its duties is the Policy and Rules Division's Policy Analysis Branch.

Shiben stated that the reorganization was done in the interests of better management and increased service to the industry and public. "This reorganization is especially important now," he continued, "because it gives the bureau increased capability for planning and developing policies in light of new and advancing technologies."

Satcom III Takes Off



Oops Dept.: Have you seen this satellite? Information on its whereabouts would be greatly appreciated, we hear. Last seen in the vicinity of Cape Canaveral, Fla.

The third satellite in RCA Americom's Satcom series was catapulted into orbit on December 6. The 24 channels of Satcom III are earmarked strictly for cable TV service; over 1600 CATV stations will receive programming from the bird. With the transfer of much cable traffic to Satcom III, more transponder space will be available for broadcasters on Satcom I.

RCA's SMARTS syndicated program service, slated to begin this year, will be on Satcom I, according to plan. Radio and newswire services, including UPI and ABC Radio, are expected to use transponders on Satcom I also, and RCA will probably seek more "occasional video" business on that bird.

Users of Satcom III will include HBO and Warner Amex, with five transponders each, and Showtime, with three; all plan to expand existing services and/or add new services in their pay-TV lineups. Also expected to go on Satcom III are several new basic cable services, including a new network for women, Turner's Cable News Network, and the Cineamerica network, aimed at the over-50 audience.

Late Bulletin: As *BM/E* went to press, radio contact with Satcom III had been lost and no trace of the satellite had been found by RCA, the North American Air Defense Command, or NASA. Chances of locating the $20 million satellite appeared slim; possible explanations for the disappearance included malfunctioning of the data-transmission antenna, overshooting of a rocket stage, or, most serious, the explosion of the satellite during rocket firing.

FCC Releases Network Inquiry Reports

The FCC's Network Inquiry Special Staff has released the first six preliminary reports of what the Commission described as "the first full-scale examination of commercial practices in the television industry in the past 20 years." The six reports, issued for public comment in October, cover network-affiliate relationships, FCC jurisdiction over the nets, FCC rules governing networking, the history of the prime time access rule, the structure and business activities of the nets' parent corporations, and the history of the nets' origin.

A major finding of the inquiry staff was that the Commission does have legal authority to directly regulate net practices, as opposed to only regulating O&O stations. The staff also concluded that FCC regulation of the network-affiliate relationship is unlikely to affect the way the industry responds to viewers. Attempts at such regulation to date, the staff noted, have had little effect on clearance of prime-time network programs, and further regulation will probably be no more successful.

The final report in the inquiry is not due until next fall. The FCC first issued a notice of inquiry on the networks in January, 1977, and formed the Network Inquiry Staff in March, 1978. Copies of the preliminary reports are available from the Commission's Office of Public Affairs.

Citizens' Groups Attack Deregulation

A coalition of public interest groups has petitioned the FCC to drop its recent sweeping radio deregulation proposals (see *BM/E*, November, 1979, p. 100).

ADM

Control the complete audio spectrum

Your video and our ADM 2400 console: a perfect pair

One of the features you'll quickly appreciate about your ADM® audio console is that it performs in perfect harmony with your video equipment.

ADM's 2400 Series consoles are modular, multi-input broadcast production units designed to handle the most sophisticated and demanding audio requirements. They are 24 input, 4 submaster, 2 output, fully modular consoles. The 2400 housing comes completely wired, permitting ease of expansion if the full complement of modules is not initially required.

Our proven design and manufacturing capabilities, and the use of highest quality components, assure you of unquestioned professional integrity and maximum reliability — backed by an exclusive 5-year warranty, the most comprehensive in the industry.

Make sure you control the entire audio spectrum. Contact Audio Designs and Manufacturing, Inc. — *The Audio Company* — 16005 Sturgeon, Roseville, Michigan 48066. Phone (313) 778-8400. TLX 23-1114.

Included in the coalition are such groups as the American Civil Liberties Union, the National Organization for Women, the National Citizens Committee for Broadcasting, Black Citizens for Fair Media, and the Consumer Federation of America.

The petition calls on the Commission to rescind its notice of proposed rulemaking and to disclose supporting data for all parts of the notice. Specifically requested were the results of the small-market ascertainment study. The petitioners also want the FCC to hold nationwide public hearings on radio deregulation.

Behind the petition is the coalition's contention that the Commission has not adequately shown that news and public affairs programming would continue if radio were deregulated.

Another vocal attack on deregulation came from an "odd couple": the United Church of Christ and the NOW Media Reform Committee jointly placed an ad in *Variety* warning radio employees that deregulation could endanger their jobs. The ad predicts the firing of those involved in news and public affairs programs, which will supposedly disappear under deregulation. Further loss of jobs due to station automation was also foreseen.

On the other side of the fence, major broadcasters' associations have applauded the Commission's moves toward radio deregulation. Both the NAB and the NRBA adopted resolutions calling the FCC rulemaking proposal an important first step, but both indicated that Congress must act to assure deregulation.

There was one sign that Congress is thinking along the same lines as the Senate minority introduced a revised version of S-622, proposed as an amendment to the 1934 Communications Act. The new bill authorizes the FCC to prohibit pay-TV operators from siphoning sports from commercial TV; bars regulation of radio advertising; eliminates the Fairness Doctrine; and prohibits sports blackouts if all seats are sold 48 hours before the game.

WARC Wraps Up In Geneva; Most U.S. Positions Upheld

Although it overshot its deadline by a week, the first World Administrative Radio Conference (WARC) in 20 years managed to wade through some 15,000 proposals before adjourning last month in Geneva. The outcome of the conference, attended by nearly 2000 delegates from 142 member countries of the International Telecommunications Union (ITU), the United Nations agency that sponsored WARC, was considered generally favorable to U.S. interests.

The 60-member U.S. delegation, headed by Ambassador Glen O. Robinson, had done its homework for this conference. Delegation members conceded that if they had not spent the last five years preparing for this WARC, the U.S. would not have come out as well as it has.

Upon the December 6 conclusion of the 11-week meeting, U.S. officials figured that acceptance of primary proposals and fall-back positions backed by the U.S. delegation ran better than 90 percent. "Overall," the State Department's Gordon Huffcut pointed out, "we came out of this one fairly well."

But there are some areas where the U.S. did not come out so well. The U.S. delegation registered a "reservation" — which means the U.S. will not be bound by a final decision — over the addition of 3.5 GHz to the fixed satellite service. The U.S. views this addition as a threat to its AWACS military radar system, which operates on the band.

Best In The Field

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Outside the studio, the remarkable Hitachi SK-90 does it all. For EFP, it sports a studio style 5″ viewfinder. All key functions can be controlled with your choice of Remote Operating Unit (ROU) or Digital Command Unit (DCU). For ENG, slip off the SK-90's studio viewfinder, slip on the 1.5″ viewfincer and shoulder mount. Your SK-90 is now a compact, lightweight self-contained portable!

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Hitachi SK-90: portable ENG mode

Digital Command Unit (with coax/triax option)

Remote Operating Unit (features RGB out)

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Another area of contention is high frequency allocation. The U.S. lost out on its proposals to limit maximum power output of new HF transmitters to 250 kW and to limit simultaneous broadcasting of a specific program in any one reception area to one frequency per band. The U.S. felt that such limitation would reduce congestion on the HF bands. But developing countries, which banded together on HF proposals in the one-nation, one-vote conference, saw the U.S. proposals as a threat to their own international shortwave broadcasting, and defeated the proposals.

The U.S. had called for an expansion of medium frequency broadcast allocations in Region II (the western hemisphere) in the 1605 to 1860 kHz band, in hopes of gaining new space for a rapidly increasing number of AM radio broadcasts. Although the entire band was not allocated to AM broadcasting, the U.S. did win the 1605 and 1705 bands, which will be reserved in 1987 and 1990, respectively. Allocation details will be worked out during upcoming regional conferences.

Allocation of bands on satellite services will be made at a Space WARC in the mid-'80s, which came as a disappointment to the U.S. delegation. This country had hoped that a flexible approach would be taken toward satellite communications. Developing nations, however, again called for both orbital and frequency assignments to be allotted on a national basis. Therefore, the Space WARC, which will convene in 1984 or 1985, will have to deal with the problems of space allocations. Nevertheless, this WARC approved a 400 MHz slot for broadcast satellites in the 12.3-12.7 GHz band.

Although no timetable has been set, WARC delegates in Geneva proposed three more world conferences and at least six regional conferences over the next decade. The first regional conference is slated for next March, when Region II delegates will gather in Buenos Aires, Argentina.

FCC Proposes ENG Subcarrier Use

The FCC has proposed allowing TV stations to use subcarriers on their aural transmitters for cuing and coordinating ENG crews in the field. The idea was originally suggested by Boston Broadcasters, Inc., licensee of WCVB-TV, in 1977. At that time, BBI said that the increased use of ENG made such a cuing and coordinating method necessary and that use of subcarriers would be more efficient than use of auxiliary broadcast facilities, which take up spectrum space.

The Commission issued a notice of inquiry in 1977 asking for comments on this and other uses for aural subcarriers. Other proposed uses included TV stereo, bilingual sound channels, and augmented audio for the visually impaired.

In its recent action, the Commission proposed rules covering only cuing and coordinating uses for subcarriers, noting technical developments since comments had been filed in the original inquiry. Subcarriers would be limited to the 20 to 75 kHz band. The FCC is especially looking for comments on how the rule changes would affect CATV systems. Comments are due January 7 and replies by January 28.

Kidvid Blasted By Task Force

Television broadcasters have not complied with the children's programming policies mandated by the FCC in 1974, according to a five-volume report by the Commission's Children's Televi-

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They're real.

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CONRAC

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News

sion Task Force. The report has sparked intense controversy in Washington and around the country by recommending the establishment of minimum program requirements for kidvid.

The basis for its proposal of programming minimums was the task force's contention that without governmental action, commercial television was not likely to voluntarily increase the amount of educational children's programming it broadcasts. Economic incentives for children's programming are weaker than for adults, since children have less direct buying power; in addition, the two-to-12 population is on the decrease.

More effective than mandatory rules in the long run, the report said, would be increased outlets for advertiser-supported programming and the increase of CATV and STV. Until such changes in the industry begin to affect the amount of educational children's programming, the task force claimed, interim requirements would be necessary to insure adequate amounts of such material.

Specifically, the task force recommended that the FCC require broadcasters to air two and a half hours of educational/instructional shows for school-age children and five hours for preschoolers each weekday.

KRON Goes Live By Bird From D.C. Bureau

San Francisco's KRON-TV became the first TV station in the country to provide regular, live Washington coverage via satellite with its establishment of a news bureau in the nation's capitol in late October.

The station's live news broadcasts will reach the NBC affiliate's Bay Area audience on the Westar II bird. The action was announced by KRON's news director, Jean Harper. Heading the new bureau is George Osterkamp, former news director for KQED, San Francisco's PBS station. Also on the *NewsCenter 4* Washington team are reporters Gail Christian, former news director at KCET, Los Angeles, and Jeff Hodes, former Washington correspondent for the Independent Television News Association. Rounding out the team are two full camera crews.

The bureau is being equipped with full editing and ENG facilities, according to KRON chief engineer Larry Possi.

Fourth Channel

The Independent Broadcasting Authority (IBA) of the United Kingdom has announced plans for its fourth UHF channel, scheduled to be launched simultaneously in all IBA-served regions in November, 1982. At that time, 30 high-power transmitters supplied by British manufacturers Marconi and Pye will go into service; 18 more will follow at monthly intervals during 1983 and 1984. The £16 million transmitter package is the most expensive ever signed by IBA.

Over 80 percent of the U.K.'s viewing population — more than 40 million people — will be able to receive the signal initially. Special consideration is being given to Wales, which will be served by six main transmitter stations and 80 local relay stations. Ultimately, IBA hopes to achieve 99 percent coverage by the fourth channel.

According to IBA, the new channel will be the first based entirely on the latest generation of high-efficiency klystron amplifiers, which Marconi and Pye are receiving from Mullard Ltd. The klystrons feature a typical conversion efficiency of about 45 percent; they are expected to reduce operating costs, conserve energy, and reduce the size of the transmitter installations.

In addition to its work on the fourth channel, IBA is continuing its present program of expanding its existing UHF network and extending its radio services.

Jerrold Announces 52-Channel CATV System

A 400 MHz cable television system with 52-channel capability has been introduced by General Instrument's Jerrold Division. Known as System 400, the system is an expansion on the previous 300 MHz radio frequency limit, which provides 35 channels.

Hardware for System 400 is expected to be available early this year and was exhibited in December at the Western Cable Television Association trade show in Anaheim, Calif. The extra channel capacity could be used by cable operators for a variety of uses, including special-interest channels, premium programming, tiered services, and nonentertainment services.

Errata

In "TV Commercials: The Leading Edge of Special Effects" *(BM/E*, November, 1979), please note the following corrections:

The Rutt/Etra video synthesizer was developed by Steve Rutt and Bill Etra some three years after the development of the Scanimate system by Lee Harrison III, founder of Computer Image Corp.

The three-dimensional metallic graphics pictured in the story were actually developed by Computer Image director Kirk Paulson, then executed by Scanimate operator David Small.

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After spending six months researching the purchase of a 1" VTR, you shouldn't have to wait another six to get it.

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The TT-7000 is sold and serviced by 3M. One of the largest suppliers to the broadcast industry. And it's built by one of the most respected manufacturers of video equipment: Nippon Electric Company.

Which means you get all the standard features found in other 1" VTRs. Plus a few important extras. Like full audio/video confidence heads, built-in FM calibrate oscillator/marker, and a sync channel.

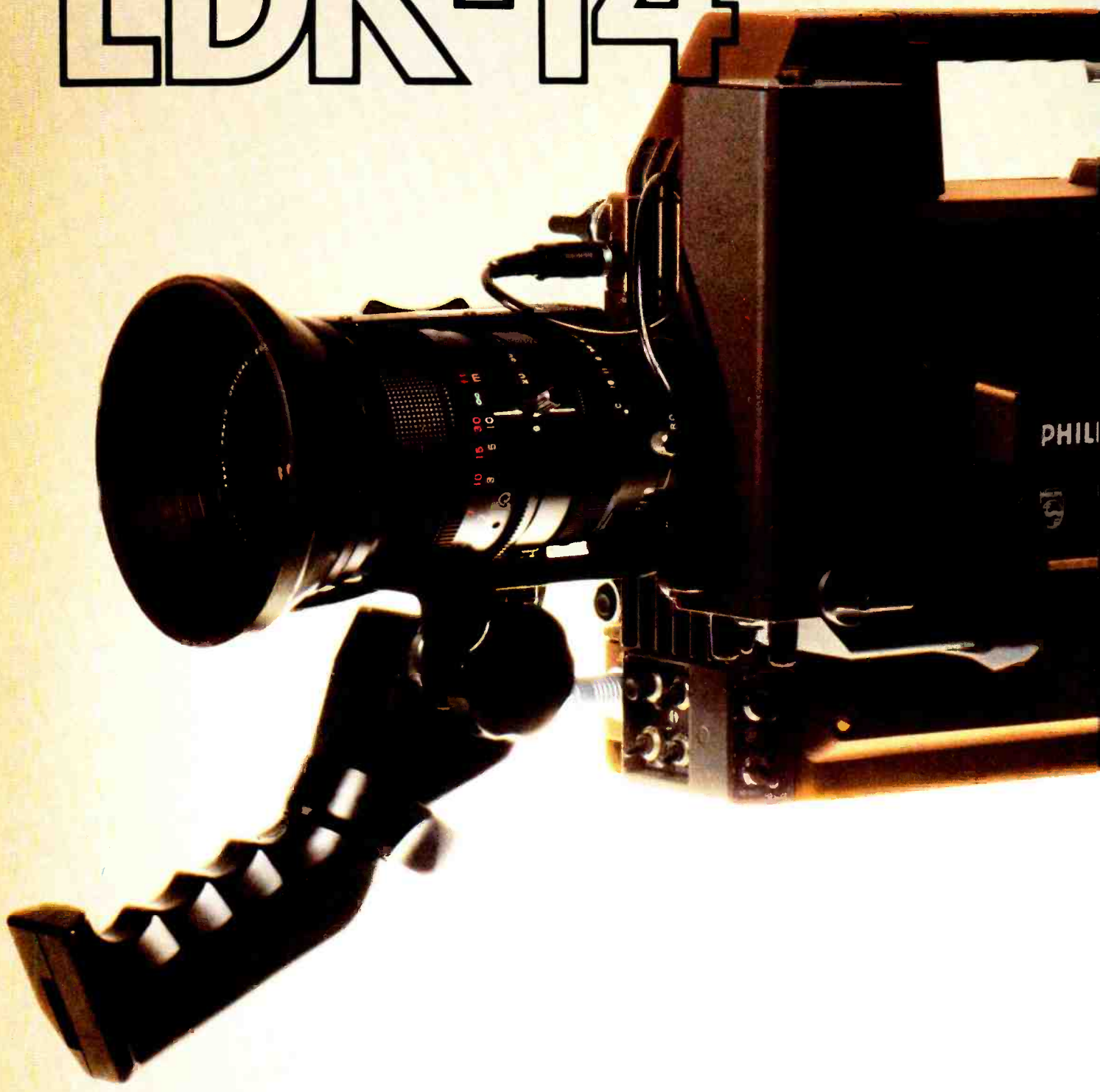
For complete details and technical specs on the TT-7000, call (612) 733-7914. Or write: 3M/Mincom Division–Videc Products, 3M Center/223-5E, St. Paul, MN. 55101.

If you don't take too much time making your decision, you can get the TT-7000 in practically no time at all.

3M

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.

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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.

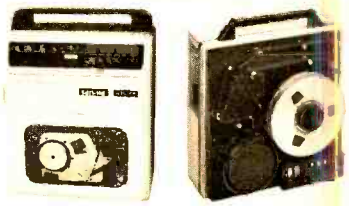
Among its many other unique features for portable and studio use are:

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

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

3M

Variety Unlimited: Short Takes For Radio

THERE IS NO reason for any radio management to run out of short items of high interest today. The variety of material offered to radio stations is stupendous, and a lot of it, including some of the best, costs little or nothing at all, in cash outlay at least. Bartering is the way of life in this area.

Here are several sources of short-item programming that should appeal to some radio managements. Scores of others have been described in earlier issues of this magazine.

The whole intellectual range, free from Cornell

At Cornell University in Ithaca, N.Y., the University Relations Department operates a full-fledged radio production studio. Part of what the university produces there is *Cornell Forum*, a series of programs issued weekly, designed for radio stations. Each program is either seven or 14 minutes long (the station's choice).

The general plan is to attack some interesting or essential topic in the arts or sciences, with experts from the Cornell faculty (1500 strong, including an outstanding expert in just about any field that comes up). Many topics are in reaction to current news stories or in response to pervading issues that cause anxiety for many people.

The station gets the programs on reel-to-reel tape, free, agreeing only to pay the postage on the return of the tapes to Cornell. Each week the program can be used as often as the radio management likes — and many are repeated.

Through use on various radio nets, *Cornell Forum* is currently aired by well over 1000 stations on a more or less regular basis. Joseph Leeming, the usual interviewer for this program and its assistant director, told *BM/E* the objective is to produce 52 programs a year, without fail, for the cumulative effect of consistent repetition.

"Exposure" for Cornell, one of the obvious objectives of the series, is very low key, with the university's name used briefly in the introduction and at the end. Many of the expert commentators, of course, are introduced as from the faculty of Cornell. That is about it.

A list of the topics for 1979 shows the extraordinary range and importance of the material. Ten topics chosen from those for 1979 give some idea of this range and interest: "Improving US-Japanese Communications"; "Decline in Federal Research Support"; "Never Again! Inquiry into the Assassinations of J. F. Kennedy and Martin Luther King"; "Senate Reactions to the Salt Treaty"; "Recent Changes in the American Family"; "Is Sleepiness a Disease?"; "The Einstein Legacy"; "Infrared Astronomy Comes of Age"; "New Developments in Fast Food Technology"; and "Finding a Cure for High Medical Costs."

Leeming points out that the station can use a part of a program, pulling out the interviewee's words as an actuality, for example. The range of these programs is so wide that some part will almost surely seem important to most radio stations. Radio managements with any interest should write Leeming at 122 Day Hall, Cornell University, Ithaca, N.Y. 14853, or phone (607) 256-4655.

Sheridan opens series on consumer issues

In consonance with the times, Sheridan Broadcasting, known as Mutual

Radio Programming

Black Network when it was owned by Mutual, has begun production of an ambitious series of special programs on consumer issues. The first one, "The End of the Horn of Plenty," a 20-minute discussion of the soaring cost of food that is such a large factor in inflation, was aired by the network on November 20, 1979. The programs are being produced in the first instance for affiliates of the network, but will be available for a fee to other stations that want them.

In the works, Harriet Bennett of Sheridan told *BM/E*, are a number of additional programs on urgent consumer issues. The network will announce some of them shortly after the first of the year. Station managements that want to keep in touch should write Sheridan Broadcasting at 1745 South Jefferson Davis Highway, Arlington, Va. 22202, (703) 685-2152.

Get the right word!

"Sense and Nonsense with Words" is a college course aimed at improving communications among people, taught at Lindenwood College in St. Louis by Alfred Fleishman, one of the best-known teachers and writers on the subject. *Sense and Nonsense with Words* is also a home-study course available on cassettes, and a regular radio program on KMOX-FM in St. Louis.

The program is now available to other radio stations as a weekly 15-minute program through Gert Bunchez Associates, program syndicator with offices in many cities (headquarters are at 7730 Carondelet Street, St. Louis, Mo. 63105).

Bunchez has a substantial list of other spot programs, with lengths from one to 60 minutes. There are programs on gardening, on many aspects of business and personal finance, on politics, on domestic and foreign affairs as seen from Washington, on food, on house repair, and on many other topics. In the near future Bunchez will release some hour-long music specials, devoted at first to rock and country music. Any radio management wanting the complete list should write Bunchez at the address above, or telephone (314) 862-5250. **BM/E**

BM/E's Program Marketplace

Syndicators For Radio

Kershaw-West Productions, Inc.
7540 LBJ Freeway, Suite 528
Dallas, Texas 75251
Tel.: (214) 387-0532

READER, IF YOU are more than 30 years old, take heart. The advertising world during the past 10 months or so has decided you are worthy of utmost attention. You have been lifted up beside, or maybe even above, the teen-to-25 group, who were the kings for so long. The marketers have discovered that people from 35 to 65 have plenty of money to spend. And there is a lot of evidence that these middle-aged people are spending their money on themselves, rather than piling it up to leave to their children. It's a shift in attitudes that is basic for sellers of many products.

A new syndicated radio program that confirms and takes advantage of this shift is called *The Music of Your Life*. It is made up of "non-rock" hits of the 40s, 50s, 60s and 70s, right down to the present. The music is chosen for a strong "foreground" emotional impact, and is carefully assembled to produce a "matched flow" effect, through attention to the sequence of timing, etc., that has worked so well with some Beautiful Music formats. Matching this foreground, hit-style music naturally differs from matching Beautiful Music, but the principle is the same: the program has a continuity of effect that holds on to the listener.

The Music of Your Life is put together by Al Ham, a long-time veteran of many areas of entertainment music — he has composed and arranged movie scores, put together many radio programs, made a lot of music for television, and made music for a number of national advertisements. In addition, he has won awards for many of his creations. The program is being marketed by Kershaw-West, with Jim West in charge. Jim has been a principal in leading syndication operations for many years. His last previous post was as an executive at TM Productions, a seven-year assignment starting in 1970.

Ham and West have come up not only with a program idea of apparently high potential, but also with a marketing approach that looks exciting. Along with the programming come all the instructions and promotional material for setting up a *Music of Your Life* fan club. Listeners are invited to join the club to register their likes and dislikes in the programming, to take part in social and community service events, and to contribute to a newsletter.

The program, and the fan club, have stirred industry attention with outstanding performance at the first two stations to sign up: WHLI in Hempstead, Long Island, and WMAS in Springfield, Mass. Both are AM stations that were well down in the heap before *The Music of Your Life* came in; WHLI was a rocker. Both stations promptly increased their audience shares by spectacular amounts — WHLI by more than 800 percent in June/July ratings, WMAS by nearly 700 percent in the same sweep. The WHLI fan club had reached a 10,000 total by early December, when this was written.

Kershaw-West supplies a basic library that will fill a station's total programming needs. This will be updated on a flexible basis, using the responses of fan club members as guides to the direction the program should take in that market. In other words, the subscribers are going to be individually programmed to some extent.

The fan clubs have another important function. Members can be polled on their product likes, dislikes, and plans. This information can give potential advertisers a firm grip on the buying propensities of each station's listeners. This is a great aid to the station in selling many of the national advertisers.

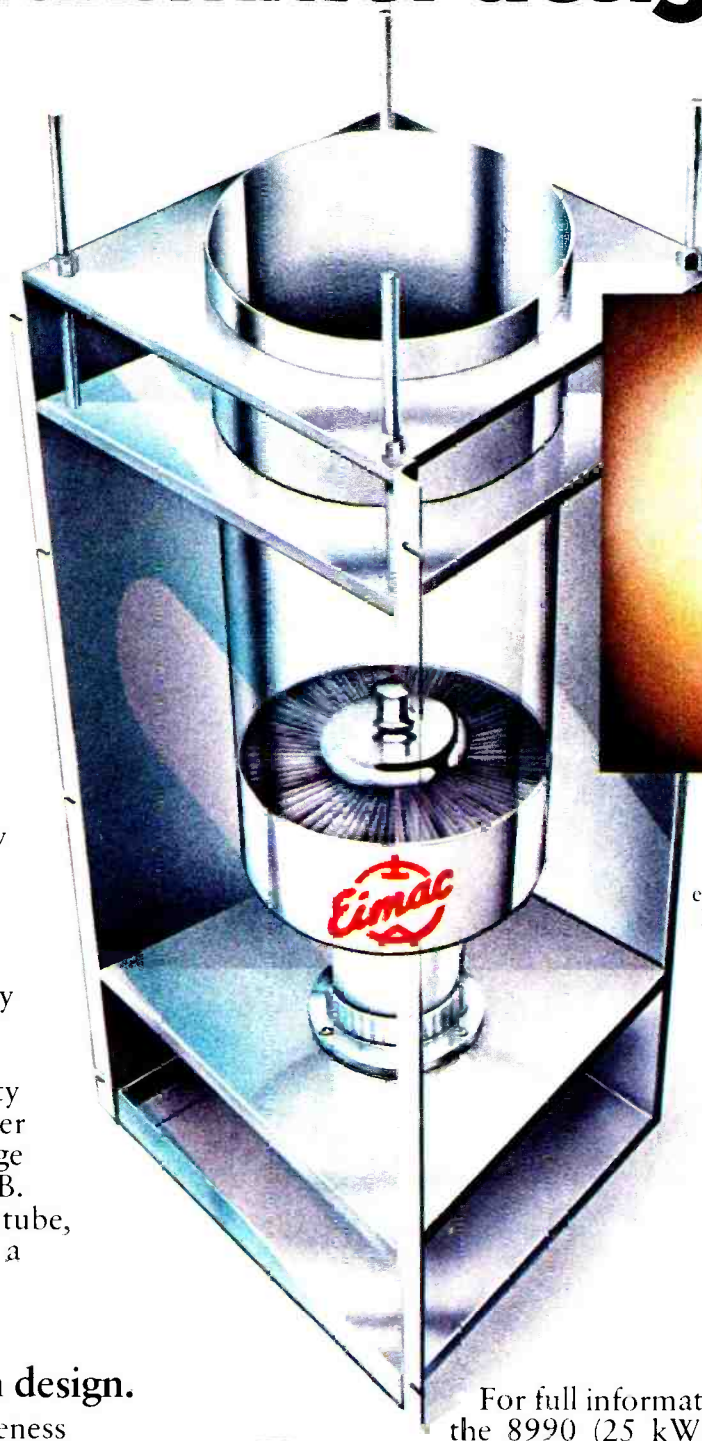
Jim West gave *BM/E* an example of a fan club's effectiveness. WHLI organized a dance with a "big band" playing music from the programming. Six hundred and twenty people signed up in a hurry, a capacity crowd. The station had to keep telling listeners who had heard the original announcement that there were no more tickets: requests kept coming in by the hundreds. Disco worshippers, move over.

West noted the flexibility and resourcefulness of the idea. The local club may decide, for example, to donate the proceeds from a dance to a local charity: this appeals strongly to many people in the age bracket. Meanwhile, the club activity, whatever it may be, builds loyalty to the program.

Another idea in the works, according to West, is discount buying for the club members. This becomes attractive to sellers when the numbers of people reach into the thousands.

Also supplied along with the programs, in addition to the club material, is general promotional material for the program, including background material on the artists. Altogether, *The Music of Your Life* may well be a lifeline for several types of stations, including those fighting against too many other rockers. It appears to be one of the best organized and promoted syndications now on tap. **BM/E**

EIMAC takes the work out of 25 kW FM transmitter design.



1935, EIMAC was present at the birth of FM broadcasting. Major Armstrong's early transmitter used four EIMAC 150T tubes in the amplifier stages. And EIMAC still retains its commanding position in continuing high power vacuum tube technology.

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For full information on the CV-2200, the 8990 (25 kW) and the 8989 (15 kW) write EIMAC, Division of Varian, 301 Industrial Way, San Carlos, California 94070. Telephone (415) 592-1221. Or contact any of the more than 30 Varian Electron Device Group sales offices throughout the world.

Circle 110 on Reader Service Card

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Top management "Higher productivity, more effective training and selling, better communications... if a video camera can help deliver that, I'm for it."

Studio cameraman "We're ready for the high performance of a sophisticated Saticon camera. And I can certainly do without having to have a separate genlock unit."

*Registered trademark of Hitachi

You got!

"We can turn out needle-sharp pictures with the KY-2000U. And with options like JVC's remote control unit, it's adaptable to just about any field or studio situation."

"The KY-2000U meets all my criteria for performance and price. And I know I can trust JVC, with their reputation for quality."

"This neat little KY-2000U is less than 12 lbs. with 1.5" viewfinder. Handles nice and easy. And with 52 dB S/N and sensitivity doubling to 12dB, what more could I ask?"

"I can see how the KY-2000U can help me get more out of my people wherever communications is involved."

"What a relief! No more separate genlock. And the Saticon tubes really deliver high sensitivity and resolution, and low lag."

JVC's new KY-2000U 3-tube Saticon camera is a real rarity today: an engineering breakthrough that makes economic sense, too. It has all those features mentioned above. Plus horizontal and vertical contour correction, both standard. Built-in variable blanking circuit and VTR trigger mode select. Broadcast-standard Y.I.Q. encoder. C-mount lens versatility.

And something else just as important: JVC's reputation for superb quality.

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TELEVISION

PROGRAMMING & PRODUCTION FOR PROFIT

WDVM Series And Special Unshackle Black Voters

EYEWITNESS NEWS reporter Bruce Johnson at WDVM-TV, Washington, D.C., had a vision: if black Americans were to participate in the democratic process and vote, then they could reap some of the rewards of participation. "The bottom line," according to Johnson, "is that in areas where blacks vote, the streets are paved and the houses are all connected to the sewer system, whereas in areas where they don't vote the streets aren't paved and the houses aren't connected. Why, then, don't blacks vote?"

Johnson proposed to his news director, and was given the go-ahead for, a five-part series to air during the newscast and a one-hour documentary to air after the series had run. *Voter Apathy: The Last Major Shackle* was to be Johnson's investigation as to why blacks don't vote — a look behind the sometimes astonishing statistics.

WDVM reporter Bruce Johnson conducts interview for Voter Apathy *story with Bill Thompson shooting with the Ikegami HL-77*

Johnson conducts another interview in Selma, Alabama

Johnson and his crew — associate producer/researcher Lois Dyer, photographer Bill Thompson, and recordist/soundman Julius Brown — visited nine cities during the three months of weekends they devoted to the production. The cities included Houston, Texas; Selma and Montgomery, Ala.; Cleveland, Ohio; Columbus and Atlanta, Ga.; Boston; and Chicago. "We didn't just pick cities and go there at random," explains Johnson. "We worked very closely with the Joint Center for Political Studies, a Washington-based minority 'think tank.' They would suggest places for us to go and people we ought to speak with. The whole production was designed to look like we had spent a month or two at each location, whereas careful research allowed us to do it in a day or two."

What Johnson found, and presented to viewers, was an often frightening look at the plight of American blacks. At the same time that he interviewed leaders of the National Urban League and the Congressional Black Caucus, and others who will play key roles in the 1980 presidential election, Johnson also went to the streets and into homes to find out what blacks actually thought. In Cambridge, Md., for instance, he interviewed a 70-year-old woman who lives in what used to be a chicken coop. From her and others he learned that even if every black in Ward II voted, local political zoning would prevent them from electing more than a single black council member. Yet blacks form over 40 percent of Cambridge's population. From a black dentist in Cleveland he elicited the surprising attitude that the dentist supported housing restrictions concentrating the city's blacks into informal ghettos and limiting whatever political power they might have. And from the Ku Klux Klan, as he confronted them in Selma, Ala., he was able to get statements in which Klan members expressed fears that advances by black voters were cutting into the whites' economic base.

Lightweight, portable production equipment and a closely knit crew were clearly essential in these kinds of situations. If kids in a housing project playground weren't pestering Johnson to take their pictures and clowning in front of the camera, then subjects he wanted to interview became tense with all the equipment around.

A large measure of credit for the success in these difficult interview situations goes to photographer Thompson. "We were trying to be sensitive to the different situations," he explains. "Sometimes we would just sit down with people we were going to interview and help them relax. We wanted to show them that we were part of their

experience — that we belonged there."

Thompson also developed two camera techniques that he was able to use while handholding the Ikegami HL-77 (which he did for almost 75 percent of the shooting). He had the HL-77 modified so that a small switch beneath the viewfinder could be used to defeat the tally light on top of the camera. "We would start talking with a subject," he explains, "and let the tally light show. People would get used to the idea that when the light was on we were rolling and when the light was off they could relax and be candid. After a while, I would just hit the button to turn the tally off, and they would relax and tell us what was really on their minds while we were still rolling. We got some of our best material that way."

Another technique used by Thompson was to pop off the eyepiece of the viewfinder, allowing him to see the screen without squinting into the camera. Provided that he remembered which way to pan the camera (the screen is inverted without the eyepiece), he found it much easier for subjects to relate to him by looking him in the eye.

The choice of lens was important, too, since often the camera was set at some distance from the subjects to avoid intrusion. Thompson used a Canon 10 to 100 mm zoom lens, to the front of which he could add a wide-angle adapter. Thompson used the wide-angle attachment several times, finding it particularly useful when working in the cramped quarters of some of the homes they visited. He also used the attachment while shooting in Houston for a wide up-angle on the tall buildings as he was driven along in a car.

Lighting a major problem

Thompson's background in production, which has seen him on numerous commercial shoots, led to his being particularly conscious of the value of good lighting. While relying on available light whenever he could, particularly since it was a documentary, Thompson used a lot more lighting than would normally be associated with an ENG-style shoot.

A key feature in the lighting plan was the combination of a small sun gun mounted on a bracket on the camera with the signal boosting capability of the HL-77. Thompson's plan was to use the sun gun with several pieces of diffusion material or screens — just enough light to fill in the faces. He would also sometimes use a Lowel Tota Lite or two on a stand, bounced off a ceiling or a wall to fill in the background. With this much light he was able to use either the 6 or the 12 dB boost in the HL-77 to give good images with better depth of field. "You can't use the 12 dB gain when you don't have any light at all," says Thompson, "or there's just too much noise. But with a little light — just enough to give some definition but not enough to be obtrusive or wash out natural light sources like candles or small lamps — you can use the gain quite effectively."

To power the sun gun, Thompson used the new, lightweight Frezzolini battery pack. Its abilities to hold a charge well and to be fast-charged extremely rapidly were both important to him, as well as its light weight. Thompson considered it impractical to make the recordist Brown wear a lighting battery belt since Brown had to check video level, audio level, point a shotgun mic, check the tape supply to be sure the tape was not near the end of the spool and stretching or bunching up, and log the shots. Thompson therefore carried the battery himself.

Brown, as mentioned, handled the audio, relying on manual gain setting rather than AGC on the BVU 100 to cut down on noise. The general technique was to use two microphones recorded on the BVU's two audio tracks. Johnson was lavaliered with an ECM-50, his level set at a point where he would not be overmodulating even if his volume went up slightly. Brown could then concentrate on riding gain on the second channel, directing a Sennheiser 815 shotgun mic in the best angle. From time to time it was necessary to swing the mic back and forth from speaker to speaker, but this was not a favored technique since it inevitably resulted in missing some important comment. When using the shotgun, especially when it was placed at any distance from the sound source, Brown employed an external low-cut filter to help eliminate the low rumbling which is characteristic of the mic's response.

Another helpful audio tool was a small 9 V portable external amplifier connected to the BVU. "It's impossible to find a set of headphones that provide enough volume and isolation through the 2000 ohm BVU output," says Thompson. With the external amplifier, however, Brown could use extended range headphones. In addition, the amp contained a small speaker; with it, and by using return video to the camera viewfinder, Johnson was able to check takes on his stand-up intros and commentaries.

To check video, the crew also brought along a battery-operated Sony color monitor. Set up in a hotel room at night, it provided Johnson and Thompson with an opportunity to review the day's material. Thompson also relied on it to check tests shot in difficult lighting conditions, giving him the opportunity to try a different light-

ing or filter pattern if the color balance was severely off. The monitor was even once used in a car on the way to the airport to spot-check tapes; in this case, the color converter was run off the BVU's own power supply. "We didn't check tapes as much as we should have," says Thompson, "but we tried as hard as we could. When you only get one visit to a city, you have to be certain you have something before you leave."

Post-production during the wee hours

All together, some 65 20-minute cassettes were shot. Not all tapes were complete, however, since Thompson tried to make the job of editor Jerry Gordon easier by changing to a new roll whenever a new subject was introduced. The tapes were viewed first by a production assistant who made a shot log with approximate timings. Gordon then viewed all the tapes again on his BVE/BVU editing system, making precise notes with the time code readout. The post-production, which took about 40 hours, was all done in the evenings since both Gordon and Johnson had regular assignments during the day.

It is interesting to note that time code was not recorded in the field. A primary consideration was that, since both audio channels were being used, they did not want to run the risk of time code bleeding through. Another more aesthetic consideration was Johnson's desire to let Gordon have a full creative input. "When you edit by numbers," explains Johnson, "and you give the editor a precise shot chart so that all he has to do is roll up to the section and choose the in and out points, I think you lose something. An editor can give a fresh new eye to material. He can look at the tapes and see what's really there. The reporter and the photographer were at the scene and involved with the shooting. They may remember there being a mood, but it may not have been captured on the tape. So rather than dictating the edit, we let Jerry [Gordon] see it for himself."

Gordon apparently saw things right. The five segments for the news show aired at 6:00 p.m. September 17 through 21, and the one-hour documentary on September 21 at 11:30 p.m. The station's response was terrific, and the documentary aired again after a Washington Redskins' football game — again to good response.

As a result, WDVM is looking into the possibility of syndicating the show to a national market, particularly in those cities with large black populations and in the cities Johns on and his crew visited. "We want blacks to get out and vote," concludes Johnson. "Airing this right before the elections might be a really valuable tool." **BM/E**

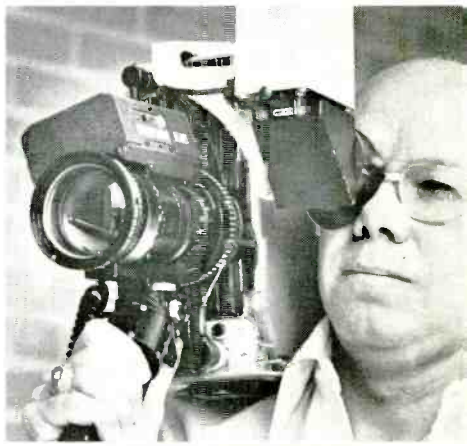
Lawrence Communications, Jacksonville, Florida

The Videography Company, West Hollywood, CA

"Bi-media", Fairfax, Virginia

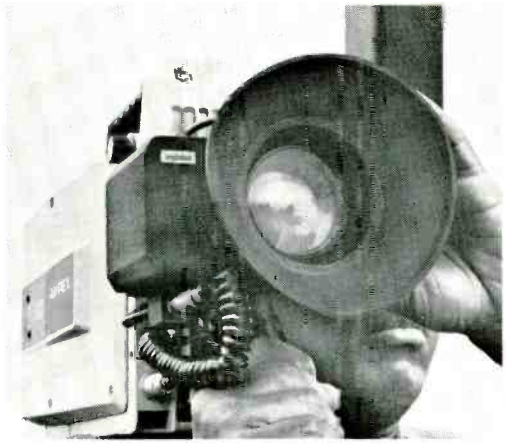
NJP-TV, Trenton, New Jersey

WCCO-TV, Minneapolis, Minnesota

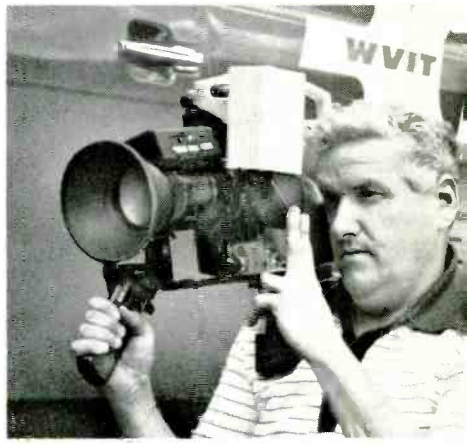


KMTV, Omaha, Nebraska

WJRT-TV, Flint, Michigan



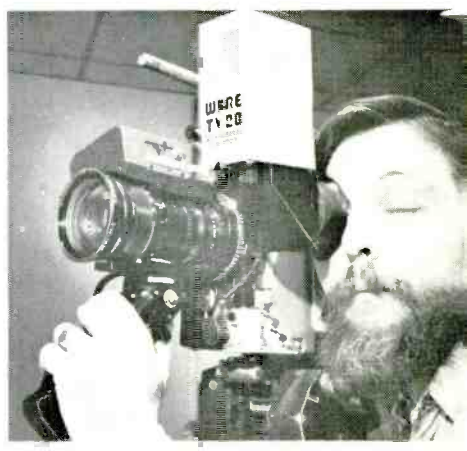
Univ. of District of Columbia, Washington, D.C.



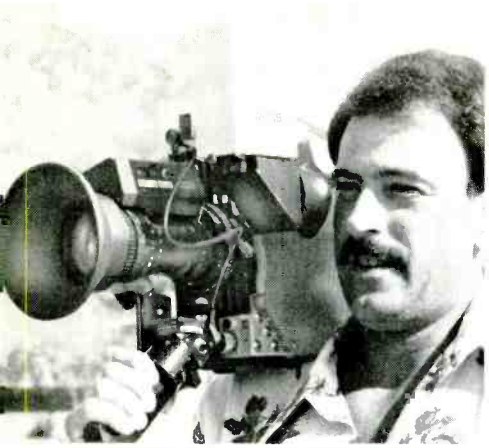
WVIT-TV, West Hartford, Connecticut

WCVB-TV, Boston, Massachusetts

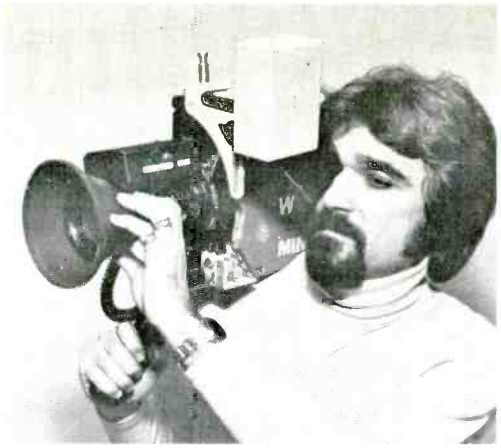
Independent TV, Edmonton, Alberta



WBRE-TV, Wilkes-Barre, Pennsylvania

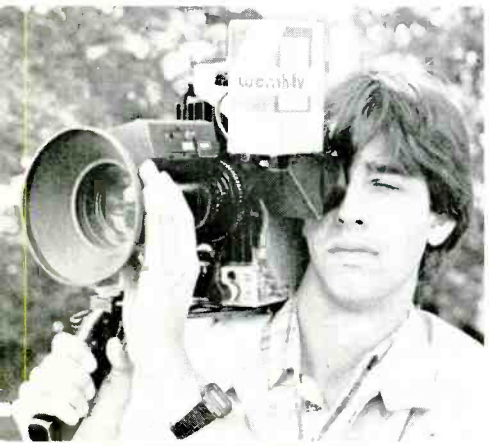


WRGB-TV, Schenectady, New York



KOA-TV, Denver, Colorado

General Electric, Lynn, Massachusetts



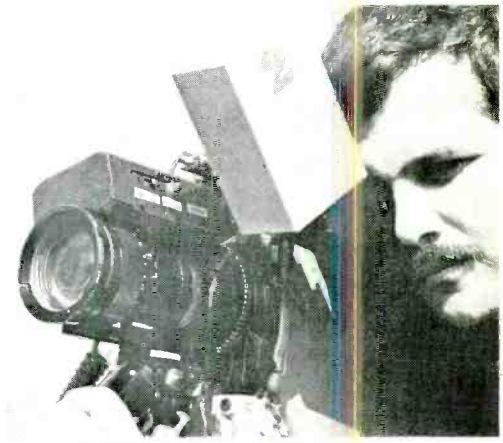
WCMH-TV, Columbus, Ohio

WVUE-TV, New Orleans, Louisiana

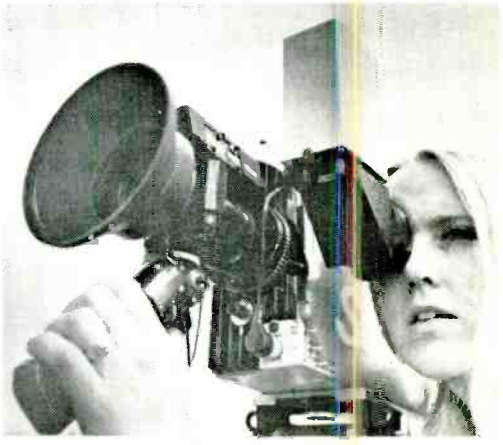
WITI-TV, Milwaukee, Wisconsin

WFLA-TV, Tampa, Florida

KYW-TV, Philadelphia, Pennsylvania



WMT-TV, Cedar Rapids, Iowa



WLUK-TV, Green Bay, Wisconsin

THREE MILE ISLAND: LESSONS LEARNED

Three Mile Island was a "class 9" accident that couldn't happen. A presidential task force severely criticized utilities and government agencies for their lack of preparation for such an accident. Were broadcasters better prepared?

"If there's anything that's clear, it was that we didn't expect this accident. And if I have to put my money in a basket, I'd put my money in a basket that says that most of our people, if you woke them up in the middle of the night on Tuesday night [March 27] and said to them 'What do you think?' and you list the seven or eight major causes of the accident that have been identified so far, they would say, 'Hell, that can't happen.' There would be a few who would be smart enough to say, 'Well, our studies haven't really addressed themselves to that. It's probably unlikely but I couldn't say for sure.' But most of them, I think, would say, 'That can't happen.'"

Those are the words of Karl Abraham, Public Affairs Officer for the NRC's Region One office in King of Prussia, Penn. The words were part of his testimony before the President's Commission on the Accident at Three Mile Island. In a sense, the Nuclear Regulatory Commission (NRC), the utility, and officials of other government agencies concluded that there was little reason to prepare a response plan for an accident that would never occur. They believed their own propaganda—but to some extent, so did broadcasters.

Associate professor David Rubin of New York University's Journalism and Mass Communications Department headed the task force that reported on the "Public's Right To Information," in connection with the presidential commission's study of TMI. Said Rubin, "It is one thing not to be prepared when the consequences of your lack of preparation are relatively limited. It is another thing not to be prepared when the consequences are potentially catastrophic." Though Rubin's remark was directed at government and utility officials, there is a message in it for broadcasters, too.

"I think," said Rubin, "the value of Three Mile Island is that it appears that the public health consequences were minimal, but the accident was serious enough—economically, politically, and from a public relations standpoint—that now the industry can see that a serious accident can happen and now the motivation to do something about it is there so that planning that hadn't been done, will be." Whether Rubin's optimism will be borne out is a question of some concern to everyone. News directors will assign, and reporters will do, stories on "the lessons of TMI" for some time to come. While the press will, it is hoped, keep the light on the issue of nuclear safety, broadcasters will have to turn the light on themselves.

According to the task force report, "Local radio was the single most important source of information about the accident at Three Mile Island for the people of Dauphin, Lancaster, and York counties." Two surveys conducted

in the area at the time of the accident showed that 56 percent of those responding got their first news of the accident through local radio and that about the same percentage of local residents relied on radio "as a major source of information about the accident." Finally, 62 percent of local residents cited radio as their "most frequent source of news during the accident." This compared to a 1976 Roper report that found only 19 percent citing radio as their most frequent source of news.

For local radio, this is an awesome responsibility. But the task force report goes on to say, "If local radio was the news medium that most people turned to for information during the accident at Three Mile Island, it was also the news medium least able to cover the story." The task force report cites the absence of an all-news radio station in the area and the small news staffs of the area stations, which offer a variety of music formats. Mike Pintek, news director of WKBO, the first station to break the TMI story, was quoted in the report: "There is no way you can run a 24-hour news operation with only five people." The largest news staff in the area belongs to WSBA-AM in York, with seven full-time and two part-time news staffers.

But manpower is only one small part of preparedness. The size of a news staff is largely a matter of practical considerations for radio management, and one does not keep on hand a staff of forty in the expectation that someday there will be a major nuclear accident in the area. As reports from radio and television stations around the country presented elsewhere in this issue show, many stations take careful stock of their resources, technical and human, in order to be certain of their ability to handle emergencies. In most cases, the best prepared stations are those that expect to deal with natural disasters indigenous to their areas—such as hurricanes, tornados, forest fires, or snow storms. In such cases, the stations can expect this type of disaster a couple of times a year, and have already gone through the rigors of such crises time and again. They have honed their operations to a fine edge and benefit from an ever higher level of experience.

But the nuclear accidents, industrial disasters, and a host of other technologically based catastrophies are new horrors to contend with. They can happen anywhere at any time. Because they result from human institutions, the public expects them to be more fully explained. As KYW/KDKA, Harrisburg, Penn., correspondent Sandy Starobin put it, among the people in the area, "there was a sense of mortality, a sense of betrayal . . . the utility company was trusted." It was as if a trusted member of the community suddenly turned on his neighbors murderously.

Charles Wright, a sociologist of mass communications at the University of Pennsylvania, lists four primary functions of media: surveillance, interpretation and prescription, transmission of culture, and entertainment. In times of crisis, it is the first two of these functions that become the most important. Surveillance, says Wright, is the responsibility to identify hazards and to warn the public of them; interpretation and prescription is the responsibility to transmit understanding of the hazard and to tell the public what to do about it. Psychologist Charles Osgood has suggested that from earliest times these functions have been carried out through what he calls the three central elements of meaning: evaluation, potency, and activity. Even primitive man could describe an event as "friendly or unfriendly" or "big or small," and tell

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The media at Three Mile Island did a good job of carrying on the traditions of Osgood's primitive man, but it seems the media came up short in meeting Wright's four functions. That the surveillance, interpretation, and prescription functions seemed to be the weak points might be due to the fact that the utility was "trusted" and thought of as "friendly." That may not happen again, but there are other "trusted community members"—chemical plants, hazardous materials storage depots, pharmaceutical laboratories, oil refineries, and the like. The biggest problems facing radio and television stations at TMI were probably not that different from the problems that broadcasters would face in any instance where modern industrial technology had gone wrong: a lack of knowledge regarding who is in charge; a lack of understanding of the technology involved; an obtuse barrier of jargon from specialists, scientists, and engineers; a maze of agencies with overlapping authority and jurisdiction; and a sudden invasion by an army of media.

Fortunately for broadcasters, the last item seemed to have been the least troublesome. Though telephone lines quickly became overloaded by a crush of telephone traffic into and out of the area by concerned citizens, the media—especially broadcasters—had ample equipment. Two-way radio, microwave, CBs, wire services, and ham radio all played a role. Though there were only three video-grade lines out of Harrisburg, which the networks quickly took over, the networks frequently let their affiliates piggyback reports. WPVI, Philadelphia, was able to go live from the scene on a regular basis by piggybacking its report on the ABC line from Harrisburg to New York, and then to Philadelphia. Locally, WHP provided a common feed to area stations. At the earliest stages of the emergency, according to Richard Hill, an engineer with WCMB/WSFM, Harrisburg, more information was available through non-broadcast means, CB and ham radio, than through traditional channels. Another engineer at a Harrisburg station pointed out that there is a longstanding tradition of cooperation among broadcast engineers: "There's a lot more borrowing, lending, and trading going on among engineers at competing stations than most managements acknowledge."

There were elements of confusion and mayhem on the technical end of things, but as Hill said, "Working in emergency communications for three years, I was surprised that everything went off as well as it did." There were logistical problems. WCMB's chief engineer was down with the flu as the emergency began and WCMB had to fly in its former CE, George Werl, from sister station KQRS in Minneapolis. Expecting a need for additional RPU gear, Werl brought along an additional two units. Bob Feldman, assistant news director at WPVI, said that though they sent up two full ENG crews on Friday, March 28, they soon realized that was not enough. Additional crews were sent later with editing equipment and field producers to sustain the operation in the field. Said Feldman, "Next time I'll know to send editing equipment more quickly." WPVI is also adding a helicopter with microwave repeater capability, though not as a direct result of TMI. With it, WPVI could have made the 80-mile hop without having to piggyback on ABC's lines.

With the state of affairs that existed during TMI, the technical preparedness of the stations was somewhat akin to being all dressed up with no place to go; except that the problem wasn't a lack of places to go, but rather a serious doubt about the value of going to various places.

The scene at TMI

As Rubin said, ". . . you can't understand any of this unless you understand what the scene was." And what the scene was, was deceptively calm. Dave Edwards, an assistant engineer and traffic reporter for WKBO, was making his routine rounds in his news cruiser radioing in traffic conditions to his station. As he neared the Three Mile Island reactor site he noticed that the usual steam plume was not present. Edwards had heard from a friend of his that the Colonial Park Fire Department had been put on alert. Why, he didn't know, but he thought there might be a connection, so he called in over his remote pickup unit to Mike Pintek, WKBO's news director.

Pintek called Metropolitan Edison's Reactor Control Room at TMI and was told that no one could talk to him at the moment: ". . . we've got a problem," they said. He then called Met Ed manager of communications services Blaine Fabian, and was told that he was in a meeting. Pintek told them "to get him the hell out of the damn meeting," and when Fabian got on the line he explained that a "general emergency" had been declared but that this was a "red tape" type of thing required by the NRC when certain conditions exist. Pintek asked what the conditions were and was told that there was a problem with a "feedwater pump. The plant is shut down. We're working on it. There's no danger off-site. No danger to the general public." At 8:25 a.m., Pintek went on the air with the story.

Shortly after, the AP picked up the story and put it out over the wire. Within hours TMI became a national and international story. According to the task force report, a press corps numbering 300 to 500 at any one time descended on the area. In their ranks were wire service reporters, newspaper reporters, magazine reporters, network reporters and technicians, local radio and television reporters and technicians from distant cities, and an international contingent from Japan, France, Sweden, West Germany, Italy, Spain, and Great Britain.

According to the task force report: ". . . the accident did demonstrate to the NRC, the utility, and the press what 'hurt the most.' The effort to inform the public of events at the reactor site was handicapped from the start by a complete lack of planning for an accident that would last for a period of days . . . The lack of planning was so profound that spokesmen began issuing statements from at least a half-dozen locations." These locations ranged from the Information and Observation Center at TMI to a motel in Hershey, an American Legion Hall in Middletown, Metropolitan Edison's offices in Reading, the Commonwealth's capitol in Harrisburg, NRC headquarters in Bethesda, Md., and the White House. Communication among these centers was confused, at best. Conflicting

statements were issued regularly from any and all of the locations.

It was under these conditions that conflict and controversy over the media's role began to emerge. At this time the dispute remains intramural, but just under the surface of the passing grade that the media has received lies a smoldering question that needs to be addressed. Could the media have done better, and will they do better?

The problems the media face are numerous. While the term "media" may be collective, there is probably no word in the English language with as tenuous a hold on its many parts. The local media at TMI perceived their mission one way, the national media perceived its role in yet another way. Television took a different approach from radio, and print took yet a different approach. Not only is the family of media filled with sibling rivalry, but it is also incestuous.

Local radio stations, with their small news staffs and scant resources, quickly found themselves relying on the wire services and national networks for information about a story occurring in their own backyard. The task force report claims that local radio termed the performance of the wire services everything from "very good" to "criminal." An out-of-town TV reporter said of local radio, "We don't think that they did very well. They put on anything and everything without talking to people. When we needed to know what was going on, we tuned in KYW (all-news radio, Philadelphia) on our car radios." An area reporter spoke with a sense of outrage at what he called "silly" reporting by television networks. "The networks" he said, "were completely derelict. The networks proved that you don't have to be intelligent to be successful." These criticisms have been quoted without attribution in order to protect the careers of the speakers. While *BM/E* normally refuses to use unattributed quotes an exception was made in this case so that the reader can get a sense of the situation at TMI. Local radio felt that its major responsibility to its audience, the residents of the immediate area, was to reassure them and prevent panic. National media, by and large, took the view that this was a major and dramatic story, a precursor of what could happen elsewhere. The need to reassure and calm was not as keenly felt by the national reporter. Stations from the region just outside the critical Three Mile Island area had yet another job. If there was to be an evacuation, they had to prepare their areas for an enormous influx of evacuees. Yet, with the network/affiliate, wire service/subscriber relationship in use, the local audience had access to all of these reports. For them, the national news caused new concerns.

What happened locally

As the crisis at TMI developed, local radio soon discovered that it was no longer "business as usual." Most stations increased their regular news coverage an average of 400 percent during the week of March 28 to April 3. WHP provided a live feed of Governor Thornburg's press conferences from Harrisburg and the NRC's briefings in Middletown to a mini-network of five local stations without charge. WCMB ran five hours of call-in programs on Sunday and Monday evenings to try to answer questions from the public. In addition to the call-in programs, WCMB tried to establish a rumor control line to check on rumors called in by the public.

Many stations found themselves with extra air time as local merchants cancelled spots for sales that would not take place, but these were often replaced with announcements of school closings and the like.

Most station personnel were put on overtime and many were forced into performing duties that normally were performed by others. At WCMB, announcers and salesmen were used as reporters, and at WKBO, Pintek put every spare hand on the telephones. At WHP the personnel problem was less severe as the news staffs of its sister TV and FM radio stations were called on to cooperate.

Network-affiliated stations benefited to some degree by the presence of national media. At WHP, for example, the CBS news team allowed the local staffers access to their material and some of their experts. According to Dave Edwards of WKBO, "There was a lot of listening 'over the shoulder' of the network people."

The most difficult problems for local radio were cross-checking information and getting news out of various places, given the shortage of field personnel. Probably the biggest problem was handling the crush of questions from residents. Added to calls from their own areas, local stations were also besieged by telephone calls from reporters from all over the world wanting to confirm the most dire rumors or trying to get information on "what's really going on there?" Eventually, some stations told the task force that they just began hanging up on such calls. The best they could do for their own listeners, however, was to tell them to stay tuned to their radios.

Local television stations did their share too, though they faced somewhat more stringent scheduling problems than radio. WITF-TV, the public broadcasting station, played an important role in providing a local base for the *MacNeil-Lehrer Report*. Without microwave equipment, according to producer John Baer, the station concentrated on a documentary approach. Rather than interrupting programming with fast-breaking news, they attempted instead to provide a perspective. At 11:00 p.m. on March 30, WITF went live nationally over the PBS network with a studio discussion by Gov. Thornburg and anti-nuclear scientist Chauncey Kepford. "We've never been geared for live [EFP] production, so we started off the show with three preproduced pieces." The *MacNeil-Lehrer Report* showed up at WITF on Wednesday and devoted its Friday evening program to TMI. Locally, WITF also presented talk programs by science writers and other authorities who sought to provide background on what was happening.

How it could have been done better

David Rubin thinks that there is some merit to the idea of local emergency mini-networks. Given that the economics of local radio don't often permit large news staffs, it might be possible to pool resources. This type of emergency plan, however, would have to be worked out among stations far in advance. Under what auspices such mini-networks might be formed is a genuine concern. In a real crisis stations will still wish to send their manpower

and equipment to essentially the same places. WHP came close to operating as a clearing house of information, but with more planning such a system could be vastly improved.

Mike Pintek believes that a station should have an emergency plan to staff a newsroom around the clock. Such a plan, said Pintek, would involve changing the station's programming format, and that might mean a formal plan for the news director to take over programming decisions.

"I have a file on what to do in case of floods," said Pintek. "Tips on how to stay dry, how to keep warm, stuff like that. Maybe it would be possible to get together with some local colleges or other authorities—anybody who has brains—and get some of this stuff down. . ." on matters relating to nuclear accidents. Pintek also heard of another idea that he thinks might have merit: "Get tape cuts of local officials with general types of information relating to emergency procedures." These could be played at times when there is no real hard news.

Richard Hill, who came in to help out at WCMB after his normal shift at WSFM, encourages some sort of tie line between stations outside the normal telephone system. "Often the only way we could find out what another station knew was to try and get through to their GM, and either he was too busy or the phones themselves were busy."

Then there are the general recommendations that everyone made in one way or another. Stations should have an organized telephone alert system for getting personnel on the job. There should be a continuously updated list of civil defense officials and how to reach them. A close study should be made of the responsibilities of various state agencies during different types of emergencies. A constant question that loomed at TMI was, "Who's in charge here?"

By far the most difficult deficiency to solve is the education of the media in modern technology. Sandy Starobin points out, "We have over-concentrated in sociological and political sciences—no one concentrates on the physical sciences." This is, of course, less true of print, where there are frequently knowledgeable science reporters on staff, but during TMI all but a few of these reporters had difficulty grasping the intricacies of nuclear reactors.

Before the accident, Met Ed supplied regular press releases and handouts on routine happenings at the plant. Often, these press releases were written originally by engineers and then massaged by PI people. Even so, they were often obtuse. Many stations, and networks especially, called in experts in nuclear matters, but in the early days of the accident even these experts were playing catch-up ball with events. Bob Feldman, assistant news director for WPVI, feels better now that he has made contact with nuclear medicine experts at the University of Pennsylvania and other experts in various fields at other area institutions. Making such contacts is important, but unless the crisis involves nuclear energy, an entirely different set of experts may be needed. This education of journalists may be the toughest nut to crack.

From the task force come several suggestions that are worthy. Commissioner Ann Trunk, a Harrisburg housewife appointed to the president's study group, suggests that radio stations provide routine radiation reports during incidents at nuclear plants. Such reports should be given like temperature and humidity index reports, stating what normal background radiation is and putting into perspective any abnormal radiation levels. This would not only warn the public during an actual emergency but also familiarize citizens with radiation terminology.

The thoughts of David Rubin coincide pretty much with the thoughts of the many journalists at TMI. "The public has a right to know everything," said Rubin. "If you begin to whittle away at that, there is no point at which you can logically stop. So, we assume that the public has a right to know everything, but the operative question is not what the public has a right to know, but what does the public have a need to know?" There is clearly information that the public has a right to know during an emergency, but there is other information for which the public has an urgent need. The problem is to be able to identify the difference between these types of information and to report that which is needed immediately, while reporting the other information later.

According to Rubin, the public had a right to know what was going on in the control room at TMI minute by minute, but they probably wouldn't have been able to make head or tail of it. On the other hand, the public had both a right and a need to know if there were "any radiation releases? If so, how hot are they, where are they moving? Do we stay or do we go?"

The task force conclusions can be interpreted for the benefit of the media. Rubin feels that radio could be particularly useful as a two-way medium, answering questions from the public, and applauds WCMB's efforts though he feels they could have been better executed. Chief improvement to the call-in approach would be possible by having experts in the studio or in telephone contact. Such experts should include nuclear medicine specialists, insurance specialists, civil defense officials, and the like. Of the questions that were asked on the WCMB call-in shows, Rubin says they were all good questions—"the station just didn't have the answers." One of the recommendations the task force will make to President Carter is that people from the utility and the government agencies be designated to go to radio stations to answer such questions. "Such an approach," said Rubin, "could help to stop rumors right off the bat."

Of course, the bulk of the task force recommendations deal with the public information functions of the utility, the NRC, and state and federal agencies. The recommendations are for a "structured information release" process. Located near the site of the emergency, says the task force, should be a press center that meets the common definition of the term: a place where journalists can confront sources directly, with technical facilities provided for the press and backup material such as schematics and fundamental descriptions of the plant and its works available. While the utility should be responsible for certain information, as the emergency progresses other agencies should be brought in. The task force does not recommend

Three Mile Island: Lessons Learned

a "single source" type of approach, but rather a structured progressive approach where new sources are brought on-line as the situation develops.

Further, the federal agencies should, according to the report, centralize their information and be on site before issuing statements. It seemed to the task force that the state is the right place for evacuation information to be handled; and the report discouraged other agencies from going public with recommendations.

Because of the difficulty of covering such "technical" issues, the task force also recommends that various agencies hire or train disaster communications specialists to help interpret for the press what all the jargon means. These people should be dispatched to the site of an accident immediately. According to Rubin, it seems fair to presume that all of these information systems should be operating within 12 hours of the declaration of a general emergency.

Throughout the task force recommendations, the clear aim seems to be to provide the media, and hence the public, with a series of clear directions to go in during an emergency.

The Task Force on the Public's Right to Information concentrated largely on the failure of the utility and government agencies to supply timely and accurate information because, as Rubin said, ". . .it came to us early on that for us that's where the action was. It was much more important to know what information was being made available to the public rather than what the press did with it." Another reason for this focus was that the task force also had the responsibility to make recommendations to the President that he could implement. While the government can force licensed utilities to draw emergency plans, reorganize and/or reform the NRC, and fund programs to improve the ability of such entities to respond to emergencies, the First Amendment and the traditional adversary role of the press in this country would make Presidential recommendations on press performance ineffective.

Nevertheless, the task force report devotes more than 100 pages to the performance of the press and while no direct recommendations are made to the press, the inferences are there. As recommendations to the utility and government agencies are made and new regulations drawn, the hope is that the capability to handle such incidents in the future will be improved. Whether these improvements are effective or not will largely depend on whether or not the press has improved its ability to test and to challenge the new systems. The media has learned a great deal about politics, crime, weather, international relations, trade, and a host of other topics over the years as the society has become more complex. Radio and television acquire, daily, ever more sophisticated tools for gathering and reporting the news. The challenge now is to acquire the knowledge to confront the "technology beat." Robert Bernero, assistant director for material safety standards of the NRC, arrived at the TMI site on Monday, April 2. He was surprised that six days after the accident began, reporters still needed his basic briefing on how the reactor worked. Roger Mattson, director of the NRC's Division of Systems Safety, said of the incident: "I guess one thing TMI taught me is that the media in this country have little or no capability to report or handle technological information." Thus, the gauntlet has been dropped. **BM/E**

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ENG/EJ: RUSHING IN WHERE OTHERS FEAR TO TREAD

In crisis and emergency situations, viewers increasingly look towards television for accurate, informative, up-to-the-minute reports. To meet these needs, some stations have developed emergency response plans to enable maximum efficiency in disseminating vital information during times of crisis. Is your station prepared?

RESPONDING TO emergency and crisis situations may be among a television station's most important public service activities. What if there were a hurricane bearing down on your city right now . . . or a huge passenger plane crashed at your local airport . . . or you were buried under six feet of wind-driven snow . . . or a river flooded, forcing evacuation of thousands of local residents? These are real situations that happen all too frequently.

Telling the story accurately and completely, as well as providing continuing coverage during ongoing situations such as severe storms, is obviously critical in life-threatening situations. Is the public, in fact, in danger? How long is the danger likely to last? How can they protect themselves? Is it necessary to evacuate? If so, where should they go and what should they take with them? These are all questions that are likely to come up in any emergency, and your station is going to be asked to provide the information — if not over the air, then certainly over a probably already overburdened telephone switchboard. In times of crisis, the public turns to its most accessible source of information — the media. Being there for them in times of crisis may help spread the message that you are there at other times, too.

To deal with emergencies, many stations have established prearranged crisis response plans. In some cases the plan is little more than an up-to-date list of key station and local authority phone numbers, distributed to reporters, photographers, and others at the station who must act when the situation arises. In other instances, particularly in those areas with chronic severe weather conditions, the crisis plan may be so highly evolved that even low-grade engineers and operations people can keep the station on the air. One thing is clear: having a response plan tailored to your station's market and your engineering and operations capabilities can make a vital difference when covering situations in which your program material can help save lives.

At the outset it should be noted that crisis response plans often address two rather separate needs at a station. First, the station must be able to keep itself on the air during the crisis (obviously, if it is knocked out, it will be useless). Second, it must have the means at its disposal to go out and gather information (or, at least, be able to keep in touch with it) during even the most adverse conditions.

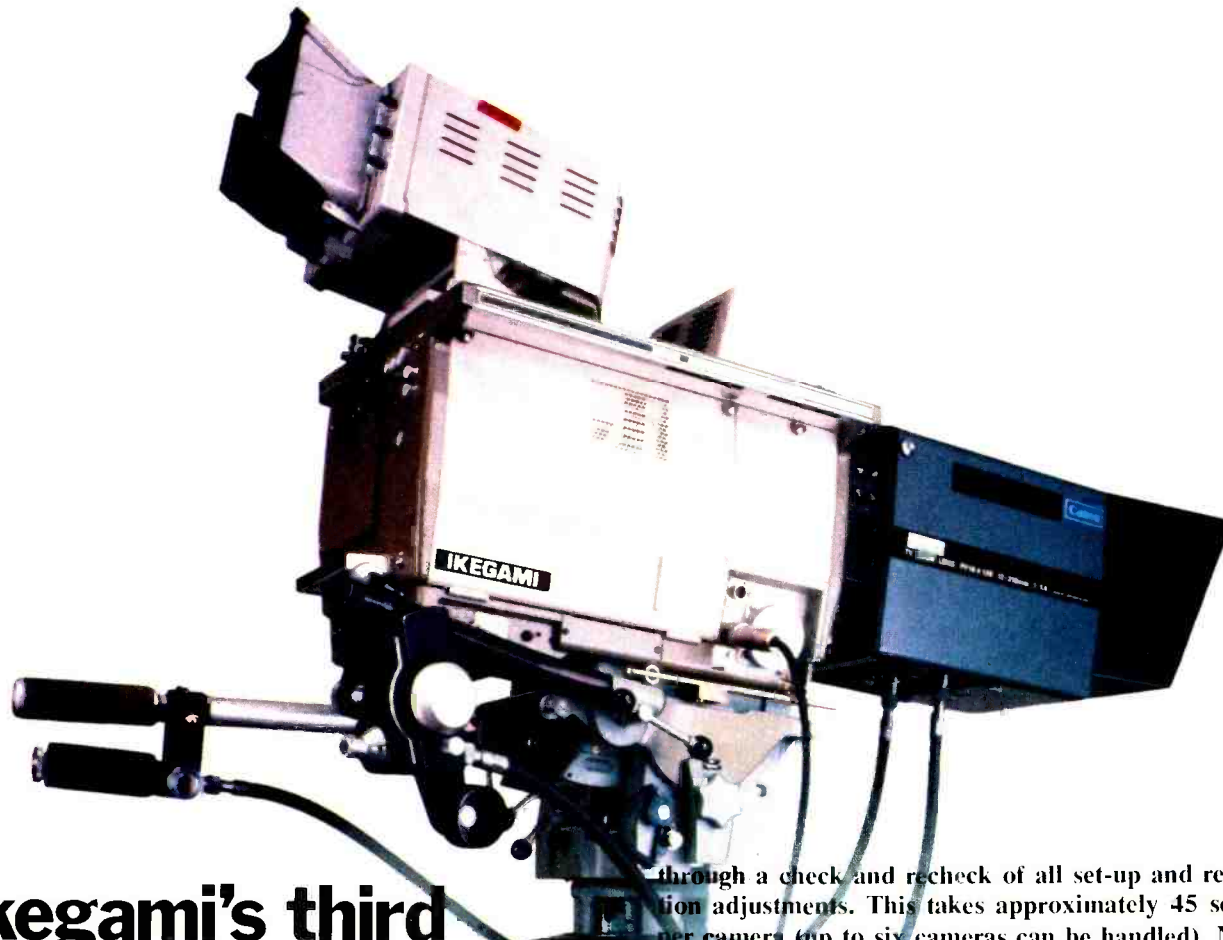
On the first objective, most stations are already fairly well equipped with emergency generators to supply full or partial power to the transmitters. This is often coupled with backup systems for STLs — for instance, a backup telco line out to the transmitter in case of STL failure.

Along with emergency generators or alternate mains supply at the transmitter, stations are also increasingly providing themselves with emergency generators at the studio. Careful planning (chances are that extensive air conditioning will not be needed during a major storm) can insure that emergency power is distributed to key areas such as news, a studio for emergency broadcasts, and master control, permitting operation with far less power than normally required. Checking the generator's fuel supply frequently is an obvious precaution against failure.

Where they are available, network affiliates can also be a valuable backup. In Chicago, for instance, WMAQ can activate a system by which the network program being aired by an ABC affiliate in Indiana can be carried via an intercity link and rebroadcast from WMAQ's facilities at the Hancock Tower. In addition to maintaining an emergency generator there, WMAQ could theoretically move key personnel, equipped with battery-operated equipment, to the tower so that local programming could be originated in addition to the network retransmission.

WPTV — calm at the center of a blustering storm

In a sense, then, the transmitter becomes like the king in a chess game: it must be protected at all costs. At the same time, however, there must be programming to put on the air. It was for this reason that WPTV, the Scripps-Howard Broadcasting Co. station in West Palm Beach, Fla., actually moved part of its studio operation out to its transmitter building when Hurricane David rolled through last Sep-



Ikegami's third microprocessor-controlled camera reduces registration set-up time and cost

The ideal camera for field broadcast television assignments must meet three major criteria. It must be air-ready moments after arrival at the camera site. It must deliver pictures of studio-quality color, crispness, and clarity. And it must be consistently reliable.

The Ikegami HK-357A meets those criteria in the field and is equally suitable as a studio camera. And it allows the camera crew to concentrate on creative aspects of their assignment instead of on time-consuming set-up and readjustment tasks.

Once on-site, the HK-357A requires hook-up to only three cables and power source. Then, a push of the microprocessor activate button automatically cycles it through a check and recheck of all set-up and registration adjustments. This takes approximately 45 seconds per camera (up to six cameras can be handled). No external registration and chip charts are necessary because a test pattern projector (diascope) is built into the lens. Camera distance from the compact base station can be nearly a mile with triax, or 2,000 feet with TV-81 multicore cable.

Because the HK-357A optimizes the capabilities of the newly developed Diode Gun Plumbicon®, the picture outputis of very high resolution, low lag, low noise and wide dynamic range. Dynamic Beam Stretch to reduce comet tailing; Geometric Correction for near-perfect registration; auto iris and auto white balance — all contribute to the superior color picture program output of this camera.

The HK-357A is notably versatile too. It offers selectable contrast compression levels; built-in chroma keyer; gen-lock to Sync and SC or VBS/BBS; and several other features, including an unusually compact CCU, optional RCU, tiltable and rotatable 7-inch high-resolution electronic viewfinder.

The performance record of Ikegami cameras at the major networks in the United States and around the world attests to their consistent reliability and long, trouble-free service life.

If you are upgrading, a demonstration may well reveal that the other cameras you've considered may already be obsolete when compared against the HK-357A.

Ikegami HK-357A

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tember.

WPTV's coverage of David, under the aegis of news director Bob Howick, had actually begun almost a month earlier as the first of the season's tropical storms began brewing in the Caribbean area. With frequent reference to charts and maps and with National Weather Service radar pictures, WPTV's news and weather staff tracked the storms on a daily basis. At the same time they began a series of public education programs, in cooperation with local civil defense authorities, to tell people about boarding up windows, stocking emergency supplies, equipping themselves with fresh batteries for portable radio and TV sets, filling bathtubs with water in case of water supply interruptions, and so forth. This material was presented by both the station's own reporters and by frequent interviews with government, county, and civil defense officials and weather bureau people at the local civil defense headquarters.

When it became clear that Hurricane David was actually on a collision course with West Palm Beach, however, Howick and chief engineer Ed Roos activated the station's own emergency plan.

A large measure of WPTV's problem lay in the location of its studio building right on the Intercoastal Waterway — an area WPTV staffers knew would almost certainly flood if the hurricane hit hard. There was no way, even with the studio's auxiliary 250 kW generator, that the station could operate under three feet of water. The solution was to set up a miniature studio at the transmitter building itself, capable of going on the air directly through the transmitter.

"We set ourselves up planning for the absolute worst," says Roos, "assuming that everything would be out except the transmitter. We established a very limited but very complete studio." The equipment came from WPTV's EFP van, which had been engineered so that equipment could be rolled into a remote location for commercial work: two RCA TK-76 cameras, an ISI 904 production switcher, a Shure audio mixer, a Tektronix signal generator, and a Sony BVU editing setup that could be used by stranded reporters or originate playback through a TBC. Also on hand was a vast array of communications and monitoring equipment for getting the latest updates from civil defense and the weather bureau. Howick and the station's chief weatherman set themselves up in front of a small flat and were ready to deliver a full two-camera show. As it turned out, the main studio managed to remain on the air throughout the entire three-day ordeal; with the staff on 24-hour-a-day call, however, and with normal programming suspended, the studio at the transmitter was used to produce roughly half of the programming, giving those at the main studio a chance to grab some sleep.

WPTV never signed off during those three days, "which felt like a week and a half" to Howick. "But we felt an obligation to stay on the air as much as possible." Coverage of the storm included reports from those areas it had already passed through — Puerto Rico and the Dominican Republic — showing the damage it had created. More important, however, was the coverage from the civil defense headquarters. According to Howick, "we'd done a number of stories on storms and floods in the past, and everything had been centered around the civil defense bunker. So it seemed like the natural place to be for this one." With its ENG van parked outside and a TK-76 inside cabled to the truck, WPTV was able to provide a constant update on the situation, with a reporter on hand at all times of night and day. The van microwaved the signal back to the central receive point on a 2 GHz Microwave Associates system, and then relayed it to the main studio on a 13 GHz link.

Both Howick and Roos stress the importance of maintaining a close liaison with civil defense authorities. Says Howick, "they were extremely cooperative. And even if they hadn't been, they certainly would be now. I think that if there were any reservations before, they were completely wiped out by what we did on the air. Not a single life was lost. The response we got was tremendous."

WVUE learns from the past

1979, it seems, was the Year of the Hurricane, with both David and Frederick causing major damage to the southern U.S. It is a great tribute to broadcasting in general that no one was taken by surprise. Specifically, the credit goes to stations like WPTV and WVUE, the Gaylord Broadcasting Company station in New Orleans, which was able to predict the locations in its coverage area — extending from east Texas through Alabama and the panhandle of Florida — where Hurricane Frederick was likely to create the most havoc.

WVUE senior news producer Paul Amos explains that the station's coverage of the two to three tropical storms and hurricanes that annually pass through the area begins

Shot from KOOL's microwave-equipped helicopter during extensive flooding in Phoenix area

KOOL's on-the-spot report from the Salt River Bridge which was threatening to wash away

ENG/EJ: Rushing In

as soon as the storms are named. "People around here have a high awareness of weather," says Amos. "When a storm appears in the Gulf, everybody's attention is turned to it." The station's coverage of the storm increases with its proximity to the Gulf coast, not only with information about the storm's progress but with word on what to do in an emergency. This helps the station build up its image as *the* place to turn to learn about what to do.

It is when the storm is actually predicted to impact the WVUE viewing area, however, that the emergency response plan is activated. Relying on patterns of past heavy storm damage and population displacement, crews are dispatched to locations where there will almost certainly be major problems — areas with older, decaying buildings, for instance. The eight two-person (cameraperson/reporter) crews, equipped with Cinema Products CP-16 film cameras, are therefore already on hand well in advance of the storm. This gives Amos the relative luxury of being able to cover each area in as complete a fashion as possible — everything from the preparations for the storm's impact to the actual storm to the storm's aftermath. During the coverage, crews maintain contact with the news department via two-way radio and are able to drop exposed film off at prearranged locations where a desk assistant or other nonessential person can pick it up and return it to the station for rapid processing.

Though "strongly committed to film," WVUE also maintains two ENG microwave-equipped vehicles for late-breaking stories and live coverage. One is a full-fledged van with on-board generator, a Philips LDK camera, and Sony BVU recorder; the other is a smaller unit with a TK-76 camera and battery-powered microwave transmitter. Both have Microwave Associates 13 GHz window microwave units.

During the storm coverage, Amos tried to keep both vans as mobile and flexible as possible, particularly the smaller unit, which was dispatched to stories where tape was a must because of proximity to air time. The mobile van, on the other hand, was often devoted to production of the news show rather than coverage. During the storm's worst moments, the truck was parked down by the lakefront where the strong winds almost guaranteed Amos shots of the ocean lapping over the sea wall — again predictable from past experiences. There, with the co-anchor delivering the newscast, viewers saw spectacular evidence of the storm's presence.

Another key feature of the WVUE response plan is a list of important telephone numbers updated and distributed to all reporters and crew people before each hurricane season. As well as the obvious numbers — sheriff's departments in its own and all surrounding counties, local civil defense contacts in its own and surrounding areas, local police departments, the Red Cross, local levie boards responsible for hurricane and flood protection, and so forth — the piece of paper also contains space for writing in the telephone numbers and locations of evacuation centers once they have been established during a particular emergency. Amos points out that now, with the Nuclear Regulatory Commission's insistence that communities maintain an evacuation procedure in case of an accident, stations should get in touch with their local civil defense people, find out where the shelters are, and post them conspicuously in the newsroom.

Having a crisis response plan has helped WVUE deal with other emergencies, too. Three years ago when the Continental grain elevator exploded in suburban New Orleans, Amos knew exactly how to respond: "Because of our experience covering storms, we knew we had to get as many people out there as possible to cover the different aspects of the thing. There was the explosion and fire itself — a spectacular scene that ended up on network. Then we had to have a crew to cover those who were injured and killed. And another to cover the relatives of those who were still missing. And others to go to the hospitals to check on the progress of the survivors. We drew on our experience of covering hurricanes to immediately zip to the different locations we knew we had to get to."

In another instance, the collision of a passenger ferry with a tugboat on the Mississippi several years ago, WVUE again drew on its emergency response plan. The news director rushed to the accident to coordinate the coverage of the crews on the scene, while those at the station coordinated the coverage at local hospitals and the Red Cross and interviews with relatives. Without a prearranged plan, the news director could not have left the other half of the coverage to studio personnel.

Amos warns, however, that even the most efficient of response plans may not be enough for certain situations — such as the New Orleans Police Department strike during Mardi Gras last year. "At first," says Amos, "we tried to respond as we would in any emergency situation. But events in which the central characters are people change much more rapidly than when the characters are storms or explosions or the like. During the first few days of the strike, we got caught with our pants down several times. We would send a crew to set up for a story at the negotiating session, knowing that that's where we could predict the action would take place. But the mayor would suddenly call a press conference a few minutes before air time. We were racing equipment around everywhere — it got to be a battle among the stations with the winner being the one who had the most gear available."

In emergency situations like these, Amos concedes that a response plan must be flexible enough to adapt to the circumstances. During the strike, he found himself far more reliant on his reporters in the field, who were able to evaluate the information and help make predictions about what would break when. Amos, constantly reevaluating his information throughout the day, was therefore able to mobilize his crews at least one step ahead of the events.

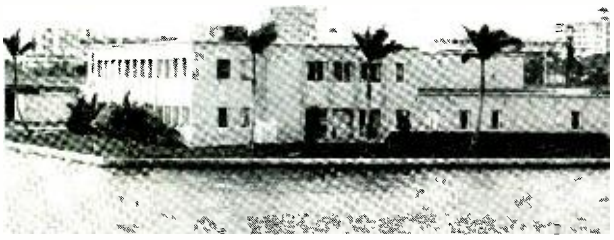
KOOL takes to the air to cover floods

It is thought that the number of microwave-equipped helicopters being used by TV stations in the U.S. will eventually reach 200; some 37 are in use today. Certainly they are not all being used to cover crises and disasters. With one, however, a station gains a powerful news-gathering tool during crises. A helicopter may turn out to be the only way to get crews out into the field when roads wash out and can also provide breathtaking aerial views of the damage to help put an emergency situation into its proper perspective. These, at any rate, were the experiences of Phoenix station KOOL during extensive flooding in the area last year.

KOOL's news division manager Bill Miller explains that torrential downpours had proved too great a burden for the Phoenix reservoir system, forcing engineers to release a torrent of water down a usually dry stream bed. The water collapsed most of the bridges, leaving the three

WPTV's fleet of microwave-equipped vehicles used during coverage of Hurricane David last September. Truck at left provided production for mini studio set up at transmitter building

Sony BVE editing controller taken to transmitter building for use by reporters in case they became stranded by the storm



WPTV's studios in West Palm Beach lie directly on the Intercoastal Waterway – a prime area for flooding

An RCA TK-76 camera, part of WPTV's ENG production capability

that remained as the only links between the northern and southern parts of the city and creating monumental traffic jams. In addition, several rivers rose to flood proportions, washing away many homes and causing hundreds of others to be evacuated. "There was only one thing to do," says Miller. "We just took all our people and put them on 24 hour-a-day call. We let them sleep from time to time, of course, but they were always on duty. It's tremendously expensive to do something like that. But it's worth it in the end — to the community and to us. We come out as better reporters or photographers or engineers than when we went into it. It really brought us together as a team."

KOOL's multi-faceted response plan included everything from having experts on hand to forecast the weather and potential flood spots to an emergency microwave link in case the studio failed. "We stationed a guy here," explains Miller, "who had some real knowledge about the river and what it might do. He really understood the jargon used by the Salt River Project people, who were coordinating the water release and flood control." The expert sat by the communications receiver listening in on the Salt River communications. From them he was able to determine where the problems were — in much the same way as those working in Salt River's own control room — and inform Miller. Miller could send reporters to the scene of a potential flood sometimes days before it happened.

The emergency microwave system consisted of a plan to have one of the station's two ENG vans act as a mobile studio, relaying directly to the transmitter. VP of engineering Al Hillstrom had borrowed two diesel generators and had rewired the entire studio to operate off them should the main power lines go down. There was the possibility, however, that even this emergency system would not be enough and that the studio would be completely flooded out. A plan could be instantly activated, therefore, in which an ENG van, equipped with a Microwave Associates 2 GHz transmitter fed by an Ikegami HL-77 camera for live (or Sony BVU 50/VO 3800 for tape) capability could go on the air with a newscast. The microwave signal, normally relayed from a mountaintop receive site co-located with the transmitter STL, could be switched directly into the transmitter. The truck even carried a supply of program tapes that could be aired while live talent was preparing to go on-air. Fortunately, the system never had to be activated.

Also integral to KOOL's emergency response plan is its excellent liaison with the local civil defense authorities, operating out of their emergency center. One of the ENG trucks was out there during most of the week-long emergency, providing frequent live telecasts through a window microwave unit on the camera inside. "We tried to keep people informed at all times," says Miller, "about what kind of danger they were in, or were *not* in — which often proved to be the case. In that kind of situation there are a lot of rumors, most of which turn out not to be true. Dispelling false rumors was an important part of what we did, and we were right at the source of the information."

When there was a life-threatening situation, KOOL was there, too. By keeping reporters and crews assigned to particular beats where they could establish good working relations with the particular authorities involved, Miller was able to keep one step ahead in his coverage plans. He would have his reporters ascertain what the authorities would do in response to a large number of possible situations — no matter how small the chances were they would

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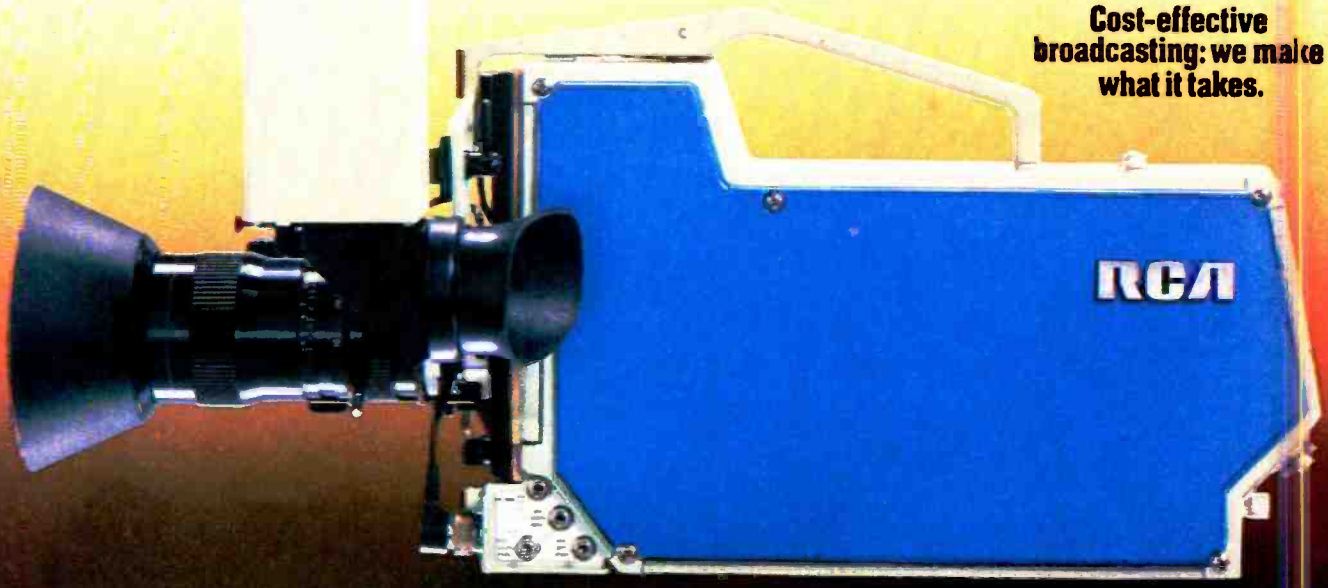

happen. He would then use the station's TeleMation Compositor to create and store the information so that it was already formatted and ready to be aired immediately if the authorities decided to close a road or evacuate an area. The same was true for live coverage in badly affected areas. Knowing where the floods were likely to hit next, Miller would station one of the ENG vans there ready to cover the evacuation. In one instance, the crew stayed behind to provide a picture of what the floods were doing to a neighborhood whose residents were probably watching the telecast at an evacuation center. "I think a lot of people will remember our reporter saying, 'We've got to go now or we're going to get caught,' with the water lapping around his feet," muses Miller.

By far the most different and visible elements in KOOL's coverage, however, were shots of the overflowing river and collapsed bridges supplied by KOOL's microwave-equipped helicopter — the first time a live telecast was made from a helicopter in the Phoenix area. The Bell chopper, equipped with a Microwave Associates window unit on a frequency common to both vans, was able to fly up and down the river providing spectacular aerials to whichever van was closer. In turn the vans, equipped with small switchers, were able to cut from their own ground cameras (with, for instance, a reporter interviewing a civil defense official about a bridge threatening to collapse) to the overhead shot actually showing the situation. The helicopter could then fly downstream and, within a matter of minutes, transmit to the second truck for another report. The system worked extremely well, according to both Miller and Hillstrom.

At KOOL, the experiences with the floods have led to the development of an actual written emergency plan. It tells, basically, what to do when certain things happen — whom to call, how to get people in, what to put on the air, what the priorities are — and clearly establishes a chain of command. On the engineering side, the plan details how to set up the ENG vans for direct microwaving to the transmitter to provide live coverage, then patching the VCR playback into the microwave system for preprogrammed material. All engineers at the station are familiar with the procedure.

Coverage of the floods has led to other engineering changes, too. For one thing, backup communications systems are a must. The ENG trucks are now outfitted with communications systems that operate on the same frequency as the 450 MHz Motorola walkie-talkies used in the field; a single switch will change program audio over to the 450 MHz system from the microwave link in case there is interference. At the same time, an "enormous" quantity of extra batteries for the mobile units are kept fully charged since no battery can hold up after 18 and more hours of constant use. Station personnel are also given the exact frequency of the field radio system so that it can be programmed into the scanner systems on their car radios, providing for at least one-way communication if all else fails. Another communication backup system consists of the pagers worn by Miller, Hillstrom, and other key people, who can be contacted by telephone if the radio systems fail.

There is yet another engineering change brought about from the experience of covering the floods; Miller has the station and mobile vans equipped with a generous supply of heavy-duty plastic garbage bags. "They're the *only* decent protection against the rain we have," claims Miller.

Neither rain nor snow nor gloom of night stay WMAQ and WTHR . . .

The best crisis response plans, as we have seen, are those that are both reflections of a station's basic capabilities and are responsive to the demands of the environment — be it chemical or meteorological. It is interesting to note, therefore, that two stations — WMAQ in Chicago and WTHR in Indianapolis — have turned to the same equipment to help them deal with emergencies. In both cases the emergent weather condition is snow — which reached its climax during the severe blizzards last winter. And in both cases, a helicopter was linked with four-wheel-drive mobile units to provide coverage.

WMAQ's William Marshall was one of the first to get in on the move to use flexible, mobile, microwave-equipped vehicles for ENG. He purchased, from the floor of the 1978 NAB show, E-N-G Manufacturing's Ford LTD with its single frequency 2 GHz system. The LTD is still in daily use and proving a real workhorse. "We wanted something, however," says Marshall, "that would be a little more reliable in off-road situations — a vehicle with four-wheel drive whose body was up a little higher and which would enable us to get to places a car might not be able to." Marshall again turned to Jack Harris at E-N-G Manufacturing, who was able to supply two GMC Suburbans specially modified for ENG use. Both had dual 2 GHz/7GHz capability, and both were fitted with four alternate power systems (an on-board generator, mains tie-in capability, the Suburban's own battery, plus an additional dynamo and battery system to provide up to 20 minutes of emergency power). The Suburbans got their first real test when the DC-10 crashed at O'Hare Airport last May; they enabled WMAQ reporters and crews to get in on terrain that might otherwise have been impassable. They got their second workout last winter when they were often the only way to get about in the snow. Marshall has just received two more.

WMAQ's helicopter is a Bell JetRanger III outfitted with a hybridized microwave system made up of components Marshall already had on hand — a Microwave Associates 2GHz 14 W transmitter and an MA omnidirectional antenna. Marshall explains that this is by no means the final configuration of the system; he is awaiting new developments in airborne microwave before deciding which system to go with. The station presently maintains two sets of receiving antennas; the main site, at the Hancock Tower, has dual Nurad Superquads for 2 GHz and 7 GHz operation, the auxiliary site at the Sears Building has two sets of Nurad quad horns, again for dual operation. Marshall estimates that by fine-tuning the directivity, he could achieve a helicopter range of 90 to 100 miles. Then, by installing a dual frequency system in the helicopter (using a 7 GHz link from the Suburbans to the helicopter and a 2 GHz link back to the receivers), the range could be considerably extended beyond the present 30-mile limit.

WTHR's manager of engineering Ron Arendall faced a similar problem. During the two or three bad snowstorms Indianapolis gets each winter, he not only has to be able to get his staff into the station, but must also be able to get them out on assignment. Part of the station's emergency plan is to assign its seven video cameras (Ikegami HL-77s and 79s and Thomson-CSF Microcams) and four film cameras to its cameramen. News director Bob Schaeffer

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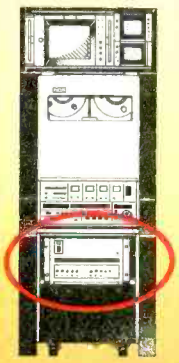

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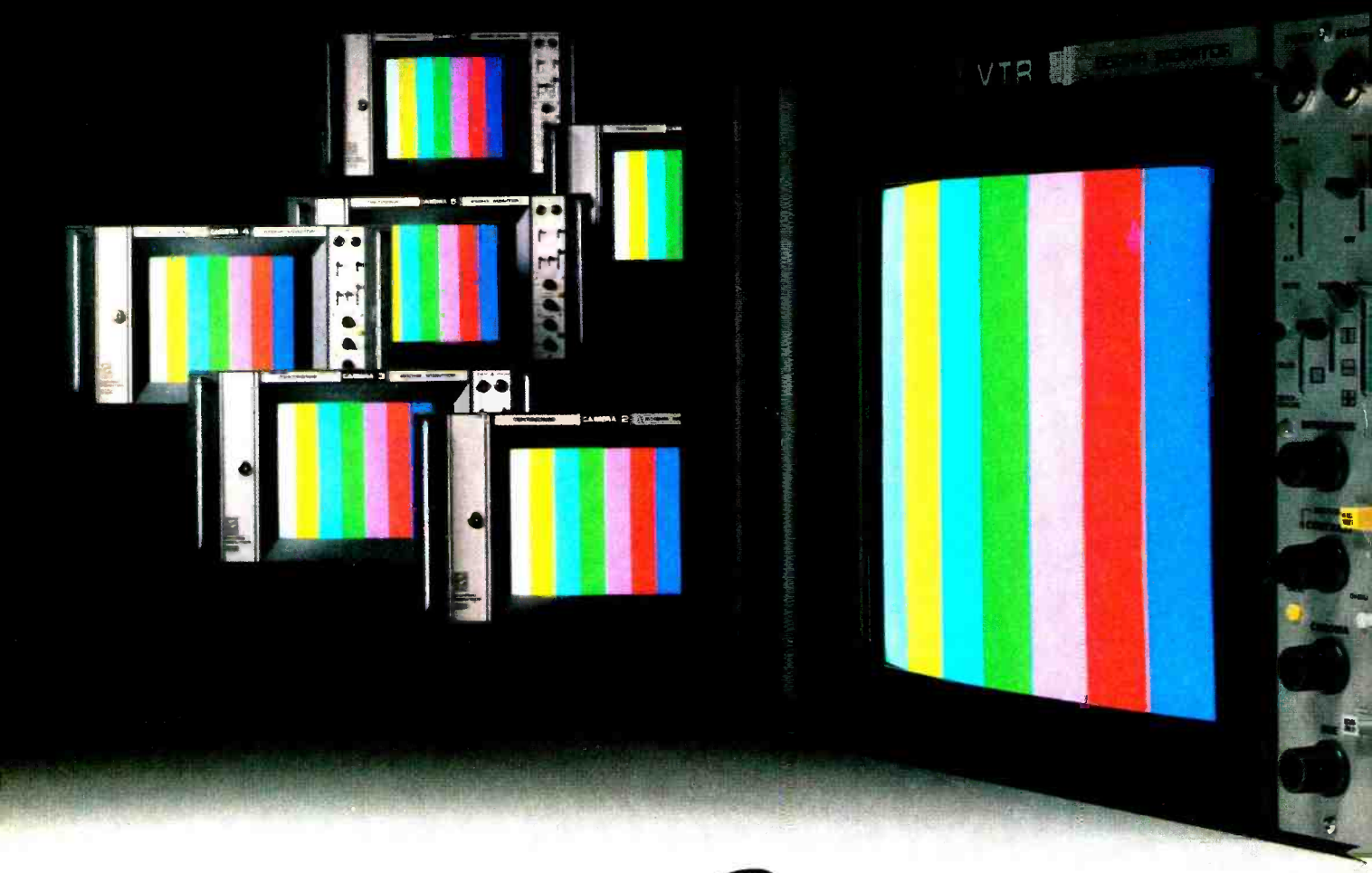

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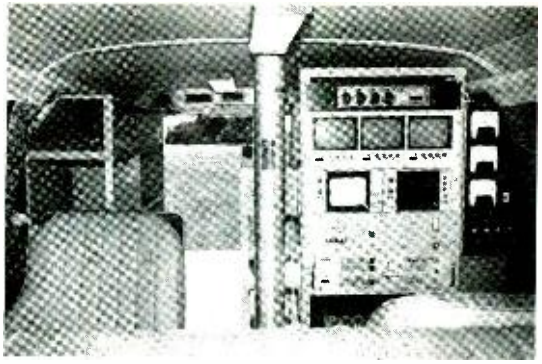

Interior view of van showing production control center with audio mixing and video switching and monitoring

The Suburban out in the middle of the snow following last winter's blizzards (left)

High ground clearance in the Suburban permits off-road use (right)

maintains a list of where the cameramen live and is able to assign them to cover areas close to their homes.

Schaeffer has also established a good liaison with a hotel right across the street from the station, where staffers who make it in can catch some sleep without hassles.

For real coverage, however, four-wheel-drive vehicles are a must. The station maintains two Chevy Blazers, each equipped with a camera and recorder, used for general transportation to get crews around. For live capability, there is an E-N-G Suburban, outfitted with a 2 GHz Nurad Goldenrod telescoping mast, Thomson-CSF Microcam, and BVU 100 recorder. The Suburban also carries a 13 GHz window microwave unit for its camera. Arendall is impressed with the Suburban's ease of operation, particularly in emergencies. "It used to be that the vans were much too complex. But with the Suburban you go out knowing you're going to use only one camera and that you're definitely going to get a signal back. It really can be a one-man operation."

The only problem with the microwave vehicles proved to be their limited transmission range within the 20-mile radius metropolitan area WTHR covers. The answer proved once again to be a helicopter — a Bell JetRanger III outfitted with a Tayburn microwave system. With an on-board ENG camera and BVU recorder, the chopper is capable of providing a picture from at least as far out as the limits of the Grade B contour — about 60 or 70 miles. The helicopter can also act as a relay for one of the ground cameras equipped with a window microwave unit. Together, the helicopter and four-wheel-drive vehicles provide coverage during crisis situations that would otherwise be impossible.

More and more stations are developing crisis response strategies like the examples we have just examined. Innovative ideas abound — ranging from basic plans of having on-air microwave systems ready to relieve a threatened studio, to WTHR's simple but effective device of preceding a Vidifont crawl message advising adverse conditions with a beep tone to make viewers conscious. New technology is at the forefront of many of the plans — ranging from fully-equipped mobile vans capable of acting as mobile command posts to microwave-equipped helicopters to provide overviews. The ideas and the technology are only a backdrop, however, to the willingness of station personnel to respond in a crisis as if human life really did depend on it.

Only one note of caution remains, however. At KXAS in Ft. Worth, Texas, Harold Taft has been forecasting tornados for over 30 years, during which time he was also a commander with the Air Force Weather Service. Taft has personally trained some 150 "weather watchers" who regularly call him at the station on a special number to give temperature and rainfall readings and who act as storm spotters. In addition, whenever a major storm moves into the area, local civil defense sets up a sub-command post right in Taft's office, maintaining two-way radio contact with some 200 mobile civil defense storm spotters. When Taft sees the threat of a tornado touching down, he rushes into master control, tells them to put up a "Special Bulletin" slide, and delivers the warning over a live radar picture. "When they hear me hollering," says Taft, "they know I'm for real!" The problem is that not all viewers will always agree. "We don't break in on a commercial," explains Taft. "But if there's a life-threatening situation there's no time to crawl a message — we have to go live. And if it interrupts someone's favorite soap opera, we'll hear about it, no matter what the danger or how much advance warning we're giving people." For the station committed to serving the community, the choice is obvious. **BM/E**

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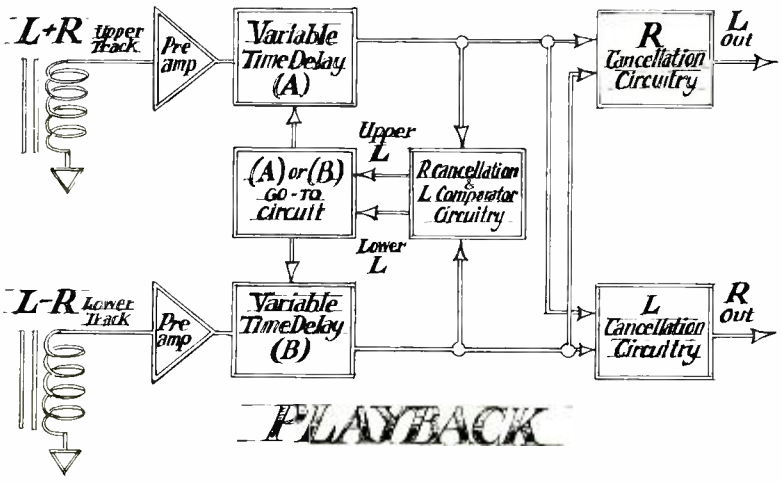

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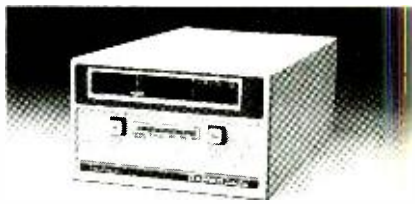

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RADIO PLANS FOR ORDER WHEN CHAOS STRIKES

Emergencies always have unforeseeable factors, but careful advance planning is still the single most important part of success in handling disasters. The disaster case histories set forth here show this vividly, along with other essential lessons drawn from the emergency experiences of radio in large markets and small.

THERE IS ONE WAY a radio management can position the station to earn the highest respect in its community—indeed, to be an essential, life-saving agency in many cases. The role played will discharge the station's most basic responsibility, and give the staff special satisfaction not available from their regular duties.

The rule for this is: be ready, as completely as you can, to handle emergencies that hit the community! This issue of *BM/E* tells how broadcasting has handled emergency situations of many kinds in recent years. The record, as every reader will see, is spectacular, even though hindsight in some cases has shown the way to improvement of radio's calamity performance. That is normal, and valuable: one main purpose of this special issue of *BM/E* is to gather in one place a substantial body of lessons from the front-line experience of many stations. And broadcasting has been absolutely on the front line, from Three Mile Island (see "Three Mile Island: Lessons Learned," on p.30) to the furious destruction of Hurricane David, from wild flooding on the Mississippi to the railroad fire-explosion disaster near Toronto.

Radio, particularly in smaller communities, has emerged as an essential information lifeline, one that the community would have been in desperate straits without. Small-market radio is uniquely positioned for this. But satisfactory performance in that position follows if, and only if, the management has made every reasonable preparation for the unforeseeable.

The seven stories that follow tell how seven radio stations, in small, medium, and large markets, actually performed in serious, life-threatening calamities that struck their respective communities. These stations are not at all unique. Many others have written similarly splendid stories of performance in the face of disaster. The stories told here are representative of the main kinds of emergencies radio stations are likely to face, and the responses of the seven stations, taken together, constitute a rich manual of calamity performance in which every broadcaster is likely to find some guidance.

CJMR: kingpin in Toronto evacuation

Just before midnight on Saturday, November 10, cars in a freight train of the Canadian Pacific went off the track between the towns of Wolfedale and Mavis, a few miles from the Toronto suburb of Mississauga. Tank cars carrying propane and chlorine gas exploded, sending up a spectacular pillar of fire that was visible for miles.

Michael Caine, vice president and general manager of stations CHWO and CJMR—the latter has studios in downtown Mississauga—was driving home and saw the huge fire. He went toward it and was the first media person on hand, ahead of most of the police and fire trucks. By that time the general nature and location of the accident were known to the police. The news crew at CJMR, alerted by Caine, was able to get from the police a brief preliminary statement, which went on the air at midnight, eight minutes after the accident.

A CJMR news crew, two men of the six-man news staff in a car with two-way radio, also saw the fire from a distance and rushed toward it, although they were off duty at the time. That crew, plus nearby telephones, put CJMR right on the line at the scene, well ahead of other news media.

Working closely with officials of the fire and police departments who were well known to them, the CJMR crew reported on-air at 12:45, accurately according to the information officially known at that time, that CP tank cars with propane and another gas had exploded, that people within a half-mile of the site were being evacuated, and the exact location of the accident.

This was followed throughout the night by almost continuous reports from the scene, including the first live actuality, a description of the scene and interviews with officials there.

Roger Snowdon, the CJMR news director, and Bob Connolly, morning news editor, came on the scene to help in directing the news effort. CJMR became a main line of information between the authorities and the people in the area. This worked smoothly and effectively because CJMR personnel knew the relevant authorities well, and vice versa.

Important in the station's communications with the police are three telephone lines with unlisted numbers. The police, who have the numbers, can get through to the station even when the regular lines are jammed with listener calls.

A second wave of evacuees was sent to Square One, a nearby shopping center. More and more CJMR personnel

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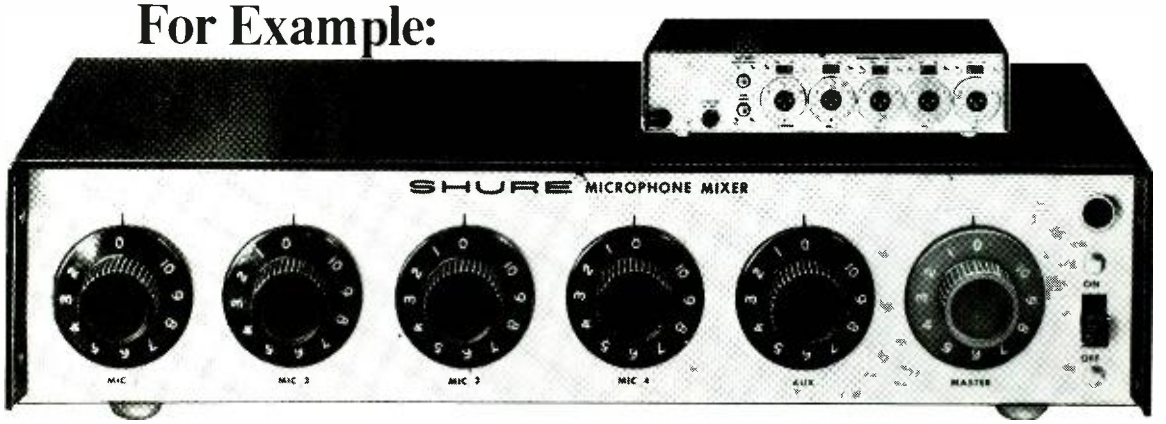

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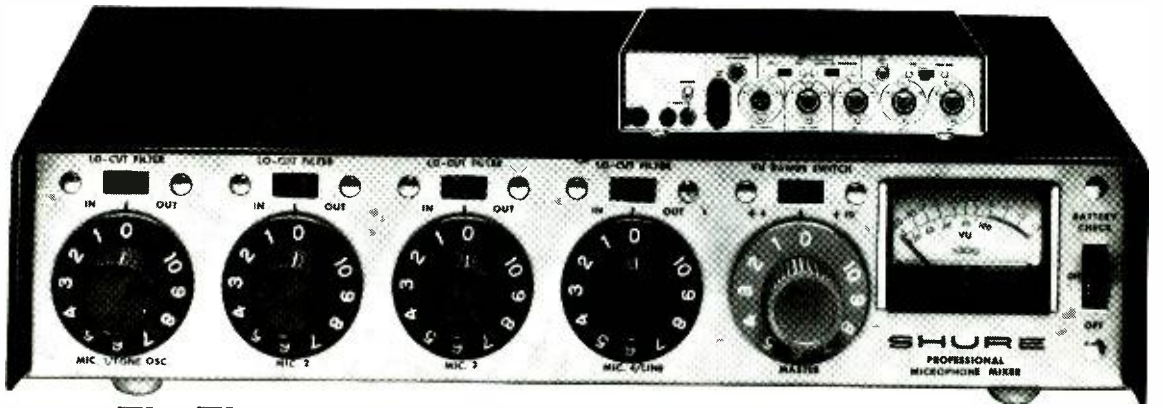

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came on, some at the crash scene, others at the studio. Before the morning was over, some 20 persons were on the job.

CJMR's close relationship with local authorities and policy of checking every report with them became most important: a number of times the police asked CJMR to correct erroneous reports on the air from Toronto stations. This was a matter of the utmost importance because the area of evacuation was widened in rapid stages until by Monday morning nearly 226,000 people were affected. It was in this urgent situation that CJMR performed a kingpin role, aiding the evacuation in every possible way. The station acted as a message center for separated families and broadcast information on how to act in evacuation centers, what to do with the family pet, and other questions. Another vital function was to warn sightseers away from the scene. At first curiosity seekers had jammed all the approach roads, seriously impeding police operations. And, of course, a main function was to confirm to listeners exactly where each group was to go.

Incidentally, many of the CJMR personnel were themselves evacuated and spent the period at the station, sleeping on the floor and bolting down coffee and "fast food." They would have come on duty in any case. This pitch-in spirit, and the skill of the news staff who directed the operation—in addition to the news staff's total familiarity with and to the local fire, police, and civil defense authorities—were the absolutely essential foundations for the operation.

At the height of the danger, the CJMR studios in Mississauga had to be evacuated, and all operations were moved to CJMR's sister station in Oakville, CHWO, which shares the same transmitter towers (CJMR/CHWO won an award in *BM/E's* December, 1975 Best Station Contest). But the possibility that Oakville, too, would have to be evacuated had to be considered, and general manager Caine had a truck loaded with emergency studio gear to go on the air from Milton, 15 miles north. Bell of Canada had quickly put in the necessary telephone lines. CJMR could have been on the air from Milton in less than half an hour.

Caine gave *BM/E* some reflections on the Toronto tank-car accident, potentially one of the most dangerous events of recent years in a highly populated area. He pointed out that the very large quantity of chlorine gas that escaped into the air could have descended as "mustard gas," fatal in 15 minutes or so if breathed in. "We at the scene were *really* on the front line, although we didn't know the full extent of the danger at first."

He strongly emphasized that in such an operation a "scoop," beating other stations to the air with hot information, is *wrong* unless its accuracy has been double-checked. He said that a radio station cannot perform its emergency function unless there is a *plan of personnel assignment known to all in advance*. The staff leaders, those with long experience in directing news operations, must be right on hand; the operation should not be directed by new or inexperienced news personnel.

Caine noted that one vital factor is assignment by the police and civil defense authorities of liaison officers to deal continuously with the media, officers who have the authority and knowledge to give out official information promptly. This has the double value of keeping the media out of the way of urgent police operations, and of improving the accuracy and speed with which information reaches the media.

Attorney-General Roy McMurtry explains the scope of the emergency to the press

He concluded that if all these conditions are met, a local radio station can be of inestimable value to the authorities; they leaned heavily on CJMR at the Toronto site in the huge evacuation. The dependence is mutual: the station needs constant, close communication *from* the authorities in order to serve its listeners and play out what are likely to be some of its finest hours.

WHHR faces down Hurricane David

Hilton Head, S.C., is a resort island 40 miles off the Atlantic coast with a permanent population of about 11,000 and a summer resort population of about 40,000. The very peak of the season, the Labor Day weekend, was the time chosen by Hurricane David to move up the coast with its winds of more than 100 miles an hour.

WHHR-FM is the only radio station on the island, normally putting out 3 kW of RF power, more than enough to cover the island's ten-mile radius. Well ahead of the hurricane came the news that all commercial power would be shut off to minimize the danger of fire.

Station manager Al Rogers and chief engineer Jack Valinski knew WHHR would be sorely needed on the air to provide fast emergency and evacuation information to the island's people during the hurricane. There is no municipal government, but an Island Emergency Council, made up of civilians, supplies central guidance and information. The council set up a command post and prepared check lists of advice on handling all anticipated events during the hurricane. WHHR aired this advice repeatedly during the time before commercial power was turned off, six hours ahead of the hurricane.

Rogers and Valinski decided that their best hope lay in their 3300 watt generator. Their transmitter alone takes 8500 watts, but they thought the generator just might get them by *if they used their exciter as the transmitter*.

Valinski notes that ". . . some fast advance planning and more than a little luck kept WHHR on the air almost continuously during Hurricane David and through a 24-hour period with no commercial electric power. The way it all worked out is a good example of what can be done when something has to be done. . ."

The first trial, run by turning the transmitter off but leaving the exciter on, was a failure: the signal from the antenna was effective only for about a quarter-mile. Valinski decided to rewire the exciter so it fed directly into the harmonic filter at the head of the transmission line, about a half-hour's work in the transmitter cabinet. This was done

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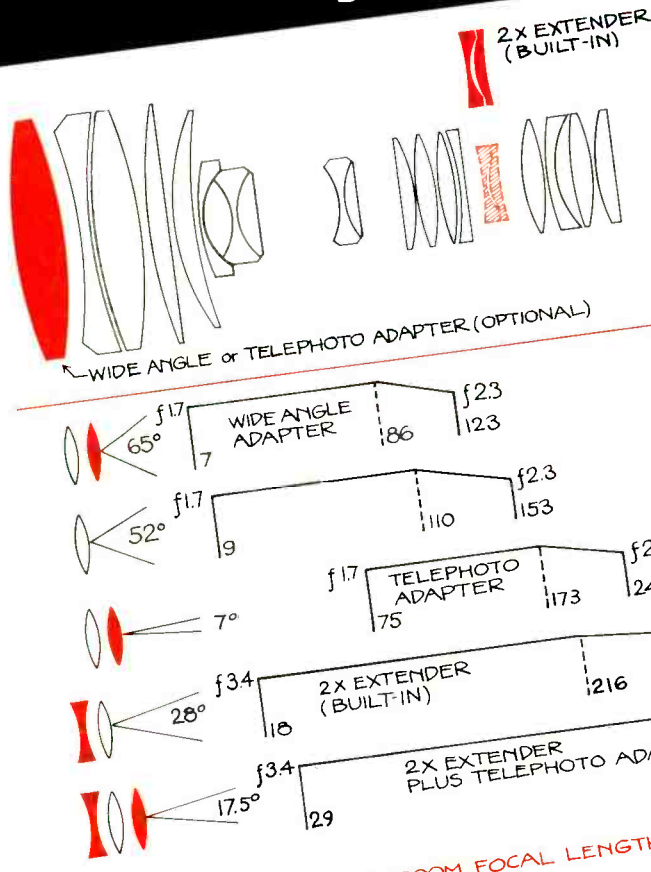

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Radio Plans For Order

immediately when commercial power went off, at 10:20 a.m. on September 4. When it was done 20 minutes later and the power from the generator fed in, the wattmeter showed 22 watts going down the transmission line for an ERP of 25 watts.

That was enough: WHHR did cover the island, and got reports from as far as 40 miles inland. For one four-hour period at the height of the hurricane, WHHR had the only signal on the band between Brunswick, Ga. and Charleston, S.C. The only breaks were for refueling the generator, a three-minute chore about every two and a half hours. The generator even ran the cart and open-reel tape machines with no speed problems.

For incoming information on the progress of the storm, WHHR was able to depend on its telco line to the Weather Bureau. But a breakage here too was naturally a possibility; and for that, WHHR had in place a mobile ham radio rig that ran on its own power and could bring in information directly from mainland ham nets. In most parts of the country, the ham radio organizations work extremely well in emergency situations. Their potential value is being recognized by current efforts by the NAB to get the FCC to authorize permanent ham radio receivers at broadcast plants.

Valinski summarized for *BM/E* what the station learned. The generator, he said, will be made a permanent part of the station's plant, in a weather-proof shelter. A larger fuel tank will be installed. There will be permanent switching to transfer generator power to the station, and RF switching in the transmission line to make the exciter the final, a 10-second changeover.

Valinski is also making a complete power inventory of the plant to determine what each item of equipment needs, so they know just what they can run if it ever happens again.

The WHHR management echoes that of CJMR on two very important points. WHHR president Stewart Corbett says that technical ingenuity was vital, but would have been pointless ". . . without staff members who volunteered to sit out the storm on the mics and telephones." And Rogers told *BM/E* that the relevant authorities (in this case the Emergency Council) should in the future assign a liaison officer to work continuously with the media as a way of making information transfer accurate and fast. Luckily, Hurricane David did not spread injury and damage widely at Hilton Head. But it was absolutely necessary that the people of the island know what was happening and what to do at every juncture. WHHR played its full part in that.

WRVA bridges flood-divided Richmond

The historic James River, running through the middle of Richmond, Va., is usually a sober and stately stream. After Hurricane Agnes of 1972 dumped its oceans of rain on the eastern United States, however, the James turned into a torrent that invaded all the lower-lying sections of the city, washed out all but one of the bridges, and ran into thousands of businesses and homes.

Radio WRVA, a veteran in Richmond, has a five-person news staff. When the flood came, that staff went on permanent duty and was joined by nearly all the other station personnel, prepared to stay until the emergency was over; in effect, the management declared a "general quarters," and the whole staff responded.

Broadcasters kept the public informed as the emergency progressed. Evacuation of the Mississauga Hospital was accomplished smoothly

Essential in many emergency situations is two-way radio in mobile trucks or vans; they can keep the station on top of developments and put the event on the air "live"

Accurate information to citizens in the path of the flood was essential. WRVA put a staffer permanently as liaison with the city's Flood Command Center; he had a line directly to the station's studio and could get information there in short order. By charting flood progress on a map of the city, WRVA's news staff could anticipate the moves ordered by the city and was ready with detailed information when any order became official.

The station operates a helicopter with two-way radio, which proved to be immensely valuable in charting the flood. The helicopter also brought in some staff personnel who were on the wrong side of the river when the bridges went out. That unit, plus a complement of cars with two-way radio, allowed the station to maintain an up-to-the-minute map of the city indicating flood conditions in every sector.

Aiding in this operation was the station's "beat" system. Reporters are assigned to certain sections of the city, with which they are familiar, so they could accurately evaluate what was going on in their reports to the station. Also, the newsroom always had a news editor on duty to coordinate all incoming material. This kind of organization adds efficiency on ordinary days, but becomes essential in emergencies.

WRVA's detailed reports, based on careful map analysis and front-line information, helped greatly to keep the people of the city on top of the flood. The station also ran a message center to help families separated by the river with information on various members' whereabouts.

John Harding, news director, emphasized to *BM/E* that

Radio Plans For Order

One of the most valuable pieces of gear for disaster coverage is the "brick," or hand-held transceiver, which can reach the studio from several miles away

staff "esprit" was one of the biggest plus factors in the emergency. "In a sense, they thrive on disaster," he said. "Everybody is there, and knows what to do. We became a close-knit team that could have done anything."

WCEM: undaunted despite flooded studio

In the Eastern Shore town of Cambridge, Md., water is a pleasant way of life: the mile-wide Choptank River laps the ends of the streets, and dozens of tidal creeks run to the river and to the nearby Chesapeake Bay through the rich farmland. But Hurricane David turned the river into a menace. The water came up into many parts of the town, including the studios of WCEM/WESP-FM, the only radio station.

As manager Samuel Cannon explained to *BM/E,* the studios are quite near river level and a super-high tide may get into the ground floor of the two-story building. All the cabling runs just under the roof; the operation can be moved quickly to the second floor in an emergency.

The Hurricane David wind and flood were among the worst ever known in Cambridge. The river was several feet above normal high tide. Roads were washed out, bridges destroyed throughout the surrounding county. There were hundreds of emergency situations—power out, buildings damaged, trees across the road. WCEM became a crucially important information lifeline.

So Cannon and his staff went on emergency duty just before 3:00 a.m. on September 6. Power was gone, but the station stayed on the air from emergency control equipment on the second floor, using a gasoline generator supplied to the station some time before by the civil defense organization with just such a situation in mind.

The local police turned to WCEM for many kinds of help, a habit of long standing. Cannon has a private telephone number, known to the police, who can get through if the regular phones to the station are loaded, as they often were in this case.

Civil defense and other local organizations also are in the habit of turning to the station for help. And scores of individuals throughout surrounding Dorchester County asked for help when they could not get to a hospital, or needed emergency shelter, or wanted to get information through that was vital to them or to others.

Even though WCEM is not a primary station in the local EBS net, Cannon pushed the EBS encoder button when the emergency period began. He did this not to tie other stations into the net but to alert listeners, who have learned from the weekly tests what the two tones mean. Hearing them used in an actual emergency naturally made their function stand out sharply.

During the emergency operation, WCEM stayed on its daytime power of 1000 watts, a suspension of the rules that is authorized by the FCC just for such situations. The regular nighttime authorization is 250 watts. The whole performance shows the special rewards of radio operation in a small community. Everyone accepts the radio station as a "good citizen," one they can hardly do without.

KFWB passes tough test in L.A. brush fire

As an all-news station in a megalopolitan area, Westinghouse's KFWB in Los Angeles must have a large organization of people and machines well trained and put together to do the job. Day-to-day news broadcasting is a highly competitive operation in the very large cities. But the same planning and skill that keep a radio station on top of the large-city news game can be redirected for outstanding performance in emergencies. The redirection takes knowledge at the top and a sense of 100 percent dedication throughout the staff.

These facts were emphatically confirmed when brush fires roared into the Los Angeles suburbs in Sept., 1979. News director Carol Breaschers explained to *BM/E* that KFWB has six cars equipped with two-way radio. Each two-person team in a car can be directed from minute to minute by the news assignment chief in the studios. The car teams can be called at home with "beepers"—and they were in this case. In turn, the roving cars keep the central news staff informed at all times of the location and progress of a news event of importance.

During the days when the brush fires were at their height, this arrangement allowed KFWB to maintain an "instant news" stance on the state of the fires, their direction, and the dangers as evaluated by authorities on the job. Communication with the police and the directors of the firefighting effort was maintained with an experienced staffer assigned to liaison at all times. Six reporters were on the scene night and day; their stints ranged up to 24 hours, with only minimum breaks.

In the studios, an editor was always on duty and in charge, 24 hours around the clock. He or she directed the flow of information into the on-air material, making such decisions as when to use actualities or when to break into regular programming.

Any of the radio cars can go on the air directly, and during the worst of the fire emergency that was done a number of times to bring listeners descriptions of the event directly from the site, along with the crackling of the fire, shouts of firefighters, and interviews with authorities at the scene and with citizens whose homes were hurt or threatened. The event could always be brought directly into the studio this way: when the signal path became difficult, KFWB could call into play a relay station in a jeep, able to move quickly to an advantageous spot for reaching the studios.

Breaschers emphasized, as did those at other stations, the paramount importance of clear lines of communication to and from the police, the fire department, and civil defense. The reporters at the fire knew who the relevant authorities were on the front line; the editor and writers in the studio could check stories instantly by phone, through long-standing contacts at the official agencies.

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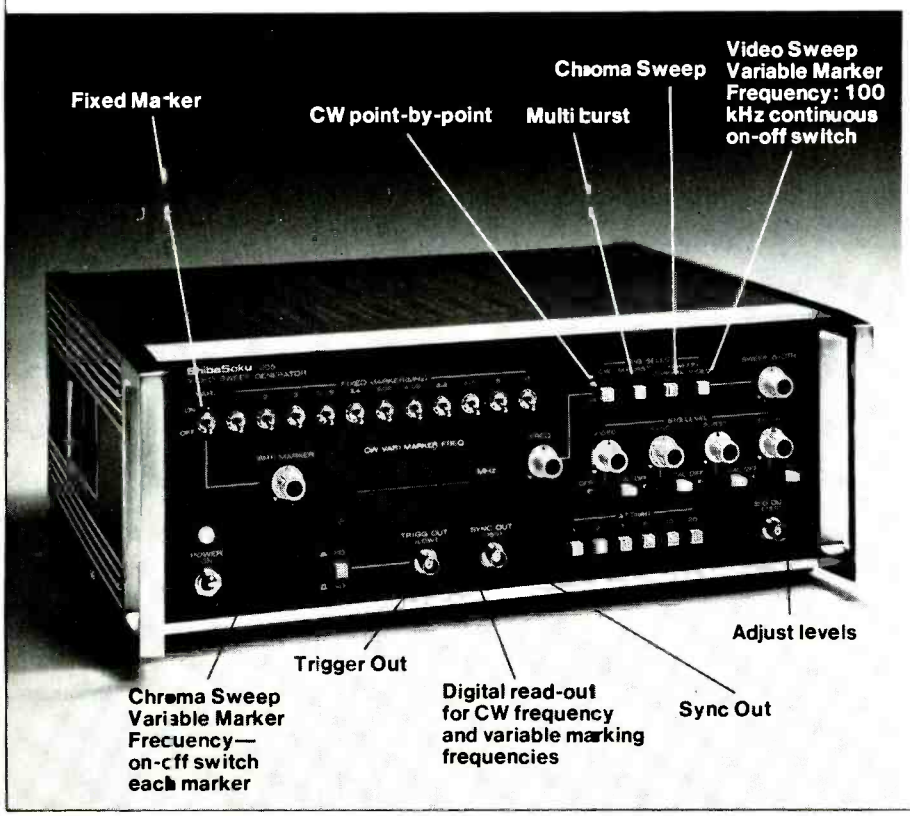

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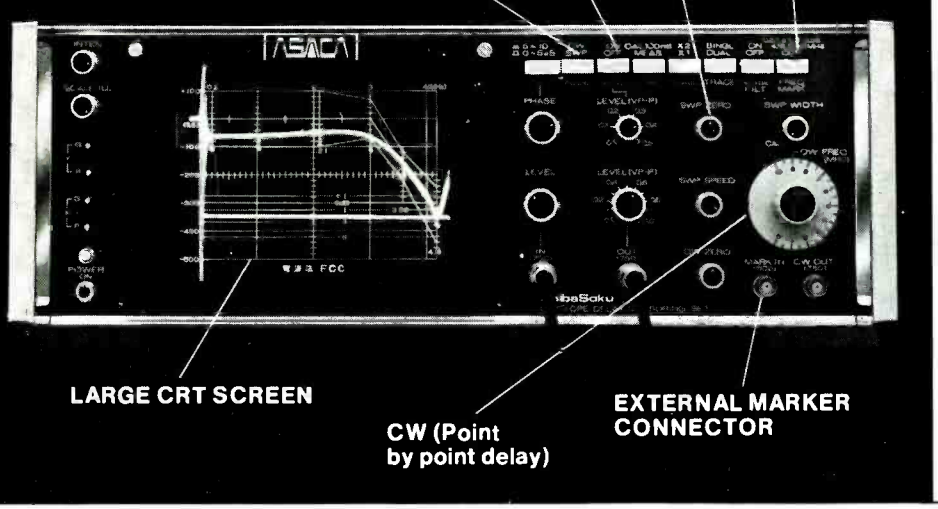

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Radio Plans For Order

By making maximum use of its highly skilled news organization, KFWB was able to keep those who listened—a large fraction of the city's citizens—on top of the fire situation at all times. The on-site interviews with authorities and victims made the meaning of the fires vivid. Advice to those in the path of the fire helped them cope with the terrible danger. Unremitting effort for accuracy made the KFWB reports immensely valuable. As in the other case histories told here, skill, plus a determination throughout the staff to go all-out for the community, allowed the station to handle a disaster well.

Veteran KODY: prepared for emergencies

To flourish for 50 years in a medium-sized city in an area that gets many blizzards in the winter and tornadoes in the summer implies skill in handling emergencies. KODY, in North Platte, Neb., AM-er on 1240 kHz, operating with 1000 watts in the day and 250 watts at night, has that skill to a high degree.

KODY is the EBS control station for the area. Emergency power is assured by a generator supplied by the civil defense organization; it is kept fueled at all times and starts automatically if commercial power is gone for more than three minutes.

The generator is in a shelter at the transmitter site, two miles outside the town. Also in the shelter at the transmitter is emergency operating equipment: a console, turntables, tape machine, and cart machine. There is even a supply of packaged food and enough water to sustain a couple of operators for several days. KODY has gone on the air from the transmitter site several times in the years it has been there, most of them for blizzards that knocked out power and made roads impassable. Travel to the transmitter site has been accomplished by snow vehicle.

Thus, the station has a strong mechanical backup for emergencies. Mrs. Jerry Wing, general manager, told *BM/E* about the staff organizational backup. Of the total of 16 people on the staff, two are regularly assigned to news gathering. But the station has a complete staff plan that goes into effect when an emergency is declared: every one of the 16 has a well-understood, thoroughly rehearsed part to play. Wing says no one has to be told what to do when the emergency hits. All move immediately into their assigned roles.

The station has a receiver constantly tuned to the NOAA weather radio in North Platte, thereby receiving official weather forecasts as soon as they are made. There is also a direct line to the local civil defense headquarters. And as the control station for the local EBS net, KODY gets a special call from the NOAA authorities whenever they believe a weather emergency is on the way.

This applies especially to tornadoes in the summer. For example, last July 31 the station got a call from Harry Spahn, chief at the NOAA weather station, who reported a tornado a few miles away, southwest of Imperial, Kans., and moving southeasterly. KODY carried out its EBS function, pushing the encoder button to alert other stations in the net, for wide coverage of the area. Then KODY went on the air with taped NOAA data detailing the location of the tornado and its apparent direction; listeners in the path were advised to get ready to go into shelters. Brief tornado survival advice was broadcast. All commercial broadcasts were suspended while the emergency was on. During this period, too, the station went on its daytime

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During the blizzards that afflict the area in the winter KODY becomes, among other things, an essential information center. Listeners are told which roads are impassable and which have been opened. Persons stranded away from home can let families know where they are. People who need emergency transportation to hospitals can be picked up by helicopter, if the whirlybird can get through. The close lines of communication to the police and the civil defense allow KODY to function as the communication agent in many kinds of urgent situations.

Wing made the point (as did other radio executives interviewed for this report) that ham radio can be very effective in getting information into the station from isolated areas. She has close relations with the local ham radio nets and operators in the nets have responded to the utmost whenever the community needed them. She also noted that many of the ranch operators in the surrounding area have their own two-way radio systems, which allow them to get information through to the station. KODY becomes the coordinator of many sources of vital information when the snow hits or a tornado threatens.

Towers down, power gone, but WABB hangs in

A couple of other stations in this survey—WHHR in Hilton Head, S.C., and WCEM in Cambridge, Md.—got hit by the fringes of Hurricane David.

Mobile, Ala., was right in the storm's path, and the city suffered a monumental disaster. Thousands of roofs blew off in the 130 mph winds; the whole wing of a hospital blew down; power was out for two weeks and more; nearly 500,000 people left their homes for safer shelter. Wind-blown objects made the streets extremely dangerous. The wind plus torrential rain flooded low-lying areas.

WABB-AM, in Mobile since 1948, puts out 5 kW straight in the daytime and goes directional at night; the FM ERP is 100 kW. Thanks to the management's attitudes and careful advance planning, the station was especially suited to play a central information role in the David disaster. It is the EBS control station in its local net, and has direct lines to the police and the civil defense organization.

In fact, WABB operates a pool studio right at civil defense headquarters so that broadcasts can originate there and be easily available to all radio stations in the area. The civil defense studio is linked to the main WABB studio not only by telco line, but by the station's Marti UHF radio remote equipment. A receiver is permanently tuned to the local NOAA weather station, which maintains a radar system for tracking storms; there is also a direct phone line from the station to NOAA. The station has emergency generators that can keep the plant on the air; these generators ran for nearly two weeks straight after the storm.

Led by president/general manager Bernard Dittman, WABB started to prepare listeners for the storm on the evening of the day before. The location of the storm as determined by NOAA was given periodically. Advice on how to maximize safety during the storm went out from time to time. Both music and commercials were cut back sharply to make room for this emergency coverage, and

Dittman told *BM/E* that some advertisers were annoyed, accusing him of unwarranted alarmism. What happened the next night, of course, wiped out any such annoyance in the face of gratitude for the station's performance.

Mobile is necessarily hurricane-conscious. One form this takes is the free distribution of maps of the area and of the adjoining Gulf, with geographical coordinates to allow pinpointing storm locations and directions. WABB supplies the maps free to citizens, as do many commercial establishments in the city. During the storm, WABB gave listeners location and direction regularly with the aid of the coordinates on the map.

Dittman has a complete personnel assignment plan for emergencies, with reporters carrying two-way radio equipment. All were in place by 9:00 a.m. of the morning of the storm, covering every section of the city. In order to give its warnings maximum value, WABB makes a careful weather analysis with the help and guidance of NOAA, and this analysis proved to be highly significant in the case of David.

Citizens of Mobile hear many hurricane warnings during the course of the season, but in the majority of cases hurricanes coming across the Gulf to Mobile go right or left, and largely miss the city. The reason for this is a pressure area over the city that diverts the hurricane. The result is that the seriousness of hurricane warnings tends to be down-rated by Mobil's citizenry.

WABB's analysis indicated that David would be different and much more serious because there was no pressure area to divert it. Consequently, the station warned listeners that David was likely to be severe, and advised full preparation for such a storm. Just how severe it would be the WABB forecasters, of course, did not know: they could not foresee winds of 130 miles per hour and a hurricane that moved more than 50 miles inland before losing force.

The storm struck at about 7:00 p.m. and reached a peak around 11:00 p.m. Power was lost early in the period; WABB's emergency generators took over. Three of WABB's four antenna towers were buckled over. The WABB engineering staff managed to retune so that the half-destroyed towers still loaded the AM transmitter well enough to put out a signal over the city. The FM transmitter was off the air.

WABB's largest service was to help in moving nearly 500,000 people out of their homes and into safer buildings designated by the police and civil defense, just ahead of the storm. The movement was completely orderly, and undoubtedly saved many lives.

During the four days of the emergency, WABB warned its listeners of many dangers. For example, fast-talking types were peddling emergency generators at inflated prices to homes all over the city: WABB warned listeners that such generators are illegal in homes. A lot of fires started because people put lighted candles near windows, where the wind could blow them to the floor. How to handle candles, as well as other aspects of hurricane survival, made up a manual of safety that was broadcast repeatedly.

WABB stayed on the air throughout the storm, the only broadcast station in the city to do so. It was a tower of strength, mostly because the management had the foresight, and the motivation, to get ready for the worst that might happen to Mobile. **BM/E**

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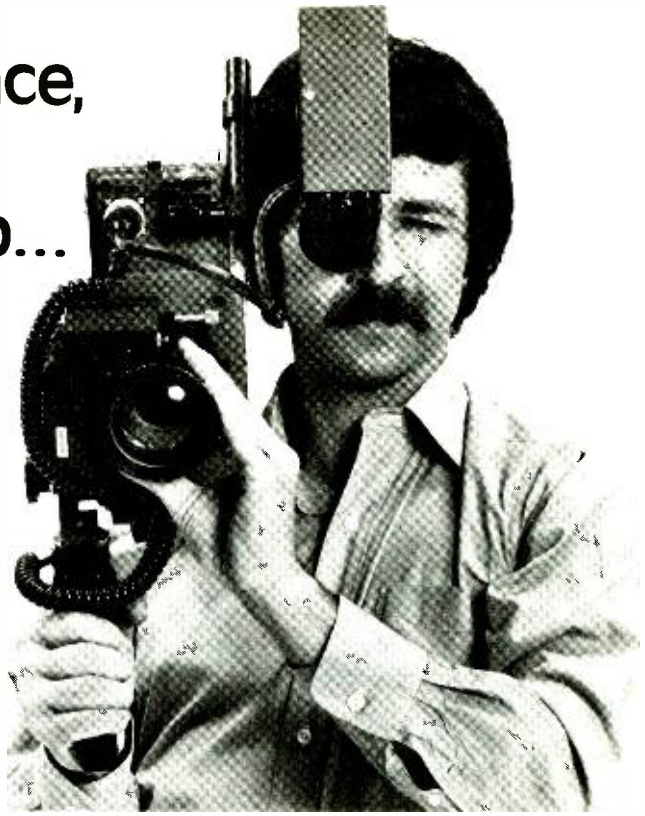

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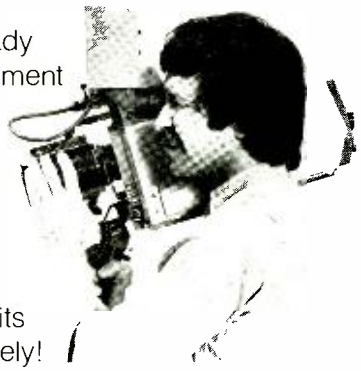

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A Crisis Response Plan In Brief

BM/E editors have collected some of the best ideas we uncovered while researching the preceding stories, and present them here in short form. Nearly all of the ideas are equally applicable to radio and television stations. Executing some of these ideas can be relatively expensive and executing some of the others, practically free. All of the ideas are invaluable.

Whether some of the suggestions made here are to be added to your existing emergency operating plans or whether they help you start one, some general observations are applicable across the board. Every aspect of an emergency plan should be known to each employee. The plan should be posted prominently and files relating to emergency procedures should be duplicated and accessible to more than one person. Whatever key telephone numbers are gathered should be posted prominently.

In smaller markets where individual resources may be limited, an emergency mini-network should be considered. The pooling of resources during times of crisis may be a very worthwhile endeavor. Few broadcasters seem to see a long-term advantage in short-term competition when their communities are endangered.

Gathering Information

- In addition to natural disasters that may be common to your area, identify industrial, commercial, and government facilities that may pose a threat. Contact the operators of such facilities and establish communications with their public information operation. Ask for background on the type of activity the facility is engaged in. Find out whom to call during an emergency and gather any information available on emergency procedures the facilities may have planned.
- Identify all local, county, state, and federal agencies that have a role to play in handling various types of disasters. Get telephone numbers of the chief public information officer for each of these agencies and understand the scope of the agencies' responsibilities. Concentrate on Civil Defense and get copies of evacuation plans that pertain to areas your station serves. Assign someone at the station to serve as the CD liaison.
- Satisfy yourself that should telephone traffic become too heavy during an emergency, you have alternate means of communicating with key agencies. Backup telco lines to certain agencies are helpful, UHF two-way radio may be available, and many agencies have special emergency frequencies through which they can communicate.
- Most states have an Office of Emergency Preparedness, or similar. Learn as much about this operation and its personnel as you can.
- Prepare an intelligence file on each type of emergency you may encounter. Collect useful information on how citizens can protect themselves from the effects of the different types of disasters you identify.
- Identify people at colleges and hospitals with specialized knowledge in the areas of concern. Ask them to be available to check and interpret information relevant to their specialties.
- Know and understand your local EBS role. Brief all personnel on the operation of EBS and your station's function in the EBS network.

Technical Preparation

- Your transmitter is your ultimate link to the public. Make sure the backup transmitter is in good working order and that emergency power is available at the transmitter site.
- Emergency power is basic. The Civil Defense authorities may supply an emergency generator to your station — free — if they believe your station is vital to their local emergency plans. There are reports of long waits for such generators, so if you can afford your own, get it.
- Emergency power at the studio is also important. Identify those electrical systems you could do without in an emergency and plan to shut them down to minimize the draw on your emergency power supply.
- Provide a backup to your STL. Check out the possibility of using one of your ENG microwave links as an alternative STL.
- For a small investment, provide a minimal studio and production facility at your transmitter site. If you have to retreat there, you'll still be able to do your job.
- Ham radio is an important communications system. Know who in your organization is a ham operator and have ham radio equipment available if practical. Know your local ham radio network.
- Equip the private automobiles of key station personnel with two-way radio.
- Keep an ample supply of charged batteries for equipment. Have a supply of heavy-duty plastic garbage bags on hand to protect equipment in bad weather.

Staff Organization

- Clearly establish who is in charge during emergencies. The news director or other top management individual with experience in making news judgments is your best bet. A telephone alert system should be organized by this individual to get personnel on to their assignments quickly.
- The chief engineer should also organize an emergency telephone alert system to get technical people into the station as quickly as possible.
- Be prepared to man the telephones. People assigned to answering questions from the public should have access to the file of agencies, their telephone numbers, and their areas of responsibility.
- Be prepared to set up a call-in program if practical. Have experts and authorities available on the program to answer questions. Don't guess, don't speculate. Call-ins can be good since questions on a few people's minds are often on many people's minds.
- Consider setting up some sort of rumor control panel to check information as it comes in.
- Have an arrangement with a local hotel or motel to provide rooms for staffers. If local accommodations are not available, stock blankets and air mattresses or mats.
- Warn other on-air people not directly engaged in the reporting of news to refrain from speculating about news items and the meaning of bulletins. Audiences often confuse casual remarks with hard news.
- Have an emergency staff assignment plan so that all staff members know where they are to go and what they are to do. New employees should be briefed on the station's emergency operating plan as part of their initial indoctrination.

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THE MARCH OF ENG MICROWAVE

By E.J. Forbes

"Going live" from distant locations has become a routine practice at most television stations in the country. From humble beginnings, the art of microwave ENG/EJ has begun to soar. In all fast-paced technologies, it helps to look at where we've been, where we are, and where we are headed.

THE PRESENT-DAY television news department at most stations covers one or more items live almost daily using an ENG/EJ system. Less than a decade ago we saw a transition of the news crew operation from film to tape, using reduced weight cameras and portable VTRs. Recent years have witnessed a further progression, making possible the prompt live presentation of newsworthy events through the medium of microwave transmission.

An ordinary two-person news crew is now armed with a lightweight camera, a van equipped with color generators, lighting equipment, a miniature 13 GHz transmitter to feed back video and audio from the camera/news personality to a van receiver, and relay via a 2 or 7 GHz system with antennas on a pneumatic mast to the directional antenna at the studio for processing and airing.

ENG's evolution is now expanding in the direction of airborne systems opening up wholly new dimensions to news coverage. We find both helicopters and fixed-wing aircraft employed as camera platforms and intermediate repeaters providing extension of the market 100 to 200 miles beyond the metropolitan street. These types of services place certain technical demands on the various constituents of the system, relating to transmission performance, immunity to a variety of impairments, and the system gain factor. Discussions of these parameters are available elsewhere. Let's look at some tools of the microwave ENG/EJ trade that several prominent manufacturers have developed to bring about this evolution.

E.J. Forbes is a staff technical consultant with Microwave Associates Communications, Burlington, Mass.

Antenna systems

The earliest microwave equipment used for broadcast remotes employed linearly polarized parabolic antennas with tripod transmitter installations, with similar receive antennas fitted to remote-controlled pan/tilt positioners mounted high on the plant transmitting tower. The parabola's bulk and instability in a moderate breeze has given way to new concepts in transmitting radiators. We find modern van systems equipped with pneumatic telescoping masts reaching 20 to 30 feet above the ground to clear the usual traffic and low vegetation obstructions, but with a limited wind load capacity for the antenna. Meeting that need, the industry has provided helical designs, like the Golden Rod™ marketed by Nurad (Figure 1) or the Disc Rod™ driven radiator, available from Microwave Associates Communications Co. (MAC), shown in Figure 2. These have nearly the same gain as a three-foot dish at 2 GHz but obvious negligible wind aperature.

The receiving antenna system has likewise drastically changed to meet the users' competitive desire. Antennas with Cosecant^2 patterns evolved from Nurad (20 SQ series) and Tayburn to provide a smoothly filled down-looking pattern for almost constant system gain. Very compact directional positionable array antennas with beaver tail patterns come from MAC (DA-620 series); both have gains almost equivalent to four-foot dishes. Of course, to solve the problem of the building cosmetics, suppliers naturally offer sectoral horns with substantially lower gain but generally adequate metropolitan coverage.

The advent of the helicopter plus broadcasters' desire to avoid dedication of personnel to a specialized facility have brought forth a further dimension to the antenna system — the tracker. A fully automatic tracking antenna (azimuth only) with a CSC^2 (Figure 3) uplooking capability has been marketed by Tayburn to meet that need. This type of airborne system obviously requires antennas on the airframe with radiation patterns tailored to the operation, i.e., omni or controlled-directional. The manufacturers mentioned thus far have covered those needs with thoroughness, for a variety of pattern shapes and gains.

The complex electrical and mechanical characteristics of the various fixed and rotating antennas are far beyond the scope of this article. Readers can satisfy their interests by obtaining the desired detail and pattern information directly from the manufacturer.

The radio

Early microwave ENG systems were hardly more than repackaged STL fixed link or remote pickup portable equipments. When the broadcaster was the only show in town and "live news" was the innovation of the day, such equipment and its characteristics was a pretty safe bet.

Fig. 1. The Golden Rod™ from Nurad and (Fig. 2, right) the Disc Rod™ from MAC were designed to provide high gain and low wind loading

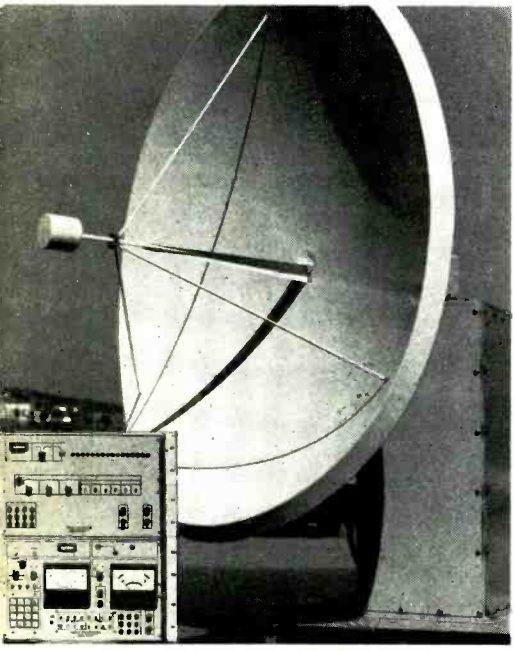

Fig. 3. Tayburn has developed the automatic tracking antenna especially for helicopter systems

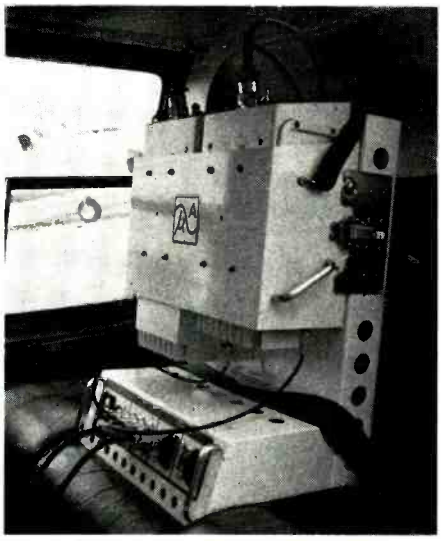

Fig. 4. MAC developed this Flight Pack for quick installation in helicopter or van

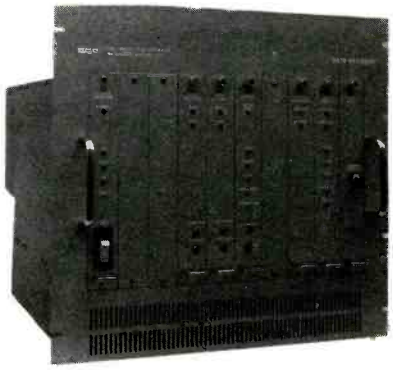

Fig. 5. D.A.T.E. is a harbinger of systems that will employ digital audio

Time and competition, however, have produced an exponential expansion of the users in most metropolitan markets. The result has been an overflow situation from the crowded 2 GHz BAS (Broadcast Auxiliary Service) band upwards to the 7 and 13 GHz spectrum. Equipment manufacturers have, in the most recent years, developed receivers with specialized characteristics to provide the selectivity and dynamic range necessary to meet the demands brought on by the very close channel spacing and widely varying relative signal strengths. It's not uncommon now (for instance, in the 2 GHz BAS band) to find systems satisfactorily working with the adjacent, potentially interfering channel running 30 dB hotter or sequential shots differing by over 60 dB and still having an airable product!

Principal marketers of these instruments are Farinon with its FV2CR and MAC with its MA-2GU. These products, and some others that are emerging, boast a full-frequency agility, among other features. With rapid switching and the remote control systems generally implemented for the positionable antenna, a station can now operate economically with several vehicles and crews on differing assignments as well as "take a look at the other guy."

Originating microwave radios for the vehicle, terrestrial or airborne, have undergone great improvement. Complete solid state transmitters or receivers are now well under a cubic foot, with self-contained power supplies suitable for a cigarette lighter socket or ac mains; they generally weigh in at about 20 pounds. The majority of these boast one or more high quality analog audio channels and radio channel frequency agility, some featuring a simple front selector switch for seven (with ± offsets) or 10 channels safely in the hands of the camera operator.

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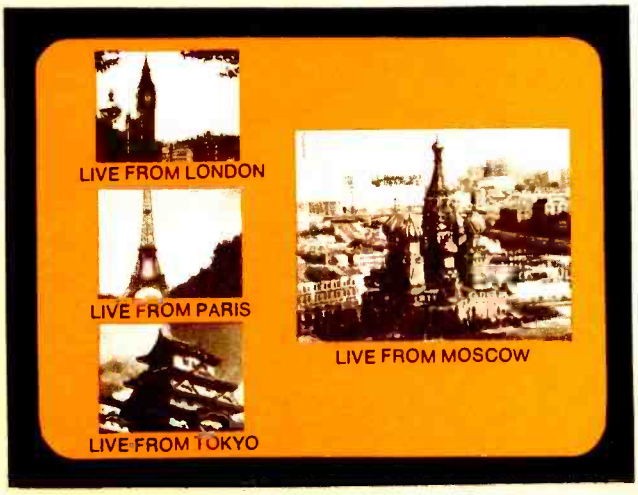

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The March of ENG Microwave

Notable suppliers in this market are Farinon (FV-MP series) MAC (MA-2CP, MA-2P, MA-7EP, and others), RF Technology (WTR-2 transmitter and receiver), and Tayburn. Competition has led to the development of gear with such remarkable RF/primary power efficiency that the manufacturers offer moderate cost rechargeable battery packs to permit completely isolated operation for three or four continuous hours.

Since system gain is frequently a major limitation in the operation, every effort is made to trim the transmission line losses, look for higher power, and maximize receiver sensitivity. It is commonplace to find mast-mounted RF power post amplifiers to minimize the losses in the flex cable up the pneumatic mast and low noise preamplifiers with noise figures of 3 dB or less to mop up receiving down line losses (which could be rather large considering that the ENG/EJ receiving antenna may be 1000 to 2000 feet up a tower).

With the wide variety of ENG/EJ applications, some highly specialized equipment has appeared. In the helicopter/fixed wing system are radio packages developed by ENG Helicopter Satellites, Ltd., MAC (Figure 4 shows a MAC-developed seat-oriented Flight-Pack), and Tayburn. With the exception of the last, these airborne radio packages are "demountable" so that they may be quickly relocated for terrestrial use, a virtue in justification of the capital outlay. The features differ widely and the reader is urged to seek details directly from the supplier.

While not directly available in the ENG/EJ products of today, we have had a glimpse of the benefits of a new digital audio transmission system called D.A.T.E. (Digital Audio for Television; see Figure 5) at some recent professional meetings. D.A.T.E. was jointly developed by the Public Broadcasting Service (PBS) and Digital Communications Company (DCC), one of the M/A-Com companies. This system has the same general philosophy and compatibility of the traditional diplexing of video and audio, in that the FSK subcarrier is spectrally located above the video band. Typical of any digital voice information transmission, D.A.T.E. offers essentially constant and impressively good signal-to-noise ratio down to carrier-to-noise ratios where the video performance is no longer useable. Additionally, it offers complete immunity to that ENG/EJ built-in impairer, multipath, which wreaks havoc with the video and the fashionable analog audio. This maybe, is an audio transmission vehicle of the future.

What next?

ENG/EJ systems, as we can see, have made enormous strides over the last decade. Considerable crowding in the lower BAS band, due simply to popularity and competition, is forcing users higher in the spectrum. Above 13 GHz, where will the broadcaster go? Recent regulatory changes, plus those to be promulgated at the WARC conference in Geneva, will have a decided impact on spectrum utility and the next step.

Natural improvements in products will take place with competitive pressures to be more efficient, smaller, lighter, and less expensive. Differing modulation techniques consistent with regulatory issues may be seen for further transmission benefits. In any case, the 80s look exciting for both the user and the manufacturer. **BM/E**

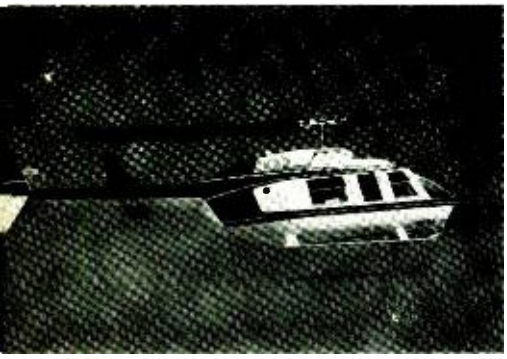
Helicopters And Microwave: A Natural Combination

At the last RTNDA it was reported that there are now some 37 helicopters in use at television stations around the country for ENG coverage; the number is predicted to rise to over 200.

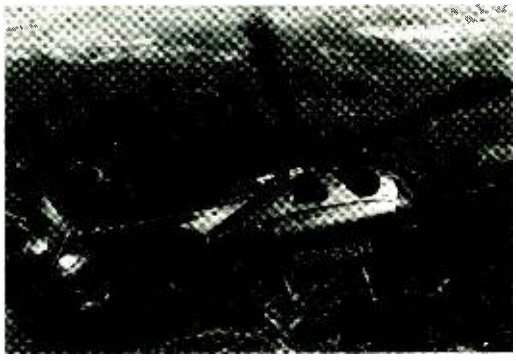
The benefits of a microwave-equipped helicopter during crisis response are obvious: while providing often spectacular coverage of the affected area and an overview not possible from the ground, they offer a station the capability of getting a crew out to the scene of a disaster or affected area in a hurry. Once there, the crew can be dropped off and the signal relayed back to the station using the helicopter as a repeater station.

A number of major manufacturers offer microwave systems for use in helicopters, among them Microwave Associates and Tayburn. The following chart is designed, however, to offer a quick comparison of the helicopters themselves. The three jet-powered models (the Bell JetRanger and LongRanger and the Hughes 500D) plainly offer greater range, speed, and even comfort than the standard-engine-powered Enstrom models. Their prices, of course, are also considerably higher.

Those planning to purchase a helicopter should compare carefully the various parameters, such as passenger and weight loading, range, duration, speed, and price. It is also suggested that you contact the helicopter and microwave system manufacturers to see which standard and optional features are desirable for ENG use.



Bell LongRanger II 206-L



Hughes 500D

Enstrom 280C "Shark"

Manufacturer and Model

	Bell Helicopter		Hughes Helicopter	Enstrom Helicopter	
Specifications	**JetRanger III (206B)**	**LongRanger II (206L-1)**	**500D**	**F-28C-2 "Shark"**	**280C**
Overall length (inc. rotors)	39.1 ft.	42.7 ft.	30.5 ft.	29.3 ft.	27.6 ft.
Overall height	11.7 ft.	10.3 ft.	8.9 ft.	9.2 ft.	9.2 ft.
Cabin width at seats	3.9 ft.	3.9 ft.	4.6 ft.	5.1 ft.	4.9 ft.
Number of places	5	7	5	3	3
Fuel tank capacity	76 gal.	98 gal.	64 gal.	40 gal.	40 gal.
Normal gross weight	3200 lbs.	4050 lbs.	3000 lbs.	2350 lbs.	2350 lbs.
Empty weight (std. configuration)	1580 lbs.	2156 lbs.	1360 lbs.	1500 lbs.	1500 lbs.
Useful load	1620 lbs.	1894 lbs.	1640 lbs.	850 lbs.	850 lbs.
Performance (standard day, sea level, @ normal gross weight)	@ 3200 lbs.	@ 4050 lbs.	@ 3000 lbs.	@ 2350 lbs.	@ 2350 lbs.
Maximum permitted speed	140 mph	150 mph	175 mph	112 mph	117 mph
Maximum cruising speed	133 mph	130 mph	160 mph	112 mph	117 mph
Maximum rate of climb	1260 fpm	1440 fpm	1900 fpm	1150 fpm	1150 fpm
Hover performance In ground effect Out of ground effect	 12,800 ft. 8800 ft.	 13,200 ft. 8100 ft.	 8500 ft. 7500 ft.	 8800 ft. 4100 ft.	 8800 ft. 4100 ft.
Service ceiling	13,500 ft.	19,500 ft.	15,000 ft.	12,000 ft.	12,000 ft.
Maximum range (in statute miles)	341 miles	342 miles	300 miles	253 miles	266 miles
Maximum endurance	2.92 hrs.	3.1 hrs.	2.8 hrs.	3.7 hrs.	3.7 hrs.
Price (for standard configuration model)	$245,000	$390,000 VFR	$250,000	$103,000	$108,000

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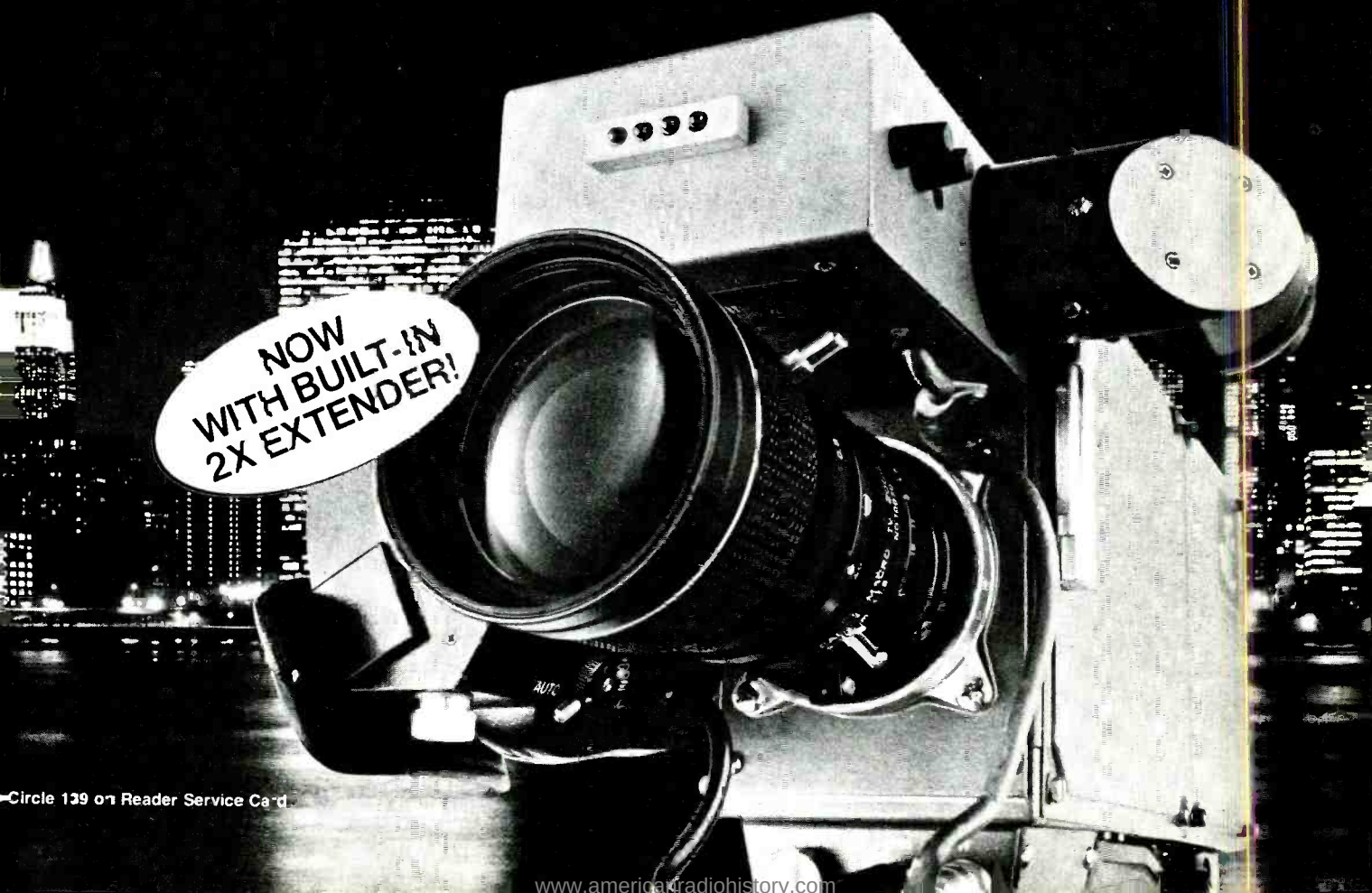

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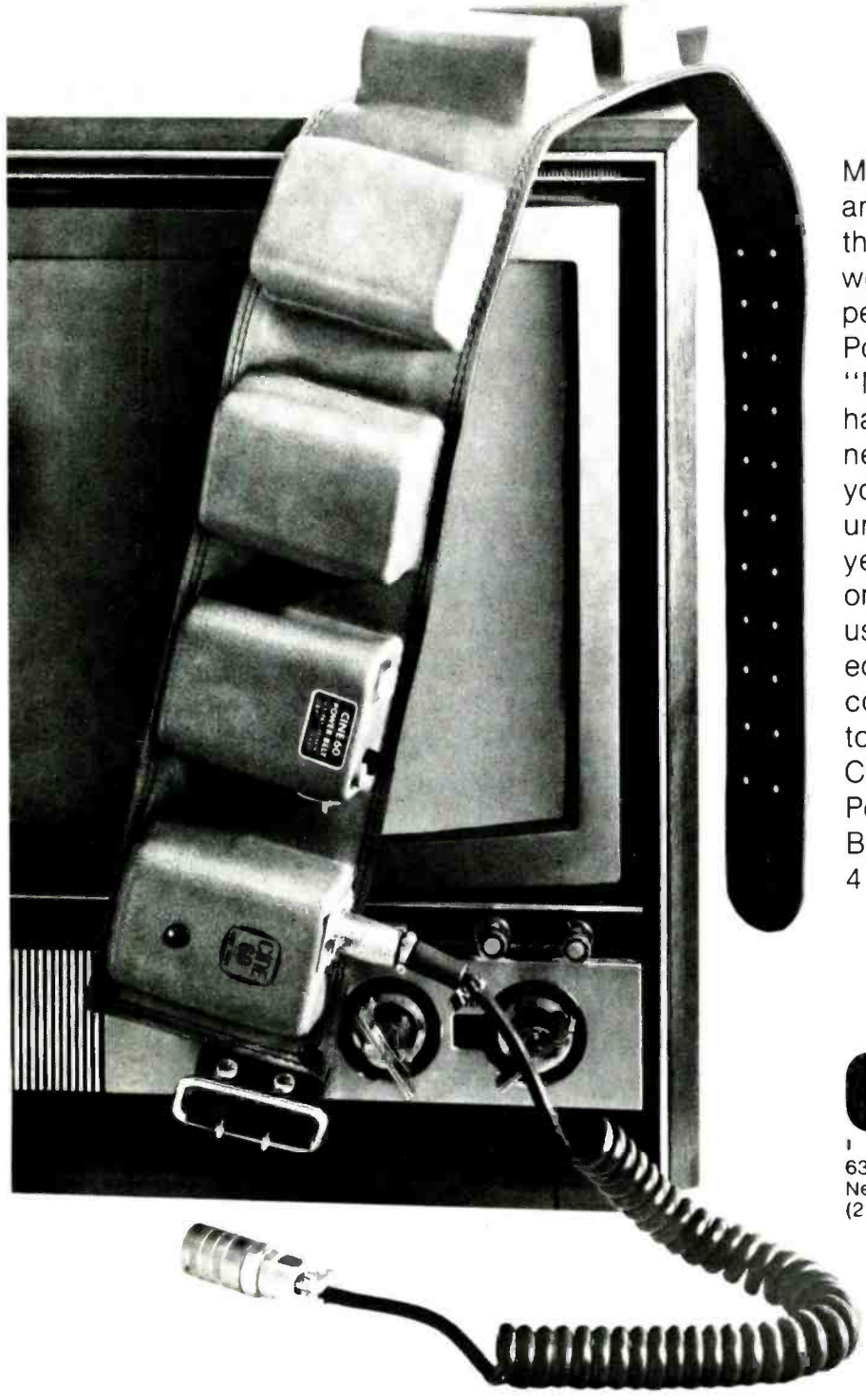

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BM/E NEWS FEATURE

New Digital Recorders And Audio Processors Lead Upgrade Parade At New York AES Show

BROADCASTERS LOOKING for equipment to aid them in the refinement of audio could choose from a number of new devices and systems shown at the 64th Convention of the Audio Engineering Society, held at New York's Waldorf-Astoria Hotel November 2 through 5. The convention, with more than 6000 in attendance and about 170 exhibitors, set new highs for the AES and showed the great intensity and scope of audio advance in many countries.

Digital recording of audio, as expected, furnished most of the excitement on the exhibit floor. 3M and Sony, the two firms now actually selling digital recorders, both added units to their lines. 3M brought a 16-track version of its 32-track recorder, introduced earlier. The 16-track machine has a price of about $73,000.

3M also had the final version of the electronic editor for its system, previously shown in prototype; price is $7500.

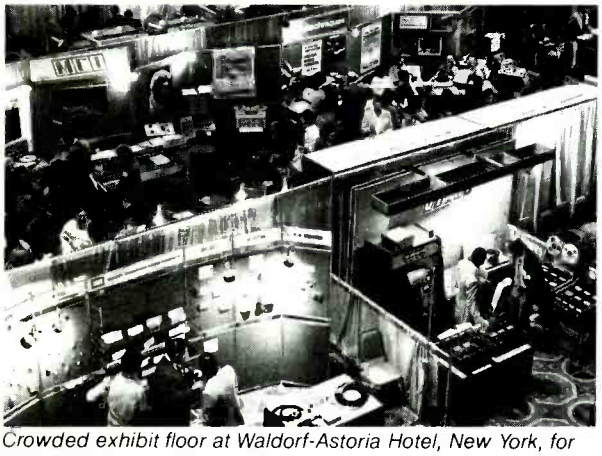
Sony had the PCM-1600 and PCM-1, which are, respectively, 16-bit and 13-bit converters for putting PCM audio onto videotape recorders. Like the 3M machines, the Sony PCM-1600 is being extensively used for the original tapes in commercial recording. Announced was the new PCM-100, a unit with the same function, intermediate to the other two with 14-bit coding, and intermediate in price.

Another Sony digital unit announced at the show was the DAE-1100, an improved electronic editor for the PCM-on-videotape system with remote control capability. Location of edit points is similar to rocking reels on analog recorders; both punch-in and assembly edits can be previewed and do not require any cutting or physical contact with the tape. Sony's demonstration of the system's operation was lucid and convincing.

Sony also announced a digital quantization processor, DQP-6040, which converts 16-bit PCM recordings to 14-bit and is compatible with any audio system using the standard EIAJ format; the PCM-3324, a 24-track fixed-head digital recorder using half-inch tape at 30 ips; and the PCM-3204, a portable four-track digital recorder using quarter-inch tape at 15 ips.

Prototypes of converter systems for putting PCM audio onto videotape were shown by Mitsubishi and JVC. Advanced models of multitrack fixed-head digital machines came from Matsushita and Mitsubishi. Although not on the exhibit floor, a two-track digital recorder with fixed head was announced just before the show as a collaborative effort of MCI of Fort Lauderdale and EMI, the English music and electronics conglomerate.

So the industry is full-out to bring digital audio into use. Even with only three systems in actual use (Soundstream, 3M, and Sony), all the major record companies now are releasing digitally mastered recordings on a fairly regular basis. By the time this magazine is distributed, there are likely to be well over a hundred such recordings on the market.



Crowded exhibit floor at Waldorf-Astoria Hotel, New York, for 64th AES Convention

Music synthesizers draw strong attention in new versions using digital technology

One of many large consoles on floor was English-made Cadac, demonstrated by Irv Joel Associates

Sony showed improved editor for PCM-audio-on-videotape system

NEWS FEATURE

In the technical sessions, there were reports on digital system development from a number of firms around the world. Some of them: Mitsubishi described a two-channel fixed-head machine. Matsushita gave details on its PCM system for VTRs, as did Mitsubishi. Sony, in several papers, explored various coding and error correction schemes and gave rules for bit reduction to save bandwidth. Teldec outlined a digital audio disc system. Philips revealed the error correction scheme used in the Compact Disc.

A full complement of analog tape machines was also on the exhibit floor, with all the established makers on hand. Ampex announced the ATR-124, a 24-track version of the ATR-100 introduced in 1978. Otari announced the MTR-90, a new 24-track machine. Eumig brought the FL-1000, a microprocessor-controlled cassette recorder with eight-bit computer interface, designed for programmable operation.

Consoles were present in their usual abundance. Irv Joel Associates had the JL-412 unit with all controls and electronics in a bridge and a work surface below, introduced this past October at the National Radio Broadcasters Association meeting in Washington (see *BM/E*, December, 1979). Harrison, Neve, and MCI all had improvements on their console automation systems. Other console makers from the United States and abroad showed models both for recording studios and broadcast use.

Also significant for broadcasters were the many audio processors shown. MICMIX introduced a new moderate-priced reverb unit, the XL-305, a compact unit claiming performance as an acoustic synthesizer to match the performance of a live chamber. Orban had a new equalizer that combined characteristics of both the graphic and the parametric designs. DBX showed a new compressor/limiter, Model 164, with feed forward gain reduction and "over easy" compression. Marshall Electronics and Eventide Clockworks had improved versions of their delay-line special effects units. Ursa Major displayed its digital reverb system. Orange County Electronics offered a new version of its VS-1 limiter-compander, which includes a full parametric equalizer.

Allison Research showed a new version of its program expander, Kepex II, with expansion range 0 to 80 dB and S/N stated as more than 90 dB; distortion is under 0.05 percent. It can be used for noise reduction and for control of reverberation and leakage. Audio and Design Recording introduced the Ex-press Limiter, a compressor/limiter/expander with digital control of functions. LED indicators show mode settings; a memory retains last-use settings when the unit is switched off.

In practically every case, the audio processing systems noted above and the others shown come up to state-of-the-art standards on distortion and noise, showing that nearly all firms making this class of equipment have joined the movement of the last few years toward a much more refined processing performance.

Test equipment for audio functions has also moved upward on a broad scale to a substantially higher level of refinement. For example, Sound Technology, well established with their line of high-performance audio distortion analyzers, brought a new unit — the 1500A tape recorder test system. With microprocessor control, it shows digitally and graphically the level, azimuth, frequency response, distortion, flutter, separation, speed, and noise of a tape machine.

Barclay Analytical had new refinements on the Badap, a microcomputer-controlled audio spectrum analyzer, which shows up to 32 tracks with peak and average readings simultaneously and includes two memories for holding maximum or minimum readings for later comparison with others. The maker described a very long list of test functions for the Badap, including a dozen or more such specialities as the "fatigue factor" in radio signals, in addition to all the usual amplitude and frequency readings.

Amber Electro Design introduced a miniature distortion analyzer that is stated to read down to 0.002 percent residual. Called Model 3500, it is a portable with battery power, built-in oscillator, and automatic operation.

Eventide Clockworks extended its product range with a new line of low-cost real-time spectrum analyzers intended primarily to fit into popular home computers. Broadcasters may want to examine these units for possible use in some monitoring functions.

Microphones were on hand in plenty, with AKG, Beyer, Electro-Voice, Shure, and Neumann (through Gotham Audio) showing their lines. New to the AES were the Neumann U89, a condenser mic with five selectable patterns, and the Shure SM81, another new condenser mic.

Among the 70-odd technical papers, in addition to the dozen on digital technology, those that may interest broadcasters included several on testing for TIM distortion and one on a system for automatically tuning FM tuners to the minimum distortion point. Broadcast engineers who did not get to the show may want to write the AES at 60 East 42 Street, New York, N.Y. 10017, for the complete list of papers available in preprint form. **BM/E**

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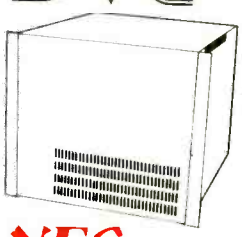

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BM/E NEWS FEATURE

SMPTE Conference Reflects Betrothal Of Film And Tape

More equipment and more visitors marked this SMPTE conference as a "mini-NAB"

IN LOS ANGELES, filmmaking capitol of the world, engineers, producers, and sundry aficionados revealed the first positive steps in a trend that will lead to the marriage of film and videotape.

Unlike the Montagues and Capulets of Shakespearean tragedy, the warring houses of videotape and film appear to be coming closer to a satisfactory marriage of their offspring. The application of electronic technology to film is making it possible for a formidable new alliance to be established in which the best of both families will unite to further the goals of worldwide communication.

During five days (October 21 through 26) of technical papers and equipment exhibitions it became clear that the computerization and digitalization of film handling and imaging were closing the chasm that has kept video and film technology apart. New telecines, new approaches to computerized post-production, an insistent clamor for a common time and control system, computerized color correction, digital storage of film images, a sprocketed film-like videotape system for audio post-production, new multi audio/video recorder controllers, and an impressive advance in tape-to-film transfer quality are all evidence that a combination of film and videotape technology can do much more than either technology separately.

Nevertheless, advances in both fields were reported that suggest both media will continue to develop on their own regardless of any ultimate union.

Generally, the 121st Technical Conference and Equipment Exhibit convened at the Century Plaza Hotel in Los Angeles with the air of what was commonly called a "mini-NAB." More exhibitors than ever before (167) occupied 331 booths. According to Jeff Friedman of SMPTE, the 9000 delegates represented a 25 percent increase in registration over the previous year. Registrations for the technical sessions, however, were at about the same level as last year.

Unlike previous meetings of the SMPTE in Los Angeles, this year's conference included nearly equal television and film industry representation. The marked growth in television representation may be another indication of the narrowing gap between the two technologies.

The exhibit portion of the show, which experienced a nearly 50 percent growth over last year, did not expand painlessly. Numerous exhibitors complained that they had only Sunday to prepare for the noon Monday opening of the exhibit floor. This short setup time was further complicated by the hotel's failure to provide electrical service to some exhibitors until after 2:00 p.m. on Sunday. As the exhibits officially opened at noon, visitors encountered large numbers of booths still being set up. By late afternnon, however, setup was completed and exhibits settled into routine operation for the balance of the conference.

Technical sessions

Though the technical papers presented at the conference were grouped into topics such as "Laboratory Practices," "Television Production," "Television Post-Production," "Motion Picture Sound Technology," "Television Sound Technology," and other headings, a common theme emerged. The general vision of the 80s evoked at the 121st Technical Conference — SMPTE's last conference of this decade — was of a changing picture of demand. The new programming opportunities that exist in the pay-TV market, the home video market, and the international market, in addition to a booming and competitive broadcast market, present a challenge to the industry to innovate and improve its efficiency. The first targets for improvement and innovation appear to be a streamlined post-production system, improved ability to work in a variety of media, and the development of additional services such as stereo audio for television and teletext systems

Along these lines, a number of developments became clear. The roles of the frame synchronizer and digital special effects seem assured, and the attention now seems riveted to improving the efficiency of post-production systems. Joseph Flaherty, vice president of engineering for the CBS Television Network, described an off-line editing system developed by CBS that utilizes six Sony Betamax VCRs for its primary recording and playback machines.

The specially modified VCRs in this system are still less expensive than larger format recorders and use the less expensive half-inch videotape cassettes. Associated with the half-inch VCR, however, is an elaborate computer control system with CMX-compatible software.

The object in designing this sytem, said Flaherty, was to remove "the last remaining barrier to the conversion of single-camera film production to videotape . . . " To accomplish this, the system would have to be low-cost, easy to use, "optimized for sucessive reediting," and compatible with the CMX decision list.

The description of the system that followed met just about everyone's definitions of the criteria established, with the possible exception of "low-cost." Though the specially modified Sony Betamax VCRs should be less costly than larger format recorders, and though the half-inch videocassettes

used by these machines should reduce tape costs, the enormously elaborate computer control, editing software, and light-pen based operator interface would seem to push the system's cost beyond what a lot of producers would call low. Since the system is developmental, however, there is no fair way of gauging what its ultimate cost might be should it become a regularly manufactured system.

Operationally, the system seems superb. The use of the six VCRs was designed to emulate the single-camera film editing technique as closely as possible. Therefore, three of the VCRs are used as recorders. The first cut is recorded on VCR 1, the second cut on VCR 2, and the third cut on VCR 3. The fourth cut is then recorded on VCR 1, again with the distance between cut 1 and cut 2 filled with black, much as black leader is used in film during editing. In playback, this multi-machine use is transparent — playing back the video in a single stream with the computer controller providing switching between cuts. By keeping the cuts on three different VCRs and letting the computer controller and software handle the switching, it becomes possible to alter almost any cut without requiring the adjustment of abutting segments.

The operator uses a light pen to select modes and functions from the system's CRT, which displays various menus. A wide range of special effects at variable rates is available. The output of the system is a "work print" and a CMX-compatible edit list for conforming the original.

The pressure for development of such a system derives mainly from the reluctance to give up the 80-year heritage of visual grammar built up during the film years and the superior economics of tape. Few would dispute the aesthetic maturity of film, though some would dispute the economics of tape, but networks look at a larger balance sheet than a smaller volume production company and therefore find videotape more economical in the long run.

Bruce Raynor of The Grass Valley Group outlined a plan for interfacing a sophisticated intelligent switcher to a computer-assisted editing controller. One of the design objectives for the development of GVG's Series 300 production system was to provide a fully integrated post-production switcher. Not only are the numerous wipe patterns, multiple reentry chroma keys, and digital special effects of the modern production switcher difficult to fully exploit during production, but the complexity of event sequences are even difficult to master during post-production.

The first step toward controlling complex switcher setups was the development of microprocessor control systems such as Vital's PSAS, CDL's CAPS, and GVG's E-MEM. In the GVG case, E-MEM (Effects Memory) "learns" the switcher setup executed by the operator and then stores it in one of several registers along with selected transition rates, if applicable. Since modern switchers keep adding effects to their repertory, editing controllers have to keep pace with these effects in order to use them. As writing additional software becomes impractical, it would simplify things if the edit controller could access the switcher's memory rather than needing to describe the event itself. Toward this end, GVG has developed an interface for E-MEM that will allow almost any edit controller to pass control of a specific editing sequence to the E-MEM unit and automatically return control to the editor when the event(s) is completed. While the Series 300 switcher is specifically designed for use in this type of post-production situation, other GVG switchers with E-MEM can also be used. ABC, New York, will be the first

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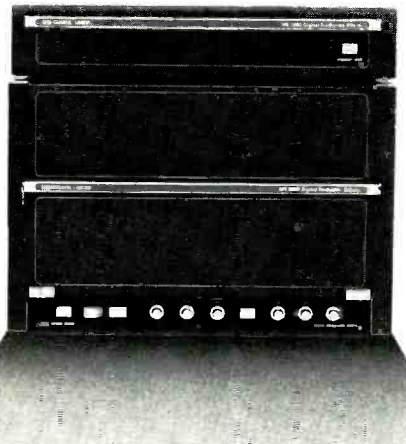

The digital video people

Circle 145 on Reader Service Card

installation of such a system, where CMX will interface with the GVG E-MEM.

SMPTE Time and Control Code

Several papers were presented concerning SMPTE Time and Control Code. As indicated in last month's *BM/E*, time and control code still presents the industry with a series of challenges. While the scores of SMPTE time code readers/generators do a creditable job of providing the basic frame reference for synchronizing several sources (both audio and video), the 32 user bits provided for remain virtually untapped. Moreover, since the serial time code is recorded on an audio cue track, stop motion and slow motion search techniques become impractical. To compensate for this, practice has been to insert the time code in the video for off-line editing. This leads to an awkward and sometimes inaccurate process of noting edit points by hand for entry into the editing system. John B. Gray of Gray Engineering described a time code reader developed by Gray that solves this problem. The new reader digitizes the video picture with time code and performs character recognition to recover the time code and enter it directly in the editing system via a computer interface and a six-line serial output. The system currently recognizes character fonts of Gray's DR-107 character generator or equivalent, but work is continuing to accomodate other fonts.

L.P. Reitz, Jr., also of Gray, outlined a number of ways his company is attempting to exploit the user bit portion of SMPTE Time and Control Code. User bits have already been used to encode film edge numbers when the object is to produce an edit decision list for conforming on film. Calendar dates, take and scene numbers, and other types of identification have also been encoded as user bits. Still, the potential of user bits seems relatively untapped. Reitz's paper implied that one way of getting more useful information encoded through user bits would be by using a separate user bit generator capable of multiplexing data in the user bit portions of the code. Such equipment for encoding and decoding multiplexed data already exists, says Reitz, but the real hope may lie in using ASCII-2 code to form a running commentary. By reserving the first two groups of user bits for this purpose, up to 250 words of commentary per minute could be encoded and 10 fixed messages of six digits each could be retained.

The limitations of the user bit concept, however, were outlined in a paper presented by Dale M. McNulty of Datatron, Inc. McNulty pointed out that there are basically two types of user bit commentary: edit-related information such as film edge numbers, and non-edit-related information such as take and scene numbers. Since there is difficulty in recovering time code and user bit data at very fast and very slow speeds, use of the bits for edit-related data can be risky. For non-edit-related information, the space provided for user bit data is restrictive. Though a large amount of numerical data could be accommodated, non-numerical data would require considerably more room to generate useful comments. Unique comments made frame by frame would present serious error checking and correction problems. "These limitations," said McNulty, "have slowed the industry's innovation and acceptance of user bits." Without a clear indication from the industry as to how it would like to apply user bits, few people have been willing to suggest innovations. As a result, said McNulty, data formats and edit list considerations go unresolved and the limitations of user bits are compounded.

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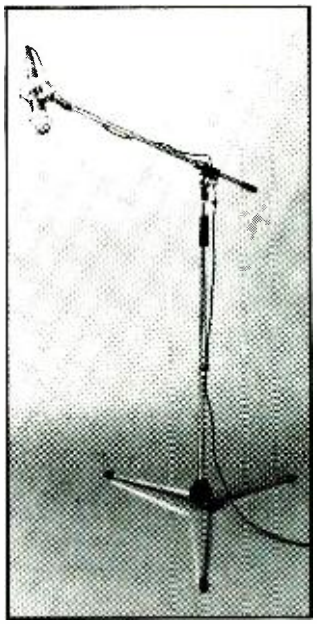

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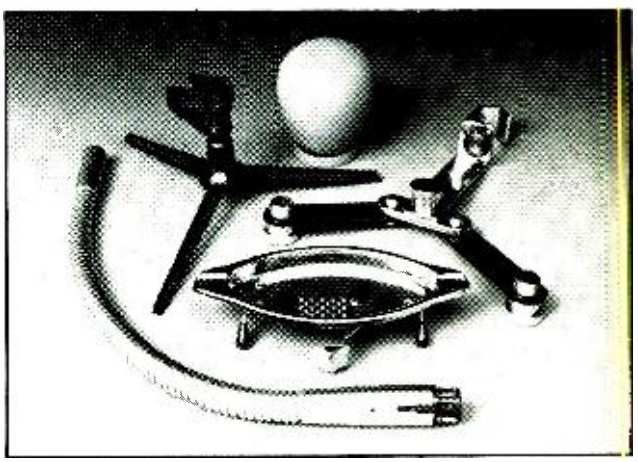

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Audio post-production

Despite the misgivings apparent over user bits, SMPTE Time and Control Code remains a valuable asset — particularly in post-production of audio. In no area other than audio is the desire to retain "film-technique" as clear and SMPTE Time Code has played a large role in making this possible. Two papers presented on the topic of audio post-production gave certain proof of this.

C. Robert Paulson of AVP Communications read a paper coauthored by J. Wilson of Philips Broadcast Equipment Corp. and H. Adams of Adams/Smith that explained how the new Adams/Smith 605 television audio post-production synchronizer permits the application of "film-style" audio post-production to the television medium. In audio, "film-style" simply means the ability to remove the sound track from the original and build a multi-track, sweetened audio composite independent of the picture, which will be laid back onto the final edited version of the picture material.

To accomplish this, the 605 controls any two slave audio tape recorders and any single master audio tape recorder. In its simplest form a single two-channel ATR would be used in conjunction with a four-channel master (or mix) recorder. In its most complex form, 32-track ATRs would be used with a computer-controlled audio board.

Control of the audio post-production process is provided by time code associated with the pictures on a videotape work print. The code need not be sequential, nor should it be if the edited synchronous sound track is to be one of the sources. Sources other than the edited videotape, however, must be recorded into the system in relationship to a single continuous track of time code.

All sound sources are then recorded onto the source tape. The sound locations are adjusted in relationship to one another on the mix tape, with sweetening accomplished at this point. By manipulating the relationship of the two recorders and their individual tracks, the sytem can emulate any configuration of equipment used in film-style audio post-production.

Another approach to bringing film-style audio post-production to TV was discussed by Bob Fine of Magna-Tech Electronic Co., Inc. His system, called VIDI-MAG™, is not designed to emulate a film-style post-production audio setup but to use one. Magna-Tech has designed a system whereby the video and audio are recorded on the VIDI-MAG system, which utilizes a 16 mm sprocketed videotape.

Once video and audio are transferred to the VIDI-MAG system, the content can be used in any standard film-type setup for looping, track building and synchronizing, sound mixing, or other purpose. Since the signals are recorded with SMPTE/EBU Time Code and the system includes a time code regenerator, layback from either a multitrack audio master or single audio master is simple. 3M has developed the 16 mm sprocketed videotape for use with the system.

While the demand for better audio post-production has led to these types of developments, the vast improvements in telecine design and operation have resulted from a continued enthusiasm for the film look and the continuing role of film as the only generally practicable medium for international distribution. While digital standards conversion of the video signal has greatly improved, it is still a costly process.

The application of microprocessor control to telecine operation and the adoption of digital frame storage to image processing within the modern telecine have created a hybrid in which

the resulting image is neither film nor videotape in the strictest sense. In fact, some people claim that the new telecines have managed to achieve the best of both worlds. The application of the digital frame store to Rank Cintel's Mark III flying spot scanner has allowed that company to claim a "live look" for its telecine.

Two papers from Bosch-Fernseh provided insight to that firm's radically new approach to telecine technology. The new machine, not yet available on the American market, uses both a new electronic design based on CCD-line sensors and a new mechanical design aimed at providing VTR-like transport operation.

Mechanically, the film is moved by means of a capstan wrap independent of the film's sprocket holes. A specially developed coating on the capstan provides the traction for moving the film. Since the push and pull of the reels is developed by individual drive motors, very little traction is needed to move the film through the transport path. Moreover, the gate consists of two conical rollers that position the film in the focal plane without the use of a mechanical gate. The only role that the sprockets play is the driving of a tacho disc that provides framing and shrinkage information.

As a result of the low inertial factors, a rapid start of less than one-tenth of a second is provided. Because the winding devices are driven by dc motors, slow motion and high shuttle speeds can be obtained. Intelligible pictures are provided by means of a built-in store at shuttle speeds. Ten times nominal speed (for 35 mm film) and 25 times nominal speed (for 16 mm film) can be achieved.

The digital store has the capacity to store up to three TV fields which correspond to the CCD-line sensors' component encoding approach. By varying the read-in and read-out address rates, the various shuttle speeds can be accommodated.

The prospect of a telecine as facile as the Bosch-Fernseh FDL 60 CCD machine leads inevitably to speculation about the possibilities of an improved mixed media post-production system. Central to any post-production system, of course, is machine control, and in this area the power of the microprocessor rolls on. Several papers presented gave glowing reports of continued triumph for the μP, but in the "good news-bad news" style that characterized many of the reports, Carl Lindke of GVG cautioned that the $40 chip could easily cost $40,000 to program. Nevertheless, as Fred Hodges of 3M pointed out in his paper, rapid advances are being made routinely in software-based microprocessor systems due to improved programming techniques and improved software development systems.

Distributed processing techniques (see *BM/E*, July, 1979) and innovative software design are shortening the product development cycle remarkably. Recent advances such as self-tailoring software have led to systems that can learn, in a sense, so that the system can fine-tune itself without the need for additional software. In fact, the nature of software-based systems has enabled some designers to conceive of a single hardware design that would be appropriate to any number of operations. Ray Unrath of System Concepts, Inc., outlined what he called "the maximized microcomputer for television." His vision encompasses a single hardware design that looks like a character generator but could function as a teletext system, machine control center, special programming system for election returns and audience polling, as well as a graphics and character generator. In a sense, the adage that you can't tell a book by looking at its cover is becoming just as appropriate for some types of television hardware. As

you have to read the book's text in order to know its content, you have to look at the equipment's software before you can determine its function.

What you can and cannot expect

A number of papers dealt with progress toward "future systems" such as high definition television, stereo or multiplexed audio for TV, the digital VTR, and teletext.

The future of high definition television was reviewed in a progress report read by Donald Fink, a member of the SMPTE Study Group on High Definition Television. The full report, said Fink, would run for some 32 pages and be presented in its entirety in the *SMPTE Journal*. The highlights of the report consist largely of a number of agreed-upon concepts. First, it was adopted that the quality of high definition television would be compared to the performance of current and prospective 35 mm film release prints as projected on a wide screen. Several other criteria were set forth upon which an HDTV system would be judged.

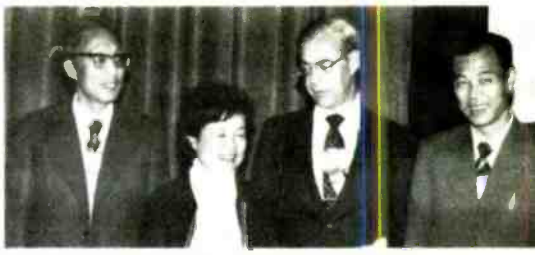
Conclusions of the study group included defining an acceptable HDTV system as one that would have approximately 1100 lines of resolution per frame, with 1500 lines per frame a future objective; a frame rate of 30 fps, interlaced two-to-one except for the purpose of producing a release print, where the frame rate should be 24 fps without interlacing (progressive scanning); and a luminance bandwidth of 25 MHz.

The committee looked at three areas of application for HDTV: in-home use, theatrical projection, and production of motion-picture release prints. It is unlikely that an HDTV system will find application in standard broadcasting, though the committee did recommend that it be down-convertible to the principal color recording systems.

The full report will be the largest single paper ever presented in the *SMPTE Journal* and its objectives and conclusions should keep R&D people busy for some time to come.

Several systems for stereoscopic television, or 3D, were examined in a paper delivered by James Butterfield of Stereo-Video Laboratories. While technically feasible, market demand for this innovation seems vague. Nevertheless, a number of proposed systems and criteria for them were discussed, and it is clear that progress is being made toward the development of 3D TV.

An area where market demand seems more clarified and the technology more certain is stereo audio for television. The progress report of the Multi-Channel Sound Subcommittee of the Broadcast Television System Committee (EIA) was delivered by Tom Keller, Jr., of WGBH Educational Foundation.

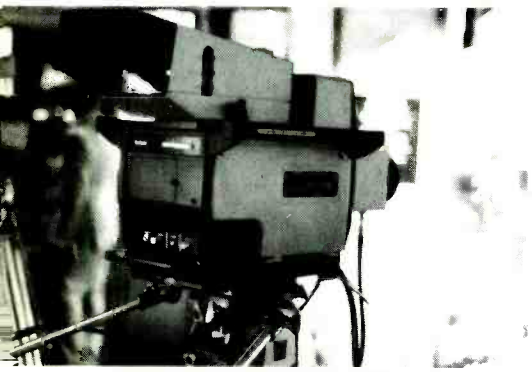


The People's Republic of China presented its first paper to the SMPTE. Fred Remley (second from right) read the paper. The PRC was represented by Chun-rong Zhou, Shao-chu Chen, and their interpreter, Anne Ling

The committee has under consideration a number of proposed systems including the system in use in Japan by NHK, a system proposed by Quasar, the Telesonic system, and a system proposed by Zenith, which, according to Keller, "looks pretty good." A subcommittee has been appointed to study the technical issues, including how these systems will affect coverage. The BTS committee of the EIA is likely to have a clear set of recommendations ready for presentation to the FCC by the fall of 1980.

William A. Halstead, a telecommunications consultant from Woodland

Hills, Calif., presented a paper describing stereo and multiplex audio systems for TV that he and his associate worked on in Japan and Uganda. Basically, the paper outlined the problems that were encountered in the development of these systems and suggested some ways to minimize these problems. None of them seemed insurmountable for either the transmission or reception of stereo audio, and the authors expressed strong enthusiasm for stereo audio in television, citing a number of market factors that point to an early adoption of some system within the next few years.



Hitachi introduced the FP-60S, a new prism optics color TV studio camera, and a new ENG model

Teletext and Viewdata systems continue to play a big role in discussions of the near future in television. Tests (see *BM/E*, November) indicate that the systems developed in France and Britain can work in the NTSC domain. Nevertheless, uncertainty remains regarding the success of teletext systems in this country, though CATV system operators show a definite prediliction for some such system. Teletext's use in broadcasting, however, will be largely dependent on the ability to commercially exploit it in a competitive market and FCC decisions regarding requirements that TV receiver manufacturers accomodate teletext in future designs. The EIA committee studying the various systems should be prepared to recommend standards to the FCC sometime next year.

Charles Anderson, Ampex Corp., threw some clear, cold water on the fevered brows of digital VTR fanatics. Some of the more difficult problems yet to be resolved before a practical DVR is manufactured were outlined in his paper. While stating that the three major manufacturers who have shown experimental DVRs (Ampex, Sony, and Bosch-Fernseh) have proven that a digital television signal can be successfully recorded and recalled on videotape, Anderson also pointed out that many more demands will be placed on designers than simple record and playback.

What the experimental DVRs have not proven is that any of the current designs are appropriate to the ultimate DVR. The ultimate DVR must meet or exceed the operational features of the current one-inch Type C and Type B recorders. To do this, the DVR must be able to provide variable speed playback at least equal to that of current technology. While providing a creditable still frame should be no problem for digital, providing intelligible pictures at variable shuttle speeds does present problems.

Each of the existing tape formats — field-per-scan, segmented, and transverse segmented — have serious design limitations for providing these "one-inch" features, though Anderson held out the most hope for the field-per-scan approach. Anderson also indicated that a tracking head such as that used in Ampex's AST system had definite advantages for a digital design. The provision of slow motion to twice normal speed for the transverse approach is probably impossible, said Anderson, though any system other than transverse will suffer from variable clock speed problems. In addition to these problems, audio and editing will also prove to be sticky issues.

None of the problems of developing a digital VTR are insurmountable, according to Anderson, but without input from the users regarding standardization and the features needed, achieving a DVR will be an expensive, time-consuming, and cumbersome process.

So, for the foreseeable future, this push to enhance the interchangeability of film and tape seems well-reasoned. Market demand for visual media is increasing, and existing technologies can meet it if resources are combined.

With portable one-inch helical VTRs weighing 50 pounds and hand-held TV cameras about 20 pounds, film has a decided weight edge over video. Developments such as one-inch SMPTE Type C video recorders and lightweight field cameras, however, have made it possible to do "single-camera film techniques" via electronic cinematography.

Electronic cinematography does, of course, offer a director major offsetting advantages — the ability to view the scene as framed at the same time as the cameraperson and then to play back the recorded signal instantly to verify that the captured scene is safely in the can.

Indeed, one of the features that comes along wih the SMPTE Type C standard tape format is the ability to add a confidence head so that you don't have to wait for a replay to see what you are laying down. Video confidence heads were introduced by Ampex on the early VPR-1 and are now a standard option on VPR-2s and Sony BVH-1100s.

An audio confidence head was an exclusive feature claimed by Hitachi for its new SMPTE Type C recorder until 3M revealed at the SMPTE exhibition that the new 3M/NEC Model TT-7000 "C" format Formal Helical Video Tape Recorder also has an audio confidence head. This is a new feature introduced since the first showing of the NEC TT-7000 unit unveiled at NAB Dallas.

The 121st SMPTE was a good place to see SMPTE Type C machines with interchange compatability in operation. Ampex and Sony had large exhibits featuring Type C recorders, and both 3M/NEC and Hitachi demonstrated units that will soon reach customers. Under its exclusive marketing arrangement with NEC for the U.S. and Canada, 3M said the first 3M/NEC TT-7000 units will be delivered this month. Hitachi units will be delivered in January. Both of these systems claim features not heretofore available.

A 3M/NEC sales feature, in addition to the audio confidence head, was the ease of accessibility of the TT-7000 for easy maintenance. The TT-7000 has an easy-to-operate front panel that offers a −¼ to 2x shuttle with jog. Although an automatic track follow (ATF) model was not shown at SMPTE, this feature will be available shortly, 3M said. ATF can be added to any TT-7000 model at any time, according to the company.

A new time base corrector is necessary for ATF, and 3M said a 10-bit 16-line correction window TBC, model NTC-10, would be introduced shortly. The TT-7000 fits in a 19-inch rack and weighs in at 177 pounds — heavier than Ampex's 120 pounds but 100 pounds less than the BVH-1100.

Hitachi's HR-200, on display at the SMPTE meet, reflected a few changes recommended by engineers who first saw the model at the Dallas NAB. An audio spot erase feature and new editing capability have been added.

The Hitachi transport design is significantly different from that of the other three manufacturers in that it uses forced air blowing from the rotary drum to lift the tape from the heads during standby, fast forward, and rewind. Hitachi is sure this feature will lengthen head life considerably. Because of the non-contact, a reel can be rewound or fast-shuttled forward in 80 seconds — 50 times normal speed. During record and play, only the heads contact the tape, which leads Hitachi to boast of "minimum dropouts."

A standard feature of the HR-200 is a

Convergence demonstrated the animation capability of its ECS editing system

built-in microprocessor for fast, simple operation including remote control. Since the introduction of the HR-200 in Dallas, Hitachi has modified the microprocessor to include a built-in editor. Another Hitachi feature is a Hall-effect pickup head, located on the third audio track, that reads out accurate time code signals regardless of speed. Hitachi will be incorporating automatic tracking (HST) in the future.

A portable 40-pound field recorder shown by Hitachi will operate for one hour from one battery charge. This unit will also be available this month.

Neither Ampex nor Sony feels at all threatened by the entry of new manufacturers. Sony announced the sale of its 1000th BVH unit at Montreux in June of this year and Ampex declared at SMPTE that it had delivered its 1000th VPR-2 (SMPTE C) as of October 20 (purchased by WBBM-TV, Chicago). Both companies are backlogged with orders. Indeed, a customer may buy a 3M/NEC or Hitachi recorder not on the basis of more desirable specs but simply on availability.

Donald D. Kleffman, VP-general manager of Ampex's Audio-Video Systems Division, said, "The VPR-2 is the most successful product Ampex ever introduced . . . Acceptance of the system continues to grow 17 months after its introduction." The VPR-2 has replaced the AVR-2 as an all-time best seller. Ampex's exhibit featured a slow motion controller, the SMC-60, and a time code reader/generator accessory for the VPR-2 series.

Sony showed a new DTR-1100 Dynamic Motion Controller capable of a variety of variable play speeds. The controller can be used with all Sony BVH units equipped with Dynamic Tracking. Playback can be varied in speed from two times normal through still and 1/5 reverse at full broadcast quality. The controller is expected to be particularly helpful in both sports and post-production work. The DTR-1100 includes three separate timing displays for versatility, plus four cue markers with automatic searching.

To get a chroma stabilized heterodyne video signal out of the BVH-500 portable Type C videotape recorder for verification and monitoring, Sony introduced at SMPTE the HT-500 Chroma Stabilizer. The HT-500 stacks with other BVH-500 accessories.

Sony was the source of another new development in the VTR field. This was the introduction of a completely new self-contained portable ¾-inch U-Matic videocassette recorder. The BVU-110 incorporates full color playback, a time code generator card as a plug-in option, and a Ni-cad battery that will operate the recorder for five hours on one charge, all in one unit. A high-speed picture search function allows a viewable playback picture in either the fast forward or reverse mode. A monitor has been modified to lock up to this high speed. Other features of the BVU-110 are a flying confidence head and automatic backspace editing.

Eigen Video introduced a memory control unit that converts its analog disc recorder into a random access 600 slide system. Any one of 64 locations keyed into the memory provides instant access to a series of adjacent slides, operating forward or in reverse. Switching is in the vertical interval. News directors can interrupt the memory to insert new material manually. A complete system, consisting of the controller, disc drum, and digital TBC/DOC, sells for a modest $25,000.

IVC showed its IVC1-11 high band color VTR in the U.S. for the first time. This new recorder is a one-inch helical VTR with a direct color recording system that provides a bandwidth of 4.2 MHz NTSC and 5.5 MHz 50/625 PAL/SECAM, free of moire. Also included in the unit is a Dolby video noise reducer system that produces a signal-to-noise ratio of 50 dB NTSC and 48 dB PAL/SECAM. DOC, time base correction, and velcomp are available as plug-in options.

The unit is not a Type B or Type C format, so tapes recorded in those formats are not interchangeable with the 1-11. The superior multigeneration performance of the 1-11, however, is viewed by the manufacturer as the key to its use in editing and one-inch mastering. The color recording electronics are derived directly from those used in IVC's 9000 two-inch mastering recorder. Priced at about $30,000, the new VTR is aimed at the high end industrial market as well as at mastering and editing applications.

More new cameras

Several new cameras that made their first appearance at Video Expo in New York earlier in the month were displayed in Los Angeles. Setting a new benchmark in performance for a low dollar was new Hitachi FP-60 studio camera. This is a professional studio camera, with prism optics using one-inch Saticons, priced at only $25,000 sans lens. The newly developed prism optics system and new Saticon tubes yield a signal-to-noise ratio of 52 dB and a resolution of 600 TV lines.

The camera has a full array of built-in features — automatic beam optimization (for extended dynamic range and reduced comet tailing), built-in bias light for reduced lag, built-in test signals, built-in iris servo control and shading compensation. It also has auto white balance and an automatic wobbling circuit (to make beam alignment easy). The camera also offers a dual method of color temperature correction and a tiltable viewfinder. R,G, and B outputs are another feature.

Another new Hitachi camera was the FP-40S self-contained portable featuring ⅔-inch Saticons and prism optics (f 1.6). The camera has many built-in features and is priced at $23,000.

JVC introduced a new self-contained camera with quite remarkable performance specs for under $10,000 — half that of comparable units, said JVC. Three ⅔-inch Saticons are used and a signal-to-noise ratio of 52 dB is claimed. The camera includes a new parallel optical system with a high quality dichroic mirror. Pictures are "needle sharp" with high contrast and a minimum of flaring.

The camera was designed to be physically tough. JVC says broadcast performance, economy, and reliability are the watchwords for the new unit.

Ikegami introduced a new low-cost three-tube, prism optics, color convertible camera, the ITC-350, priced at about $15,000. The new camera boasts a 53 dB signal-to-noise ratio with 500 lines resolution, bias lighting to reduce image lag, gamma correction to match with other cameras, and selectable private/common intercom; genlock operation in any mode is optional.

For studio operation, the ITC-350 features an optional CCU operating on power supplied from the camera head and an optional ac adapter. As an ENG unit, the camera weighs 11 pounds without the lens and consumes just 15 watts of power.

A "smart" auto white balance compensates for color balance and remembers setup levels for three days after shutdown. A host of other automatic circuits are featured along with a variety of options.

Video recording improvements

Philips displayed a working LDM 3000 digital noise reducer that was the subject of a paper discussed earlier. The new unit, which is fully automatic and fully adaptive, will be available in

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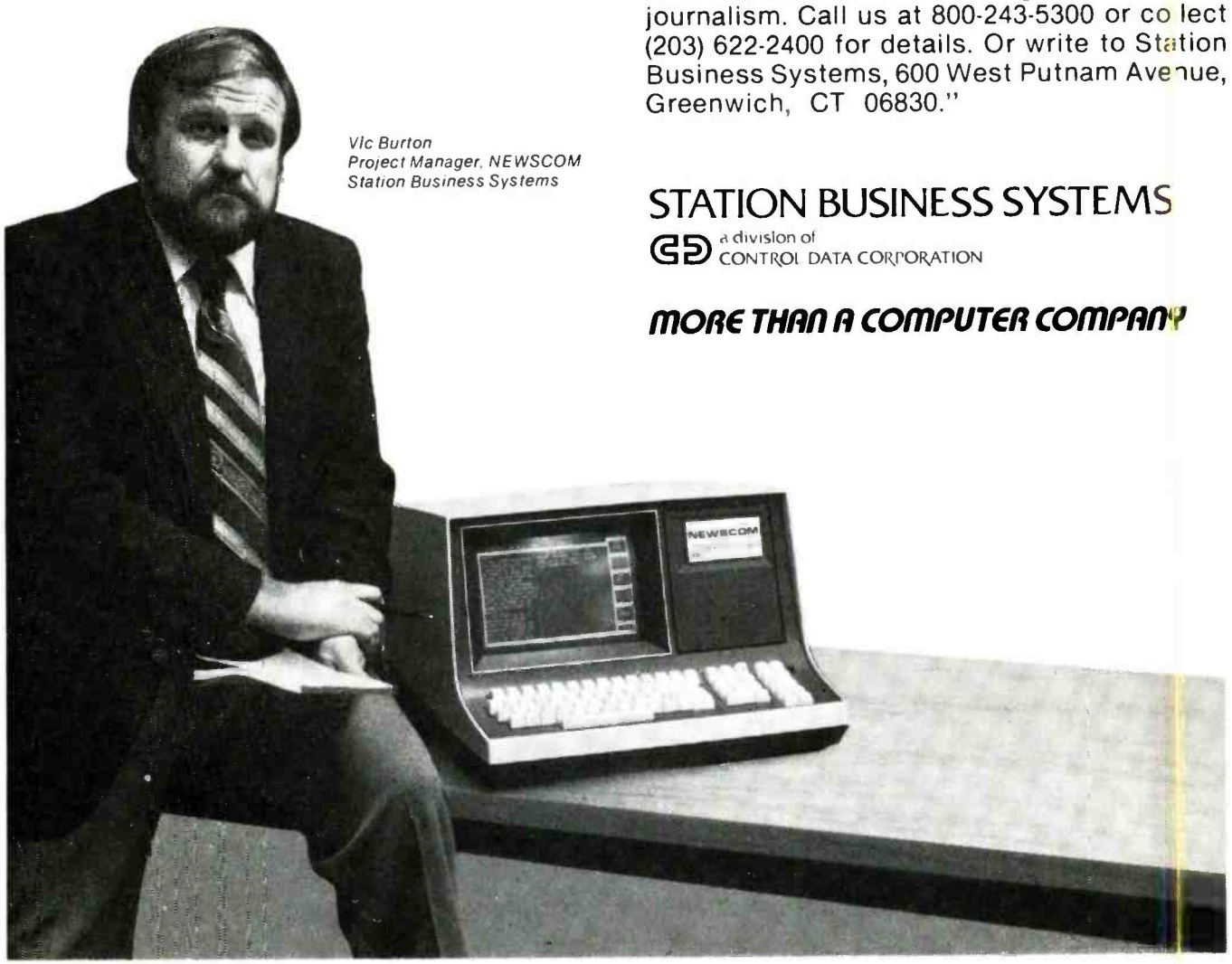

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Project Manager, NEWSCOM
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NTSC for the U.S. market sometime this year. When it is introduced it will probably be more expensive than the current digital noise reducers, but the manufacturer feels its superior automatics and fully adaptive filtering will justify the price differential.

The LDM 3001 (NTSC) uses a recursive low pass filter in which the output signal is recirculated; by means of an auxiliary side chain movement detector circuit, the operation of this filter is bypassed, thus preserving picture detail. The movement detector is fully adaptive and monitors the incoming noise level, adjusting automatically the threshold of operation. Complete diagnostics are supplied with the system.

Dolby, who supplied the analog video noise reduction system for the IVC 1-11, mentioned earlier, announced the availability of an analog audio noise reducer for Ampex's VPR-2. This unit, which was discussed at NAB in Dallas, should be in production by the second quarter of 1980.

The Dolby noise reducer (Cat. No. 255) provides Dolby Type A noise reduction independently to both audio tracks of the VPR-2. Like other Dolby Type A systems, 10 dB of noise reduction is provided from 20 Hz upwards, increasing to 15 dB at 9 kHz and above.

At the Dallas NAB, Yves Faroudja, Inc. (YFI), showed a Comb Filter Separator and a Record Booster. At SMPTE, these devices were exhibited in new configurations. The YFI Comb Filter Separator is now available as a plug-in module that will fit into Conrac or Barco professional monitors. The YFI Record Booster, which provides preenhancement to the camera signal input of VTRs, has been packaged in a portable outboard model that attaches to U-type portable recorders. The portable unit is priced at $1950.

No new editors were introduced at the show, but some enhancements and marketing shifts were noted. The Z6 system from Videomedia, for instance, has now added the Z6-E. This latest edition of the Z-80 microprocessor-controlled editor is capable of A, B, and C rolls and extended effects capabilities. To rehearse edits involving such multi-machine external rolls, the software controls the switching of the inputs so that the editor sees the entire sequence as it would appear. Modifying these events is accomplished through a function-oriented panel that reduces operator/controller dialog. Infrequently used routines can be recalled from the system's memory by asking for an editing menu display, thus eliminating the need for a looseleaf editor's manual. The edit decision list is stored right on the edited master tape at a rate of six events per video frame, thereby bypassing the punched-paper tape method.

Hitachi showed its one-inch Type C VTR incorporating several new features since its introduction at NAB

NEC (above) and MCI/Quantel demonstrated the simplicity of their interfaces by using 3M switchers

Other changes that affected some of the editing machines at SMPTE included the first display of the EPIC editing system under its new corporate ownership, Harris Video Systems (formerly CVS), and the first exhibition of the Mach One system as a product of TeleMation, soon to become a product of the new Fernseh, Inc. (see Broadcast Industry News, December, 1979).

The Convergence system, ECS, was demonstrating its animation capability. Using an animation stand, camera, and the ECS edit controller, a very creditable video type single-cell animation performance was put on.

Digital special effects units on display offered one more step forward by demonstrating that virtually any switcher can be used in conjunction with them. Both NEC and MCI/Quantel showed their systems interfaced to low-cost 3M switchers. Grass Valley and Vital, however, continued to show their digital effects packages in conjunction with their own switching systems.

There was also an impressive downsizing of a sophisticated switcher with the display of CDL's CD-480-4. This $25,000 switcher is just 24⅝ inches wide by 16 inches high. The rack electronics are 21 inches high and the 24-input panel is 29⅞ inches wide. The switcher offers a complete package of 480 SFX processing and options.

An innovation in routing switchers was displayed by Di-Tech, with the demonstration of its new Pace 1000 computerized real-time controller. This system utilizes the 8030 single-board computer and a CRT terminal. A full week's routing assignments can be scheduled and controlled from the CRT with a real-time event display to keep the operator informed. Editing and changes in the assignments can be quickly accomplished through the keyboard. The controller and software to control up to 100 sources and 100 destinations are available for approximately $11,000.

Other innovations

There was a time when major new product introductions could be expected to coincide with the NAB, and one of the things that had people referring to this fall's SMPTE exhibits as a "mini-NAB" was the number of new products offered. Lenco, for instance, introduced a line of new professional color monitors -- the PCM-500 Series. The new monitors use a black matrix shadow mask precision in-line (PIL) gun cathode ray tube. Resolution of the tube is 625 lines or better and a comb filter or regular notch filter are switch-selectable. Inputs to the monitor may be either NTSC or RGB, an unusual feature for studio monitors. All controls are front-panel mounted and remotely controllable, with the exception of the underscan switch. The remote control panel is dc powered and can be placed up to 1000 feet from the monitor.

With significant advances in packaging and sealing material designs, lead acid batteries are on their way back. Lead acid batteries have always offered some advantages in terms of electrical performance and recharging, but poor material design has restricted their practical application from rough television and film assignments. Now, according to a paper presented on the topic, advances in these types of materials have rejuvenated interest in lead acid. One new company, G&M Power Products of Los Angeles, Calif., displayed a line of lead acid batteries in power-pack and belt configurations. These batteries are able to be charged and recharged between 200 and 2000 times without some of the "memory effects" or over-charging problems associated with other types of batteries.

There were numerous products seen for the first time at SMPTE in lighting, film editing, film cameras, and related areas. Many of these products will be featured in upcoming editions of *BM/E's* Broadcast Equipment column. Suffice it to say that the SMPTE's ability to bring out such a showing at its technical conference is testimony to the growing importance and sophistication of the Society. **BM/E**

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INTERPRETING THE FCC RULES & REGULATIONS

FCC Redefines Control Standard

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

THE UNIVERSITY OF PENNSYLVANIA, the prestigious Ivy League university, is a licensee of the Federal Communications Commission again, but just barely. The university has operated WXPN-FM in Philadelphia since 1957. The FCC revoked WXPN's license in 1978, however, on the grounds that the licensee, the trustees of the university, had forsaken supervision of the station. Although WXPN is a noncommercial educational station, the decision has ramifications for *all* Commission licensees of broadcast stations. We will attempt to explain some of the issues in the series of cases which culminated in the eventual reinstatement of the license for WXPN.

The case against WXPN

The problems at WXPN date back several years. In January, 1976, the Commission designated the renewal application of the station for hearing.[1] The Commission designated two issues: (1) to determine whether or not the applicant, the trustees of UPenn, had exercised adequate supervision of the station in a manner consistent with the responsibilities of a licensee and (2) to determine whether, in the light of the evidence found as a result of investigations of the previous issue, UPenn possessed the requisite qualifications to remain a licensee.

According to the developed record, during the 1972-75 license period, WXPN repeatedly received notifications from the FCC of violations of various technical standards. In some instances the station apparently disregarded complaints altogether.

A notice to the trustees accompanying the designation order also indicated the licensee was liable for forfeiture of the license as a result of broadcasting obscene material. In the opinion of the Commission, program segments noted by the Commission "appear to appeal to the prurient interest, describe sexual conduct in a patently offensive way, and lack serious literary, artistic, political, or scientific value." This was in line with the three-fold test of obscenity set up by the landmark Supreme Court case, *Miller v. California.*[2]

As a result, the WXPN case became somewhat of a *cause célèbre* on the obscenity issue. However, the Commission evaded the question of obscenity. Both the initial decision by an administrative law judge[3] (ALJ) and the decision by the Commission[4] denied the renewal application and considered the most serious issue to be the loss of control over station operations by the licensee. The licensee, the trustees of UPenn, apparently had no idea of what was going on at the station. In addition, after the trustees were informed of the irregular lines of organization, more than two years passed before they took corrective action to improve the structure of control.

In fact, as early as the designation order, station control would appear to have been the major issue for the Commission. Although he thought the university should have been given a short-term renewal rather than a hearing designation, then-commissioner Benjamin Hooks noted the "management gap" in existence at some noncommercial educational stations. Also, Hooks criticized the "regulatory 'base-on-balls' we have given educational stations in general" and complained that "responsibility for actual station operations is lost in a jungle of contemplative committees."[5]

In his initial decision, the ALJ determined that the trustees of UPenn failed to exercise proper control and supervision over WXPN and that renewal was not in the public interest. The full Commission concurred that the holder of the license had not met the Commission's standards of a licensee during the previous license term (1972-1975) and that its conduct was "incompatible with the obligations of a public trustee." It added:

> "Throughout the 1972-75 license period, serious complaints were lodged against WXPN-FM. Yet the problems at the station were not effectively addressed until the Commission initiated its own investigation some 27 months after the initial complaints. If our licensing policy is to have meaning, the licensee must exercise control and supervision over the operations of its station."[6]

The trustees had delegated control and supervisory powers over the station's operations to the president of UPenn, who in turn delegated to the dean of students, who in turn subdelegated to the director of student activities. Student government groups also had input into station affairs. The FCC determined that the licensee in this case had delegated authority to such an extent that there was *no meaningful standard of supervision and control over the station.* If the FCC had excused this, it would have been in contravention of a longstanding Commission practice. This practice was underscored by the *Eleven-Ten* case:

> "Only by holding a licensee responsible for the operation and management of a station, and only by insistence that the reins be held by the licensee, can there be any reasonable assurance of responsible station operation and management."[7]

The same imperative was strengthened in the *Continental Broadcasting* case:

> "Retention of effective control by a licensee of the station's management and operation is a fundamental obliga-

[1] *Trustees of University of Pennsylvania,* 57 FCC2d 793 (1976).
[2] *In re Notice to the Trustees of the University of Pennsylvania,* 57 FCC2d 782, at 790 (1976). See also *Miller v. California,* 413 U.S. 15 (1973).
[3] FCC 77-D15.
[4] 69 FCC2d 1394 [44 RR2d 747] (1978).
[5] 57 FCC2d at 795 (1976).
[6] 44 RR2d at 753 (1976).
[7] *Eleven-Ten Broadcasting Corp. (KRLA)* 32 FCC 706 [22 RR 699] (1962), recon. denied 33 FCC 92. Affirmed sub. nom. *Immaculate Conception Church of Los Angeles v. FCC,* 320 F2d 795 (D.C. Cir), cert. denied, 375 U.S. 904 (1963), cited in *Trustees of the University of Pennsylvania,* supra., (1978).

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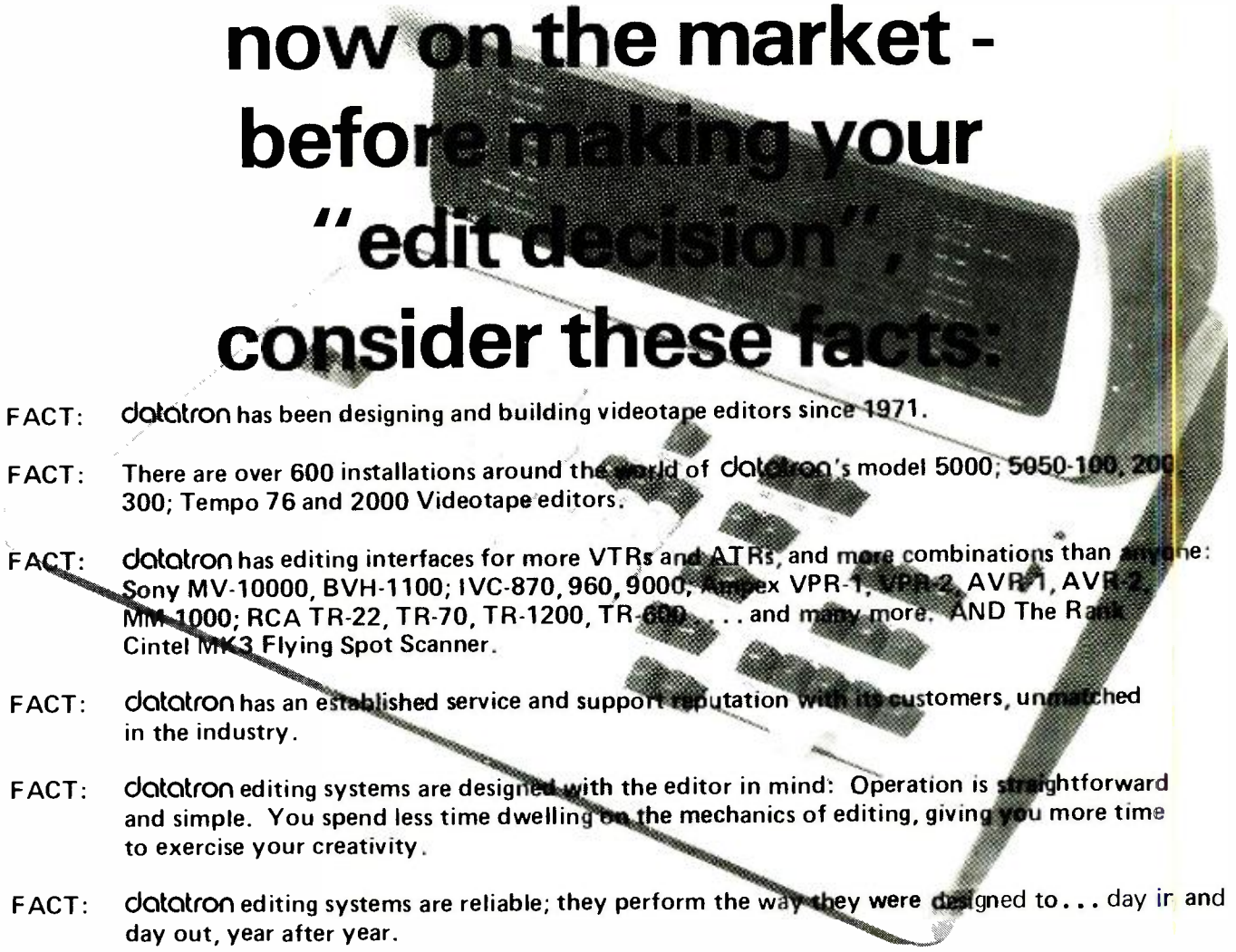

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> tion of the licensee, and a licensee's lack of familiarity with station operation and management may reflect on indifference tantamount to lack of control."[8]

The Commission would not absolve the trustees of UPenn of blame because they were unaware of the severity of the problem. In its decision, the Commission recalled the case of the Alabama public television network: "[A] licensee cannot escape responsibility for the actions of those to whom it delegates programming responsibilities simply because it was unaware of such actions . . ."[9] The Commission granted, however, that a licensee could not be held accountable for each and every action of station employees but felt that UPenn could have limited such problems by diligent supervision.

Resolution of the case

As matters stood in January, 1979, UPenn had been ordered to take WXPN off the air. When UPenn filed an application for a construction permit in June, 1979, however, the Commission waived §73.3519 of the rules, which would have otherwise prohibited the station from reapplying for deleted facilities within one year. In October, 1979, the Commission granted the application for a construction permit.[10]

The Commission agreed to an arrangement that a five-person professional staff and manager, supplemented by student volunteers, would operate the station for the licensee, the trustees. The Commission noted:

> "[It] appears that the lack of supervision and control which led directly to the loss of license has been remedied and since the applicant is otherwise fully qualified, we find that a grant would serve the public interest."[11]

Conclusion

The case of the University of Pennsylvania's WXPN-FM could have bearing on the situation of all broadcasters who have separate ownership and management. In the case discussed above, the Commission acknowledged that of course, by definition, noncommercial service differed from commercial service. However, the Commission emphasized it would be mistaken to regard the noncommercial service as outside of the Communications Act and the Commission's rules. The duty of exercising proper control over broadcast station operations and personnel applies equally to *all* licensees, commercial and noncommercial.

In light of this decision, broadcasters should take note of any official Commission notices about possible rule violations. Public and staff complaints should be acted upon expeditiously. Licensees who maintain separate ownership and management should especially take care to see that the station continues to be operated as represented in the original or renewal application for the entire license term. Any questions should be referred to their communications counsel.

The case of WXPN might indicate the Commission really means business on this matter of station supervision. **BM/E**

[8] *Continental Broadcasting Company*, 15 FCC2d 120, at 126 (1968), cited in *Trustees of University of Pennsylvania*, supra.
[9] *Alabama Educational Television Commission*, 50 FCC2d 461, at 495 (1974), cited in *Trustees of University of Pennsylvania*, supra.
[10] *Trustees of the University of Pennsylvania*, 46 RR2d 565 (1979).
[11] *Ibid.*

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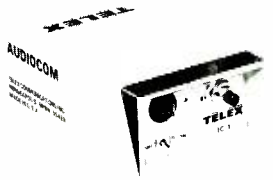

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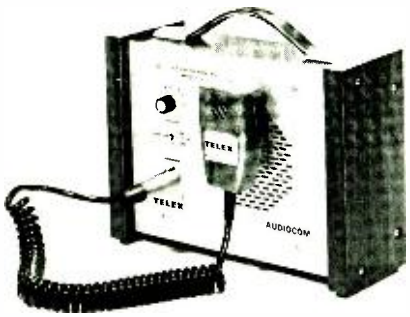

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SPEAK OUT

Speak Out: "You Have To Understand The Medium To Use It Effectively," Says Tony Russomanno, KSFO

Editor's note: This Speak Out was derived from a conversation with Tony Russomanno. While the thoughts are his, the telling of his story has been reconstructed by BM/E *editors for presentation in this column.*

IT'S NOT JUST your thoughts that are important. You have to be able to communicate those thoughts and you do that through the technology of broadcasting. If you don't know how to effectively use the technology, that's just as bad as not knowing how to effectively translate your thoughts into words.

In the past year, I and my station, KSFO, San Francisco, have received a number of awards for my reporting of the events surrounding the People's Temple in Jonestown, Guyana. Though the awards recognized journalistic enterprise, that enterprise was made possible through the use of technology and an understanding of its importance. I am, I think, a better reporter because of my background in electronics. It enables me to be better prepared to work on my own and to meet goals as a reporter. Technology is not an end in itself. It is a tool to that end, and you have to know your tools.

A knowledge of the tools of my trade, a level of preparedness, and a certain resourcefulness were all central to the situation I confronted in the Guyana story. As soon as word was received that Congressman Ryan and members of his party had been shot, news director Jeff Skov recognized that it was a story with incredible local interest. The People's Temple and its leader, Jim Jones, had been subjects for local news over a period of time, but because those people in Jonestown were mostly from the San Francisco area, with friends and relatives here, the story was, in essence, local.

Jeff Skov told me he was thinking of sending a reporter to Guyana and asked if I was ready to go; did I have a passport? Since I had no passport I, of course, answered, "Yes." Skov explained that there was a flight for Guyana that evening. I knew there were several things I had to do. First, set a world record for getting a passport, and at the same time collect my thoughts and my gear.

My gear was the least of my worries. I needed to think about what I would be doing in Guyana. Would I be doing a lot of moving — a lot of travelling? I knew whatever I took would have to be rugged and lightweight. As a Sony technology "freak," I settled on taking my TC150 and my TC142. With this gear I knew I not only had backup equipment, but I would also have fairly good editing capability. I also took what I consider to be a very important piece of equipment — a simple Y connector. For a microphone, I used the EV-635 (Electro-Voice), a rugged mic that will take a lot of punishment.

In addition to this basic package, I keep a neat assembly of "anything-to-anything" connectors. This has been a routine of mine that makes it possible to just grab one simple package and be off. If I underestimated any of my technical needs, it was for cassettes. Though I took 24 hours' worth, I could have used 48.

Tony Russomanno, KSFO, San Francisco. His reports from Guyana and his documentary in the aftermath of the People's Temple tragedy have won for him the RTNDA International Award, the San Francisco State University Broadcast Media Award for Best Documentary, and his station took the 1979 Armstrong Award for best News Programming

My next greatest concern was getting my stories back to KSFO. Without a network to support me, I knew I'd be depending on the telephone system. In Guyana, the telephone system leaves a lot to be desired. The telephones are basically ancient devices left over from the English colonial period. Moreover, you don't step into a phone booth in Guyana. You deal directly with the telephone company. You go to the telephone office, step up to the counter, pay in advance, and then the people direct you to a booth. You must pay in Guyanese currency and without it, you don't make calls. When your time runs out, you are not advised to deposit anything; you are simply cut off.

Given this rather primitive telephone system and my experience with transoceanic cable, I established a second communications line. KSFO and the other Golden West stations are UPI affiliates. I used my UPI contacts to try and set up some sort of deal for piggybacking my reports on their high fidelity satellite feed. As it turned out, I struck up some deals with my UPI contact in New York and the UPI reporters on the scene that made this system my most reliable link.

My third communications link stemmed from my background in radio. I have my FCC First Phone, and I've been a long-time ham radio operator. Ham radio is probably one of the best and yet most underutilized communications systems around. It is a worldwide fraternity and a reliable one.

I checked around the station and found one of our engineers who is a ham operator, and then we located a ham who agreed to monitor a certain frequency at a specified time each evening. I was certain I could locate another ham operator in Guyana. I never had to resort to this third system, but it was reassuring to know that it was there.

By this time, I was confident of my home base, but I was still a long way from Guyana. As a number of airline deals fell through, getting a ticket became a great problem. Finally, I went to our sales department and asked one of our salesmen if there was anything he could do by working out a deal with Pan Am — a station client. The salesman made a few calls to New York, and soon I was on my way.

The first flight took me to New York, where I used the layover to complete my arrangements with UPI. Then I boarded the Pan Am flight, which was the first commercial flight into Guyana since the news of the attack on Ryan's party. The plane was loaded with press.

Speak Out

The New York Times had a big crew aboard. There were AP and UPI reporters, television people, and even a correspondent from *Der Spiegel*, the German newsmagazine. Mixed among the passengers were people whose relatives were in Jonestown. Virtually no one sat down during the flight. We just walked up and down in the aisles talking about what was going on in Guyana and what we thought was going on.

Then began a series of events I'll never forget. As we approached Georgetown, Guyana, my name was called out over the public address system. An attendant told me that the pilot had been informed by radio from Guyana that upon arrival, I was to be escorted from the plane before the other passengers. I asked why, but the attendant had no other information. I asked that Georgetown be contacted for an explanation, but was told the tower could not be raised.

I had heard a story about a San Francisco *Chronicle* reporter who had been detained by Guyanese authorities a couple of days earlier. An NBC field producer stayed with this reporter until the problem was cleared up. I had no idea what was going on, so I began giving my name and affiliation to UPI and all the other people I met on the flight and asked them to start looking for me if they didn't hear from me in a couple of hours.

When the plane landed and came to a halt, I turned on my tape recorder. Whatever was going to happen, I wanted it on tape.

As the door of the plane opened, I found myself staring into a bright searchlight sitting on the tarmac. Silhouetted against the light were two men, one with what appeared to be a rifle held at parade rest and the other with a clipboard. When I approached them, the one with the clipboard looked up at me, then down at his clipboard, and then back at me. "Are you Mr. Russomanno?" he asked. "Yes," I replied.

At this, he extended his hand and said, "I'm Alan Ross of Pan Am; I'm here to make sure your stay is an enjoyable one. Is there anything we can do for you?"

For this, I was unprepared. It seems that our salesman who had arranged the flight through contacts at Pan Am was owed a favor by somebody, so when the arrangements were made, "VIP" was added after my name.

This demonstrates another thing about the Guyana story. It was clearly an American story. For the Guyanese, it was pretty much business as usual — you still greet people at the airport.

Successful reporting from a foreign country depends largely on resourcefulness. It was clear to me that my story was a local story with an angle that the networks would not provide. To the networks and wire services there was a "body count" side to the story, but for the San Francisco audience these were the bodies of San Franciscans, some neighbors, some relatives. I felt I had an obligation to try and explain what went wrong.

For a reporter working alone, cooperation becomes the most important thing. In Georgetown, you just couldn't be everywhere at once. There were survivors of Jonestown showing up on the streets of Georgetown, there were press conferences, there was a problem of trying to find out what was going on in the jungle 150 miles away. The people who cooperated did o.k., and the folks who didn't? Well, there was the wire service reporter who reported that 800 survivors had walked out of the jungle. There was a network correspondent who took the attitude that he didn't need to talk with anyone else, so no one told him that he needed Guyanese currency to make a telephone call and his story waited over the weekend for the banks to open.

Cooperation took many forms. Sometimes we traded tapes. I met an

NBC radio correspondent who was rushing off to cover one story while I was headed in another direction on another story. In a moment a deal was cut. We traded tapes. I dubbed a tape of his to send back to New York while he went off to cover another story. Unfortunately, NBC, New York, would not accept the call, but when I filed my own story over UPI's satellite link, I piggybacked the NBC report and UPI forwarded it to them. As part of my deal with UPI, they got my stuff as soon as KSFO received the material.

On Thanksgiving morning when the bodies were first found at Jonestown, there was a mad rush to get there. I asked myself what story I could tell if I were to go to Jonestown. Not much more than a flyover. For me the story was still in Georgetown. UPI sent a reporter out there who had to go through an almost incredible system to make the 150-mile flight. The Guyanese government authorized only one pilot and plane to make the flight, so he was going to the highest bidder. It took the UPI reporter three days to get the necessary clearances and then to negotiate with the pilot. After learning what he could, he tried to return, but the plane left without him. Finally, the reporter filed his story by phone. I got the call, taped it, and we got permission to use his report for KSFO. It worked nicely because I was able to get the Georgetown end of the story for him while he mucked about in the jungle.

After I filed my last report from Georgetown, I began the trek back home. I landed in New York and as I stepped off the plane, I learned that San Francisco Mayor George Moscone and county supervisor Harvey Milk had just been assassinated. I called the station and Jeff Skov had the good sense to tell me to stay where I was; to take a few days off.

This may be the most important point of the story. When a reporter or crew has been through an experience like Guyana, or some other incredible disaster, they must be given an opportunity to cool out. Al Webb, a fantastic journalist with UPI, told me after the Guyana incident that it was worse than all the years he'd spent as Southeast Asia bureau chief during the Vietnam war. There must be a chance to reflect and to come to terms with events of this scope.

Now we are back to normal — or are we? On March 27, 1979, I attended a press conference with a lot of other reporters presented by the Abilone Alliance, an anti-nuclear group. They were presenting some experts from their own camp who were going to discuss the dangers of low level radiation and the danger of the Diablo Canyon nuclear reactor, located on an earthquake fault. After a while, most of the reporters left because they felt "there was no news here." I stayed to hear the medical explanations on radiation effects and other information. The next day, the TMI story broke. I had established contact with these people and they were answering my questions. Other reporters, the ones who had left the press conference the previous day, came back demanding answers. I got my questions answered first. Because of the information I had and the contacts I made, I think KSFO had the best reporting in town on the TMI accident.

Right now there is a problem with the Diablo Canyon reactor site regarding the seriousness of the earthquake danger. The Atomic Safety and Licensing Board has one set of figures the U.S. Geological Survey has another set of figures. The reactor has been retrofitted to improve its ability to withstand the shock of an earthquake, but still doesn't meet the original figures provided. Somehow, the NRC was able to make two different figures match. How do you report something like that on the air unless something happens, unless there is an event? We, as reporters, have a responsibility to know enough to ask the right questions, to find out what we can even when the subject is difficult. BM/E

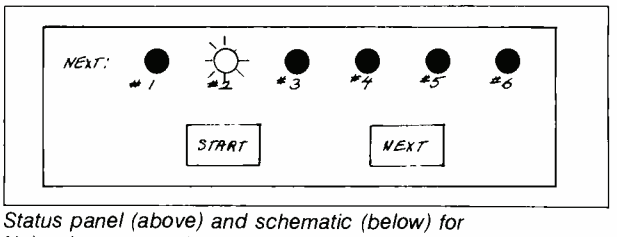
GREAT IDEA CONTEST

1. Sequential Cart Triggering Circuit

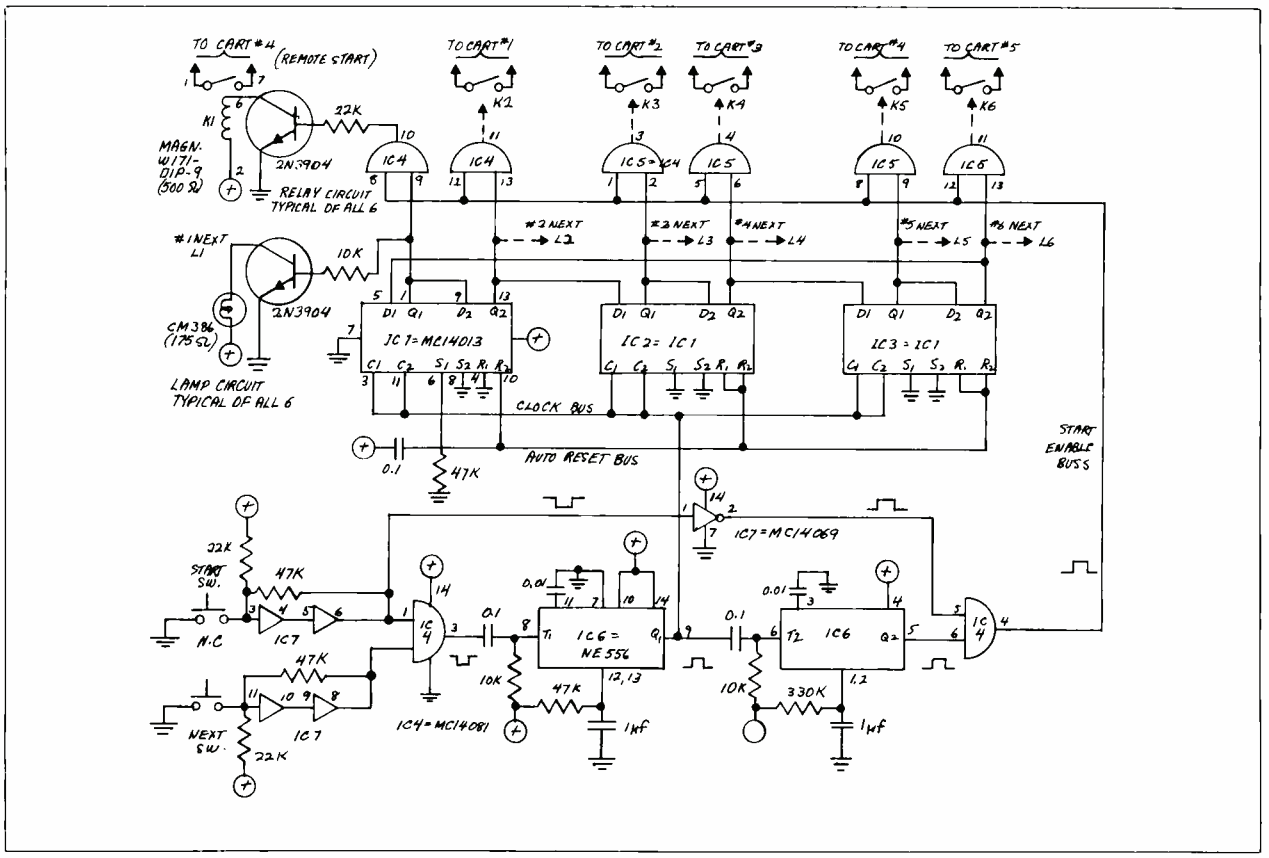
J. W. Nelson, Chief Engineer,
WPCH, Atlanta, Ga.

Problem: The need for the radio announcer/operator to read cart labels and remember which cart is next during a break.

Solution: This sequential cart trigger circuit has a START button that starts the first cart machine and delegates control to the second, third, and so forth cart machine or tape deck. A status panel indicates which deck the START button will start next. When the START button is pushed, that deck will start and the next light will move to the next deck in the sequence. The next time the button is pressed that deck will start. A NEXT button allows the operator to skip a spot or start anywhere in the sequence. The circuit automatically returns to "deck no. 1–next" status after a power failure.



Status panel (above) and schematic (below) for Nelson's sequential cart triggering circuit



2. Digital Timer

Ronnie Powell, Radio/TV Engineer,
KSAU-FM, Nacogdoches, Texas

Problem: To build an accurate, inexpensive timer that would start tape machines automatically.

Solution: We needed a method to record news feeds and programs for delayed broadcast. Our solution was to buy an inexpensive digital clock and interface the alarm in order to start audio or videotape recorders.

We installed a jack on the clock that allows the alarm to function normally until the interface is plugged in. Approximately 5 V pulses are developed across the 470 ohm resistor, which acts as a load in the absence of the alarm speaker. The .01 μF capacitor helps to prevent false triggering of the one-shot while LED L1 simply indicates when the alarm is pulsing. Polarity of the alarm pulse must be determined for proper triggering of the 74LS123 one-shot.

Portability plus in communications counters.

100 MHz · 512 MHz · 1250 MHz

Systron-Donner's communications counters offer the latest technology in precision frequency measurement along with a battery pack option that lets you take them anywhere.

- **Tone measurement** (opt.): Allows measurement of low frequencies with high speed and resolution. For example, 0.01 Hz resolution measurements may be made in 1 second.
- **Overload protection:** Input fuse allows counter to withstand high input signal levels without damage.
- **Sensitivity:** 10mV rms for all three models.
- **Display:** 8 LED digits with excellent visibility, 0.1 Hz resolution.
- **Many options:** It's a simple matter to tailor an instrument to your needs for accuracy, stability and BCD outputs.

All models accept an *internal* battery pack that does not increase the size of these compact instruments. Battery power begins automatically when AC power fails or is removed.

In addition to communications applications, these counters are ideally suited for any use that requires high sensitivity and wide range frequency measurements.

For more information or sales assistance, contact your Scientific Devices office or Systron-Donner at 2727 Systron Drive, Concord, CA 94518. Telephone (415) 676-5000.

S-D the frequency measurement people, and a lot more

SYSTRON DONNER

PUT OUR PERFORMANCE TO THE TEST

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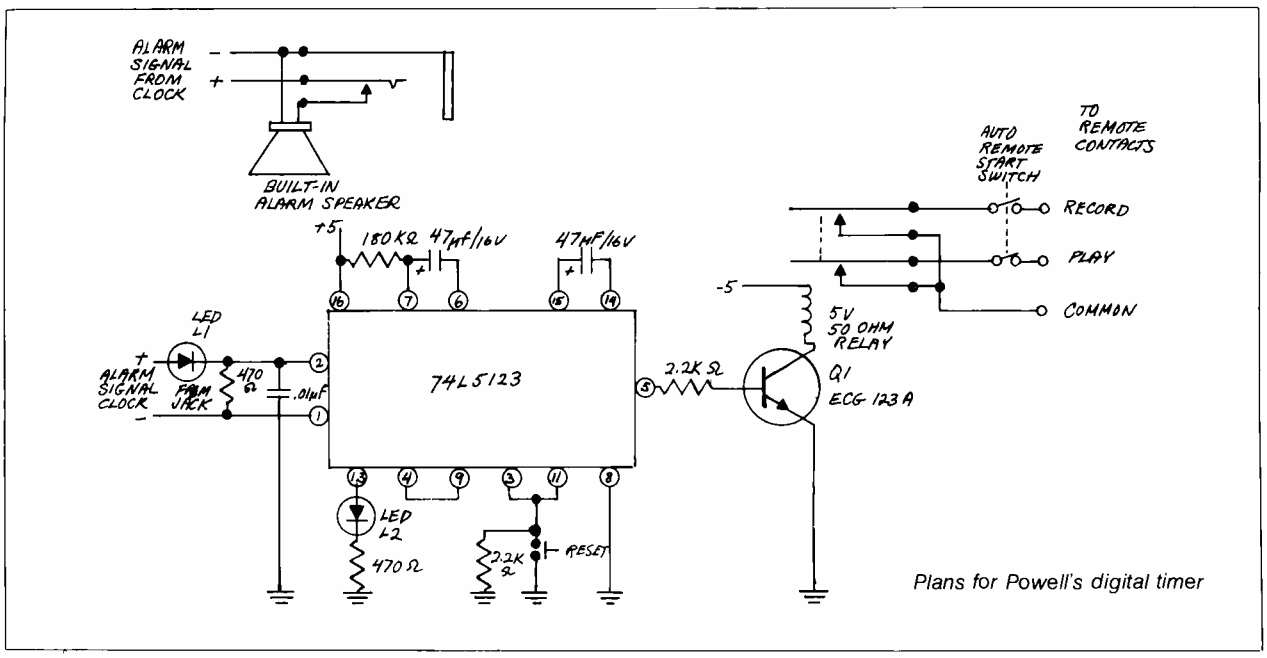
Great Ideas

The first half of the one-shot, which has the timing resistor omitted, acts as a latch and triggers the second half of the chip. This second half of the one-shot has a time constant that enables the relay for approximately five seconds through the relay driver Q1. The relay will not close again until the reset button is pushed and the alarm is activated. LED L2 indicates when the one-shot is latched.

If the tape machine contacts need to be held closed for

continued on page 106



Plans for Powell's digital timer

Now—The 1980 Great Idea Contest

BM/E's 1980 Great Idea Contest begins with the January issue. Send in your ideas for making station life easier — they could win you a prize! Just read the rules below and fill in the entry blank — and don't forget to vote for your favorite entry. 1979 winners will be announced in March.

Mail to:
Editors, BM/E
295 Madison Avenue
New York, New York 10017

1980 Entry Form

Name _____ **Title** _____
Station Call Letters _____ **City** _____
State _____ **Zip** _____
Telephone No. _____
Licensee _____
Class of Station at which idea is used (check one)
TV _____ **FM** _____ **AM** _____
Category: Audio ___ **RF** ___ **Video** ___ **Control** ___
Objective or Problem: *(In few words; use separate sheet for details)*

Solution: *(Use separate sheet—500 words max)*

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

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

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

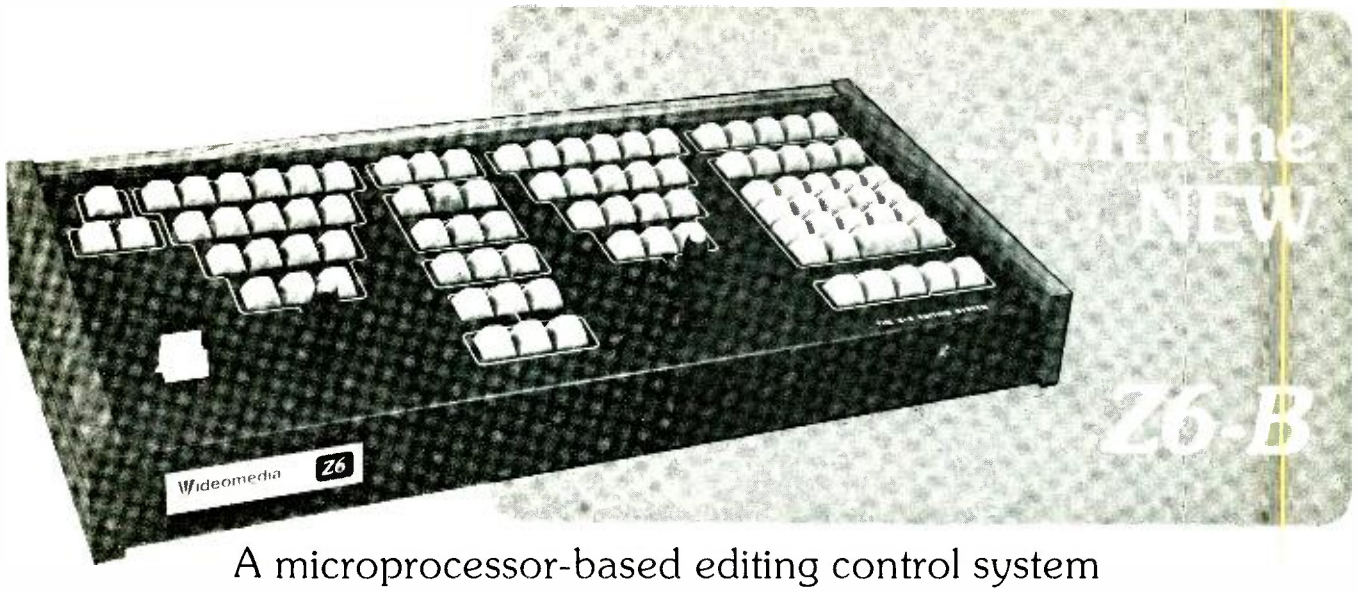
3. Material Accepted for Publication: *BM/E* editors will make all decisions regarding acceptability for publication. If duplicative or similar ideas are received, *BM/E* editors will judge which entry or entries to accept. A $10 honorarium will be paid for each item published.

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

5. Winners: Top rated entries in the year-long tally will become winners in each of the three major categories (AM, FM, TV). Final winners will be picked in February, 1981, and announced in the March, 1981, issue of *BM/E*.

6. Prizes and Awards: Three top prizes will be awarded: a programmable electronic calculator will be awarded for the highest rated entry in the respective categories of AM, FM, and TV. Ten engineering slide rule calculators will be awarded as secondary prizes for the highest rated entries in the following additional categories (top three winners are not eligible for these prizes): audio (three prizes, one each in the AM, FM, and TV categories); RF (three prizes, 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).

CREATIVE FREEDOM



A microprocessor-based editing control system

Who more than you, deserves all this?

The Z6/B has all of the outstanding features of its predecessor, the Z6/A plus . . .

- **Auto Edit** — any or all 99 events can be performed at the push of a single button.
- **Sync** — a Z6 exclusive, keeps both tapes synchronous with respect to each other. Move either tape in either direction and the other transport will move the exact number of frames.
- **ADR** — Automatic Data Replacement, when activated, sends the editor in a "looping" condition. The operator can replace data numerous times until it is a "take."
- **Auto Cal** — automatically assigns the proper number to the proper frame of video on any new tape. No longer do known locations or SMPTE addresses need to be referenced.

The Z6 data display is a continuous readout of all edit parameters, including operator prompting messages

Z6/B standard features include . . .

- Bi directional joystick shuttle
- Auto search
- 99 event memory
- Full status display
- Cruise control
- Rehearse, perform, review edit
- Error and prompting message
- Programmable Pre and Post rolls
- Single glide ballistics
- NO mechanical mods to VTR's
- SMPTE or Micro-code display
- Return to "in" or "out" points
- Micro-loc* — frame accuracy
- Consecutive non stop mode change
- Full VTR remote control
- A/B monitor select
- Tag functions

Z6/B options include . . .

- Drop frame/Non drop frame readout
- Dump — an exclusive Z6 feature which records all memory on the video tape itself
- Line Printer — allows a hard copy readout of all edit decisions and parameters

Z6 is truly the most powerful video tape editing system available. Call Videomedia or your local dealer for more information.

*pat. pend.

Videomedia
Professional Television Systems

250 North Wolfe Road, Sunnyvale, CA 94086 408/733-6500

Circle 162 on Reader Service Card

Great Ideas

the entire length of the program, as is necessary when using the remote jack of an audio cassette, the 2.2 K ohm base resistor of the relay driver can be moved from pin 5 to pin 13.

To operate the unit, set the alarm, push the reset button, and flip the Auto Remote Start switch.

3. Optimod-FM Modification

Walter Kowalczyk, Transmitter/Studio Engineer, WTAE/WXKX, Pittsburgh, Penn.

Problem: Audible mid-frequency pumping and loss of high-frequency brilliance with the Optimod FM.

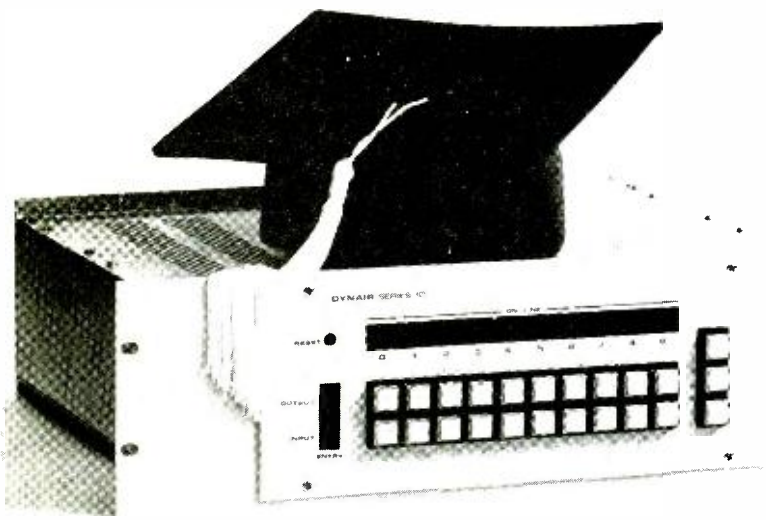
Solution: After listening to several stations using the Optimod, this problem became apparent. Studying the unit's schematic, I found that no significant headroom was allowed for preemphasis unless the audio emerges from the broadband limiter at a level below the limiting threshold, e.g., during gain recovery or soft passages. It occurred to me that using a pad between the broadband and high frequency limiter sections would alleviate this problem. The pads can be simple voltage dividers, identical for each channel, and should be inserted between the accessory points (29/28 and 31/27), which are now jumpered.

Since the 75 microsecond curve is up 3 dB at only 2.1 kHz and there is often a lot of energy in this region, a pad of at least 3 dB should be used so that audio emerging from the broadband section at full level will have at least some preemphasis applied. Without the pad, response will approach flat rather than preemphasized whenever audio out of the broadband limiter is at the limiting threshold level and contains significant highs. At the receiver, brilliance and mid-range loudness will be sacrificed if proper preemphasis is not used. Your modulation monitor won't sit on 99 percent with this modification, but it will help banish listener fatigue.

A companion idea is to provide for high frequency gain reduction metering so that the action of the high frequency limiter section can be observed. This is easily accomplished by using an SPDT switch at the gate of the G/R meter FET (IC216C). In the broadband position of this switch, the connection is unchanged; in the high frequency position, the FET gate is instead connected to the high frequency gain reduction bus (junction of R281/282). The front panel meter switch is set to "G/R" for either limiting function. The high frequency G/R position can show only relative limiter activity, because the amount of gain reduction is dependent on frequency.

I gave these ideas to Bob Haberkost, chief engineer of WNDE/WFBQ, Indianapolis, Ind., who tried them with gratifying results. He used 10 K ohm trimpots for the pads, and set them to 4 dB attenuation. The result was much less high frequency limiter activity with better highs, a more "open" and less restricted sound, with essentially no perceived loss of loudness. **BM/E**

The Story of The Smart Little Switch

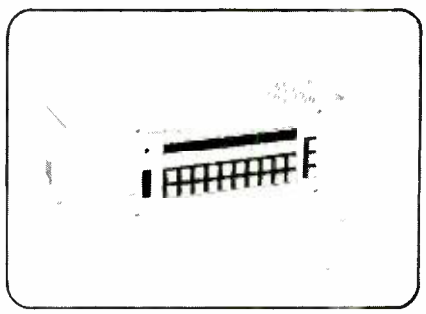


- It's a quick-thinking, high-achiever in the solid-state video and audio switcher class.
- Its microcomputer brain takes direction from local or remote controllers on a single coax line.
- If it loses power, it remembers its status — puts everything back in place when power is restored.
- It does its thing during the vertical interval.
- It can tell up to three switchers what to do and provides tally as a standard feature.

The Series 10 solid state switching family puts a lot of large-switcher capability into small broadcast, educational, and industrial systems. It gets its smarts from a microcomputer based control system. Available only in a 10 x 10 matrix, which is both cost-effective and small in size, the smart little switch fills small-systems applications where big things need doing.

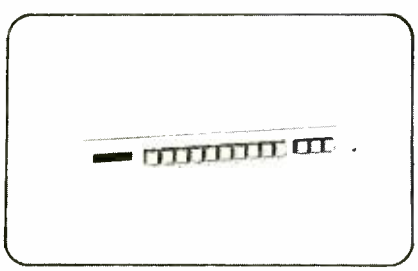
Separate solid state matrices for audio and vertical interval video switching are available — and all systems come with tally as a standard feature. Matrices can be mixed in all combinations up to a total of four, for multi-level audio, audio-follow-video, RGB, and data switching applications.

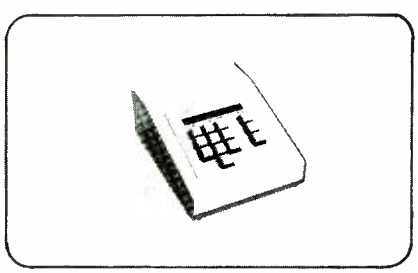
The real genius of the Series 10 however, is its high degree of flexibility in providing local and/or remote control in any combination to meet a variety of needs — and remembering everything — even when the power fails. Now that's a lot of big system smarts for a little switch.



Remote Switcher Controls When control of the switcher from another location — or two, or more — is a requirement, master control panels can be added in racks or on desks located up to 2000 (RG59) feet away. They can be programmed by internal switches to run the entire matrix, one bus, or display the status of all outputs.

But there's more to the story of the smart little switch and how it all comes packaged in self-contained units — including the master controller — enabling add-on of many of the system elements at a later date. Why not join the smart set and get the details on our ingenious little switch.





Remote Bus Controls Single bus remote control can be added at any time for one or all outputs. The same 2000' of RG59 cable used for remote master controls provides communication for the rack or desk units. They're smart too — with their own microcomputer for communication, keyboard and LED scanning. Set the bus location with internal switches and it will appear on the front panel's LED display!

Circle 164 on Reader Service Card

SERIES 10

It really IS a smart little switch

DYNAIR

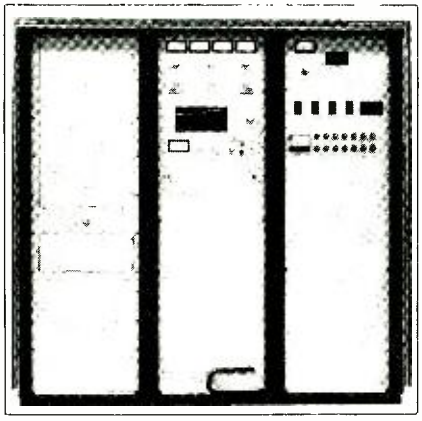
ELECTRONICS, INC.

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

BROADCAST EQUIPMENT

FM Transmitter 250

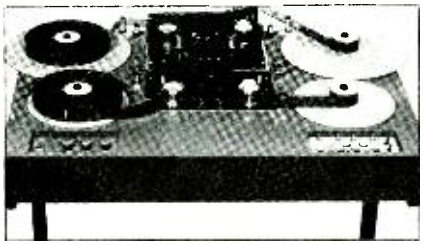
The Model 831G-3 25 kW FM transmitter is type-accepted to operate as low as 10 kW. PA efficiency is approximately 80 percent, over 10 percent better than the maker's previous model when operated at the common power



output of 20 kW. LED status indicators signal each level in the control ladder, including all overloads and the status of all door interlocks. A phase loss/rotation detector gives additional protection against main ac power line problems. Indicators and controls are at eye level; electromagnetic relays have been eliminated wherever possible and components have been simplified. Features include automatic power output control, automatic overload recycling, built-in VSWR protection, and automatic filament voltage regulation. Maker claims superior frequency and PA stability. ROCKWELL COLLINS

Telecine 251

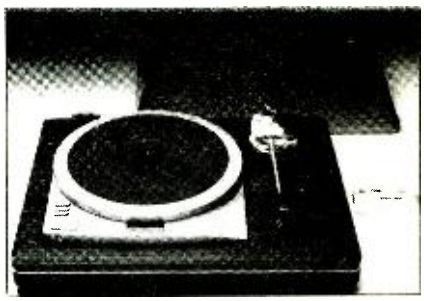
The Series V-1000 Videola™ telecine transfer machine, introduced at SMPTE, is designed to transfer film to tape with film speed independent of TV sync and irrespective of any vertical



scanning rate. The film moves in real time, and visual effects such as slow and fast motion are achieved without dependence on TV sync. The unit does not require a dedicated camera, and cameras may be assigned as need arises. The "flickerless prism" intermittent optical system produces resolution of 6 MHz for 16mm and 8.5 MHz for 35mm. Wow and flutter is less than 0.1 percent RMS or DIN weighted; picture steadiness is typically 0.1 percent, vertical and horizontal. The unit can be used with composite optical, magnetic, or separate magnetic tracks in 16 mm configuration or with optical track in 35 mm. Features include auto density control, manual color correction, auto and manual torque motor control, and crystal-controlled 14/15 fps film speed. Production models will be available in July. MAGNASYNC/MOVIOLA CORP.

Direct Drive Turntable 252

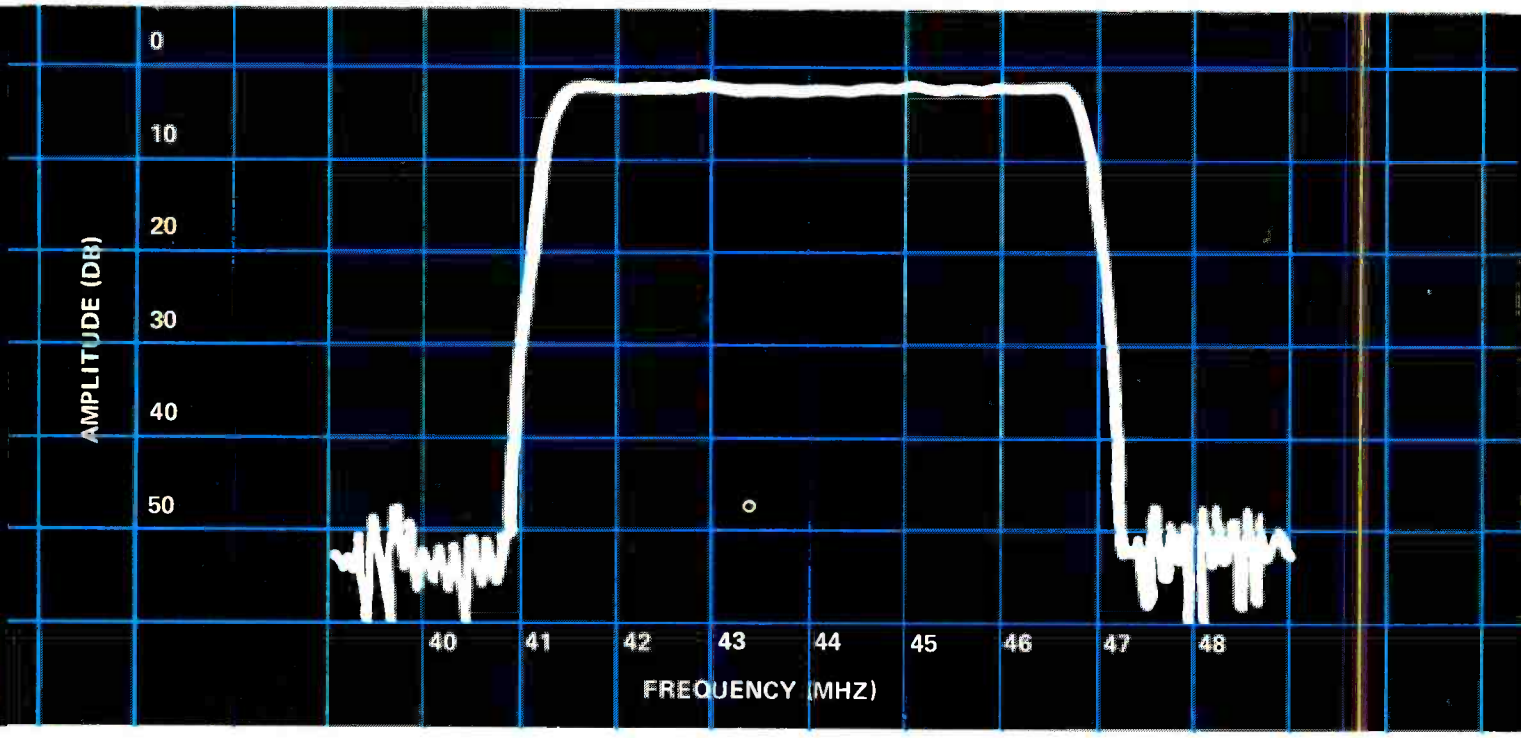
Model SL-1015 is a turntable system consisting of a quartz synthesizer direct drive turntable, an anti-resonant and acoustically deadened turntable base, and a new tonearm system design allowing tonearms to be interchanged for



precise matching with different cartridges. Quartz synthesizer pitch control gives precise variation in 0.1 percent increments above or below any of the three standard speeds up to a maximum of +9.9 percent. This allows the user to match the pitch of a record to that of a musical instrument, or expand or compress playing times to fit a time slot. The amount of pitch variation is indicated by a bright digital display above the pitch control buttons. Full cycle detection FC, extremely high torque, integrated rotor-platter motor construction, high effective damping, pulsed power supply, and special pitch lock mechanism to prevent misoperation are included. Wow and flutter is rated at 0.025 percent WRMS. TECHNICS BY PANASONIC.

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

For a better signal, here's how Rockwell SAWs shape up.

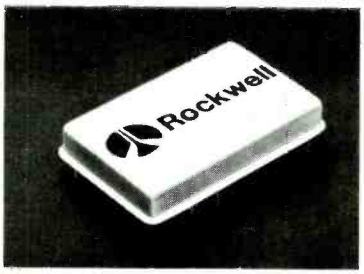


Now you can get Rockwell technology in solid state, space saving, maintenance-free SAW filters.

Micro Power

Rockwell International announces the latest addition to its SAWD (Surface Acoustic Wave Device) product line. The Rockwell SAW CATV Modulator Filter. It combines the solid state advantages of SAW technology with the volume production and research and development resources of Rockwell International. The result: A better signal for cable TV transmission of higher resolution video. That's Rockwell Micropower!

Rockwell's SAW bandpass filter provides the CATV Modulator designer with unique benefits. Shown in the graph above, the Rockwell SAW CATV filter has excellent band pass characteristics. Its solid state construction requires no tuning or maintenance, making it ideal for remote, unattended locations. Its compact size means it saves space and allows design flexibility. Add to that its flat group delay characteristics and reliability and you'll know why Rockwell SAWs are shaping up to be the technology leader.



Rockwell's SAWD products are the result of over 10 years of research and development together with nearly 30 years of Collins mechanical filter design and production.

For more information, contact Filter Products Marketing, Electronic Devices Division, Rockwell International, 4311 Jamboree Road, Newport Beach, CA 92660. Phone: 714/833-4544/4324.

Rockwell International

...where science gets down to business

Circle 165 on Reader Service Card

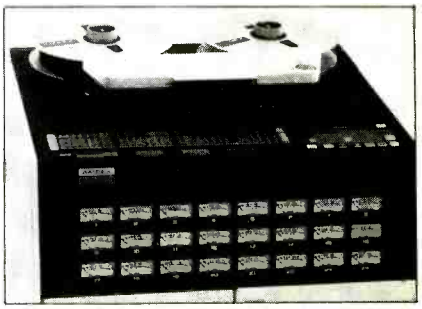
Broadcast Equipment

ENG Cue System 253

This one watt IFB system combines and retransmits program and instructions from an ENG van to field personnel. It consists of the Model CTA cue transmitter and the Model LPQRA cue receiver. Model CTA accepts two audio inputs and controls levels so that program is heard continuously and instructions (from two-way radio or local mic) override program audio as they occur. Frequency range is 26.1 to 26.48 MHz; power source is 120 V 60 Hz. The transmitter takes up 1¾ inches of 19-inch rack space. Model LPQRA is pocket-sized (3 by 5 by 1 inches) and battery-powered. It features 6 kHz audio response for accurate program monitoring, a crystal filter for interference-free operation, and a high-level headphone output. The system is FCC type-accepted. Model CTA, $750; Model LPQRA, $395. COMREX CORP.

Multi-Track Audio Recorder 254

The ATR-124 24-track audio recorder, introduced at the AES convention, uses a closed-loop dc servoed transport that maintains constant tape tension at each reel in all operating modes without pinch rollers. Both reel motors and the single drive capstan are servo-

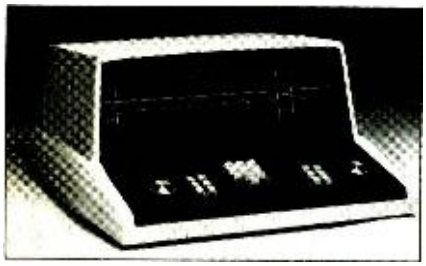


controlled; tape tension is automatically adjusted. Flux Gate™ record heads combine the recording and sync playback windings on the one head for Sel Sync™ response that approximates normal reproduce response. A variable speed shuttle regulates forward and reverse tape motion; shuttle speeds can be regulated from slow to 300 ips. The system features programmable monitoring with memory and a battery-powered backup memory in case of power failure. Also featured are dual microprocessor controls, record mode diagnostics with flashing VU meter lights, and Pick-Up Recording Capability (PURC), which permits the editing or dubbing of new material without creating errors at either end of the new insert. Noise reduction inter-

face is provided. Options include multi-point search-to-cue and complete remote control panel. AMPEX CORP.

Video Editor 255

Commander I computerized SMPTE or Control Track videotape editing system is designed to control two VTRs in either an on-line or off-line editing situation. Features include listing of edits



with cut, wipe and dissolves, 24-, 25-, and 30-frame rate selection, editing through midnight, and storage of up to 25 events. The unit operates with two-inch, one-inch, or ¾-inch VTRs. It reads, prints, and punches an industry-compatible tape, and can be interfaced to most VTRs without modifications, according to the manufacturer; the operator is provided with continuous feedback of the editing parameters. UNITED MEDIA, INC.

Turntable Preamp 256

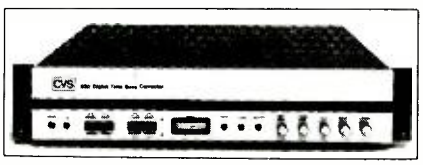
The Audio-Metrics stereo/dual turntable preamplifier combines discrete and IC components in the input gain stage and low noise resistors to hold noise to near theoretical limits, according to the manufacturer. With second stage equalization, the first stage gain block effectively buffers the cartridge from loading changes and provides broadband high input overload protection. Transformers have been eliminated through the use of ICs, ground plane circuit boards, and input and output RF suppression, protecting the unit against RF interference. Specifications include: THD, 0.03 percent at +18 dBm; maximum output, +27 dBm, maximum input, 350 mV at any frequency; and noise, 96 dB relative to 12 mV at 1 kHz. $225. RADIO SYSTEMS DESIGN, INC.

Broadcast Limiter 257

The 600L broadcast limiter for AM and FM transmitters provides a high slope ratio above the limit threshold, allowing closer operation to the transmitter maximum input. It accepts program signals from 20 Hz to 15 kHz and has a "gain make up" control that adjusts the input signal to compensate for varying levels. A six-position threshold switch varies the threshold in 1 dB steps from +5 dB to +10 dBm; attack and release times are also selectable by six-position switches. Preemphasis switch and gain reduction meter are included. The unit is housed in a 19-inch rack-mounting assembly compatible with the associated 600F filter unit, intended for use as a bandwidth restricting filter in AM installations. The filter operates from the same 24 V remote power supply as the limiter and provides a high cutoff rate above a frequency of 6 kHz and a pass band ripple of less than 0.3 dB. AUDIO & DESIGN RECORDING, INC.

Digital TBC 258

The CVS 520B is an updated version of the CVS 520 digital TBC, designed to work with all VTRs. The key new feature is an optional 16-line window intended for dealing with portable VTR



gyro errors, random edits, and other ENG or EFP problems. Improvements in head switch handling provide increased protection against possible tearing and color streaking when the unit is used with segmented VTRs, according to the manufacturer. The unit dubs cassette and other non-capstan servoed heterodyne VTRs to quad and other production machines, converts all heterodyne VTRs to interlaced color, and uses nine-bit four times subcarrier PCM digital sampling to maintain picture quality on multi-generation tapes. HARRIS VIDEO SYSTEMS.

ENG Mixer-Amplifier 259

Model MA-3VR is a three-channel on-board mixer-amplifier for ENG teams that will mount permanently on any VCR or one-inch VTR. It is powered by the VTR battery and has low current drain; up to ½ watt monitoring power is provided. The unit, which measures 1½ by 3 by 6 inches and weighs 20 ounces, can feed any headphone of any impedance, accepts balanced or unbalanced low impedance mics, and is double-filtered against RFI. It is designed with network input and has no protruding knobs or plugs that could interfere in crowds. The solid-state LED VU meter is unbreak-

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

Broadcast Equipment

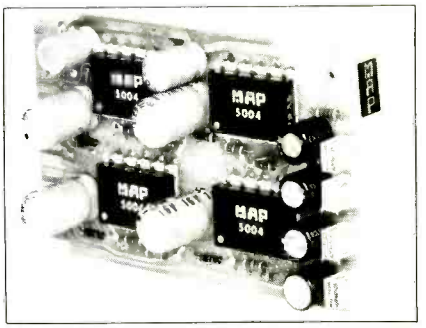
able and highly visible at night. All components are mounted to be in the natural hand position of the sound person. $375. TRANSIST-O-SOUND.

Time Base Corrector 260

The ccd2h-1 video TBC will work with any half-inch or ¾-inch capstan or non-capstan servo heterodyne VTR. It can externally lock to a master sync generator to allow the operator to use the VTR as a source and do A-B rolls. S/N is 58 dB, differential phase is 0.5 degree, and differential gain is 1.5 percent. The unit has a correction window of two horizontal lines with an automatic steerable advanced sync to keep the VTR centered in the window. Also featured are adjustable noise coring to reduce chrominance and luminance noise by up to 4 dB and adjustable horizontal enhancement that provides up to 100 percent boost in the picture. $5800. EDUTRON, INC.

Four-Channel Amplifier 261

The Model 4020 modular plug-in card amplifier delivers up to +20 dBm into 75 ohm loads on four independent channels, each with self-contained gain control. Each channel has a differential



type input that can accept up to 47K resistive source impedance. Frequency response is flat to within ±0.25 dB from 20 Hz to 20 kHz and has a maximum distortion of 0.1 percent. Maximum noise on any channel is –80 dBm; worst-case crosstalk is –60 dB. The unit uses conventional ±15 V dc power supplies and draws a maximum of 250 mA; it is 2¾ inches high. MODULAR AUDIO PRODUCTS.

Ribbon Microphone 262

The Beyer M 160 double-ribbon microphone uses two extra-short aluminum ribbons, each less than 1/12,000 of an inch thick, as its generating elements. The manufacturer claims that the short length of these ribbons and the special forming process used in

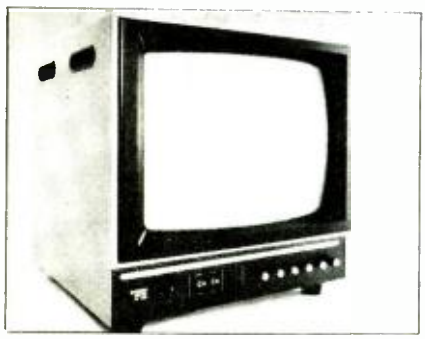
making them makes the mic highly immune to overload and mechanical shock problems. The ribbons have very low inertia, resulting in excellent transient response and smooth, natural frequency response from 40 Hz to 18 kHz. The mic's true hypercardioid pattern exhibits better than 25 dB attenuation at 120 degrees off-axis. Two red dots on the ring around the unit's head mark the longitudinal axis of the ribbons to aid in determining optimum recording orientation. Output is −59 dBm into a 200 ohm electrical impedance; options include lightweight colored windscreen, gooseneck, table and floor stands, and cable transformers for connection to high impedance inputs. $334.
BURNS AUDIOTRONICS, INC.

Cart Machine 263

Model 3400 is available in five different configurations: monaural playback, stereo playback, monaural record/playback, stereo record/playback, and monaural delay programmer. It is designed into a rack-mount assembly requiring no shelf or filler panels and may be used for desktop operation when equipped with optional cover. Features include direct-drive hysteresis synchronous motor, air-damped solenoid with excellent reserve capability, and half-inch thick machined aluminum deck. Also included are Phase Lok III head bracket, low-voltage solenoid, advanced IC/solid-state design with wide dynamic operating ranges, and long-life Nortronics Duracore heads.
BROADCAST ELECTRONICS, INC.

Color Monitor 264

Model CM-182 is an 18-inch color broadcast monitor with an in-line-type color picture tube designed to reproduce a bright picture with vivid color. Color synchronizing and color decoding circuits incorporate ICs to reproduce and maintain delicate hues, and an aperture correction circuit offers sharp pictures without ringing, according to the manufacturer. Video input is 1.0 Vp-p (VBS) 75 ohms or high, BNC connector. Specifications include: horizontal resolution, over 370 lines at center; vertical resolution, over 350 lines at center; S/N, over 46 dB; and deflection linearity, less than two percent within the central zone of diameter equal to picture height. Power requirements are U&C type 117 V ac ±10 percent, 60 Hz; power consumption is approximately 80 W. $2200.
HITACHI DENSHI AMERICA, LTD.

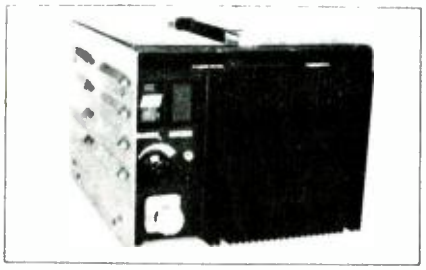


Aircraft ENG System 265

The Flight Pack 1™ is a television microwave system designed for program origination on board aircraft or for use as an airborne repeater. The completely self-contained unit includes an MA-2CP transmitter, MA-2P receiver, PA-315 12 W power amplifier, complete duplexer for simultaneous transmission and reception, and necessary power supplies to permit the system to operate from the aircraft's 24 V dc supply voltage. Once installed (on a seat, on the floor, or in a storage compartment), the unit may be separated into radio and support modules. Transmit or repeat operation modes are possible; in the transmit mode the ENG team originates broadcasts from the air, while in the repeat mode, the aircraft becomes a relay point to extend the operating range of an ENG team on the ground. Also included is the Omnex™ antenna, which mounts underneath the fuselage.
MICROWAVE ASSOCIATES.

Fresnel Power Supply 266

The Moduleur electronic ballast is designed for use with HMI and other "daylight" high-efficiency gas discharge lamps. The 1200 W solid-state ballast weighs 17.5 pounds, compared



to up to 75 pounds for conventional magnetic inductance ballast. Lamp flicker is entirely eliminated, according to the maker. An electronic feedback circuit regulates the lamp arc power consumption regardless of mains power variations and lamp aging, producing constant light and color temperature output and increasing useful lamp life. Lights may be variably dimmed without shift of the color temperature out of daylight range; remote dimming is also possible. The unit operates on 115 V current, with 575 W lamps drawing 6 A and 1200 W lamps drawing 12 A.
PEP, INC.

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