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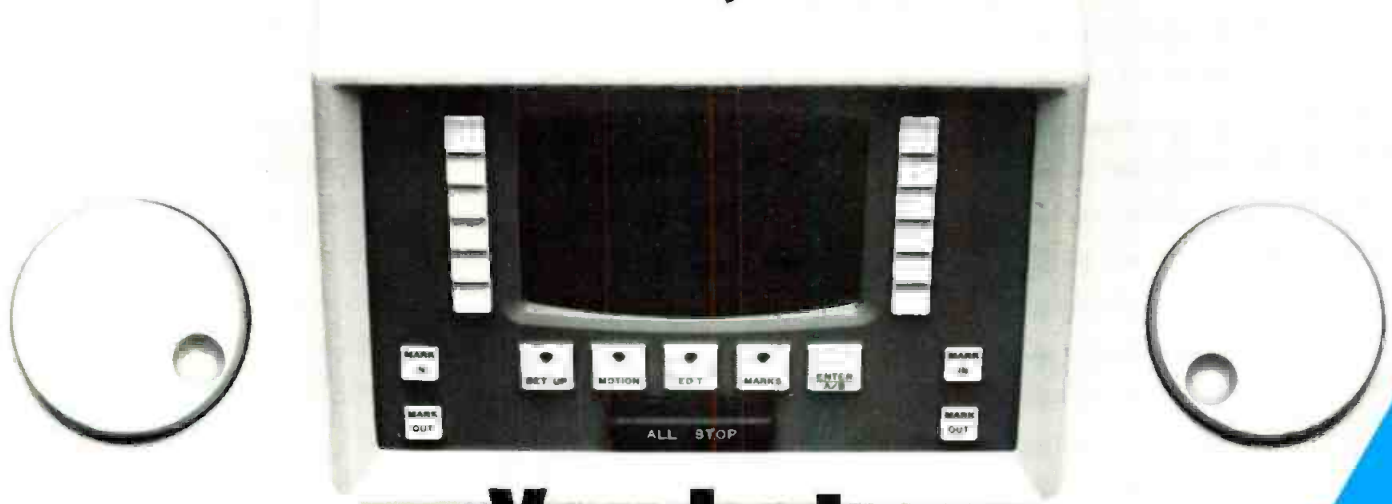
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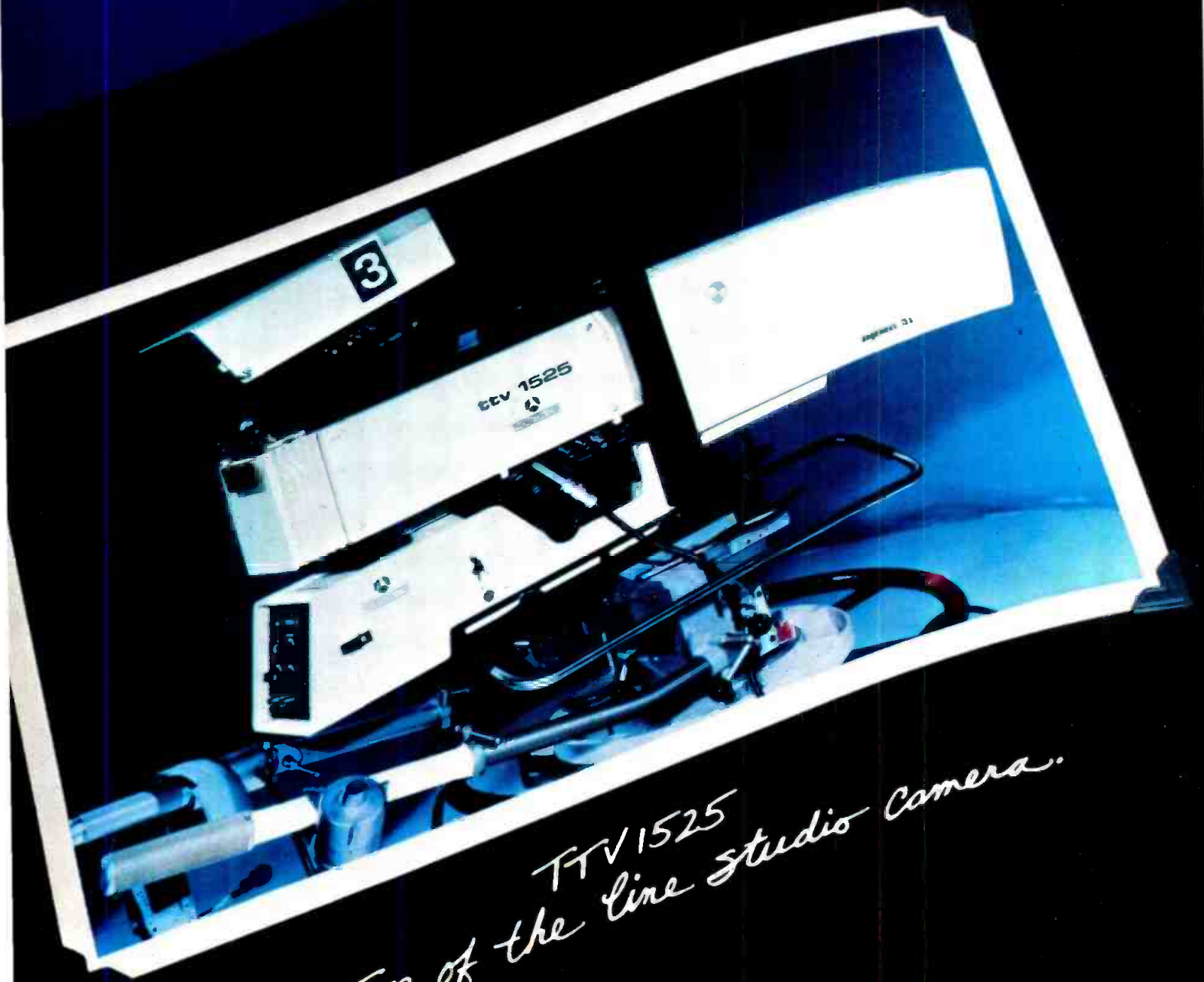
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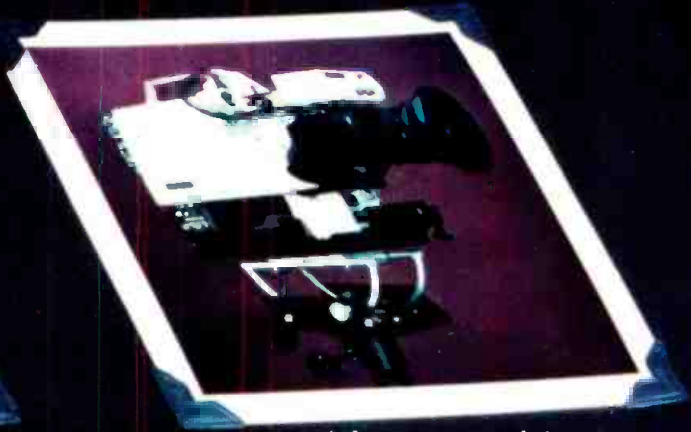
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BM/E

BROADCAST MANAGEMENT/ENGINEERING

DECEMBER 1981/VOLUME 17/NUMBER 12



Like equipment, stations are designed to achieve maximum performance. Nominees for the Best Station Awards highlight the ideas that go into designing an efficient station. Illustration by Arthur Arias.

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“OUR NEW SONY ALL KNOWN

“Finally there’s a ¾-inch recorder that doesn’t just inch along,” says Fred Rheinstein, president of The Post Group.

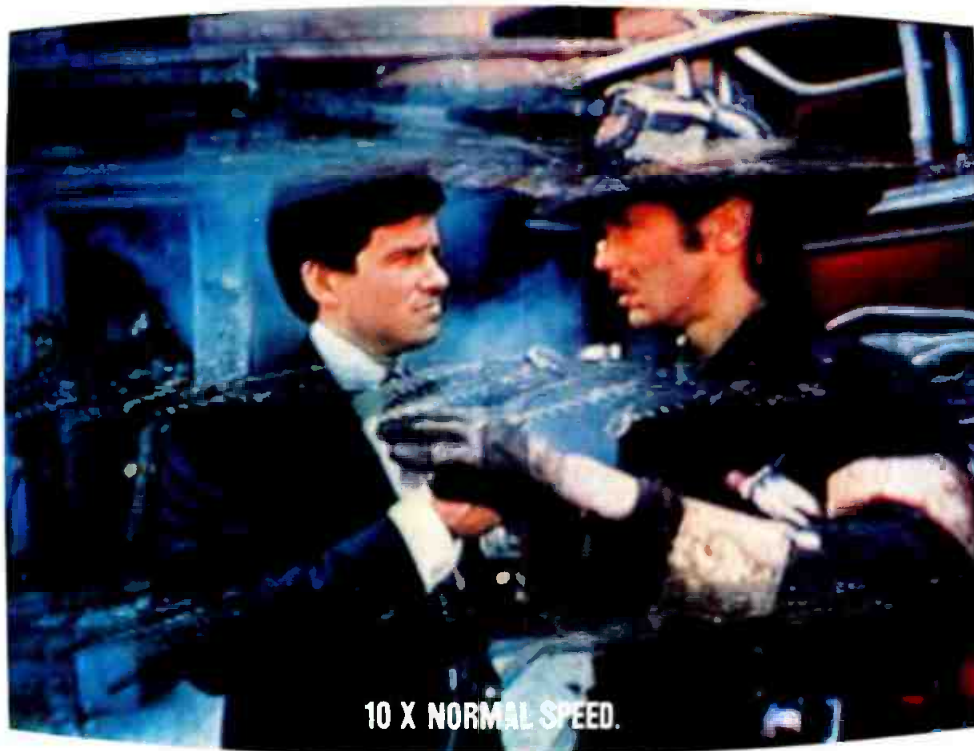
A major post-production facility in Hollywood, The Post Group counts among its clients all three networks, PBS, and major cable TV and syndicated production companies. It will edit the new syndicated children’s show “We’re Moving” entirely on the BVU-800.

“The 800 is amazingly fast. To be able to go backward and forward at 40 times play speed means you can search for your edit points—and find them—more than twice as fast as ever before,” continues Rheinstein. “And this machine goes from its highest speed to a still frame. Instantly. Without slewing or breaking up.

“It also has a direct-drive system, which promises greater reliability and accuracy.

“We have extremely critical clients,” says Rheinstein. “They’re used to the best performance, in terms of picture quality and in terms of flexibility. This new Sony can deliver it.

“It’s the perfect combination of U-matic economy and broadcast quality. It’s a true mastering process: with the BVU-800, there’s no need to transfer to one-inch and lose a generation in order to edit your tape.”



U-MATIC BREAKS SPEED RECORDS."

Fred Rheinstein, *THE POST GROUP*

Other breakthroughs incorporated in the BVU-800 include its ability to make machine-to-machine cuts without a separate controller; its adjustable, removable edit control panel; and its narrow, front-loading design, which makes rack mounting possible.

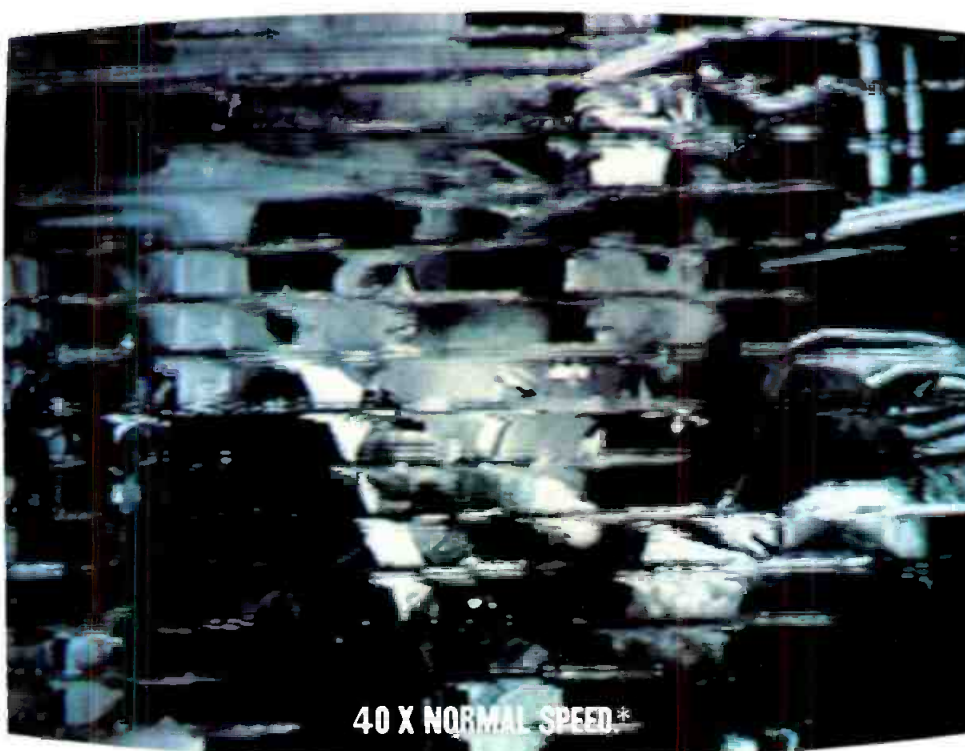
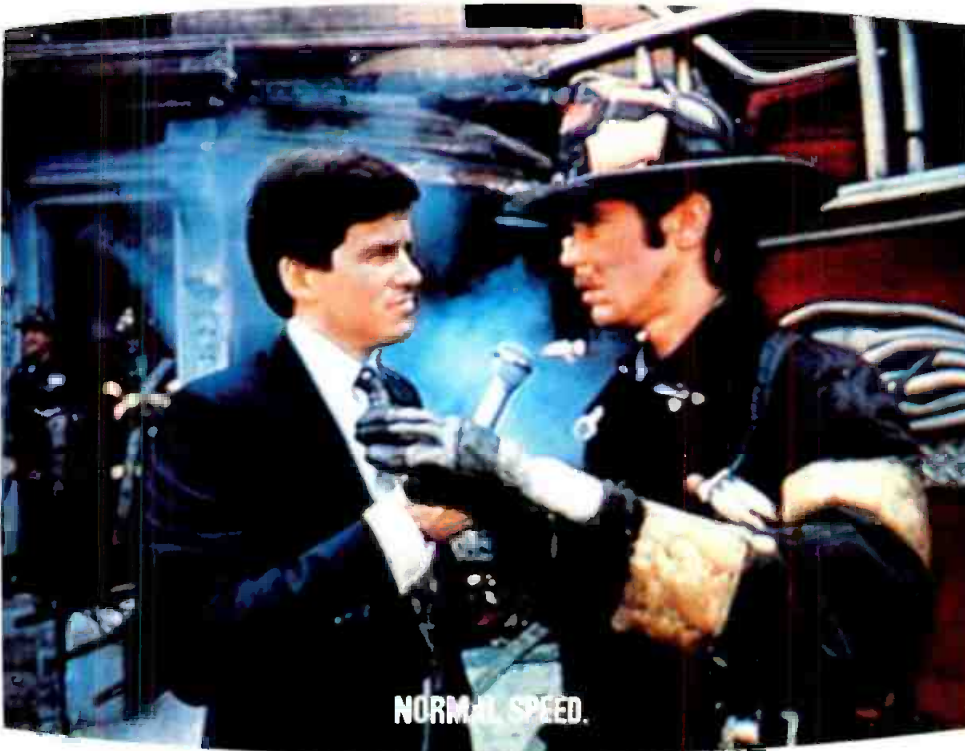
"We've always bought a lot of Sony, because we can depend on the company for reliability and innovation," says Rheinstein. "Now, with the BVU-800, Sony makes its competitors look like they're operating in reverse."

Sony makes a full line of 1-inch and 3/4-inch broadcast equipment, including cameras, recorders, editors and digital time-base correctors.

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BROADCAST INDUSTRY NEWS

Sony To Take VCR Fight "All The Way": Morita

Sony Corporation will fight "all the way" to protect the right to manufacture and use home videotape recorders, Sony chairman and CEO Akio Morita recently told a *BM/E* reporter, referring to the recent U.S. appellate court decision that ruled home recordings of copyrighted TV programs illegal.

Morita was unable to say what the exact plans of Sony's lawyers were, but he appeared determined to follow the fight as far as necessary. He told the audience at the demonstration of the Mavica still video camera (see separate story in this section) that Sony would continue to manufacture and market home VTRs and would do "everything possible to protect the public's right" to use VTRs.

The court decision, handed down by the U.S. Court of appeals for the Ninth Circuit, San Francisco, shocked many observers in the home video industry

and in copyright law, who had been assuming what one professor, Alan Latman of New York University, called "an unwritten personal use exemption." The appellate court firmly negated the idea of such an exemption by finding for the plaintiffs, Universal City Studios and Walt Disney Productions.

While Sony is the only manufacturer named in the suit, the decision presumably could be applied to Matsushita as well if it is not reversed.

Meanwhile, at least one home video magazine is warning its readers not to "break the law" until the case is settled. *Video's* publisher, Jay Rosenfield, says "an immediate Congressional remedy" is needed to protect VCR owners since the long wait for a Supreme Court decision would leave the question in limbo too long. That remedy may be forthcoming: soon after the decision bills were introduced in both houses of Congress to exempt private, noncommercial off-the-air video recording from the copyright law.

RCA Auctions Leases For Seven Transponders

The dignified halls of New York's Sotheby Parke Bernet auction galleries saw bidding on an unusual prize when RCA Americom auctioned off seven transponder leases last month. Auctioneer John L. Marion, president of the galleries, netted RCA over \$90 million dollars in this first-ever satellite auction.

Although the FCC had yet to approve the tariff revision that called for the auction, RCA went ahead with its plans. A spokesman told *BM/E* that in the event of a rejection, the company would have to find an alternative method of charging for the transponders. But RCA had several points strongly in favor of the auction process, which, according to president Andrew F. Inglis, "serves to assure that the entity with the greatest need for a facility presently in short supply sets the value for that facility." Leasing the transponders for their actual market value also will discourage speculation, Inglis said. "In such situations," he complained, "none of the real value of the facility goes to the carrier that made the original investment and took the business risk."

Lucky winners in the auction were Transponder Leasing Co. — the highest bidder at \$14,400,000 — Billy H. Batts, Warner Amex, RCTV, Home Box Office, Inner City Broadcasting Corp., and UTV Cable Network. All seven transponders are on Satcom 4, scheduled for launch next month.

CBN Wins "Network" Rule Waiver From FCC

The FCC has waived some of its network restrictions to allow the Christian Broadcasting Network to syndicate programming and to program during the prime-time access slot.

The decision is sure to prove a boon to CBN, which recently inaugurated a syndicated weekly drama, *Another Life*. CBN had originally requested that the FCC institute a rulemaking to redefine "network" to exclude CBN. While conceding that its 15-25-10 standard (15 hours per week; 25 affiliates; 10 or more states) may no longer be adequate in the face of satellite technology, the Commission declined a rede-

MPR Wins Rights To CBC Public Affairs Programs

Public radio stations throughout the U.S. can now carry the impressive public affairs offerings of the Canadian Broadcasting Corporation under the terms of an agreement with Minnesota Public Radio, MPR, no stranger to top-quality program production, negotiated for over a year for the rights to CBC's *As It Happens* and *Sunday Morning*, both of which began live satellite broadcast Nov. 15.

"It's an exceptional program," MPR's Rhoda Marx said of *As It Happens*. "It's very much global in nature and provides listeners with a unique perspective on news events around the world." The shows producers keep a file of over 80,000 contacts and do not hesitate to go to the source when an important news story breaks. Their telephone rushes in where TV cameras fear to tread — as during the 1977 incident when Hanafi Muslims took 134 hostages in three Washington, DC, buildings. *As It Happens* producers spoke to over 50 people by telephone, getting three on-air interviews. Reporters frequently spoke with Bani Sadr and other Iranian leaders during the siege of the US Embassy in Tehran. The 90-minute live program reaches half a million listeners on AM and many more worldwide on shortwave.

The second CBC program, *Sunday Morning*, is a three-hour news magazine



MPR's state of the art headquarters in St. Paul was the scene of technical production for the recent *Star Wars* radio series

that reviews the week's events with tape-recorded reports.

The two-way agreement allows CBC to pick up some of MPR's quality programming; Marx told *BME* that the Canadians have yet to determine which programs they will take.

Response from U.S. public radio stations has been strong, Marx commented, noting that stations in Los Angeles, San Francisco, Boston, Ames, IA, Chicago, Louisville, KY, Seattle, Athens, OH, and Milwaukee were among those that had already agreed to take one or both programs.

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fine the term at this time. It recognized, however, that the standard could interfere with CBN's development as an alternative program source and gave CBN the right to program up to 30 hours per week without being considered a "network."

The decision came just after CBN celebrated its twentieth anniversary, commemorating its "first feeble signals . . . from a shabby, 1 kW UHF television station" in Portsmouth, VA. The operation has snowballed since that

day in 1961, now including four O&O TV stations, an FM radio station, a nascent satellite radio net, and the CBN Satellite Network, a 24-hour cable service.

FCC Teletext Rulemaking Sparks Praise, Criticism

The FCC's recently announced rulemaking proposing a market approach to teletext has sparked comment and controversy. The proposal would allow broadcasters discretion to select any teletext standard they prefer for broadcast on lines 14 through 18, 20

and 21 of the vertical blanking interval.

The Commission admitted in its proposal that line 21 was already in use for closed captioning for the hearing impaired. While reluctant to jump to conclusions before seeing the actual notice of rulemaking (not available at press time), John Ball, president of the National Captioning Institute, said that the possible authorization of line 21 "troubles us a little." "I can understand to some extent the free market approach," Ball explained, "but I think it's over-generous for a service that hasn't even got a start date . . . The FCC's hands-off attitude on technical standards may in fact delay teletext even longer."

Ball noted that over \$11 million has already been invested in line 21 decoders by the hearing impaired; broadcasters' investments in captioned programming have also been substantial. "There's a strong likelihood," he predicted "that broadcasters will continue to use line 21 for captioning alone."


Clearly delighted with the proposal was British Videotex and Teletext, which was quick to respond enthusiastically. Bernard Koteen, chief legal counsel in Washington for the U.K. industry group, called the move "a fair and sound decision that should stimulate optimum teletext development within the U.S." The British have been greatly cheered by recent successes in the U.S., including selection for Field Electronic Publishing's Nite-Owl service (see separate story). BVT says that "a second major broadcaster in the U.S." is expected to purchase a Context system.

Meanwhile, a U.S. videotex association is in formation in Washington, DC, with a working title of Videotex Industry Association of the United States (VIA). The non-profit group's 18-member steering committee was elected at a recent meeting by representatives of over 40 companies.

Digital Disk, Processors Top Subjects At AES

For broadcasters, the most important devices and discussions at the seventieth convention of the Audio Engineering Society were those showing advances in digital technology, new refinements in audio processors, and new techniques and hardware for satellite distribution. The convention, held October 30 through November 2 at the Waldorf-Astoria Hotel in New York, drew more than 6000 registrants and more than 180 exhibitors.

On the digital front, there was accumulating evidence of a general industry movement toward a uniform standard for the Compact Digital Disk. Some months ago, Sony and Philips had announced joint acceptance of a standard disk format. At the show sev-



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eral others announced adherence to the same standard (or confirmed earlier announcements to that effect), including Studer, Mitsubishi, JVC, and Matsushita. All have shown operating systems, at least in prototype form. It seems clear that the digital disk, now dubbed the "DAD," will arrive in full force in a year or two.

Highly significant, too, was a device shown in early form by Studer — a system for converting digital recordings in one format to almost any

other desired format, the SFC 16 universal 16-bit sampling frequency converter. This would allow, for example, all present digital recordings on tape to be used as source material for the DAD, which would give the DAD a rapid software startup.

All the leading makers of audio processors were on hand, and most were showing new, more refined systems. Important for satellite developments was a system for putting digital audio onto satellite circuits, described by representatives of Sony Corp.

Next month *BM/E* will publish a more detailed account of AES's convention.

Viewers Praise Field's Open Teletext Magazine

"It's an outstanding success with viewers," says Don Kaleta, president of Field Electronic Publishing in Elk Grove Village, IL. He's speaking of Nite-Owl, the full-channel open teletext program Field has been airing since Labor Day on Chicago's WFLD-TV, Ch. 32. The station, which previously was dark from midnight to 6:00 a.m., now rolls 20-minute CEEFAX orbits during those hours, bringing viewers a mixture of news, sports, entertainment, and leisure information.

Advertisers have been slower to respond, although local ads fill about half a dozen of the 16 20-second (one frame) availabilities per orbit. Kaleta says, however, that he is talking to national advertisers, and some of them "are kind of interested." He notes that people watching the late-night program tend to be relaxed and receptive to advertising messages.

Audience response, on the other hand, has been overwhelmingly positive. Kaleta says station studies have shown many viewers stay with the program through several orbits. Field has responded to that information by varying the content of the orbits to sustain viewer interest. The first orbit each night focuses primarily on news and sports, but the entire second orbit is devoted to entertainment and leisure — including such extras as trivia, quizzes, and puzzles. Information is continually updated throughout the night. Even the show's Beautiful Music background audio, says Kaleta, has scored high.

Nielsens are fairly low, but Kaleta points out that the Nielsen audience is skewed toward daytime and prime-time watchers, so even an appearance in the ratings is good for Nite-Owl — audience share, he boasts, is a healthy 33 percent.

KRON Covers Demo With Longest Local RF Link

San Francisco's KRON-TV went all the way in its coverage of the recent demonstrations at the Diablo Canyon nuclear plant near San Luis Obispo. The station beamed live reports back to its viewers with a 232-mile microwave link — the longest ever attempted by a local station using its own equipment.

"The plant was so remote that phone company lines and construction would have been either impossible or outrageously expensive," explained Mike Ferring, KRON's news director. "Since we didn't know exactly when the demonstration would happen, it was impossible to schedule a mobile earth station and book transponder time. It was do it ourselves or don't do it at all, so we decided to give it a shot."

The station mustered a large part of its resources to cover the blockade, call-

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WJAR-TV, a 33rd market station, is actively and successfully competing for commercial production work in the New York and Boston markets. And, according to Wyatt McDaniel, Chief Engineer, the RCA TK-47 cameras that were purchased in 1979, have played a big role in the station's growth in the production area.

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News

ing in all its microwave gear except for a single Tayburn 7 GHz receiver. Its news helicopter did double duty, transporting a technician and equipment to a relay point and shooting aerials. Only one of KRON's mobile units went to Diablo, however; the station rented an RV that functioned as a home base.

Two reporters and three camera crews covered the eight-day event from all angles — including on board the ship *Stone Witch*, conducting the sea blockade. KRON's coverage also in-



KRON's Telecopter 4 delivers technician John Weaver to the top of Valley View Hill for live coverage of the Diablo blockade

cluded a seven-part predemonstration report on Diablo Canyon, filed by the station's Sacramento bureau.

ENG Application For Sony's Mavica?

Sony's tiny Mavica, demonstrated as a still video camera for consumer and industrial use, could take to the field in broadcast ENG applications. That's what Koichi Tsunoda, president of Sony Video Products Co., told *BM/E* at the recent debut of Mavica.

The camera, about the size of an ordinary 35 mm still camera, functions as a regular video camera when linked to a U-Matic or Betamax VTR and will produce full NTSC pictures, Tsunoda explained. (A built-in standards converter will allow Mavica to operate with 625-line systems.) Even if news directors find it lacking for ENG, though, the camera's other features will find plenty of uses. It stores 50 full-frame, fully interlaced video images on a miniature videodisk, the Mavipak, picking up the image with a single CCD. Horizontal resolution is 350 lines, with an S/N of 45 dB. Color bandwidth is 1 MHz, which Sony says is about twice that of home video systems.

Stills can be transmitted over telco lines with computer modems and a Sony-developed transmitter and receiver. The slow-scan transmission process involves no degradation or color alteration, Sony says.

Mavica operates on a snap-in battery containing three rechargeable Ni-cad cells; a full charge is good for 200 exposures. No developing is necessary, of course, and pictures can be viewed instantly over the Mavica viewer or a monitor (the camera has both RGB and NTSC monitor outputs). Pictures can be dubbed onto videotape for slide shows or "albums." Sony is at work on a printer which should be ready for market at the same time as the camera (target date is mid-1983). The camera and viewer are expected to retail for about \$1000.

New Cable Viewers Want News, Music

Over 80 percent of potential CATV subscribers want national and international news services, according to a study conducted by ELRA Group of East Lansing, MI. The communication research and consulting company interviewed over 9000 residents of 23 cable communities in 11 states, questioning them about the services they would want in a cable system.

News was mentioned by 80.1 percent of those surveyed, while 72.5 percent said they would like a channel featuring contemporary music. Health and safety features also rated high, with

Case History #437

Electronic News Gathering is one of the toughest environments a microphone will ever encounter. Every mike we've seen has compromised the demand for low handling noise, fine audio quality and virtual indestructibility.

Credit the NBC Electronic Journalism Department/Operations and Engineering in New York for putting the Electro-Voice DO56 shock-mounted omni in the field. Although originally designed as an on-camera entertainment and MC's microphone, NBC found the DO56 to be the microphone that provides an audio signal commensurate with video in real-life crisis situations. In these situations audio often takes a back seat to video,

Electro-Voice DO56 Shock-Mounted Omnidirectional Microphone

resulting in a final product that doesn't accurately reflect the broadcaster's professional standards. NBC discovered that the DO56 takes the pushes, the shoves, the rubs and finger taps in stride. And when handling *really* gets rough, the DO56's unique internal shock mount virtually eliminates the bell-like clang transmitted by other shock-mounted mikes.

Congratulations to the NBC Electronic Journalism Department in New York. You found the solution — the DO56.

For an in-depth description of this and other case histories, get on the Electro-Voice "Mike Facts" mailing list. Write on your letterhead to Mike Facts, c/o Electro-Voice, 600 Cecil Street, Buchanan, MI 49107.

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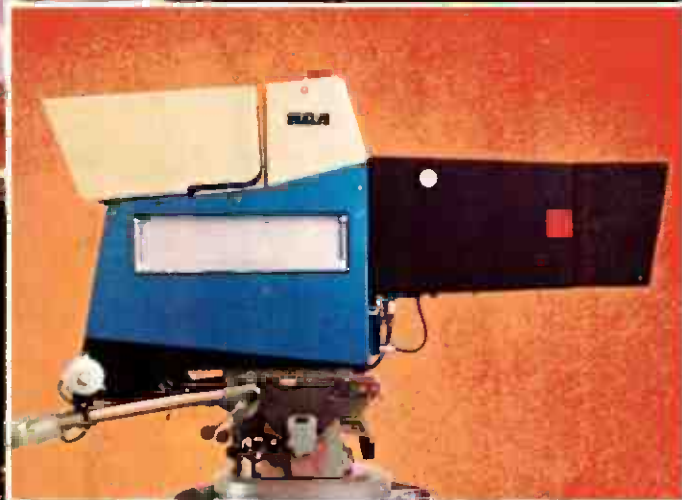
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But it is you, our TK-47 customers, who are the real Emmy Award Winners. With over 300 TK-47 cameras in use today around the world, it is you who are producing news, documentaries, variety shows, dramas, commercials and public service programming with award-winning camera performance. You know that you have to start with the best camera in order to deliver the best programs.

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The RCA logo is displayed in a multi-colored font, with each letter in a different color: R (red), C (yellow), A (green), and A (blue).

News

81.1 percent wanting a fire and burglar alarm system and 74.9 percent wanting a medical alert service.

Electronic shopping, often mentioned as a possible direction for the new technologies, fell flat with the survey group — only 16.8 percent were very interested. Sports, also, registered fairly low, with only 46.2 percent expressing interest in a sports channel. Other services surveyed included local weather (wanted by 68.3 percent), cultural programming (62.2 percent interest), Las Vegas club acts. (61-2 per-

cent), black entertainers (54.5 percent), children's programs (53.5 percent), women's programs (52.5 percent), stock market prices (46.4 percent), religious programs (34.4 percent), and Spanish-language movies (25.3 percent).

TIO Sees New Right Censorship Threat

The Moral Majority and other groups that link evangelistic Christianity with New Right politics may threaten television program diversity, according to a recently released report from the Tele-

vision Information Office. But despite their vociferousness, these groups have relatively little public support, the report claims.

The report quotes several well-known religious leaders who take issue with the Moral Majority, including evangelist Billy Graham, who says, "This is not my cup of tea." More opposition is found among broadcasters, social action groups, advertisers, and ad agencies. Both the American Association of Advertising Agencies and the Association of National Advertisers have taken public stands against the boycott proposed by the Coalition for Better Television; ANA president Peter Allport calls the boycott idea "coercive and contrary to the spirit and purpose of our free institutions." Gene Jankowski, president of the CBS Broadcast Group, ABC-TV president James E. Duffy, and former NBC president Fred Silverman are all quoted in opposition to the proposed advertiser boycott.

Public support for such a boycott is weak, the report states, citing a pool undertaken by ABC that showed that even among Moral Majority members, many disagree with many of the organizations positions. The Moral Majority members, interestingly, tended to have attitudes toward television and viewing habits similar to those of the general public. Another study, conducted by the Roper Organization for NBC, showed little criticism from the public of programs earmarked "immoral" by the National Federation of Decency.

Channel Master Enters Earth Station Market

Anticipating that private consumers will purchase some \$5 billion worth of earth station equipment, Channel Master, large manufacturer of home TV antennas and MATV equipment, says it expects to become the number one supplier of such equipment.

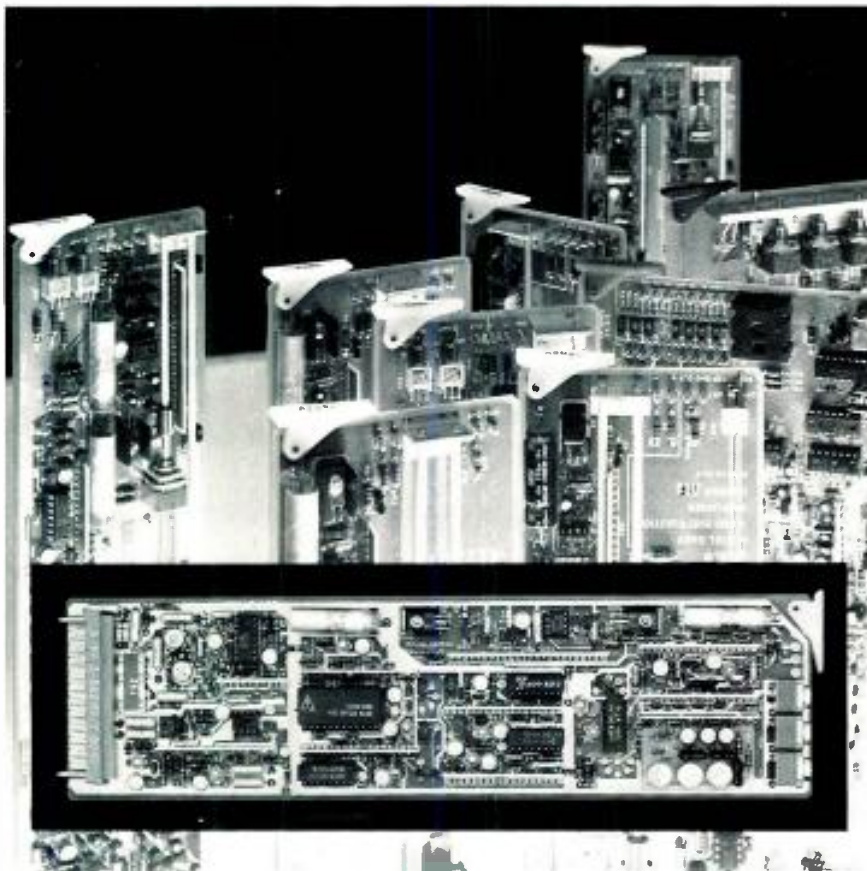
In October, Channel Master introduced four complete earth station systems to serve both the private consumer and commercial markets, including hotels, motels, cable operators, and broadcasters. Each package includes a 10- or 12-foot parabolic dish, an adjustable mount, 120-degree or 100-degree LNAs, a 24-channel receiver, and all necessary hookups. Prices vary from \$5990 to \$7590.

Systems will be sold through Channel Master's distributor/dealers network, who have been trained to locate and install the receiving station properly.

The \$5 billion market figure is based on 800,000 potential customers representing rural families, affluent trend-setters, licensed professionals (who will be receiving training-oriented

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Or, to put it another way, it's not just our big reels that make the HR-300 such a big deal. It's Hitachi know-how. And trying to duplicate that expertise adds up to spinning reels.

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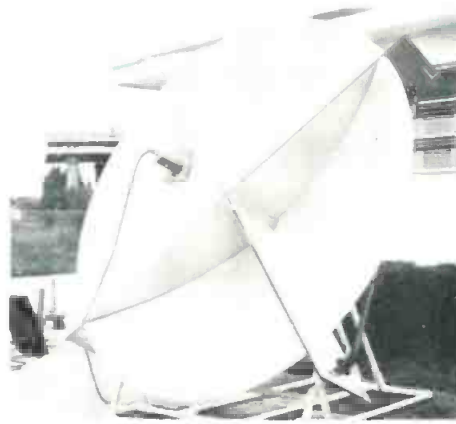
www.americanradiohistory.com

News

programming), and private clubs, churches, or similar groups paying an average price of \$6500 per system.

SSS Dish: OK For Narrow Signals?

A new plastic 2.98-meter satellite earth station may work with the extra-narrow satellite spacing recently proposed by the FCC, according to Southern Satellite Systems, Inc. SSS is testing the dish in conjunction with its manufacturer,



Laminated aluminum dish will sell for \$1800 sans LNA

Savac International. The earth station features a built-in "off-axis target squelch" (OATS) facility that increases its ability to receive a narrow beam signal, rejecting signals from the side lobes.

SSS's plans for the dish include reception of Satellite Program Network on Westar 3. The company also says it will use the OATS antenna to receive signals from the three Spacenet 1 transponders it has leased, beginning in 1984.

News Briefs

A recent Arbitron study shows **FM listening up 6.8 percent** over last year. FM leaders in the top 10 markets were Dallas/Ft. Worth, with 69.3 percent, and Washington, D.C., with 65.7 percent Tests at WVUA-FM, 100 W student station at the University of Alabama, may help determine if **vertical polarization of FM signals** can help avoid interference on television Ch. 6 The FCC has authorized Satellite Business Systems to construct a **fourth domestic satellite** to serve as an on-ground spare.

Storer has proposed a **232-channel CATV system** for a Minnesota community. The system would offer five tiers of service, two-way interactive service, and a computer service for homeowners and small businesses, among other facilities United Video won the right to **delete the vertical blanking interval** from the signal of superstation WGN-TV. The U.S. District Court in Chicago ruled that deletion of WGN's teletext signal did not constitute copyright violation International broadcasting net Univision initiated operations with a recent **live, seven-hour telecast** from New York City. The show covered the annual Hispanic Day Parade, then switched to Madison Square Garden for the Gran Fiesta en "El Madison."

The FCC has terminated its **inquiry on 9 kHz AM channel spacing**, declaring that the projected benefits do not justify the costs. U.S. officials are having less trouble than expected convincing other Western Hemisphere countries to stick with 10 kHz In an attempt to deal with the growing demand for satellite service, the FCC has proposed **reducing orbital spacing** between satellites to two degrees The Commission has denied reconsideration of its simplified radio and TV **license renewal procedures**, rejecting a request from Henry Geller, head of NTIA.

Moving right along toward deregulation, the FCC has proposed several **rule changes or deletions**. One proposal would delete requirements for type approval for modulation monitors for

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News Briefs

AM, FM, and TV stations; another would drop the public letter file requirement for broadcasters; a third would eliminate or reduce the annual financial report The Commission has decided against giving itself the power to **shut down equipment** that causes life- or property-threatening interference. The three TV nets were among commenters calling the idea unnecessary Commissioner **Henry M. Rivera** has been named Outstanding Young Lawyer for 1981 by the New

Mexico State Bar.

Any standards for LPTV stations must **insure interference protection** for full-service broadcast facilities. NAB has told the FCC, noting that "meaningful and important service" exists beyond the Grade B contour The association outlined several suggestions for **controlling CB interference** with television reception, including further research and tighter restrictions on CB amplifier purchase The FCC should end its **vague approach to "character"** in broadcast license proceedings, NAB told the commission in a recent filing.

NAB has asked the Copyright Royalty Tribunal for an immediate **interim rate increase** on programming picked up by CATV operators, but says a permanent rate increase should wait for Supreme Court action on the FCC's elimination of distant signal and syndicated exclusivity rules **International broadcasters** and broadcast-related organizations may now become members of NAB under a new policy Howard E. Woolley, coordinator of membership and information services for the National Association of Black-Owned Broadcasters, has joined NAB as **director of employment services** for the Minority and Special Services division.

NPR affiliate **KQED-FM**, San Francisco, has received this year's Armstrong Award for technical achievement in broadcasting for its work with digital audio. The station made digital recordings of the San Francisco Opera and the San Jose Symphony with the Sony PCM-100 digital processor A Japanese listener has reported that he picks up the signal of **KGO-AM**, San Francisco's ABC affiliate, on his home radio. With only a bar antenna, the 20-year old student was able to receive the signals, even though they originated over 5000 miles from his native Tokyo Mutual Broadcasting's *The Forbes Magazine Report*, a daily financial program produced by Radio Works, has won a **certificate of merit** in the 1981 Gabriel Awards Competition.

KOIT, San Francisco, has become the first major-market station to receive its programming via Bonneville Broadcast Consultants' full-time satellite broadcast service The Edward Rhein Foundation of West Germany has honored RCA Laboratories' Dalton H. Pritchard for his contributions to **improved TV picture sharpness and quality**. Pritchard was the only American among the nine recipients of the Rhein Prize 1980 **WTAW**, Bryan, and **KRGV-TV**, Weslaco, have won the 1981 Education Awards of the Texas Association of Broadcasters. The association also honored Wayne Kearl of San Antonio as Pioneer Broadcaster of the Year.

The country's first black-owned and controlled radio network, the **National Black Network**, has moved to new, larger headquarters at 10 Columbus Circle, New York, NY. NBN is a division of Unity Broadcasting Network, licensee of WDAS-AM/FM, Philadelphia The first annual **Low Power Television Conference and Exposition** will meet January 28 through 30 at the Sheraton in Washington, DC. For information, contact Joann Coviello, LPTV Coordinator, Conference Management Corp., 17 Washington St., Norwalk, CT 06854, (203) 852-0500.

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Business Briefs

Compact Video, Inc., has opened its new Compact Video Entertainment Center on Alameda Ave. in Burbank, CA. The center will serve as company headquarters and also offer production and post-production services. The company's Satellite Services Division has added three new services: a permanent incoming video loop, a microwave interconnection, and a five-meter transportable TRVO antenna **Bonneville Satellite Corp.** has announced plans to construct a video downlink network connecting 500 TVRO earth stations in the continental U.S. . . . The second **SBS** satellite has doubled the capacity of the network **Blairsat** has announced new rates for its satellite TV commercial transmission service. Commercials may be transmitted throughout the U.S. for \$10 per station.

Columbia Pictures Industries, Inc., and **Bell & Howell Co.** plan to form a joint venture company for videotape duplication and post-production Broadcast researchers **Bruce Fohr** and **Tom McNulty** have formed **FMR Associates, Inc.**, an attitude and opinion research company specializing in radio, TV, and cable. The new company is located in Tucson A new production company, **Murray Bruce Productions**, has been formed in New York City as a division of Columbia Pictures Industries. West Coast headquarters are in Burbank, CA Leasing test equipment can be one answer to the problems of availability, maintenance, and obsolescence. One company specializing in such rentals is **United States Instrument Rentals** of San Mateo, CA.

Victor Duncan, Inc., has expanded its inventories of well-maintained used video equipment, described in *Take 1*, the company's quarterly newsletter. For a copy, write to 2659 Fondren Dr., Suite 806, Dallas, TX 75206 or call (214) 369-1165 **Video Service of Nebraska** has expanded its Lincoln headquarters and opened a new office in Omaha **R.K. Morrison Co.** of Kensington, CA, is now recontouring and relapping broadcast cart and reel-to-reel heads.

Gannett Broadcast Group has ordered four ADO systems from **Ampex Corp.** for delivery to stations KBTB, Denver, and WXIA, Atlanta Duluth, MN, public broadcasting station **WDSE-TV** will go to circular polarization with **TTG-50H** 50 kW transmitters and a **TCL-16A8** antenna from **RCA**. The company's cable division will supply \$2 million in equipment to **American Television and Communications Corp.** for a new system in Indianapolis **KQFM**, Port-

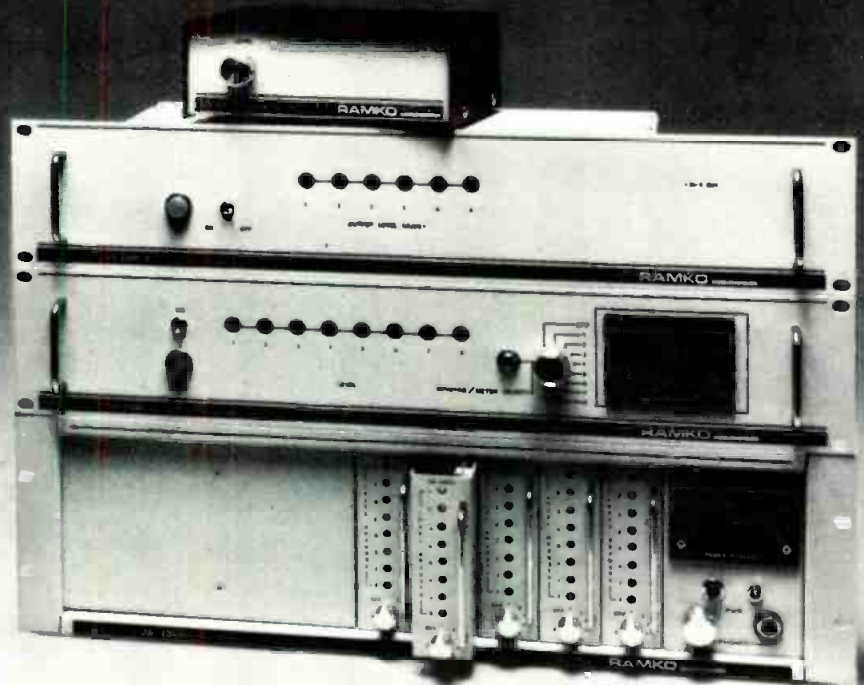
land, OR, licensed to **Golden West Broadcasters**, has automated its programming with a 9002 system from **Harris Corp.** **WVNP-FM**, a new public radio station in Wheeling, WV, recently went on-air with a Harris FM-10K transmitter; two more FM-10Ks recently went to one of the world's largest private radio nets, **Radio Cadena Nacional** of Colombia. Harris has been awarded a U.S. patent for the highlight handling system in its **TC-85** studio camera.

Aphex Systems Ltd. has sold an **Aphex Aural Exciter** to the **China Central Broadcasting System** in the

People's Republic of China **East Coast Video Systems** has been contracted to design and install a new one-inch post-production facility at **Video-works**, a New York City-based TV commercial production house. Equipment will include a **Sony BVE-5000** editor, **Sony BVH-1100A** VTRs, **CDL 480-8** production switcher, and **NEC DME** digital effects, as well as the **Warren Smith** video animation stand.

Aurora Systems has delivered its 100 **Digital Videographics System** to **Reed Communications Ltd.** of Edmonton, Alberta, a major producer of videotape programming.

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BM/E DECEMBER 1981 23

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The dc servo, Hall effect motor with flutter-filter belt drive, provides exceptional speed stability (to 0.05%), totally unaffected by line voltage or frequency fluctuations. And it runs so cool, no ventilation is required.

Full Broadcasting Features

Unlike some other cart machines, the Magnecord MC-II comes with the extra features broadcasters desire at no added cost. Built-in full remote control capability. Automation compatible cue tones (stop, secondary, tertiary) with LED indicators and contacts for external cues switching. Cue track input and output access for FSK logging. A universal mic/line input and front panel headphone jack to "preview" or time new carts and for servicing convenience.

Flexible Broadcast Use

The MC-II is so flexible it virtually defies obsolescence. You can choose mono or stereo models, play only, or with record capability. Best of all, play models are field-convertible to record/play. The record electronics come in a separate housing for convenient, space-saving installations.

Rugged Magnecord Design

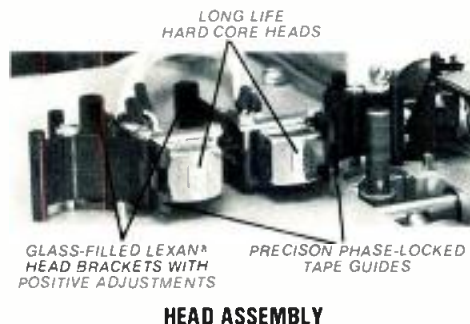
As with all MagneCORDs, the MC-II is designed to work long and reliably. For example, the woven polyester drive belt and polyurethane pressure roller are virtually indestructible. The regulated dc

power supply has universal line capability (100-140V, 200-280V, 45-65Hz), consumes nominal power and is brown-out proof. Computer grade push buttons are rated at 10 million operations. A single piece chassis and machined base plate assure positive alignment of all tape transport parts. Hard core, long life heads are mounted on unique, glass-filled Lexan® head brackets with precision, phase-locked tape guides. Carefully designed circuit boards and a Mu-metal shield make the MC-II immune to RFI, even when operated directly under a transmitting tower.

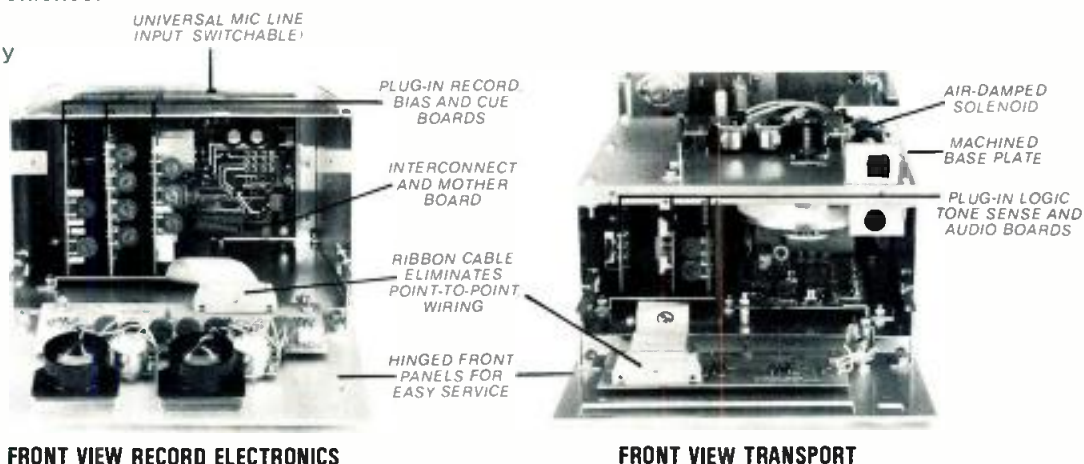
Convenient Service Access

When a Magnecord MC-II needs service, downtime is minimized. The covers and front panels are hinged for convenient access. All solid state circuitry is on plug-in

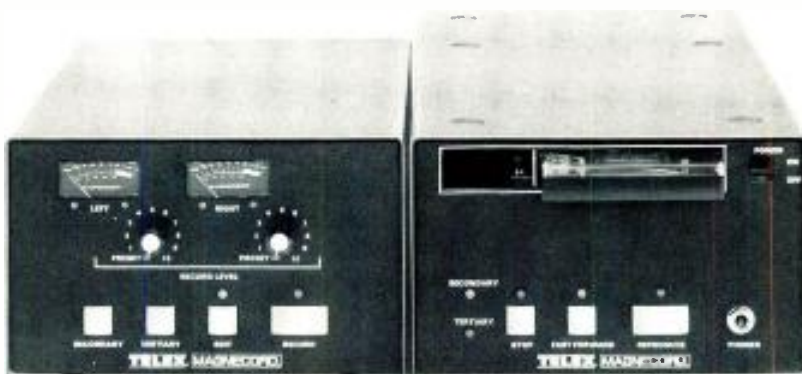
epoxy boards. Plug-in ribbon cables eliminate point-to-point wiring. And, of course, the Magnecord MC-II is made in the U.S.A. so parts are readily available.



When you compare performance, reliability, and cost, the MC-II is indeed a modern tool worthy of the name Magnecord, because it's made in the tradition of rugged excellence.



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RADIO

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Radio Drama: A Re-opening

RADIO'S MANY-SIDED comeback of the last 10 years from disenthronement by television has been thin when it comes to drama, which had been one of the staples in the reigning days of the radio networks. But new factors and energies pushing into home electronic entertainment now appear to be opening the way for a possible reemergence of radio drama on a larger scale.

The main argument for the future of radio drama is its extraordinary power when well done, to which older listeners will testify. A second force pushing drama is the escalating need for new programming, a need generated by the new radio nets.

Moreover, the competition for the home listener from alternate technologies requires something "different," fresh material that can give radio a special character of its own.

Radio drama is now enjoying increased support for operations currently underway, and for the appearance of promising new ventures. The granddaddy of the neo-net drama series is, of course, the CBS Mystery Theater, which will start its ninth year this January. With veteran radio drama artist Hi

Brown in charge, the Mystery Theater has turned in a remarkable record: some 130 new dramas every year, distributed to between 200 and 300 stations inside and outside the CBS net.

Watching a Mystery Theater drama being put onto tape, as *BM/E* did several years ago (see *BM/E*, June, 1976) gives an exciting view of the skill of Brown, his actors, his gifted sound-effects men, and his engineering team.

Those skills allow the team to turn out a complete play in a single day's recording sessions. This production efficiency is an essential part of the economic viability of the series. Obviously, the plays vary in quality, with scripts coming from many different old and new sources. The many good plays, though, generate plenty of power by stimulating the listener's own imagination, using sound to do this more powerfully than most visual effects can manage.

The Mystery Theater has benefitted from using name actors and playwrights on many occasions. The 1982 series will continue along that line. The first shows will be a five-part dramatization of Hugo's *Les Miserables*. Later



Recording a dramatization of Poe's classic horror story, "The Cask of Amontillado," produced by the CBS Mystery Theater, Roberta Marshall screams "No! No!" when Richard Kiley threatens to bury her

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The EM-101 is GUARANTEED to have an incredibly flat frequency response; within 1.5dB of perfection over the entire audible range from 20Hz to 15kHz and we back that guarantee by shipping each EM-101 with its own individual computer verified frequency response curve. Listening tests cannot distinguish the EM-101 from precision laboratory microphones costing TEN times more!

VERSITILITY

The EM-101 is about the size and shape of a stick of Dentyne chewing gum and has a non-reflective, black surface. It is also the most perfectly non directional microphone you can buy for recording or sound reinforcement. That makes it the ideal choice for stage, TV, motion picture, or conference work where variations in quality caused by motion and position around the microphone must be minimized. Unlike conventional microphones or "plate mounted" microphones, the EM-101's unique flat design allows it to be placed as close to the surface as desired to take full advantage of this traditional microphone placement technique.

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The unique design of the EM-101 makes it almost completely insensitive to conducted vibration so it can be placed directly on or even inside an instrument where the sound level is high and you will obtain remarkably improved rejection of unwanted sound and reduction of feedback. Because PA systems feed back on response peaks, the EM-101's ultra flat response allows you to use more gain without feedback and will reduce or even eliminate the need to notch filter or equalize a system.

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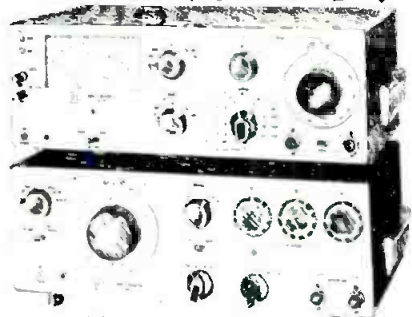
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Radio Programming



Celeste Holm and husband Wes Addy play a husband and wife in "Crack In The Wall," another CBS Mystery Theater drama

will come a Sherlock Holmes series, a play about Charles Dickens as a detective, and a story about an attempt to kidnap George Washington. Along with such classic material will be a number of original plays written for the series.

Actors will include Marion Seldes, Tammy Grimes, Amanda Plummer, Richard Kiley, Roberta Marshall, and Celeste Holm. E.G. Marshall will be the host for each play, as he has been for many years.

One measure of the success of the series is the appearance of a dozen or more Mystery Theater Fan Clubs. The enthusiastic members are mostly adults who support the series with mail to the actors, local get-togethers, joint listening sessions, and other activities.

The Mystery Theater is aimed first

toward CBS radio affiliates: if the CBS station in a market does not take the series, any other station in the market can bid for it.

A second drama operation of about eight years standing is the National Radio Theater (originally called the Chicago Radio Theater), created in 1973 mainly by one individual, Yuri Rasovsky, an actor-producer-playwright-director who set his sights on top-quality drama for radio. The non-profit project has survived in large part on grants from foundations and the National Endowment for the Humanities. The productions have won three Armstrong Awards (in 1975, 1977, and 1979), three Ohio State Awards (1975, 1977, 1980), and the Peabody Award in 1978 for excellence in broadcasting.

The 1981-82 program is much the



Casey Kasem (left) and Gary Owens rehearse their parts in "A Halloween Story," an original radio drama aired October 31 by the NBC Radio Network. It was the first live network radio drama in more than 20 years

most ambitious so far. The Markle Foundation, the Andrew Mellon Foundation, the Illinois Humanities Council, and the Satellite Development Fund for Public Broadcasting have all given production support. The 26-part series of one-hour dramas will be free to radio stations, with distribution funding from TRW, Inc. the Cleveland high-technology manufacturer. TRW will get a brief public-service identification in each program. The programs will be available, both via satellite and on tape, to commercial and noncommercial stations.

The series started on October 18 with the first of an eight part dramatization of Homer's *Odyssey* hosted by Edward Asner. Top roles are played by Irene Worth (one of America's best) as Athena; Shepherd Strudwick, another acting veteran, as Homer; Barry Morse as Odysseus; John Glover as Telemachus; and a dozen more actors of unquestioned talent. Rasovsky has written and directed the *Odyssey* series, which has original music by Eric Salzman, an important American composer. Classical scholars from several universities acted as consultants.

The National Radio Theater also distributes an elaborate program-background booklet called *Audiobill*. The one on the Homer series, now available, is an excellent education in the Homer epic, with well-written articles on the poem itself, on the history of the Trojan War, and on the background of the oral epic and its probable sequence of creation. It also contains a synopsis of the episodes in the dramatization and backgrounds of the cast. *Audiobill* is offered free to listeners and has been a resounding success; a National Radio Theater spokesman told *BM/E* that from 500 to 700 requests come in per day when an offering has been made.

After the Homer series, the NRT will distribute 16 additional plays, among them Bret Harte's *The Outcasts of Poker Flat*; O'Neill's *The Emperor Jones* (with James Earl Jones); *The Dark Tower* (with Michael York); Elmer Rice's *The Adding Machine*; Dickens's *A Tale of Two Cities*; and Frank Gilroy's *Who'll Save The Plowboy?* These and the other classic and modern plays on the list make up a rich bill of fare for any radio station willing to give drama a try. About 290 stations had signed up for 1981-82 when this article was written. Any radio management interested should write or call the National Radio Theater at 612 N. Michigan Ave., Chicago, 60611, (312) 751-1625.

A brand-new drama effort has so far produced just one play, but it is significant for the forces involved and the lines it seems to open to the future. The NBC Radio Network assembled a platoon of stars for its live October 31 broadcast of an original thriller, *A Hal-*

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Radio Programming

loween Story. The one-hour drama was a benefit for UNICEF, the United Nations children's fund. Production was by Jeff Sudikoff, president of the Satellite Live Radio Network. Direction was by Dick Orkin, of "Chicken Man" fame. Among the actors were John Caradine, John Clark, John Houseman, Jean Kasem, June Lockhart, Gary Owens, Vincent Price, and Lynn Redgrave. Script was by Richard Proctor.

These and other participants donated their work to the production; distribution costs were underwritten by Jensen

Sound Systems. About 100 stations had agreed to take the program at press time.

NBC marked high interest in the effort with a large press party and dress rehearsal in Los Angeles on the afternoon before the broadcast, billing itself as the NBC All-Star Radio Theater. An NBC spokesman confirmed to *BM/E* that this revival of the old drama name indicates strong interest at NBC in a new drama operation, although no specific plans have yet been made.

In a later issue *BM/E* will give more information on the current state of radio drama, particularly on its viability for today's radio listener. **BM/E**

BM/E's Program Marketplace

Syndicators Revisited

KalaMusic
Industrial State Bank Bldg., Suite 600
Kalamazoo, MI 49007
Tel.: (616) 385-5110

WHEN *BM/E* first wrote about KalaMusic in November, 1978, Stephen Trivers and William Wirtz had packaged the programming of their station WQLR, Kalamazoo, MI, for other radio managements. A few years earlier that programming had lifted WQLR from near the bottom to near the top in the ratings.

They dubbed the program *Beautiful Contemporary* — a Beautiful Music with attention to current hits and artists. Three years later the format is firmly established, with more than 30 subscribers, and a musical approach that has remained constant. Stations using the music, says Trivers, are nearly all in the top end of the ratings in their markets.

The music is available now in two forms. In the "matched flow" series, the selections create a seamless succession that rises and falls in a varied and pleasing way — the traditional close-spaced Beautiful Music. The "category tapes" or "random select tapes" organize the music in separate groups according to character, leaving the radio programmer free to assemble them as he wants. The programming philosophy and mode of operation of each station determine which form is most appropriate.

KalaMusic now has a second format, "Light Contemporary," that uses vocal-oriented material related to Beautiful Music, but again with some emphasis on current names and hits. Both formats are aimed for the 25 to 54 demographic that is now the main target for a large proportion of advertisers and marketers.

Trivers explains the success of his format in several ways. KalaMusic's kind of updated Beautiful Music is easy to sell to advertisers in most radio markets, he says — it's the kind of music they listen to themselves. He also emphasizes the importance of the 25 to 54 demographic in the thinking of today's marketers. Evidence that the KalaMusic programming delivers that group lies in the format's very high listener share figures — averaging as high as those for any format now in use, according to Jim Duncan's *American Radio*.

KalaMusic must satisfy the Canadian requirements for Canadian representation in imported programming for its four subscribers in that country. KalaMusic has been able to meet these requirements because of the flexibility of its programming.

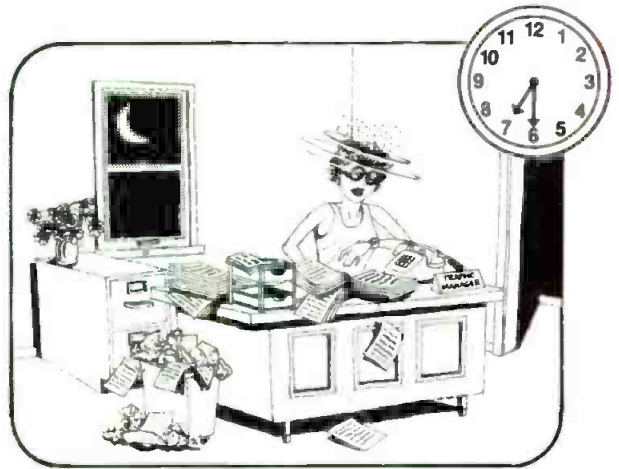
There are also four overseas subscribers, in Chile, Taiwan, Australia, the Phillipines respectively. KalaMusic hopes to use these footholds in other countries for expansion of foreign business. The overseas subscribers are happy to get their tapes by air mail.

Trivers opposes satellite delivery for syndicated music, believing that it makes the program sequence too rigid: the receiving station must use it "as is." This reduces the station's own initiatives in program sequencing, which are often vital to its stance in the community.

The music, Trivers notes, is not background listening. It is more aggressive, strongly up-front, aimed at giving the listener a positive listening experience. The objective is to turn listeners into long-term followers, rather than in-and-out pickers and choosers. The figures indicate that KalaMusic's aim is good. **BM/E**

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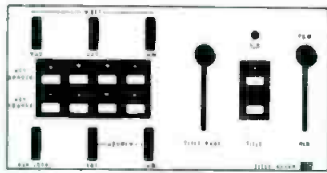
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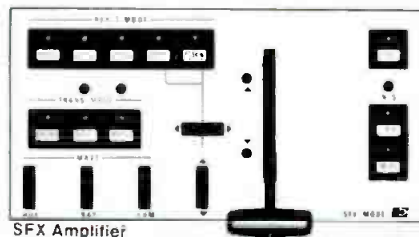


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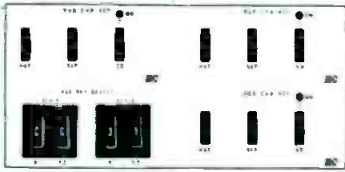
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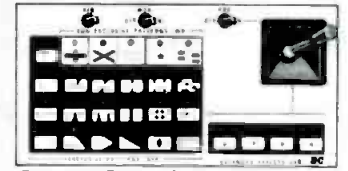
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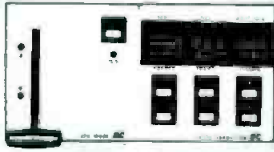
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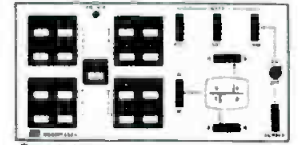
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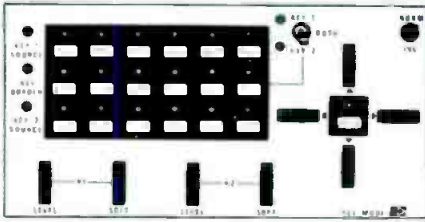
Extended Effects Generator



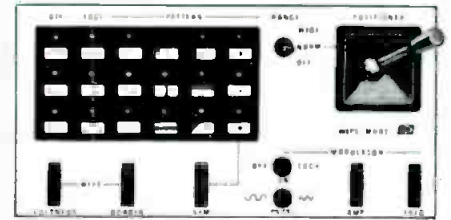
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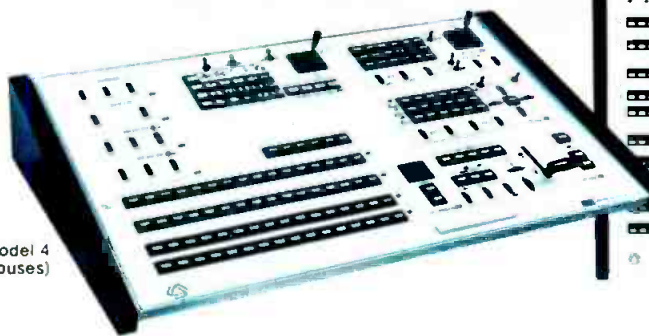
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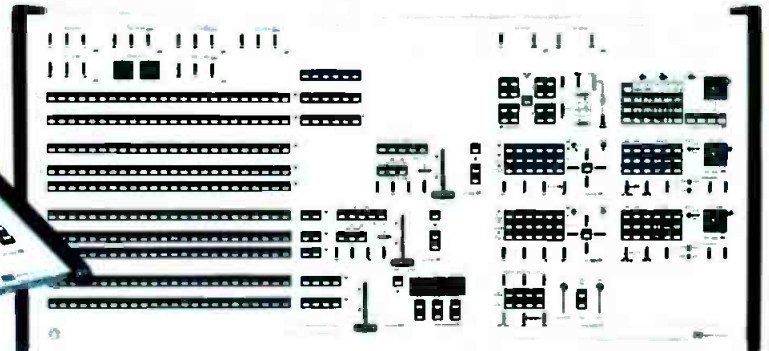
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Where Were You?: A Look At What It Is

THE SEARCH is still on for a common catchword to describe it. *It* stands for the prime-time access shows variously called reality programming, news magazines, non-fiction television, and soft-core news. Whatever *it* is, it is becoming a part of the local program strategy of many local stations. The approaches vary — locally produced, coops, and hybrids.

Let us pause now to define the terms. *Locally produced* is easy — it means a broadcast conceived and executed at a station. *Coops* are coproductions with segments produced at a number of stations and then put together at a central

location, with personalized versions for each station. The productions of the Eighth Decade Consortium (see *BM/E*, July, 1980, and October, 1981) fall into this category. In the case of *PM Magazine*, the bits and pieces of the show are generated from a central location and the final production is assembled at the station. The *PM Magazine*-type coop aims for uniformity while maintaining a local flavor.

The *hybrid* is a broadcast in which most of the material is conceived and executed at a central location, with holes left for local inserts. The voice over is also done locally. Producing a



KABC's Larry Carroll during a recording session to insert the narration for the Los Angeles version of *Where Were You?*



Chicago's Fahey Flynn goes over the script with WLS's *Where Were You?* producer Yaa Adebayo

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TV Programming

hybrid is like buying a new car with all the options. The basic automobile is the same, but it can look totally different from anyone else's.

A perfect example of a hybrid is a show being produced for the ABC O&Os called *Where Were You?* The show is produced in New York by Circle 7 Productions, a unit that produces programs for the O&O division. Circle 7's previous production was *Teletone News*.

The show takes a nostalgic look back at a year and tries to recapture the mood of the country in sight and sound. The feeling of the year is evoked with commercials, news, and other memory triggers.

The *feeling*, not just the dry facts, of a year is what the show aims for. Circle 7 Productions' news manager, Dick Citron, complains, "Television doesn't often touch people emotionally. Reaching someone on an emotional level through that little screen . . . is a difficult thing.

"We can do that because people make their own show. The guy who graduated high school in, say, 1965, watched that show and was moved — not because it was such a great show, but because of what he brought to it.

"He'll hear the music and think, 'Wow, that's the year I was dating Lucille,' or whatever. He created his own little show in his head."

Where Were You? will cover 1950 to 1976, almost automatically skewing the audience to the 18 to 49 year old group. But Citron says that there have been some surprises in the viewers who watch the show.

"We're getting people who are younger — people who weren't born when Kennedy was killed or who were born about the time the Beatles came in — who are curious about this time. They don't have the personal reaction, but they have older brothers and sisters who talked about the era. It's sort of like that cartoon where two kids are talking and one says, 'Did you know that Paul McCartney was in a group before Wings?'"

The other group of "surprise" viewers are the parents of those '50s, '60s, and '70s children. Citron tells of a letter from a woman who lived through having a teenage daughter in New York when the Beatles played Shea Stadium. She watched the show and was amused to remember the battle she and her daughter had over whether the daughter could attend the concert.

"We're bringing in an audience on either end of that [18 to 49 group] that we didn't expect," said Citron.

The advantage of this type of hybrid production is the quality of the post-

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1961 LINCOLN "X-100"



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John Kelly of WXYZ, Detroit, tapes an insert for the 1963 show at the Henry Ford Museum in front of the car in which President Kennedy was riding that day in Dallas

production effort. Circle 7 Productions makes use of the ABC facilities, which include everything from CMX 340X editing suites to audio sweetening rooms with 16-track stereo capabilities.

The O&Os, however, don't have ready access to facilities of that caliber. Their technical input to the show is limited, but the role of the stations is critical to the success of *Where Were You?*

Circle 7 provides each station with an entire half-hour video package with a music and effects mix and a script. There are four 15-second black holes for on-camera leads by the local talent. Stations also have the option of filling a three-minute window following the last commercial break with a locally produced piece.

This local window affords the station a chance to produce a key local event from the featured year. Nineteen sixty-seven for instance, was a year of riots in several American cities. The local window for WABC-TV in New York focused on the Newark riots, while Detroit portrayed its own civil unrest of that year. San Francisco, on the other hand, featured the "Flower Children."

What makes *Where Were You?* the very local show that it appears to be is each station's own people do the narration and the on-camera inserts. All the hosts for the shows are newsmen: John Johnson in New York, John Kelly in Detroit, Van Amburg (now Russ Coughlin) in San Francisco, Larry Carroll in Los Angeles, and Fahey Flynn in

Chicago.

The presence of the anchormen or major personalities gives a credibility and instant identification in the market that wouldn't be possible with the traditional announcer or actor.

More programs of the type of *Where Were You?* may or may not be the final goal of the ABC O&Os. Phil Boyer, vice president and general manager of product development and planning for the ABC-owned stations, wouldn't say that this type of programming is the direction of the access strategy for the future, but certain things pointed in that direction.

Where Were You? caused all the stations to set up units to handle the inserts and to deal more cooperatively with each other. Setting up this kind of interaction makes it easier to deal with some programming problems anticipated down the road.

"There comes a time," says Boyer, "when you can't always buy what you want from a syndicator. We figure that we could produce, on a division-wide basis, those kinds of programs that nobody is offering."

A hybrid, or as Boyer calls it "a kit," like *Where Were You?* is perfect for the kind of local participation that is now in place at the ABC-owned stations. Unstated, but certainly implied, is that it is also perfect for other stations. Circle 7 Productions will offer *Where Were You?* on a syndicated basis after its run on the O&Os. **BM/E**

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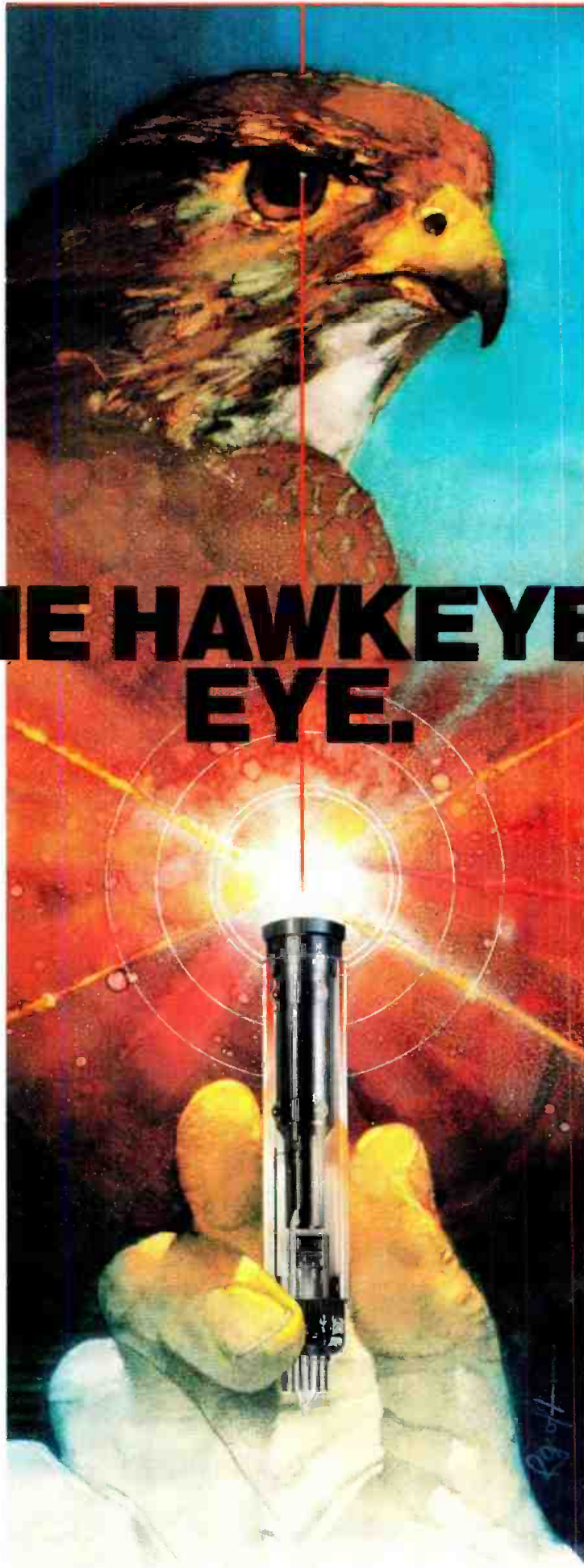
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BEST STATION AWARDS:

1981 NOMINEES

HERE, ARRANGED IN four categories — Television, AM Radio, FM Radio, and AM/FM Radio — are the nominees for *BM/E's* ninth annual Best Station Awards competition. Our editors carefully selected these from the many entries that were received; now it's your chance to select the winner in each category by voting with the ballot card that appears facing this page.

As you read through the entries, please bear in mind that the contest is designed to recognize management and engineering excellence no matter what the station's size and resources. A Top 10 market station may have had an almost unlimited capital budget and may therefore, at first reading, appear to be the best simply because it is the biggest. But the small-market station may out of necessity come up with the inspiration for the most creative solutions. To help you evaluate the station's size, we have included its market rank as part of the standard entry information.

To vote, simply select your favorite station in each category, check it on the ballot card (facing this page), and drop the card in the mail. Each winner will receive a handsome plaque, to be presented by *BM/E* at the 1982 NAB Show, so we must receive the ballot *no later than February 1, 1982*, to be eligible. But please read the entries and vote now while they are still fresh in your mind.

One final note. It's never too early to begin thinking about next year's competition. If you think your station might be a winner, drop us a postcard and we will contact you next fall.

BM/E BEST STATION AWARD 1981



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WXIA-TV



Atlanta, GA
ADI No.: 16

TV ENTRY

Submitted by Don Addington, Chief Engineer and Steve Bramham, Engineer

WHEN THE MANAGEMENT of WXIA-TV in Atlanta decided to upgrade the station's transmitting equipment to improve its service to the market, the Gannett Broadcast Group station acquired the most powerful VHF television transmitter in the world.

Replacement of the old transmitting plant and traveling wave antenna highlighted extensive improvements made by WXIA in 1981, giving strong impetus to our station's

aggressive news programming and its accompanying rise in local ratings. Numerous changes during the year, in addition to the new transmitter and antenna, have included: installing a remote control system and a new generator for the transmitter, a major remodeling of the news department with new editing stations, a new production control room, and additional equipment from ENG cameras to vans.

The WXIA signal now is beamed to the metro Atlanta and north Georgia territory via a Harris TVD100H 100 kW transmitter and a Harris TAV-12H circularly polarized antenna, described by the manufacturer as the most powerful anywhere. The result: greatly improved reception in most trouble spots for WXIA and strongly favorable viewer response.

Bolstering the new Harris transmitter and antenna is a new computerized remote control system that constantly monitors the transmitter's operating parameters and makes any necessary adjustments. The computer also prints out the transmitter log with all its headings and meter readings. Moreover, the computer alerts the master control operator of the tower light status, unauthorized building entry, STL status, and other alarm functions.



Bob Schoenfeld, engineer supervisor (above), checks the status of the "world's most powerful" VHF transmitter from WXIA-TV's transmitter control room



Production control room B (top, right) was added to ease the strain caused by increased news production. The new control room is equipped with a Vital switcher and an ADM audio console



A field production crew (bottom, right) prepares to remove the "coffin" from the production van. The color monitor, CCU, scopes, mic mixer, and power supply are housed in an Anvil case for portability

A larger, 310 kW diesel generator was installed at the transmitter site to handle the heavier current demands. With primary ac power fed into the facility from two separate substations and an autochange to the generator, our ac failures are kept to a minimum. Providing backup for the transmitter is the original RCA TT50FH 50 kW transmitter, which feeds a two-bay batwing antenna side mounted to the existing tower.

A major remodeling program replaced the old 16 mm film processor with a complete new production control room. 11 new ENG editing stations, and additional videotape equipment. We now have 17 ENG cameras in the field, compared to only five a year ago. Two new studio cameras also were added, making a total of five in use. Another measure of the news department's expansion is the fact that no less than 67 videotape machines of various types are in service in the station.

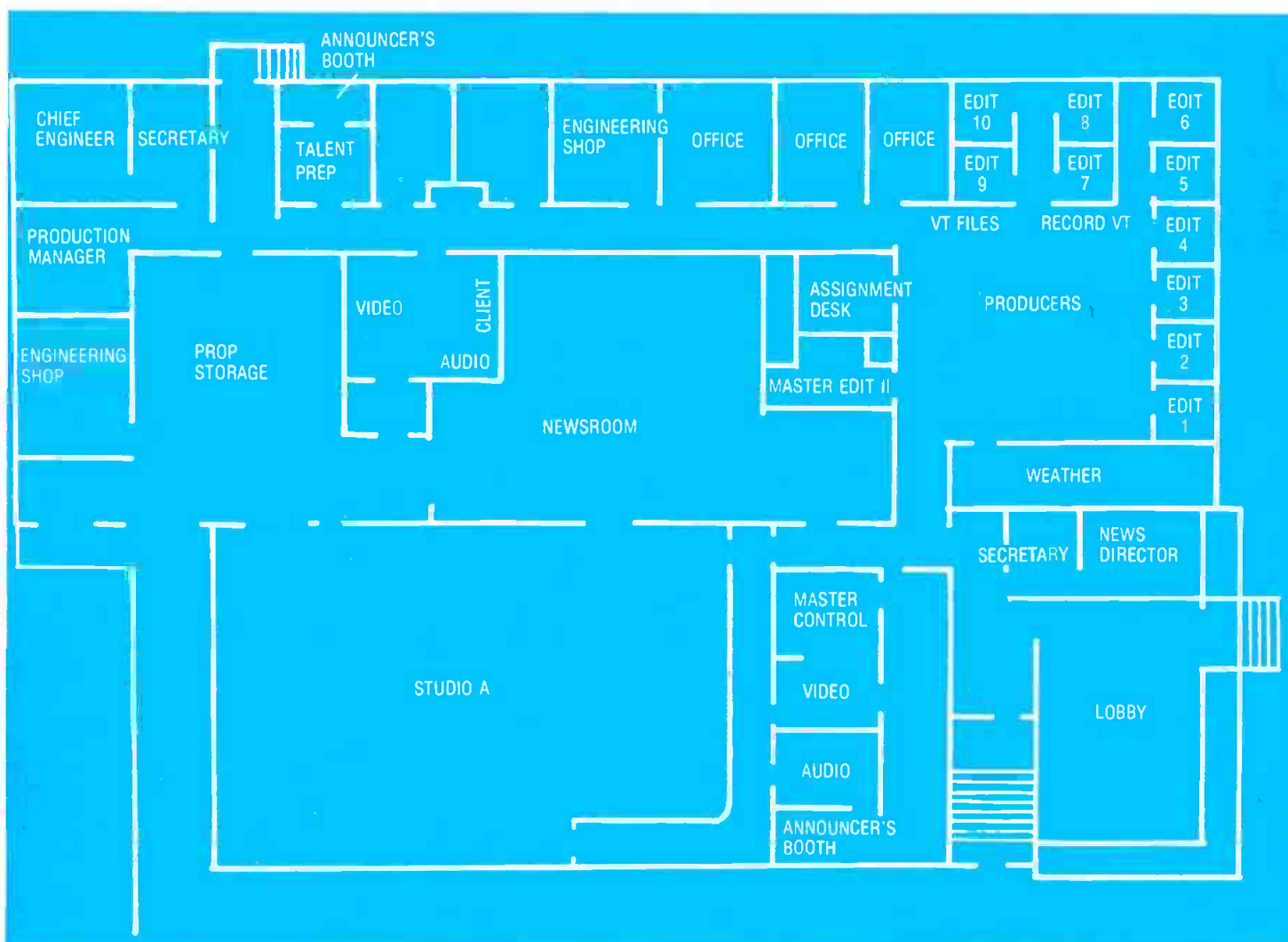
Supplementing these facilities, WXIA purchased a third ENG microwave-equipped van to relieve the workload on the two original vehicles. Microwave Associates communications equipment was used. Our microwave receiving sites, one in downtown Atlanta and the other at

the transmitting plant, provide excellent coverage from the ENG vans.

When a good shot is not obtained via the vans directly, our Skycam is pressed into service as an airborne relay. This is a Hughes 500C helicopter manned for news coverage, capable of making live feeds or taped feeds while aloft and also useful as a relay to extend coverage from ground units. On-board equipment includes portable news cameras and station-designed and built audio and video switching equipment.

News is always of primary importance at WXIA, but it assumed an even more critical status for the engineering department when the station expanded its daily newscasts by one-half hour in the morning and another 30-minute segment in the early evening, giving the station a total of three hours of news each weekday. To handle the problem of tying up studio control, we added a complete new production control room as part of the remodeling and expansion project. Equipment includes a Vital VX114-4 video switcher and an ADM 1600 audio console.

The newscasts originate from a working newsroom and are switched from the old studio control, allowing com-



The design emphasis at WXIA-TV was to upgrade the production capability of the news department. New ENG edit booths and a new control room are the center of the expansion

Outstanding Outdoors

Camera location 3 behind home plate is no place to tear down a camera. Especially if the director wants to punch it up on air to catch the next pitch. That's just one reason why the rock-steady, works-every-time HK-357A is an outstanding choice for production in the field.

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sor control brings into play Ikegami's Emmy award-winning digital techniques for automatic setup. Simply press one button and the computer automatically refreshes all set up and registration adjustments in about 45 seconds. No chip charts blowing in the wind, no tweaking. Just unpack, plug-in, auto-setup, and shoot.

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WALB-TV



Albany, GA
ADI No.: 152

TV ENTRY

Submitted by

Curtis White, Production Manager

mercial production in the new Studio B. This has resulted in better time and personnel management as well as maximum use of the facility. To ease the increased workload from the new production control room, a second Ampex ACR-25 and a second Sony BVH1100A were added to the videotape room.

A new intercom system by Farrtronics proved to be very flexible, permitting the director to communicate with the camera and the floor director via a microphone and speaker instead of the conventional headset. The headset option was retained, however, to meet individual preferences. Each of the 11 ENG editing rooms is linked directly to the ENG master editing room, manned by an ENG supervisor.

Another big step for the WXIA production crew is a new production van, a Dodge unit which was modified with a fiberglass ambulance roof for added room and fully equipped for any EFP commercial production. A special box, the "coffin," was designed using an Anvil case to house the color monitor, CCU, scopes, microphone mixer, and associated power supplies. This resulted in a flexible unit that may be used in the van or shipped by itself for location work.

Engineer supervisor Leonard Thomas (at top) oversees the expanded capabilities of WXIA-TV from master control

The WXIA-TV Skycam (bottom) doubles as both an airborne transmitter and a relay for live ground units



WALB-TV PRODUCES a quality product that equals or exceeds that of stations in the largest markets. Our viewers and clients have never had to settle for anything less than the best, even though for 27 years we have been the only station in our market.

Since 1954, WALB-TV, Albany, GA, has broadcast from the same location. But the station has undergone extensive changes, the biggest being the rebuilding of the studio and control room complex when fire totally destroyed them in 1976.

We were back on the air 12 hours after the fire with the help of a mobile van from WESH-TV. Then the planning and rebuilding began, done almost entirely by the WALB engineering department. In fact, WALB-TV is unique because we are a "self maintaining" operation. As a part of Gray Communications Systems, Inc. (a corporation that, among other things, distributes and services broadcast television equipment), WALB-TV and its engineers have an inside track on evaluating and purchasing new equipment.

The master control room and the tape room were designed with maximum equipment flexibility in mind. The master switcher is a Grass Valley 1600-4T; the routing switcher a Grass Valley 1400-34. We installed two film islands: the first is an RCA TK-28, the second, an Ikegami TKC 950B with Athena 16 mm projectors capable of variable slow motion and freeze frame. Our choice of Pioneer speakers and amplifiers to monitor audio reflects our attention to audio quality as well as video quality.

The tape room has three major machines: an RCA TCR-100 cart machine, an RCA TR-61, and an Ampex AVR-2. The TCR-100 and TR-61 are linked in a unique master/slave relationship, enabling a tape operator to dub spots to cart with the push of a single button.

All of the equipment from the tape room to master control to production control is connected by cabling underneath a computer-type floor (removable two-foot-square tiles that are two and a half feet above the actual floor). This enables us to add or move equipment *neatly*.

Other major equipment located in the control room includes a new Weathermation color radar system and microwave equipment by Microwave Associates Communications for receiving our network signal and mobile unit signal.

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The graphic equalizer: Q1027 The Q1027 monaural $\frac{1}{3}$ octave EQ provides virtually infinite tonal control, from subtle to dramatic. A center detent position on each filter control removes that filter from the signal path, eliminating unnecessary phase shift. The Q1027 offers many attractive features, not the least of which is its reasonable price. It even includes rack-mount and acrylic security cover.

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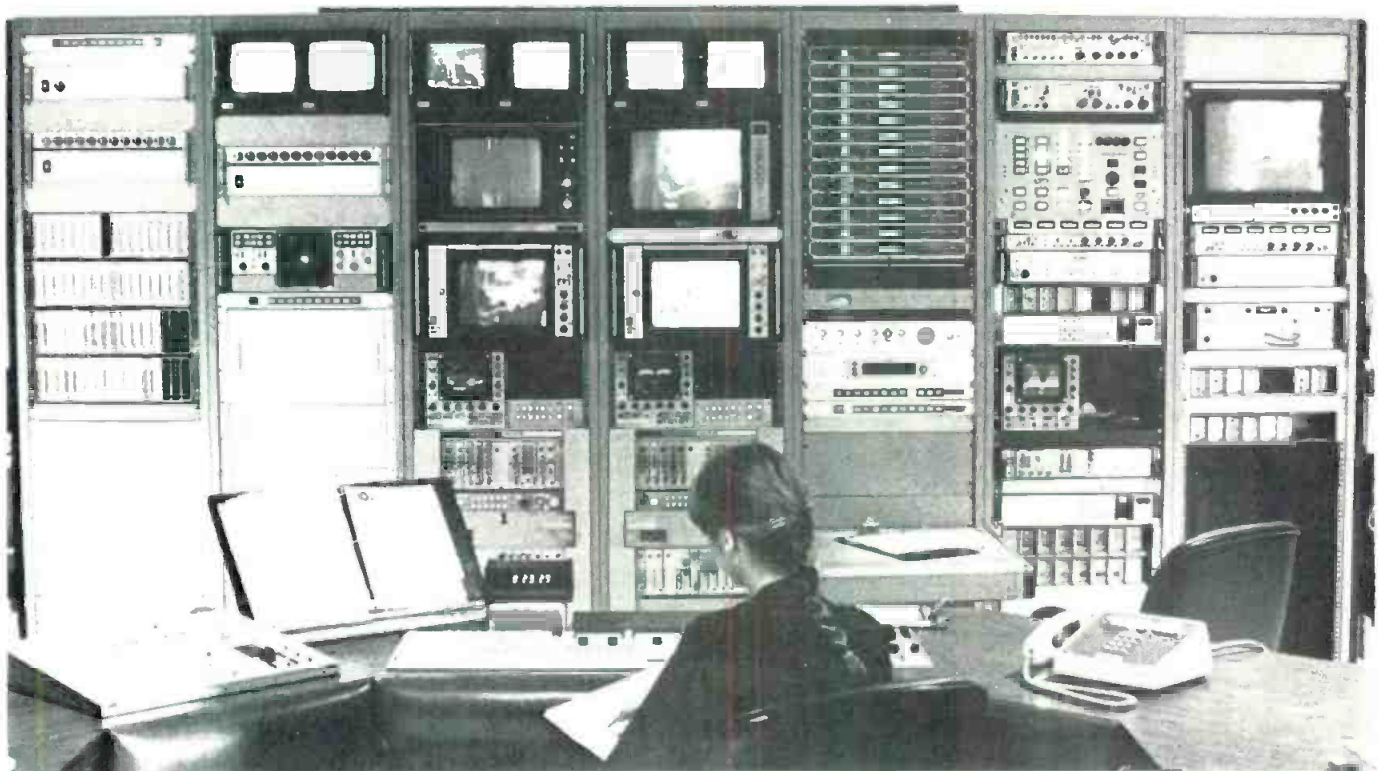


Valley 1600-7K switcher. Audio is controlled by a 16 by eight Ward-Beck Systems board, and titling/graphics are done with a 3M D-8800 graphics system.

Our mobile unit is a one-ton Ford van that houses a 3M Comtec 3300 switcher with digital wipes, a Yamaha eight by two audio board, and two Ikegami HL-77 cameras with custom-built remote controls. (The HL-77s are used frequently for single-camera shoots, tied to a Sony VO-4800 ¼-inch recorder.) We have also allowed enough rack space for the addition of a one-inch recorder.

Again, all of the design and construction of the mobile unit was done by our own engineers.

Our main studio area is 38 feet by 40 feet with a hard cyc and includes a working kitchen area. Our newscasts and commercial productions are done in this area with two



The station's carpenters designed and built the custom cabinets in master control (top, right) to house GVG switcher, WBS audio board, and a 3M D-8800 graphics system

Among the additions handled from Master Control is the station's new color weather radar system from Weathermation (center)

In the foreground is the Kliegl dimmer board (photo, left). The track near the lighting grid holds various color curtains that can be used as background or sound deadeners

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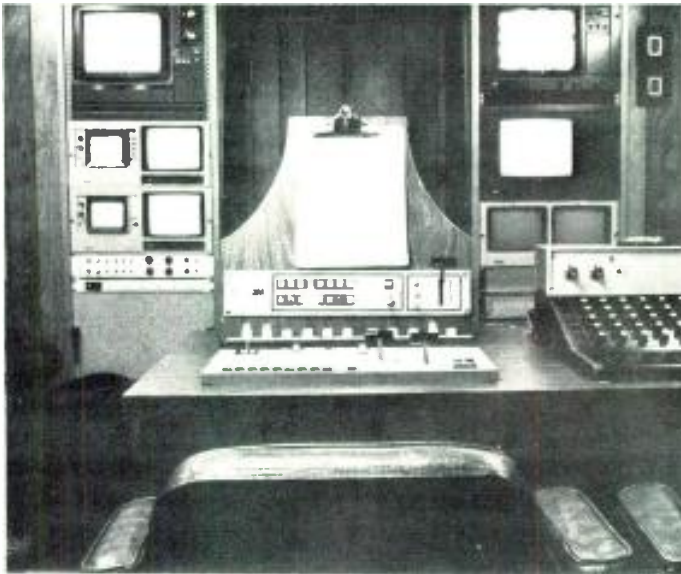
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Ikegami HK-312 cameras, a Kliegl lighting system with a 24-dimmer, two-scene preset board, and a Telescript teleprompter that is switchable from the teleprompter mode to an "off-air" mode. (The on-camera talent loves this feature.)

A smaller side studio (20 feet by 20 feet) is used primarily for our early-morning farm show.

When necessary, the two HL-77s can be easily hooked up for studio use, giving us four cameras.



Since so much of the renovation was done by the station's engineers, a well-equipped lab for test and measurement was installed (top)

The station-designed mobile unit (at left) is a Ford van containing a 3M Comtec switcher, a Yamaha eight by two audio board and two Ikegami cameras. Rack space has been built in for the addition of one-inch VTRs

KBAK-TV



Bakersfield, CA
ADI No.: 148

TV ENTRY

*Submitted by Robert Banks,
Chief Engineer*

A MODERN TECHNICAL FACILITY for maximum efficiency with a small staff, and flexibility to meet changing needs and new technology, were the primary design goals for the new building now occupied by KBAK-TV in Bakersfield, CA.

An ABC affiliate, KBAK-TV operates with a staff of 45, which includes a technical department of 10. Therefore, special design consideration was given to the operating requirements of a small staff. Although Bakersfield is a small market, the area's high cable penetration demands that the local product compare favorably with the Los Angeles stations imported by the cable systems. The new studio facilities are as modern and professional as in the larger markets.

The 17,500 square foot plant was designed by

Bakersfield architects Eddy & Paynter, working with Robert Banks, chief engineer, Wayne Killmer, general manager, and Jack Rosenthal, president of the broadcast division of Harriscope Broadcasting, KBAK-TV's parent company. Its most striking architectural feature is the 55-foot microwave tower, which was designed to integrate the antennas with the overall building design. The tower, which looks more like a sculpture than a communications tower, has become a landmark on California's busy Highway 99.

The station's master control room is a large technical area containing on-air switching, transmitter monitoring and control, video control, tape, and telecine. During early morning and late evening hours and on weekends, the station can operate with one engineer who loads tape and film and switches the station breaks.

In keeping with the goal of flexibility for expansion or reconfiguration of equipment, the entire technical area utilizes computer flooring with an 18-inch wiring space below. The Stantron equipment racks, with six-inch wiring channels between racks, also add flexibility. Outside wiring from the computer floor is routed through the wiring channels and fanned out to the equipment in the rack, allowing neat installation and simplifying the addition or removal of cables.

The master control switching console contains a Vital VIX 115-3 switcher with machine control. Remote control of the station's mountaintop transmitter is handled by a Moseley MRC-1 microprocessor control system. The

Best Station Award Entries

data terminal on the MRC-1 allows the operator to view the status of 32 channels at one time. Tolerance alarms alert the operator to any improper operation of the transmitter.

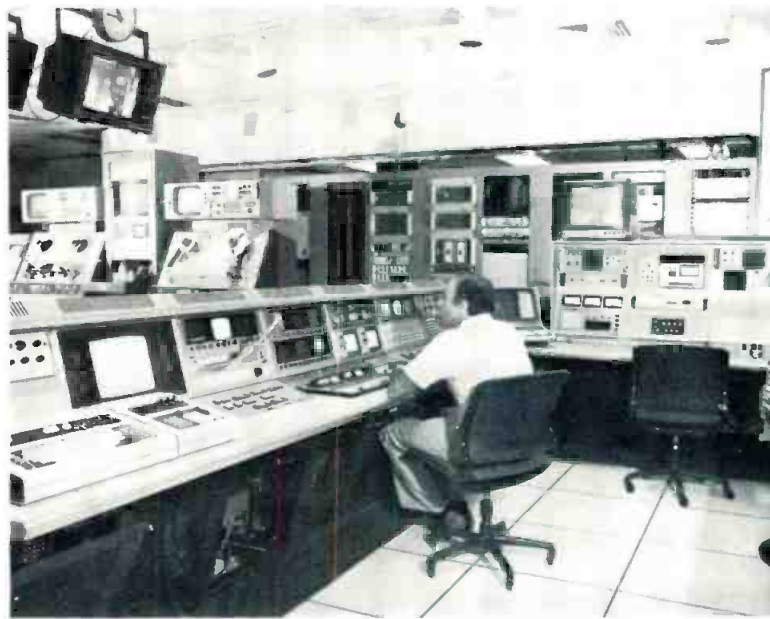
Our quad videotape complement consists of one RCA TCR-100 cart machine for commercial breaks and two Ampex VR-1200 reel-to-reel machines for programs and commercial mastering. KBAK-TV is planning to add one-inch type C helical machines shortly. We use ¾-inch U-Matic machines for both ENG and EFP. The playback station in master control contains two Panasonic NV-9600 recorders with an ADDA-VW-2 TBC/frame synchronizer.

The news editing room features Panasonic NV-9500 recorder/players with Panasonic NVA-960 controllers, while the production editing room has Panasonic NV-9500s with a Jatex time code editor. KBAK's film facilities consist of two telecine islands, an RCA TK-28B and a GE PE-240.

A Utah Scientific 20 by 20 routing switcher controls inputs to all VTRs, editing rooms, conference rooms, management offices, and studio monitors. Each of the station's STLs is fed from an output bus of the routing switcher. This allows total flexibility for testing and is a convenient bypass should the master control switcher fail.

KBAK-TV has two STLs and two TSLs for programming and auxiliary communications. Our two Farinon and two Lenkurt systems handle audio, video, transmitter control, and telemetry, and even telephone service as there are no telco facilities at the mountaintop site.

The station's EFP units work with Hitachi SK-80 and Panasonic AK-750 field cameras and JVC 4400 LU portable recorders. Our aggressive news staff of eight, known on the air as the "Newsforce," produces two 30-minute newscasts a day plus live local inserts in *Good Morning America*. All newscasts are locally oriented, with a heavy concentration of local ENG stories. It is not unusual for the station to run 17 local ENG tapes in a 30-minute newscast. The same staff also produces a 30-minute



The master control room (above) gives the operator visual contact with the tape and telecine equipment under his control. Transmitter control and monitoring is at the operator's right; video control for live cameras, film chains, and TBC is at the far right

KBAK-TV's single-story building (bottom, left) features a copper mansard roof with the microwave tower integrated into the overall design

The studio control room (below) has working space for six people at the raised production desk. A client and visitor's booth allows viewing of control room activity without distraction





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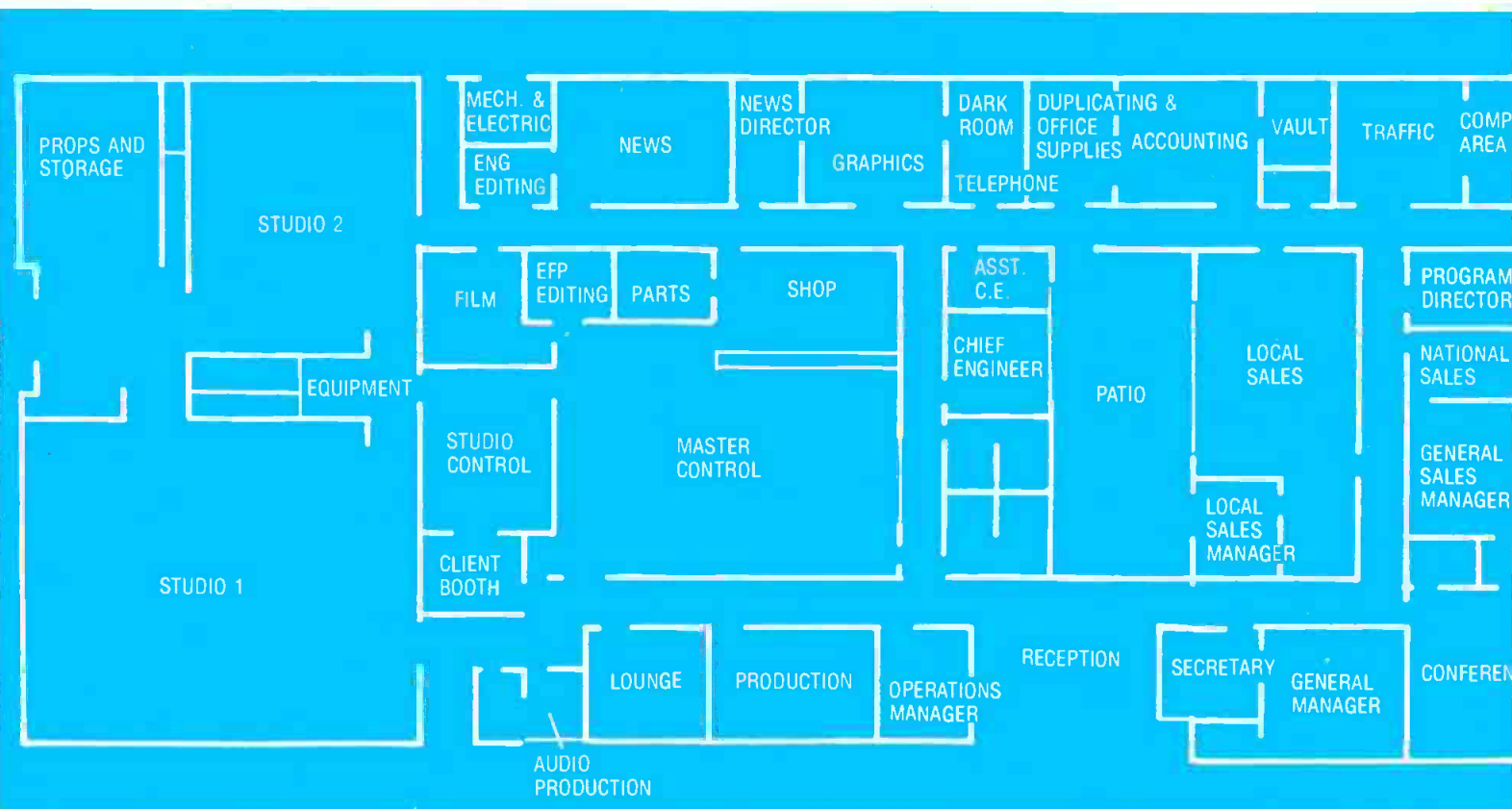
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The floorplan of KBAK-TV is aimed at grouping the various production elements for maximum control by the small engineering staff

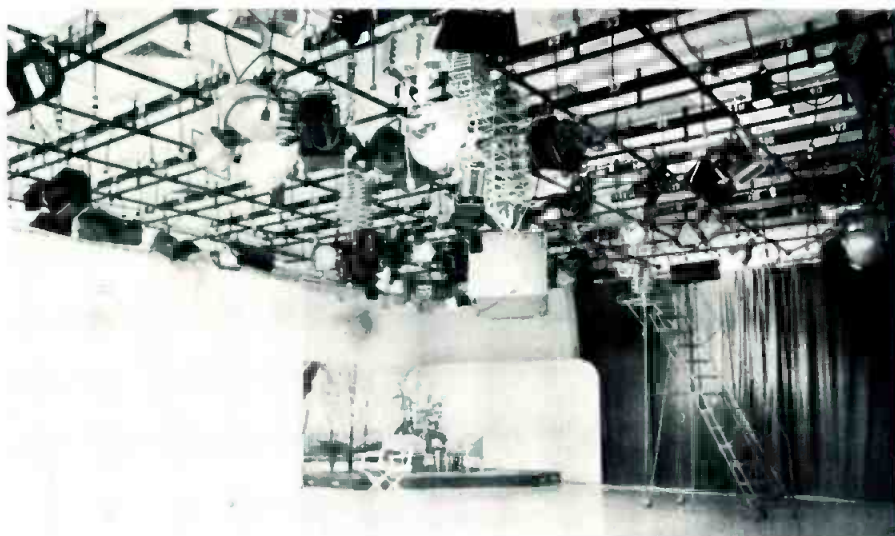
weekend magazine. The news department's field equipment consists of Sony DXC-1800K Saticon cameras and Sony BVU-50 and JVC 4400 LU recorders. Because of the large geographical area we cover, the station also has a helicopter available, unusual for a market this size.

The studio control room, which originates all live and tape production, contains two separate audio mixing systems. A small Hallikainen & Friends audio mixer above the video switcher allows a single engineer to handle post-production. For productions requiring full audio

facilities, our audio engineer has an RCA BC-7 audio console.

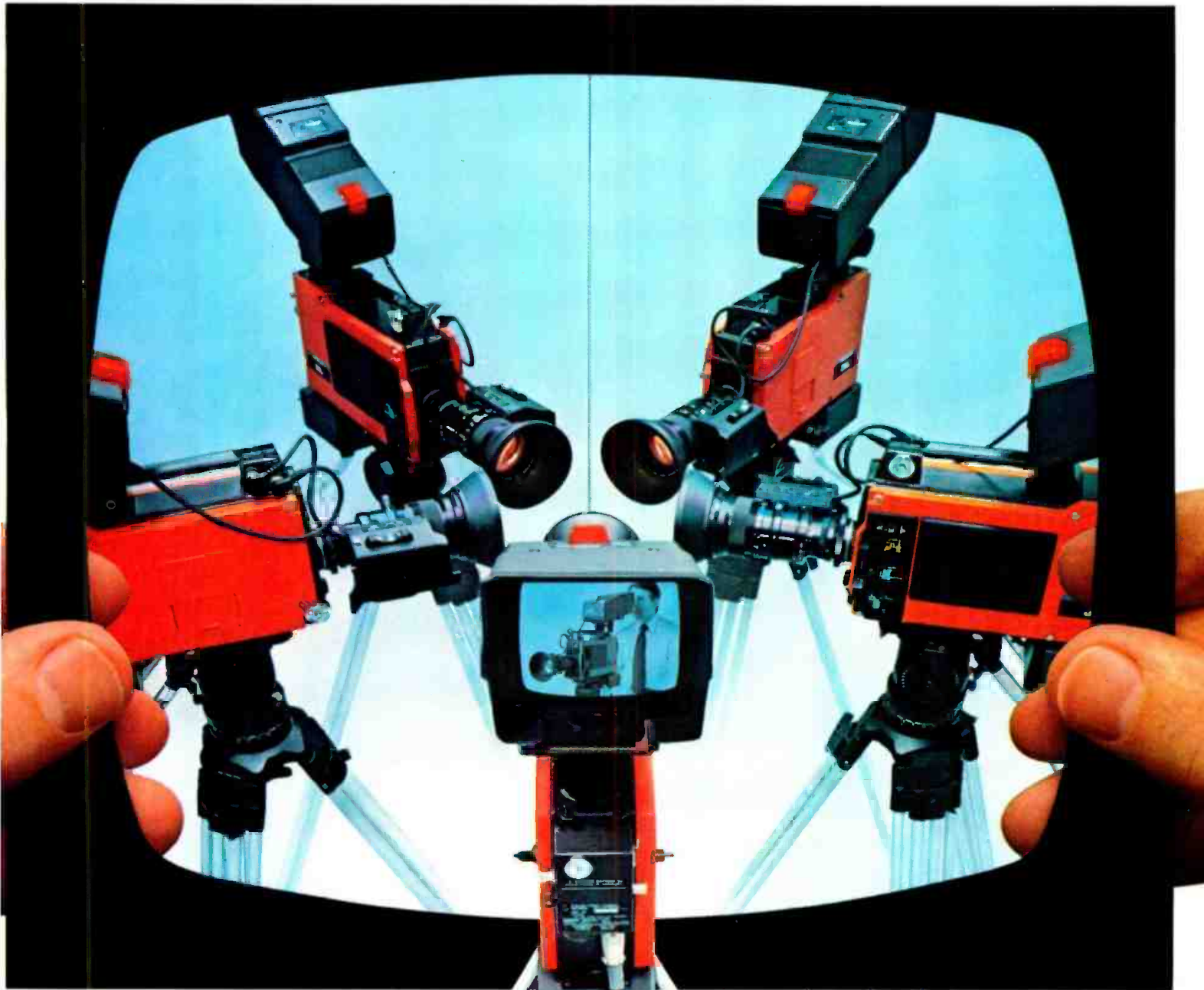
A Ross RVS-16-4 switcher handles video switching in the studio control room, which also contains an electronic graphics area with a Thomson-CSF Vidifont Mark IV graphics system with font compose and election computer. A second Vidifont keyboard is located in master control.

Directly behind the audio, switching, and graphics positions is a raised platform with a 20-foot-long production



Lighting received high priority in the design of KBAK-TV's studio. Studio 1, for program and commercial production, has a lighting system designed by Colortran

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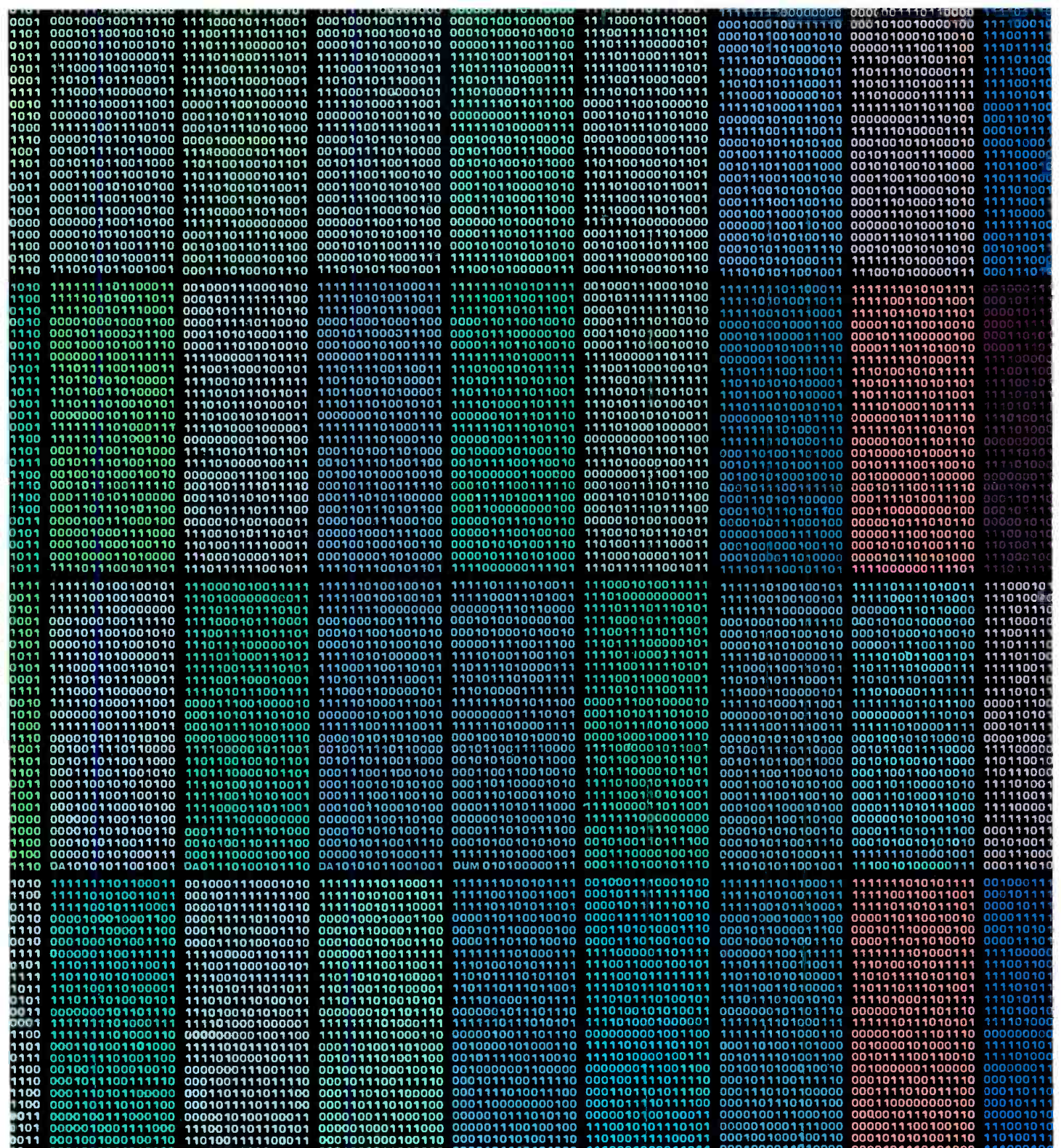
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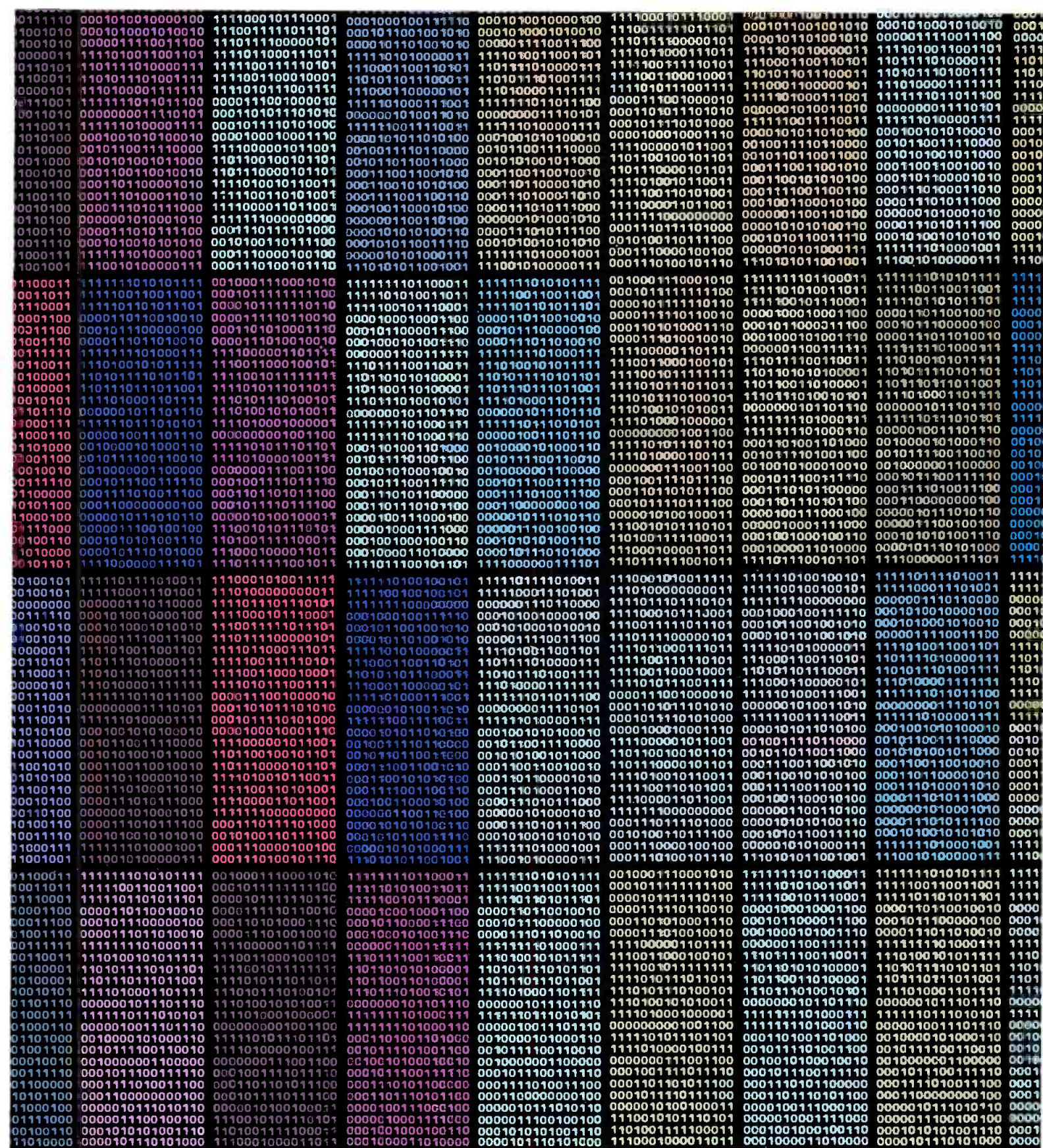
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desk. The director's talkback and intercom controls are located in a sloping panel that doubles as a copy holder. Also located on the production desk is the script drive and camera for our Listec Digivision prompting system.

The two studios are adjacent to the studio control room. Studio 1, measuring 52 feet by 43 feet, is a multipurpose studio for commercial and program production. Its custom-designed Colortran lighting system contains 18 12 kW dimmers and six non-dim circuits. The portable control panel for the dimmers can be operated from either the studio or the control room, allowing the director or TD to control lights during a show. The studio has two cycloramas on dual tracks; the seamless natural muslin cyc that completely encircles the studio is 165 feet long and 13 feet high. Colortran "Far Cyc" lights with gels color the

cyc. The second cyc, which is chroma key blue, is 65 feet long. The light grid is 14 feet above the floor. Studio Two measures 36 by 29 and contains a permanent news set and a graphics area. A Colortran dimming system controls the studio's lighting circuits.

The design philosophy of providing for continual upgrading has already paid off for KBAK-TV. Several changes have been made since moving to the new facility, and at this writing the older studio cameras are being replaced with RCA TK-761s.

The broadcast facility planned and built by KBAK-TV is evidence that a small market plant can be beautiful, modern, and efficient. The new facility represents the station's commitment to serving the community with the finest facilities and local programming.



The videotape area at KBAK-TV features an RCA TCR-100 cart machine, Ampex VR-1200 quad machines, and Panasonic NV-9600 recorders

KCEE-AM



Tucson, AZ
Metro Rank: 68

AM RADIO ENTRY
Submitted by Marshall P. Brown,
Engineering Director, Behan
Broadcasting Corp.

ONE OF THE FONDEST dreams of many, if not most, broadcast engineers is to build at least once a station from the ground up, to at last be free of the burden of history and incorporate all those wonderful ideas that have accumulated over the years. Recently, as a result of my association with Behan Broadcasting Corp. as engineering director, I was afforded just that opportunity.

After the acquisition of KCEE in Tucson, it became

apparent that the owners' plans for the station could not be realized in the existing facility due to age and size restrictions. They decided to build a new physical plant on the same property as the existing transmitter site and studio-offices location. Other options were considered, of course, including building elsewhere or leasing space in an existing structure. In our case, weighing all the options made it obvious that the co-location scheme was most advantageous.

The choice was not without some drawbacks, however. The best location for the building lay directly over the path from the old transmitter room to the towers, a three tower-array. If the existing lines were to be reused, a method of recovering them after construction had to be devised. Secondly, the transmitter site had not only its own RF field to contend with, but also two others from nearby stations. The field from the nearer, a 10 kW, measured over 650 mV/m at the center of the new studio location. A method of shielding had to be considered.

Since transmitter site, studios, businesses offices, and corporate headquarters were to share a common building, we also had to be careful to insure that each function could exist without interference or isolation from any other. This required a great deal of discussion and give and take. It became necessary for all involved to gain a much better



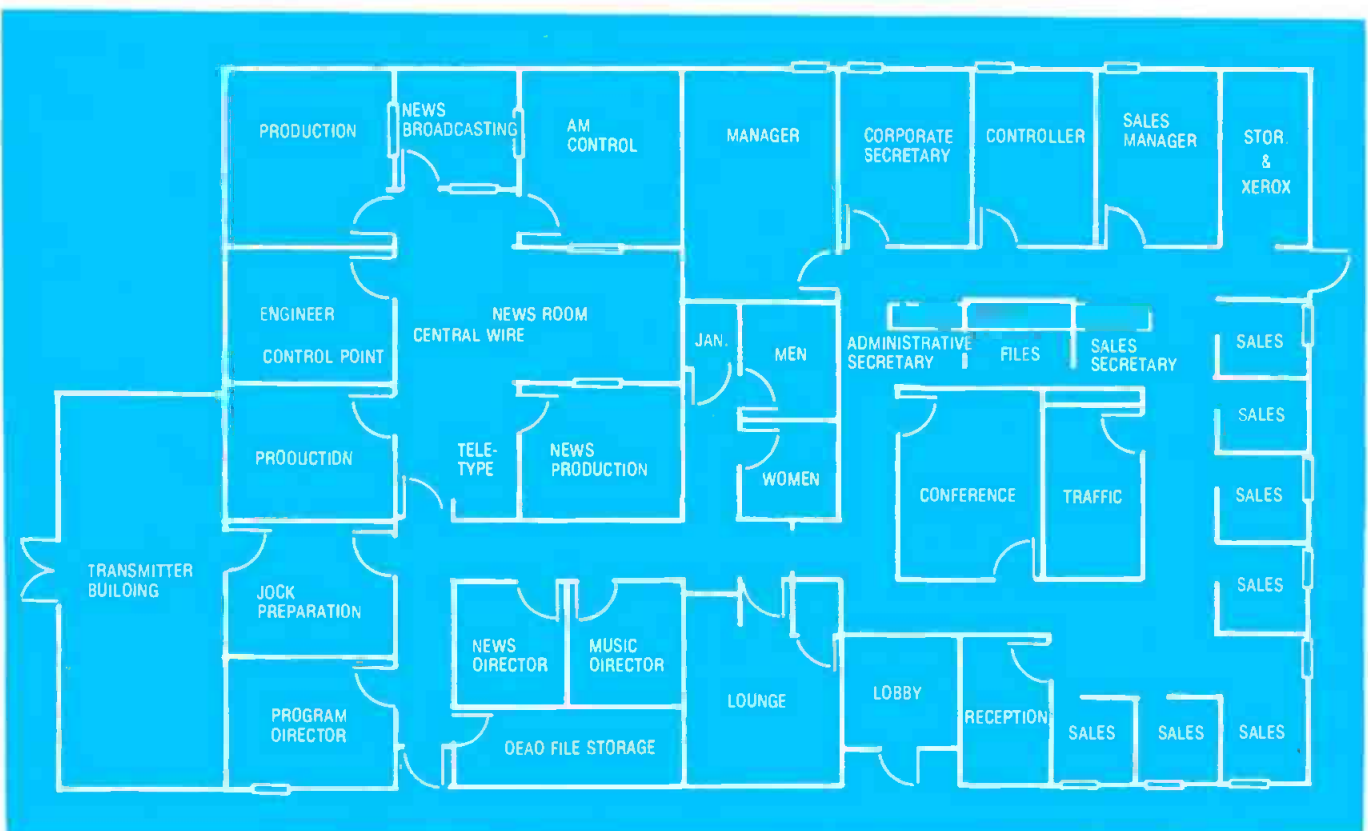
News director Jack Baty (above) in the news delivery booth



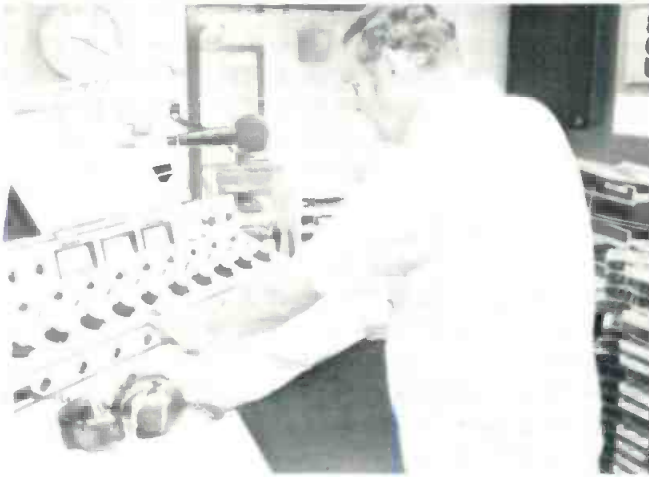
News director Jack Baty (at right) shown in the news production room

grasp of the requirements of all facets of the station's day-to-day-operation, much more so than simply working in a station demands. This is a side benefit of building a new plant with many far-reaching advantages.

The first problem, that of the old cable location conflicting with the building site, was simply solved by lifting all existing cables, excavating new seven-foot deep trenches, placing the cables in four-inch conduits, and reburying them. The second problem, RF, at first seemed to be difficult to remedy. Many stations suffer from this type of problem, and it seems that most attack it on an individual basis. In other words, they attempt to cure the problem at



Entire control area, rectangle at upper left of plan, is enclosed in aluminum screening to reduce RF pickup



Bob Creager, production manager (photo, top), uses the main production room

News director Baty (center) prepares a script in the news preparation room

Air personality Tom Lyons (above) is on the air from the main control console; window gives view into news delivery booth

Exterior of new building (at right) constructed to house the enlarged plant of KCEE. Transmitter is in adjoining building



the equipment affected.

Our approach was simply to keep the RF away from the equipment. To do this, we enclosed the entire studio complex within a 1200-square-foot screened room. An overall reduction of 46 dB was initially achieved, but this was somewhat degraded by the introduction of the various cables required for operation. The final RF field was measured at 15 mV/m, which has proved to be quite easy to live with.

The screened room was built in a hollow in the main structure. The screening is 0.016 by 28-inch aluminum, which is cheap and easy both to form and to solder. To reduce leakage, we used a four-inch overlap and soldered the sheets at 10- to 12-inch intervals. The end result is a very large aluminum box which is cost-effective, costing about \$2.00 per square foot. The studio entrance door is a standard steel fire door set in a steel frame. The frame is soldered to the screening material and the door is fitted with finger stock to insure a good RF seal when closed.

All walls in the studio area are of stagger stud construction and covered with two layers, one of half-inch sound board, the second 5/8-inch wallboard. Six inches of fiberglass insulation fill the space between walls, and all doors are solid-core. The windows between studios are composed of five layers put together much like an automobile windshield — three layers of glass separated by two of a plastic. The result is a window with as good sound qualities as the walls in a single 3/4-inch plate.

Air conditioning in sound studios requires special precautions to avoid sound both from the units and from other rooms being coupled through the ducts. Our approach was to place the air conditioners at the far end of the main building and to use duct insulated on both the inside and outside. Within the studio area, each duct in a room has at least two 90-degree turns before it joins the main duct. If the end of the world happens with a bang, we will find out about it from the wire service.

One large design problem was to find a method that

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Tube Type	Output	Gain	Efficiency	Cavity Model
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8985	25kW	20db	80%	Y1393D-V2
9011	30kW	21db	80%	Y1393D-V3
8984	55kW	16db	78%	Y1369

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We supply both the power tube and the cavity. In our pictured Y1393 cavity, the 9011 tube delivers a measured gain of 20 db with an efficiency of 80%.

RCA

would allow the studios to be wired easily, but would allow for change and growth without the need for remodeling. We decided to use a central control point rather than studio-to-studio runs. This, we feel, allows better control of grounds and affords a great deal of flexibility. Each studio or work area has three conduits, a 1½- and two ¾-inchers. Each has a 15-pair cable for audio; the control room has two 15-pair cables, the second being for extension meters and control circuits. Each room has its own two-inch ground strap, connected back to station ground via a four-inch strap at the control point.

The main control room has the equipment for putting the carts on the air and for recording network feeds for delayed broadcast. The news preparation, news production, and news delivery rooms allow efficient production and broadcast of the many local news segments.

The new transmitter, in the adjoining building, is a Collins 5 kW model 821E1, which has proven to be

thoroughly satisfactory. The old transmitter, also a Collins 5 kW, has been refurbished and set up as a standby.

All the elements I have described in the design and construction of this facility were aimed at producing a pleasant and efficient workplace that could easily be altered to meet future needs and maintained economically over its lifetime. These goals require not only effort and understanding on the part of station personnel, but the cooperation of a good architectural firm and building contractor. Understanding and respect for each other's areas of expertise and the willingness to compromise are required from the start. A professional will take the time required to explain his position and will not allow himself to be arbitrary. We were fortunate to find two such firms in the Tucson area, John Mascarella & Associates, Architects, and The Decker Construction Co. Firms such as these can make your initial visualizations become realizations.

KGW-AM



Portland, OR
Metro Rank: 30

AM RADIO ENTRY
Submitted by Lee McCormick,
Chief Engineer

FM MAY WELL BE walking away with the majority of listener shares in radio markets across the country, but in Portland, AM radio is holding its own, primarily because of KGW's longtime strength and aggressive management philosophy. The station's Top-40 format has evolved into Adult Contemporary programming, emphasizing personality, local and national news, and community service.

The successful shift could not have been carried out without new physical facilities. It took a year and a half, but on January 9, 1981, KGW opened its all-new broadcast center. The new station was a major engineering accomplishment, since it was necessary to have two complete broadcast facilities in operation during the transition. Highlights of the new KGW facility include:

- An expanded computer system that programs the station to our target demographic. This system, a Digital PDP 11/23, also is used to compile extensive passive and active music research.
- Flexible newsrooms that allow for maximum communication with reporters in the field to provide expanded news coverage.
- AM stereo capability for all audio rooms. The congruent layout of the studio provides minimum confusion and audio compatibility. To assure consistency in the



Production room 2 (above) does the majority of outside production as well as public services programming

Production room 1 (below) also serves as the backup control room. Here production engineer Gordon Miller records a commercial for later air play





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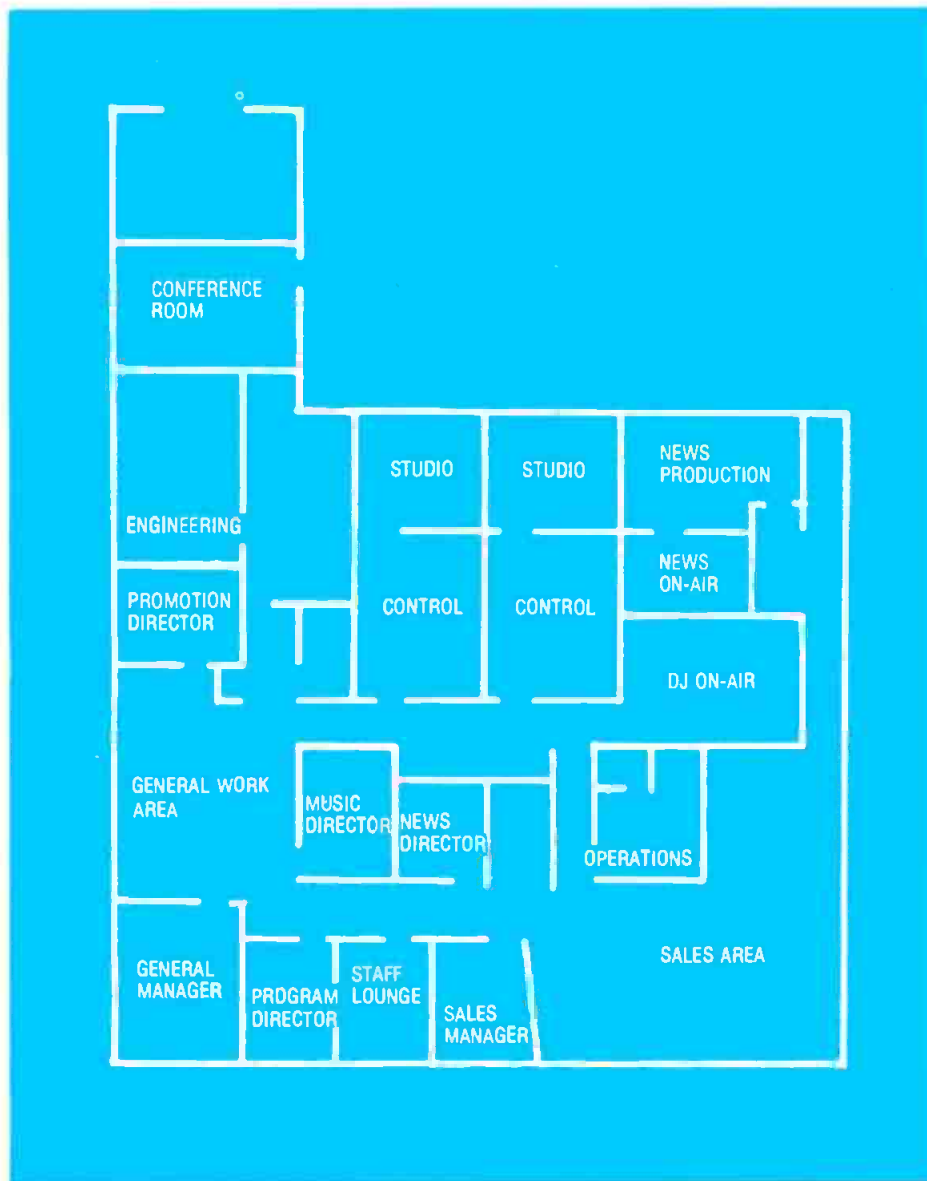


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Operating areas are enclosed by offices. Adjoining space is for FM station

audio rooms, the new equipment and cabinetry were purchased from a single supplier, Pacific Recorders and Engineering.

Avoiding an uncomfortable, fatiguing, sterile environment, KGW created a natural liveliness without sacrificing the reduction of standing waves and extraneous noise. Lead foil in the walls, carpeting on the floor, two-inch fiberglass panels in the ceiling, and acoustic walls panels helped us accomplish our goal.

Since all audio rooms were part of the new construction, the entire facility was rewired. As a result, two total broadcasting facilities had to be operational before the transition to the new area could be made. (Zero downtime was needed since KGW Radio operates on a 24-hour basis.) All inter-tie lines were made from each room to a central tie-panel before going to the engineering area, allowing maximum inter-tie flexibility between rooms.

The panel in the engineering area is a mirror image of the tie-panel in the studio area. Engineering used Siemon tie blocks, rather than soldered connections, for all terminations. Some engineers have reservations concerning the

use of telco blocks, but with the right tools and care, they are as reliable as soldered connections and require less time. The greatest gain from using Siemon blocks is the ease of changing or moving connections when necessary. All audio eventually terminates in the engineering area, where the tie-blocks connect to audio processing and other auxiliary equipment.

KGW uses an Audio and Design Recording Transdynamic processor in conjunction with six Inovonics 220 limiters to feed the stereo lines to the transmitter site. A custom-designed processor using a UREI splitter and a Pacific Recorders combiner, along with three Inovonics 220 limiters, feeds a mono backup line to the transmitter site.

A Collins 828 E-I Power Rock 5000 W model is the main transmitter, with an RCA 10 F as the auxiliary main. The transmitter site is remote-controlled from the TV operations area and has full emergency power backup. The two-tower array is nondirectional during the day and directional at night.

KGW's new control room was planned with operator

convenience in mind. By using the cue circuitry in the BMX Series 2 console and solid state relays, we installed overhead 100 W cue lights in addition to lights for the telephone "hot line" and other board functions. Lights are color-coded so that each function is easily identifiable.

Four ITC Series 99 cart machines are used for music and four more for commercials and other programming. The MCI JH 110 reel machine and the Technics SP-10 turntable are used only for special programming. In each room the stereo monitoring system consists of a Crown D150 amplifier with JBL 4313 speakers.

All equipment has its own tally lamp and remote control, easily locatable from the operator's position. The operator also has access to the two-way communication system and intercom, both of which keep him informed of

traffic and fast-breaking news events.

To aid the news staff in providing expanded news service, the news department is divided into two rooms. In the news assembly room, both UPI and RKO Two networks are available, along with access to the two-way communication system. The UPI, Associated Press, and National Weather Service wires augment the audio feeds, allowing greater flexibility in national news coverage.

Four news assembly positions are available for our seven-person news staff. Each completely independent position is equipped with a Technics RS 1500 reel machine, a cart machine, telephone coupler, portable Sony C-206 cassette machine, network feeds, and the two-way access to field units. The Motorola two-way communication system consists of a two-channel base station located



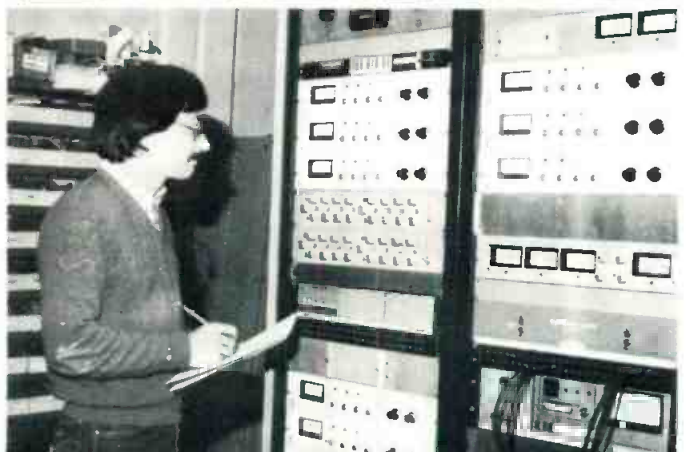
News reporter Sharon Mitchell (at left) works at one of the news assembly positions

Afternoon drive personality Dave Hood (center, left) on-air from the main control room

The KGW broadcast center (bottom, left) was expanded in 1980 and the radio facility remodeled and moved in January, 1981

Newsman Dave Paull (below) preparing afternoon drive news in the news booth

Engineer Matt Green (bottom) logs EQ and gain settings for reference in maintaining overall response of the audio processing



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at the KGW TV site and the base control unit located at the studio engineering area.

The two-way "outside" units consist of three news cars, two vans, one airplane, one helicopter, two pack sets, and a paging system.

The Audiographics console has inputs for the two networks, the two-way to outside, telephone, four Gates cart machines (one is a record/playback unit), and the news production auxiliary board. The MCI JH 110 and Technics RS 1500 tape machines allow the news on-air booth to double as a production area.

KGW's newly designed production facilities serve two purposes. In addition to providing for the station's own production needs, the two studios offer full-service facilities to clients and advertising agencies. Our production staff is able to produce professional radio commercials, TV audio, slide film programs and public service programming by using our ever-expanding music and sound effect libraries.

The production facility consists of a tape duplicating room and two complete production rooms, each with its own voice booth. Production one consists of a Pacific Recorders BMX Series 2 console, four MCI JH 110 tape machines (full-track, two-track, and four-track), two Technics SP-10 turntables, and one ITC Series 99 record-playback cartridge unit plus equalizer, limiters, and other audio processing equipment.

Production two consists of an MCI JH 600 Series 16-track console, four MCI JH 110 tape machines (eight-track, two-track, full-track), an ITC Series 99 record/playback cart unit, one ITC RP cart record-playback unit, an Eventide harmonizer, plus associated limiters, equalizers, and other audio processing units. The tape duplicating room is equipped with one quarter-inch drive unit and three slaves. All dubs are made at speed to preserve quality. There also are cassette duplicating capabilities.

In sum, the management of KGW has made a substantial and carefully engineered investment to position the station for the present and future of AM broadcasting.

WDBQ-AM



Dubuque, IA
Metro Rank:
Below 172

AM RADIO ENTRY
Submitted by Lloyd Berg,
Director of Engineering

LOCATED IN DUBUQUE, IA, WDBQ has been serving eastern Iowa, southwestern Wisconsin, and northeastern Illinois since 1933. Our station operates at 1490 kHz with a

daytime power of 1000 W and nighttime power of 250 W; both are non-directional. We are on the air 24 hours a day.

This is a very competitive market, with five stations locally, and six (soon to be eight) more operating within 30 miles.

To be number one in the 25 to 54 age group, both metro and total survey area (a six-county area), takes a good staff, a lot of effort, and a well-equipped broadcast plant!

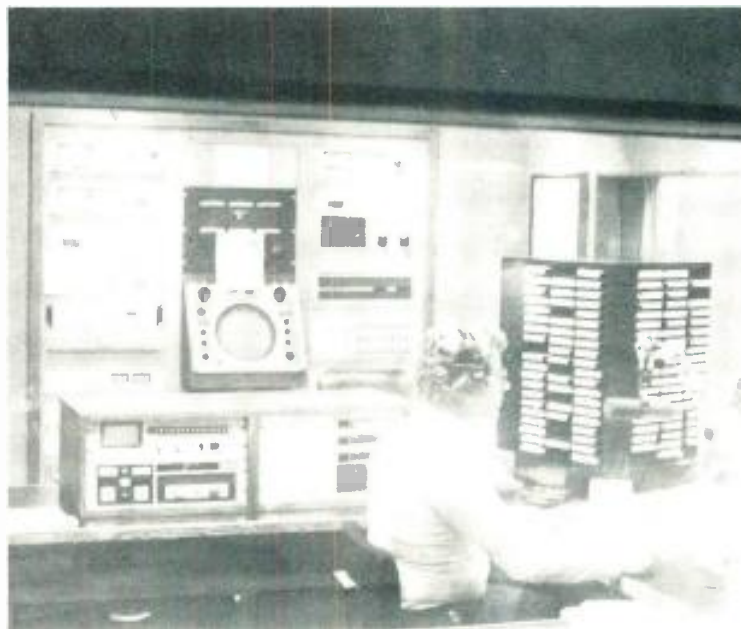
Our format is Adult Contemporary, with a preponderance of "soft rock" music, all put on the air manually by the air personalities. In addition, we have a very heavy local news operation, with many public service and local interview programs. The news coverage has emphasized intensive weather reporting and warnings, for which we used to make detailed use of reports obtained directly from the nearby National Weather Service station. The management has taken pride in our promptness in alerting area listeners to weather emergencies.

However, at the beginning of 1981 the local NWS station was closed in a budget trim by the Reagan administration. WDBQ, determined not to leave area residents without prompt warnings of severe local weather dangers, installed a weather radar system for the station's own use.

The heart of the station's weather coverage now consists of the new X-band weather radar and the accompanying digital weather station. The radar screen is located in the control room racks, along with the Texas Electronics digital weather station displays for temperature, humidity, rainfall, barometric pressure, wind speed, and wind direction.

Our Sperry meteorological radar was installed in early 1981. It has proven to be a real workhorse this first year,

Main control room at WDBQ, as seen through lobby window, has BMX console and cart machines next to operator's left, with radar screen in left wall along with weather readout, modulation monitors, remote control, and other equipment



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“seeing” all kinds of bad weather, including a tornado 40 miles away, innumerable “locally severe” thunderstorms, hail pockets, and a rainstorm that dropped seven inches of rain in one hour and caused serious flooding, washed out 12 bridges, and flooded out the transmitters of two of our semi-local competitors.

A weather radar and its severe weather warnings are *not* promotional tools; they are deadly serious business!

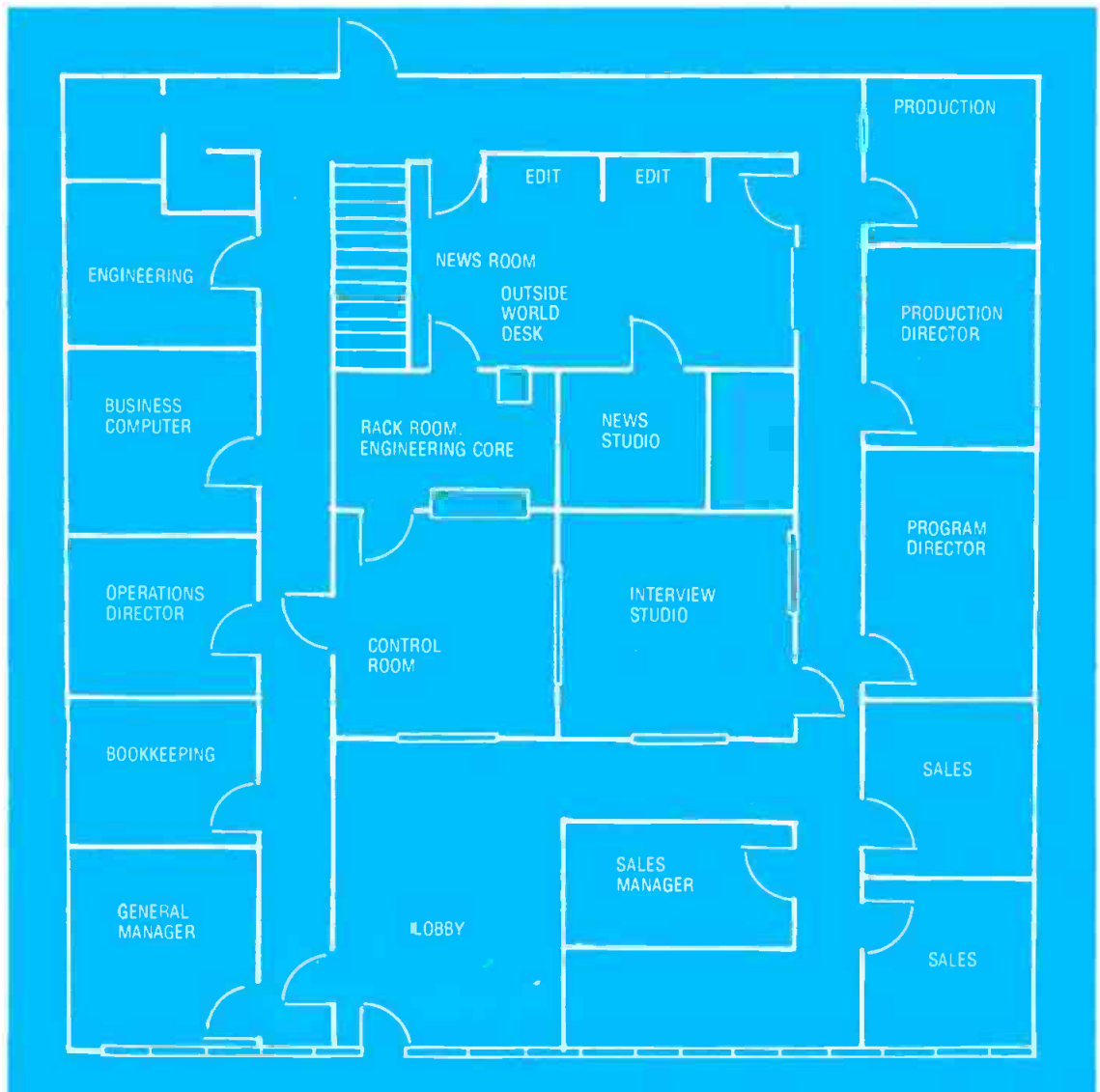
The weather radar and digital weather station live in the wall-mount equipment racks, along with the modulation monitors, audio processing equipment, EBS equipment, and the emergency patch panel.

The WDBQ newsroom has work stations for five people: two news editing stations, each equipped with a 10-position switcher, reel-to-reel recorder, cart recorder, telephone, typewriter, and cassette patch; two typing stations with typing wells and telephones; an “outside world” station with the AP teletype, the weather computer terminal and weather wire display, station-owned UHF two-way radio and paging system, police scanner, and ABC net alert detector.



Two of the editing stations in the newsroom have equipment for script preparation, recording newscasts, and bringing in new material from a variety of outside sources

Studio core is screened from noise by offices around it



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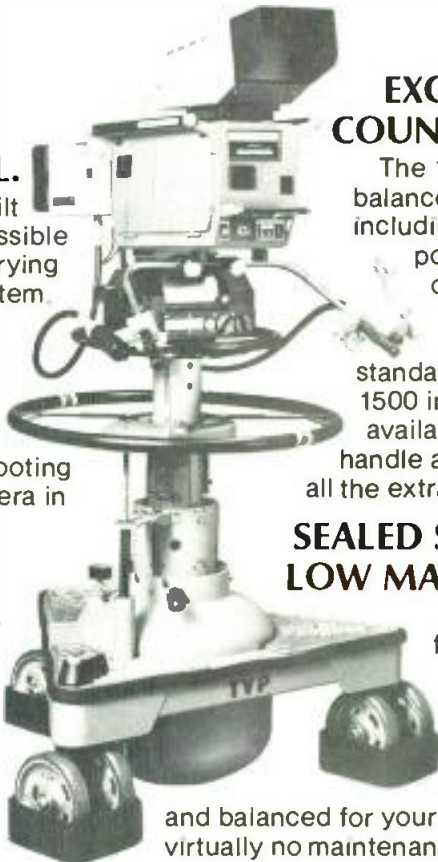
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Product on Studio, WRBR-FM, South Bend, Indiana.

Electro-Voice's Greg Silsby talks about the Sentry 100 studio monitor

When I first described to Electro-Voice engineers what I knew the Sentry 100 had to be, I felt like a "kid in a candy store." I told them that size was critical. Because broadcast environment working space is often limited, the Sentry 100 had to fit in a standard 19" rack, and it had to fit *from the front, not the back*. But the mounting hardware had to be optional so that broadcasters who didn't want it wouldn't have to pay for it.

The Sentry 100 also had to be both efficient and accurate. It had to be able to be driven to sound pressure levels a rock 'n roll D.J. could be happy with by the low output available from a console's internal monitor amplifier.

The Sentry 100 also had to have a tweeter that wouldn't go up in smoke the first time someone accidentally shifted

into fast forward with the tape heads engaged and the monitor amp on. This meant high-frequency power handling capability on the order of five times that of conventional high-frequency drivers.

Plus it had to have a 3-dB-down point of 45 Hz, and response that extended to 18,000 Hz with no more than a 3-dB variation.

Since it's just not practical for the engineer to always be directly on-axis of the tweeter, the Sentry 100 must have a uniform polar response. The engineer has to be able to hear exactly the same sound 30° off-axis as he does directly in front of the system.

I wanted the Sentry 100 equipped with a high-frequency control that offered boost as well as cut, and it had to be mounted on the front of the loudspeaker where it not only could be seen but was accessible with the grille on or off.

I also didn't feel broadcasters should have to pay for form at the expense of function. The Sentry 100 had to be attractive, but another furniture-styled cabinet with a fancy polyester or die-cut foam grille wasn't the answer to the broadcast industry's real needs.

And for a close I told E-V's engineers that a studio had to be able to purchase the Sentry 100 for essentially the same money as the current best-selling monitor system.

I'm happy to report that we've achieved *all* our objectives.

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The news booth/production room includes a Harris-Gates control board, three ITC cart machines, telephone, an in-house master digital clock display, and tape storage shelves. With all this equipment, our news staff operates very efficiently since there is no waiting in line. Stories are not lost because equipment is not available, news people do not interfere with commercial production room scheduling, and air presentation is clean and tight because news is put on the air from the separate news board. Moreover, news is always put on the air by the news staff, not by disk jockeys.

In our main control room is the BMX-22 slide pot board. All active control room equipment is wired into the "line keys" for remote control. This includes cart machines, turntables, a reel-to-reel machine, intercom system, and transmitter remote control. The above equipment is wrapped around the jock on a horseshoe-shaped counter. The main jock microphone not only feeds the board but also selectively feeds the telephone, the two-way radio, the intercom, the PA system, and the back door intercom. This shared use of the "mic" and "line keys" is very convenient, produces a smooth air presentation, and really keeps the control room clutter to a minimum.

The WDBQ production room has all the usual production capabilities, plus electronic special effects devices. To "sweeten" music, clean up poor quality tapes or old records, or create moods we use a UREI 535 dual graphic equalizer. For producing a wide range of "location" effects, as well as emphasizing voices and covering splices, we use the Orban 111B/1 tunable dual channel reverb.

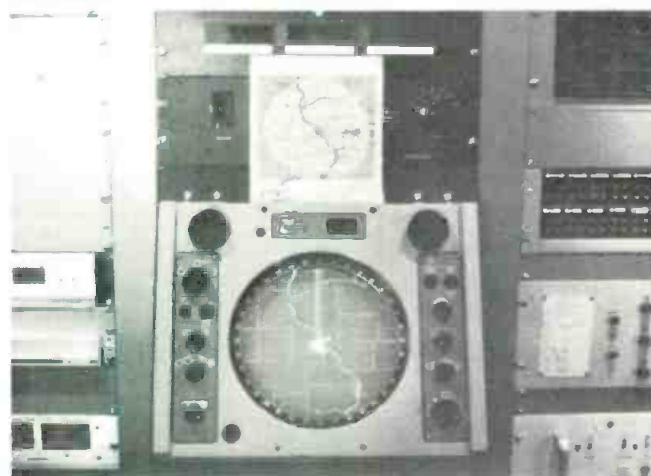
The most versatile effects device we have is the Eventide H949 Harmonizer. We use it to remember and repeat letters and short words, and to change the voices of the staff to sound like anyone from a child to a deep-voiced gangster to a perfect copy of Darth Vader. We also can shorten a 70-second spot to a 60, make a 25-second music bed become a 30, and perform many other sound transformations.

With this equipment and a creative production staff we can produce agency-quality spots. Our commercials are interesting and fun to listen to, they're easy to sell, and they avoid "tune-outs" and listener fatigue.

Near the center of the building is the engineering core and rack room. This area contains all inter-studio wiring, the station's common ground point, and nearly all support equipment, such as power supplies, audio power amps, relays, test panels, and the 110/220 V ac power panels. The broadcast area surrounds the rack room, with equipment racks built into the walls, allowing almost all equipment to be maintained in place. In addition, grounding and ventilation are better than in any other mounting arrangement.

All studio walls are 12 inches thick, with true double-wall construction, four layers of "Deci-Ban" acoustical building material, and a vented center air space. Doors are "Weldwood" certified acoustical doors. Windows are double-plate glass with a vented central air space.

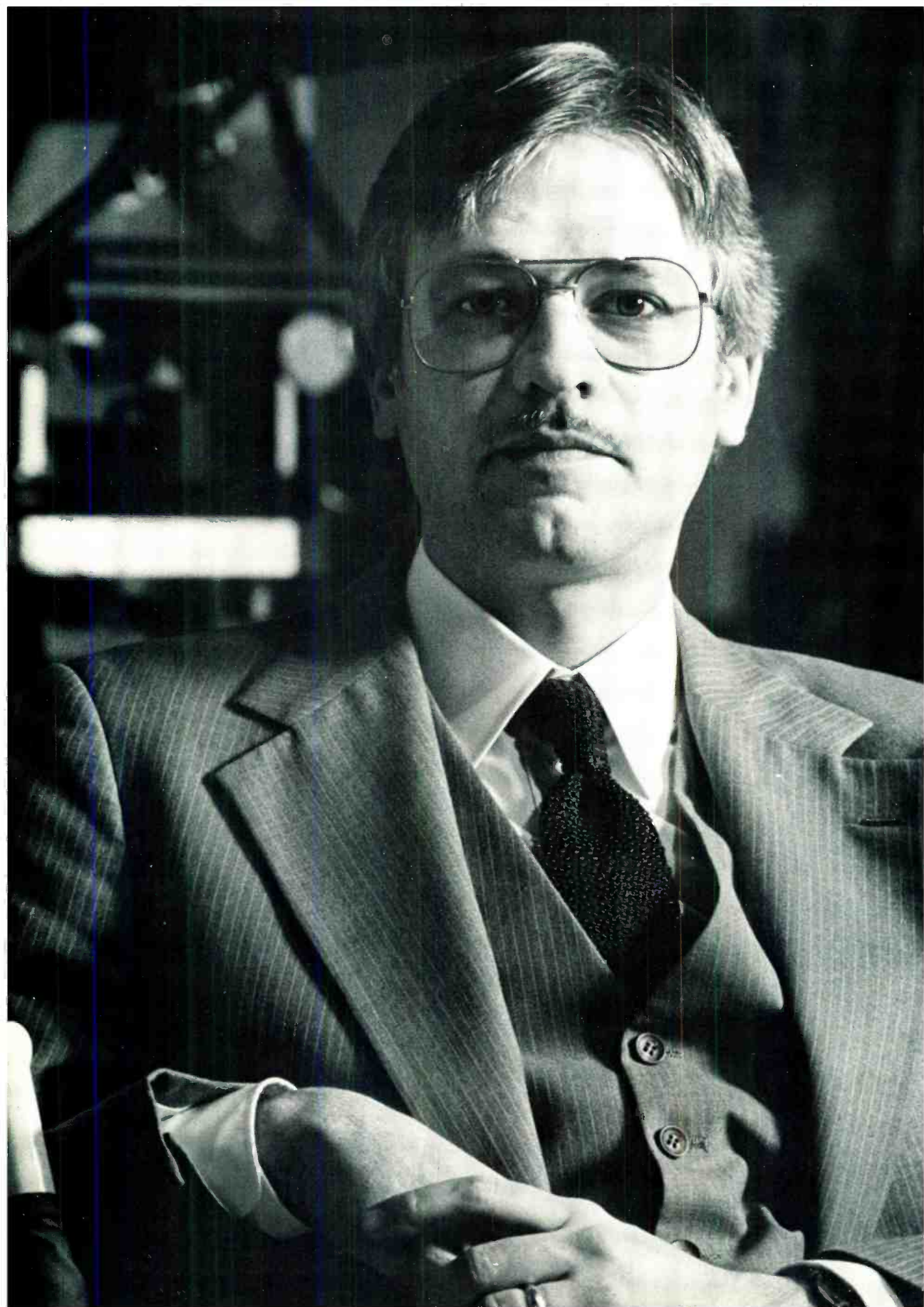
With this plant, WDBQ hopes to keep on serving the area well far into the future.



Complete "outside world" station in news room (photo, top) has studio termination of two-way radio for news gathering, news paging system, EBS net alert, police scanner, weather data computer storage with readout screen

View of production room (center) shows open-reel machines, turntables, cart recorders, and processing equipment

Closeup of weather radar screen (bottom), source of instant weather information, shows "ground clutter," small pattern in center



CURRIE



"Incredible opportunities are coming for the local programmer!"

Steve Currie, 1981 President of the National Association of Television Program Executives, is Manager of Broadcast Operations, KOIN-TV, Portland, Oregon.

"NATPE does quite a bit to help improve local programming. Sponsoring the IRIS Awards, for example. They're only for local programming, and there's no question that they've become a major award in the TV industry. NATPE-sponsored workshops and general sessions deal with the problems of local stations and those of the local programmer. The exchange of ideas and information from around the country helps us all.

"The role of Program Director is difficult even for NATPE to define, because responsibilities vary from station to station. It started out, in many cases, that the Program Director was merely an operations clerk who shuffled paper, took the network schedule, and filled in the half-hour hole on Saturday or Sunday. Most of the actual program decisions were made by the General Manager, Sales Manager, or a combination thereof. As Program Director here, I have responsibility for the on-air look of the station. I don't control the journalistic aspect of the news, but I am involved in how the product looks on the air. Attitudes toward the Program Director are changing, too. There is

a great realization that if you have a good programmer who is doing a good job, you're going to get your ratings.

"I think that as our industry develops, the local station with local studio, talent, and expertise is going to become a major supplier to other groups, whether they be a low-powered station in our own market, a cable channel, the video market, whatever.

"Right now it's easier to go out and buy a syndicated series than it is to create your own local programs, but it's not necessarily better. We have a program here called *Northwest Illustrated*, which precedes *60 Minutes* on our station. It's a magazine half-hour similar to *60 Minutes*—on a local level—and has won a number of awards, including a DuPont Columbia award. This show is, to a great extent, produced on film. We shoot on Kodak film, because we want a clean, finished look—one that sets it apart from some other news programming you see on the air. It's our showpiece and has to have the right look. Kodak film gives that to us. I'm very proud of the show, because the station is not only providing a service—we're doing something of quality.

"If I see any coming trend, it's that of more news and informational shows done on a local basis. This will help local stations maintain their local affinity. And it's a great opportunity for us. Look, it's seldom that a local station can go out

and do a dramatic presentation, a sitcom, or a movie. It's just not in the cards. But here is the chance to have something truly unique for our market. It's where we have our expertise. It's where we have the ability to really excel. There's a lot of opportunity coming for the local station, and I think that's something we all need to keep in mind."

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WEZW-FM



*Milwaukee, WI
Metro Rank: 24*

FM RADIO ENTRY

*Submitted by Terrence M. Baun,
Technical Director*

WE HAD TO BUILD a new home for our "Easy Listening" station which was number one in the Milwaukee market in spring, 1981. We wanted a downtown location, and we wanted a tall building so we could get our composite signal to the transmitter, if possible, with one STL micro-wave hop.

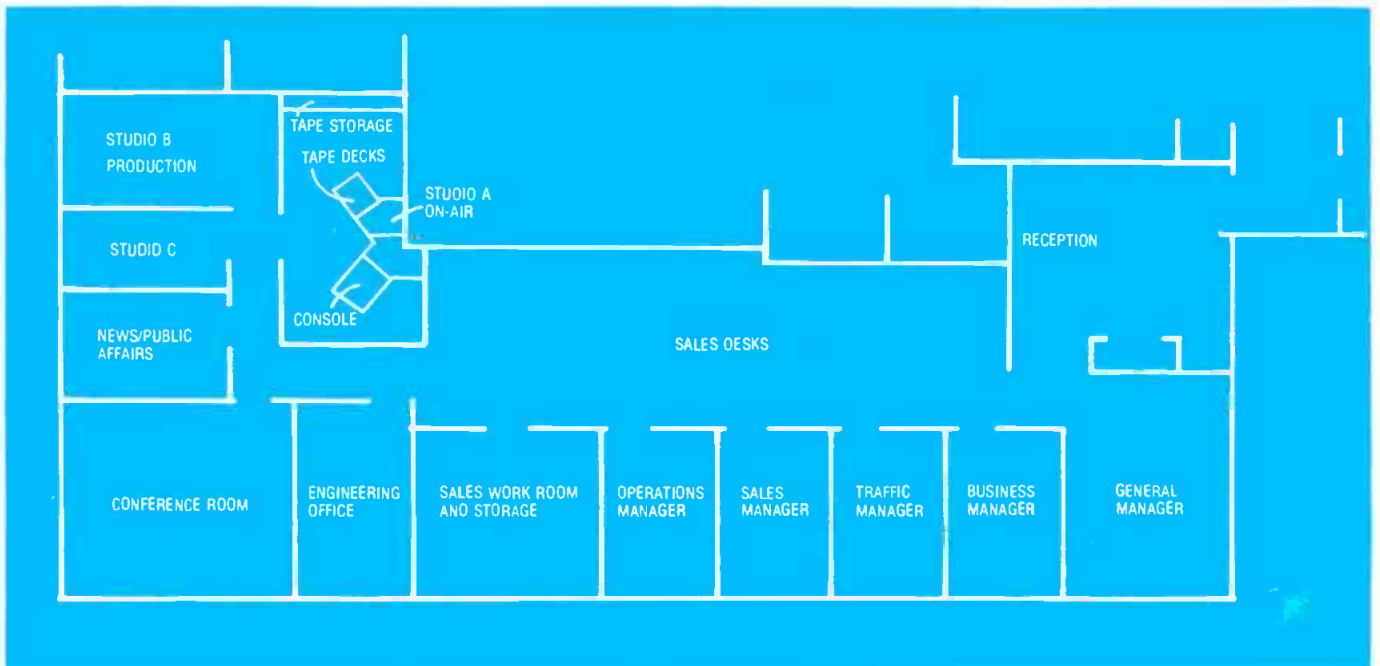
A downtown bank building, the second location we investigated, had many advantages: enough floor space, non-load-bearing walls that could be moved to meet our requirements, a clear five-mile hop to our transmitter from the roof. But when I stepped into the studio space I was dismayed by the noise from Milwaukee's main street, Wisconsin Avenue, four floors below, and from a large air-handling unit nearby.

We decided to see if anything could be done about the noise. Enter Prof. Donald Baxa of the University of Wisconsin-Extension, a specialist in acoustics. For the outside noises, he suggested a second wall, about six inches inside the building wall. The wall, to be built from deck to deck, would contain a ¾-inch-thick acoustical



The Continental Bank Building in Milwaukee is home of the new WEZW studios

To use space in a downtown office building, plant was laid out around corner, with two studios on outside wall. Double-wall construction (see story) kept street noise low



glass window (Acoustipane) to allow the outside light to come in, but not the noise! For the interior noises, Dr. Baxa recommended a staggered-stud wall, with a wall made up of a sandwich of acoustical material (SoundStop) faced with drywall, to separate the studio "wing" from the rest of the fourth floor. Three-eighths-inch-thick acoustical glass, this time set in double panes, would separate the main studio from the office area and from the other studios, allowing lots of light in interior spaces but little sound transfer.

I immediately set to work designing the studio area, utilizing Dr. Baxa's specifications. What emerged, after many modifications and changes, was a complex of three studios, each with visual contact with the others and with the outside world. The main studio for on-air use (studio A) contains a Pacific Recorders BMX-14 console, fed by our Scully 270-2 tape decks and four ITC SP cart machines. A TFT remote control and modulation monitor system is contained in a wall-mounted pod next to the operator. Thus, important monitoring and control func-

tions are immediately accessible, but do not take up desk space next to the operator. All studios are track-lighted, controlled by RF-suppressed dimmers located next to the operating position in each room, *not* at the door.

The console position gives a clear view of the hallway leading to the studio wing — thus, the person on duty is the first to know of visitors, not the last! In addition, the angle of the desk allows for the addition of on-air interviewing or news functions by providing mic space for another person directly across from the operator on duty. There is also a provision for the addition of turntables or tape machines to the right of the console, should format changes dictate such a move.

The Scully 270-2 tape machines we use for the SRP tapes are currently housed in two six-foot racks angled at the side of the operator. New decks will be installed this year, mounted in customized low racks for ease of access and operation. I foresee them on wheels, so they can be unplugged and rolled into the engineering office for service when necessary. My ultimate goal is to keep the



Don Stephens (top), afternoon talent, in on-air studio A. Wall-mounted rack holds mod monitors and remote control

Bill Moos (top), operations director, at the studio A console. Note convenience of wall-mounted monitor pod containing remote control and monitors. Studios were designed with wheelchair access in mind.

Looking into production studio from interview studio (bottom). All commercial tape storage is right in the production studio to save steps for the production manager

News director Ed Walkenheim (bottom), cues traffic manager Judi Chandellor, at the desk in interview studio C. Acrylic turntable cover in place here provides more desk space

Studio Standards

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equipment scaled down to human dimensions, eliminating the presence of the towering equipment racks and substituting a more relaxed "recording studio" ambiance to the facility.

The production studio (studio B) is located on an outside wall, and I am pleased to report that we can stand in the room and watch the buses and trucks below on the Avenue — but we can't hear them! This studio utilizes a Gates Stereo Statesman console, feeding Scully 280-SP 14 reel-to-reel recorders and two ITC Series 99 cart recorders. Two Technics turntables are readily available, covered when not in use by a sloping acrylic panel that permits the area to be used for desk space. All production materials, including agency tapes, carts, and raw tape, reels, and cassettes, are stored in this room, saving time and steps for our busy production director. A complete patch bay allows maximum production flexibility. This room can be put on the air from the A studio by means of a switch — and the glass wall of Acoustipane permits a view of the remote control/monitor pod, fulfilling FCC requirements for visibility of remote control systems from on-air studios.

The interview studio (studio C) was specially designed to be a multi-purpose room. WEZW has a heavy commitment to public affairs/news interview programs, and we wanted to provide an area where such multi-party interviews could be carried on with efficiency and ease. Our solution was to provide a Shure M-67 mic mixer in this room, located on the wall just to the left of the interviewer. From this console, a battery of three microphones can be mixed and fed to a patch panel jack in the production studio. Thus, our public affairs director is able to set up and run his interviews all by himself, using only one of the two Scully reel-to-reel recorders in the production studio

for his program. Meanwhile, the rest of the production room remains free for commercial production purposes, even while such interview programs are being taped.

Because of the relatively high-RF environment, I decided to install a special double-shielded ground bus system for each studio. Insulated number two copper wire is run within a liquid-tight flexible metal conduit directly to the cold-water riser pipe in the building chase next to the studio. The wire and the conduit are grounded directly at the pipe; the other end floats, and the number two wire acts as a ground connection for each console in each studio. When the consoles were fired up, no RF problems were encountered, although we had a 50 kW FM across the street and a megawatt UHF transmitter two blocks away!

Before the deck-to-deck walls were erected, we ran a 15 pair foil-shielded cable in a loop to connect all the studios, news area, and engineering office. The cable is terminated at each room in a punch block; by means of bridging clips, circuits can be made to run in both directions from any location around the loop. This has been most useful when, for example, the remote control system is being serviced in the shop, and the telco circuit can be jumpered from the air studio right to the engineering office to allow a thorough hench-test under actual operating conditions.

For cooling, we simply cut off all studios from the building system and provided them with an entirely separate air conditioning unit that feeds just the studios. A low velocity blower, and special diffusing vents have reduced air handling noise to inaudibility with this system. The residual equipment heat, plus heat from the track lights, has provided comfortable conditions even in our Wisconsin weather! During winter, the air conditioning system functions solely as an air exchanging system, and cooling is not provided.

KBPI-FM



Denver, CO
Metro Rank: 23

FM RADIO ENTRY
Submitted by Paul Montoya,
Chief Engineer

KBPI WAS PURCHASED about three years ago by Sandusky Radio Division. The new management wanted to enlarge the local news operation, bring more local commercial production into the plant, and greatly expand production in other areas as well. Improved equipment for putting the format on the air with top quality was also a main objective.

This all required a remodeled plant. We eventually rejected the idea of leaving the old, inadequate building for an existing office building. We decided instead to remodel and enlarge the old building, which would give us ample floor space and land for expansion.

We believed that by keeping the studios fairly large we could provide a warm and comfortable atmosphere in each room. This was our main objective since each room would be used virtually 24 hours a day. We also needed a second production room and a news facility. By narrowing down the existing control room and breaking through a double cinder block wall, we were able to add a hallway and easy access to a second production room.

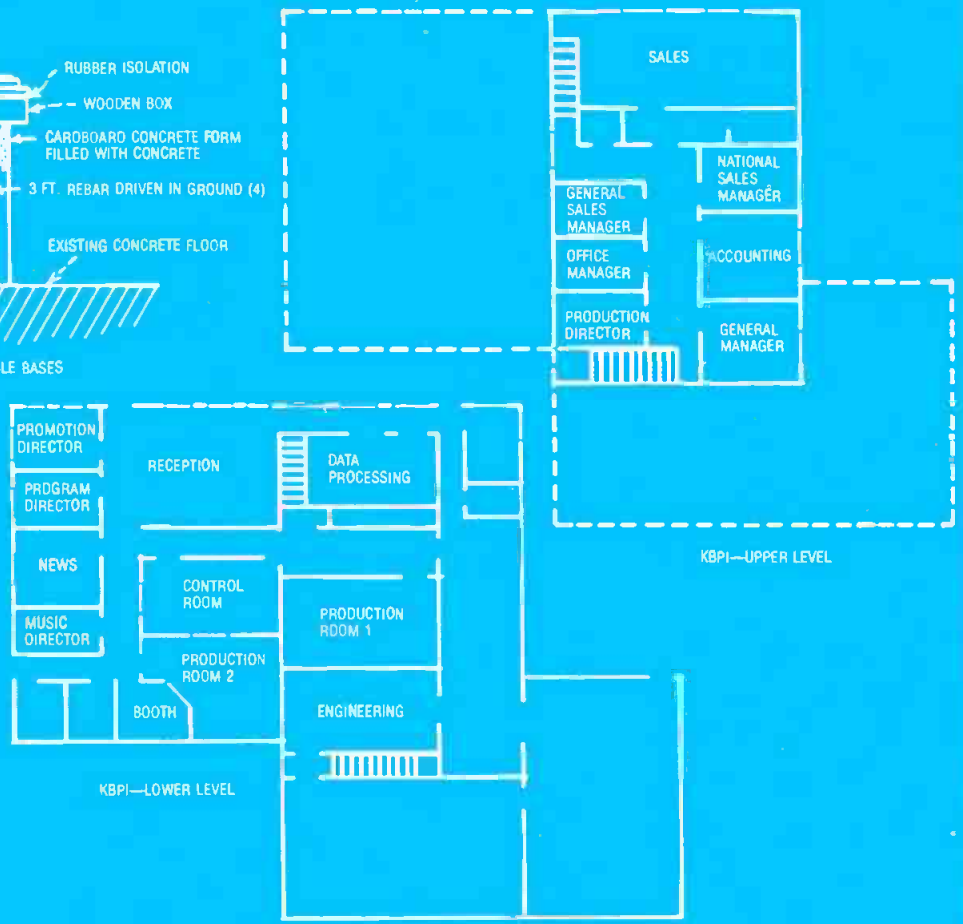
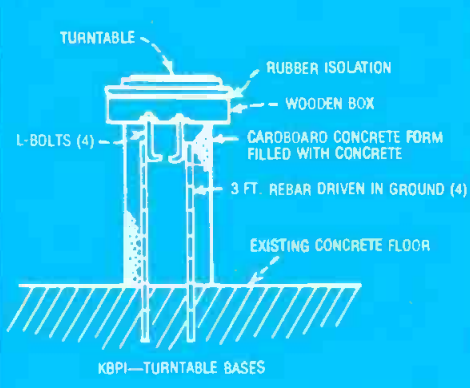
The control room was completely gutted and new wiring run. The on-the-air console we chose was the BMX Series II board by Pacific Recorders. TFT remote control and four Harris cart machines were installed to the left of the operator, with two Technics turntables to the right. A second control turrent was installed for our morning team, Steven B. and the Hawk. Split fluorescent lighting with flood lighting over control areas was provided to allow for

Best Station Award Entries

custom lighting by each operator. Special recessed colored warning lights indicate hotline, request line, intercom, doorbell, and off-the-air.

A new, second production room became our two-track room. The double cinder block wall between this production room and the control room provided excellent sound isolation between the two rooms. The room contains a Cetec Series 10 console, two MCI JH-110 recorders, and Technics turntables.

We decided to try a new method of turntable isolation in this room. We drilled holes in the concrete floor and drove three-foot rebar about one foot into the floor, then poured about a two-foot column of concrete over the rebars, making an excellent base for turntables. By then attaching a wooden box with rubber isolation built into it, we had a permanent isolated turntable base that took up little room



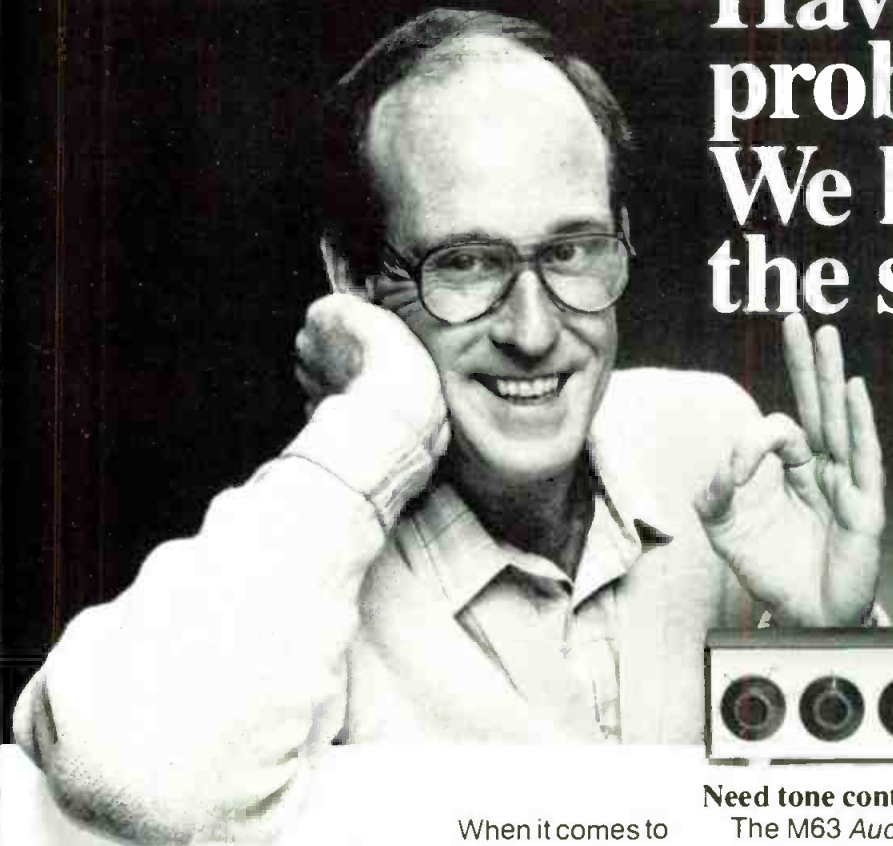
Exterior of new building and surroundings (top, left) show clean landscaping and general appearance

Two-level plan (floor plan, left) has sales and management on top floor, operating areas below. Upper left: turntable mounting

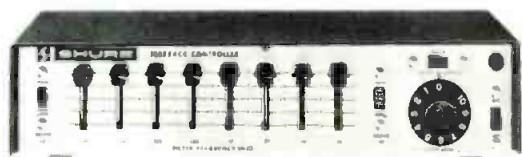
Main control room (above, top) has BMX console, Technics turntables, TFT remote control, Harris cart machines. Music director Joel Folger is on the air

In production room 2 (above, bottom) producer Don Hawkins has an extensive array of equipment for program and commercial creation. Main items are Otari eight-track recorder, MCI two-track, Quantum console, Technics turntables, Vocoder special effects unit, MXR pitch transposer, Orban reverb unit

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The M610 Feedback Controller is specially designed to control feedback in PA systems. Also excellent in post-production rooms for eliminating unwanted background noise from broadcasts, tapes.

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The SR107 Audio Equalizer provides "audio sweetening" in post-production rooms for audio and video tapes, and room equalization for hotel, restaurant, church public address systems—perfect where rack space is at a premium.

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and looked great.

The news office was then taken and turned into a full news production room, capable of being put on the air directly. We equipped this room with a Broadcast Electronics console, Pioneer 707 tape deck, and a Harris cart recorder. A Sharp video recording setup was also installed to allow off-the-air television recording.

The old production room was to become our new eight-track production facility. The programming, management, and engineering staff jointly decided that an eight-track recording facility would allow for maximum creativity and flexibility for the production staff. We decided to go with the Quantum console and Otari eight-track recorder as the heart of the system. By providing two two-track MCI JH-110 recorders, we also allowed this room to function as an overflow two-track facility. Outboard equipment includes a Vocorder Plus keyboard vocoder for special effects, an MXR Pitch Transposer, an Orban dual-spring reverb unit, and an Orban parametric equalizer. Wall treatment consisted of Sonex sound panels.

All studios and engineering rooms were interconnected by 18-pair, individually shielded multicable. This allowed monitors, buses, remote lines, and switching to appear in every area, giving maximum flexibility in future studio engineering.

Full backup was always considered during the installation of these studios. Production Room One can be put on the air during an emergency in a matter of moments by pushing a button. Our main transmitter is located on

Lookout Mountain west of Denver. If we lose power on the mountain we have a full backup transmitter at the studio. Air time is money!

It is our policy here at KBPI to include our program director, Phil Strider, our president/general manager, Toney Brooks, and myself in any studio planning. It takes a lot of cooperation between management, programming, and engineering to pull off a successful studio installation, but the payoff is high morale, efficiency, and the bottom line — high ratings.

KBPI is a class C, 100,000 W FM serving the Denver metro area. We are the number one station AM or FM in the Denver market with our personality rock format. We air our format from disks as we still find in this a big fidelity advantage over tape, and we have fairly good record service at this station.

Our audio processing consists of all tri-band processing working into the stereo generator of the Optimod. Program transmission to the mountaintop transmitter is accomplished via a composite Micro Controls STL utilizing the Micro Controls Uniphase single conversion STL receiver/exciter. Our transmitter is a CCA 40.000 using a switcher/combiner; our antenna is a Jampro JSP-5.

All studios are treated with carpeted walls and drop acoustic ceilings. All furniture was custom-built in house with solid oak trim. Access panels to the front of the furniture were built in to hide wiring. Solid state relays were used for all outboard switching, including warning lights. Approximately 2800 square feet remains for future expansion.

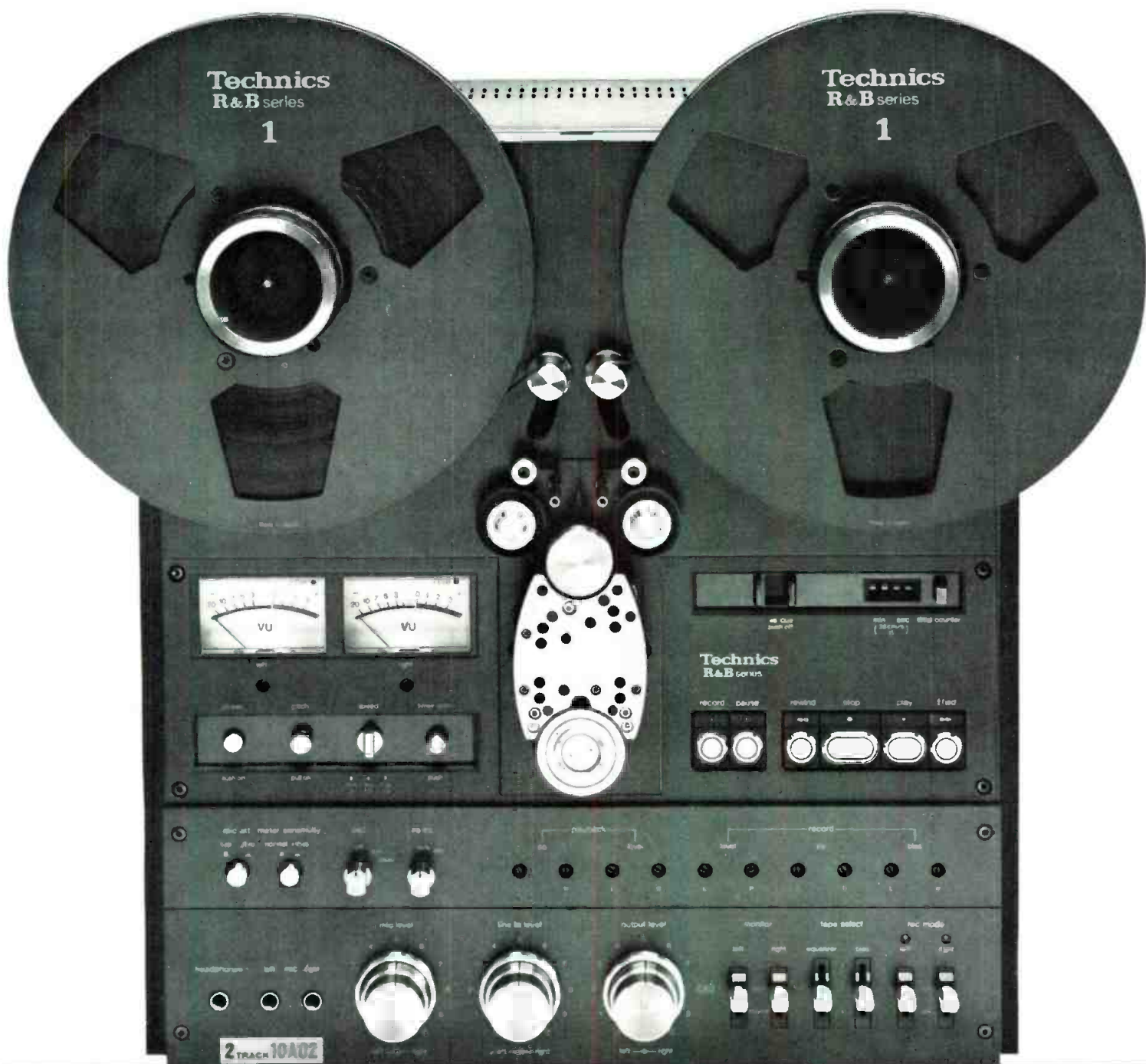


The attractive news room (above) is pleasant to work in. News director Kathy Miller can go on the air here

View of main control room (top, right) shows comfortable "living room" atmosphere in space before control desk. Several guests can sit in room for interviews

Production Room 1 (at right) has Cetec console, Technics turntables, MCI open-reel machines





The technology that made Technics turntables the No.1 choice will make this Technics deck your No.1 choice.

You'll choose Technics RS-10A02 tape deck for the same reason 85 of the top 100 radio stations choose Technics turntables: The performance and reliability of Technics' quartz-locked direct drive.

Like our turntables, the RS-10A02 gives you the precision of a quartz-locked direct-drive motor. But you also get Technics' isolated loop tape transport system which optimizes tape tension to virtually eliminate signal dropout while reducing modulation noise and wow and flutter.

Studio pros will appreciate the RS-10A02's full complement of ten front-panel controls. Like playback and recording EQ adjustments, bias controls, and playback and recording level calibrators. When used with the built-in test-tone oscillator, these controls will give you optimum recording performance no matter what kind of tape you use.

The RS-10A02 also has extremely durable SX Sendust heads, IC logic controls and just about everything else you could want in a professional 2-track deck.

So before you buy any reel-to-reel deck, audition the RS-10A02 and see why it's your No. 1 choice.

For more information on the Technics R&B Series, call 201-348-7470.

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All those in favor of patch panels, raise your right hand.

Free Phasemaster Re-
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Wrestling with those patch cords is cumbersome, awkward and not very good engineering.

But now there's a way to route audio signals with pushbutton ease. Without the patch cords. Without the separate amps, the noisy pots and the mad scramble to adjust levels every time you switch inputs.

Introducing the "electronic patch panel!"

Meet the incredible new Ramko ARA-1612 Audio Router/Amplifier.

It lets you use front panel and/or remote control pushbuttons to route 16 inputs to any of 12 outputs, simultaneously or individually, with an instant LED display of what signal is going where.

Each balanced input has its own gain adjustment. The balanced outputs are buffered so you can feed a single input to all 12 outputs with *no* interaction. In addition, each output module contains stereo/mono switches enabling operation in either mode. And, incredibly, you need only a single shielded twisted pair to make all 16 inputs available at a remote location.

More good news.

The Ramko ARA-1612 system also features solid, broadcast-level

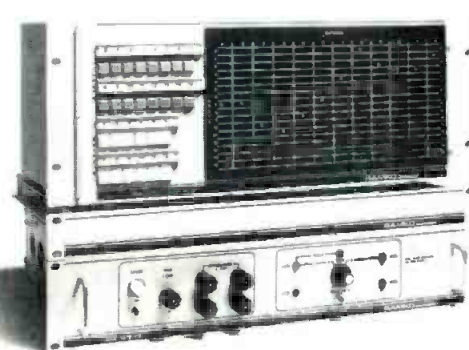
performance specs. Expandability up to 45 in and *thousands* out.

Remote control capability. A dual instant-switchover power supply for 100% on-air reliability. And it's backed by the only two-year warranty in the industry.

Our unique two-week free trial.

Try the Ramko ARA-1612 free for two full weeks (with prior credit approval) so you can pushbutton it through its paces.

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WNMB-FM



*North Myrtle
Beach, SC
Metro Rank:
Below 172*

FM RADIO ENTRY
*Submitted by Guy Mallery,
Chief Engineer*

THE GRAND STRAND of South Carolina literally explodes during its seven-month tourist season, welcoming almost 400,000 vacationers a week, a dozen times the resident population. Serving both this annual migration and the expanding year-round community has given nine-year-old WNMB some unusual problems.

1981 was planned as a year of change at the station. We had already recognized that commercial traffic was outgrowing manual scheduling and billing, that a contemplated AM affiliate would require eventual reallocation of space, and that the original control room design was obsolete for current use. This pressure was coming from both the commercial and the programming functions. The Adult Contemporary format features a variety of music, all put on the air manually, much of it from disks. Carts are used for some of the music, especially when the available recordings are below par and can be

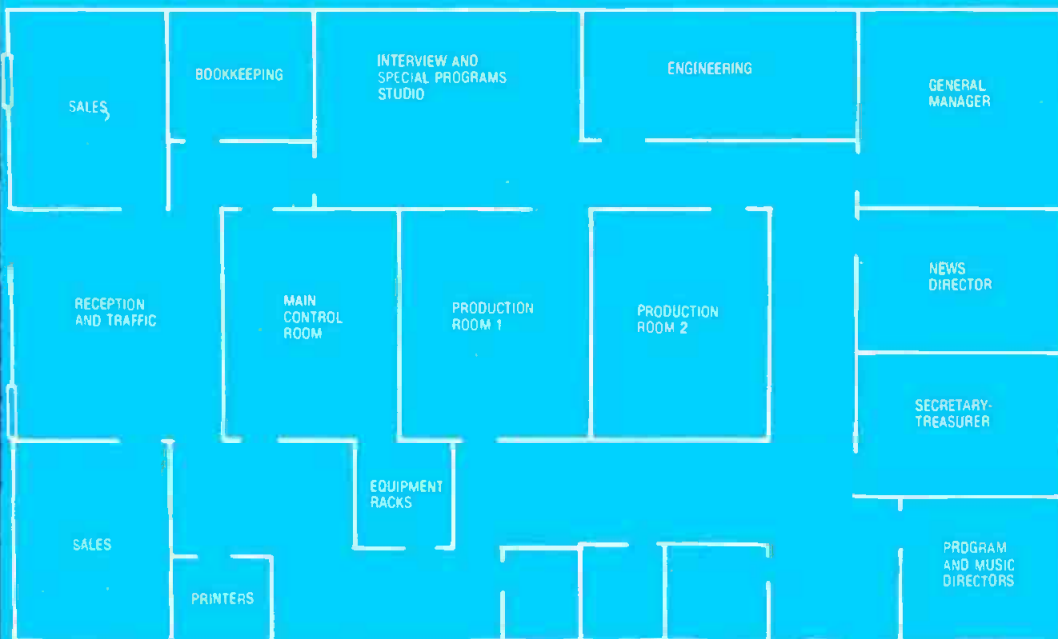
improved with careful production. The station's steady growth and success with listeners and advertisers was overloading the old, making a more efficient plant a necessity.

WNMB's commercial traffic problem is unusual. Fewer than a quarter of any day's spots can be scheduled much in advance, as tourist-oriented advertisers wait for last-minute plans based on weather and crowd size. It is not unusual for WNMB to have 40 to 50 spots scheduled on a "same day sold, same day run" basis, many booked in late afternoon for saturation flights that evening. The reverse is also true: unfavorable conditions create cancellations. Using the old manual system, traffic and sales were at the control room log more than the DJ, and the resulting scheduling turmoil was reflected in uncertainties at billing.

Over a 14-month period, the chief engineer examined 23 different commercial computer systems without finding one meeting our basic needs. Most required computer expertise that station personnel did not have; most furnished more minute detail than management wanted; and all "locked up" a day's schedule hours too early for WNMB's advertisers, sending us back to manual handling of "same day" orders.

When one computer salesman suggested the station refuse orders with less than 24-hour leadtime, we decided to quit searching and to custom design in-house a scheduling and billing system. We selected a Texas Instruments computer because of the financing offered and the availability of similar hardware and maintenance.

We designed the system around "user-friendly" TV-type displays, permitting personnel to use the system without special codes. Virtually the entire staff took part in analyzing and flow-charting the system. The old car-



Midday air personality Billy Smith checks the DJ computer terminal for the schedule on the first hour of his beach music program

Studio plan puts operating areas in center, offices around them

penter's adage, "measure twice, cut once," was observed throughout the planning.

The simplicity of the displays allows each staffer to make his or her own input to the system. Sales personnel enter directly their own orders and customer data, programming formats the scheduler, while traffic manages the system, resolving any schedule conflicts. The computer automatically schedules each order within its instructions, notifying traffic if any limits (such as product separation, priority, or stop-set content) must be overridden to accommodate an order.

The computer brought its biggest impact to the control room. We use conventional printed log only in the early day part (midnight to 10:00 a.m.), when few changes are expected. At other times, the DJ's terminal displays the schedule hour by hour, updating as needed for late sales orders. The log is never "locked up" until it is signed off by the DJ, after each hour on the air.

The console was reorganized when the computer was added. The older "turntable-on-each-side" layout had been cramped and inconvenient for interview use. Also, the control room had acoustic problems from large windows. Using four years of back issues of *BM/E*, the CE collected studio photos from which the staff selected console layout ideas.

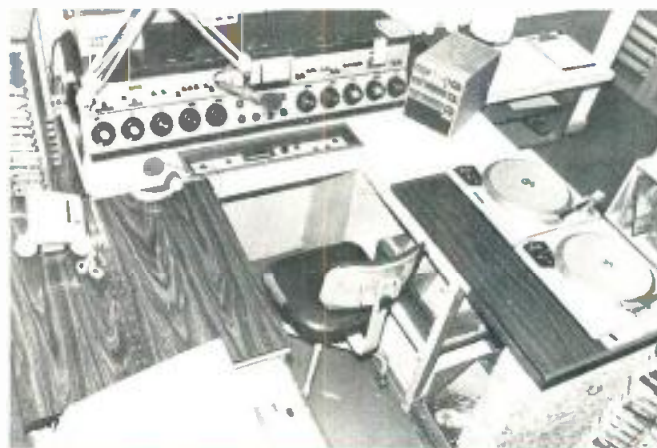
As the photos show, the redesign gave the operator ample space, with all operating functions still within easy reach. The "too-hard" acoustics got a softening from the absorbing material on the walls and vertical cabinet surfaces. Space was also opened for interview guests.

The audio chain uses a Harris MSP-100 processing system at the studio, with dual Marti STLs feeding a Harris MS-15 exciter. The 3 kW transmitter is three miles inland. Any problems between engineering and programming over the "sound" of the station were eliminated by training the PD to adjust the MSP-100 octave mix himself, with the CE concerned only with modulation levels. This division of effort has resulted in very conservative operation of the audio chain. The Adult Contemporary format gets a clean sound with no hard clipping.

Our station was one of the earliest in the southeast to convert to satellite feed for its Muzak SCA channel, improving both music quality and reliability. The dish and electronics for bringing in the Muzak programs are right at the transmitter, eliminating the need for a long program channel for the SCA feed. A Moseley remote control system brings complete control of the Muzak receiver, as well as of the main transmitter, into the studio.

With year round good weather, the beach area thrives on special events, and so does WNCB. Three Marti remote transmitters and four Shure M-67 remote mixers serve news and programming. Two special remote kits of mics, stands, cables, and tools are kept packed and ready to go. During the world's largest fishing tournament last year, the morning-drive program remoted from an aircraft off shore over the fishing fleet.

But not all beach weather is sunny. During 1979's Hurricane David, WNCB was the only station (of 11 serving the area) to remain on the air throughout the storm. A 60 kW diesel generator supports the studios in



The main console area provides more space for the DJ and for interviews. Revox reel-to-reel is under the hinged lid at left. The five by five-foot carpeted backdrop at rear of console softens control room acoustics noticeably.



One of two almost identical production studios at WNCB. Both are spacious enough to be used for group events as well as routine broadcast production.

Remote start switches for the console equipment are inset the table to prevent accident operation. Lighted pushbuttons for turntables (left) and cart machines (right) are adjacent to their respective spots.

emergency, while a 10 kW gasoline generator covers power outages at the transmitter. An automatic cut over there limits downtime to the cranking of the generators, usually 15 to 20 seconds. The two military-surplus generators, secured for the station by local disaster-preparedness officials, are run up weekly year-round and more often during the hurricane season.

THE MTR-10 SERIES



MTR-10/2 1/4"

MTR-10/4 1/2"

The MTR-10 Series

Bridging the gap between the new technology and old reliability, they're the logical extension of the innovative technology built into our multichannel MTR-90. The new MTR-10 Series gives the professional unprecedented control:

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play, standard alignment level presets, and dual-mode varispeed. Other features include controlled wind, preset master bias switching, three speeds and AES, NAB and IEC selectable. Both include return-to-zero and offer an optional tape locator with ten position memory and tape shuttle.

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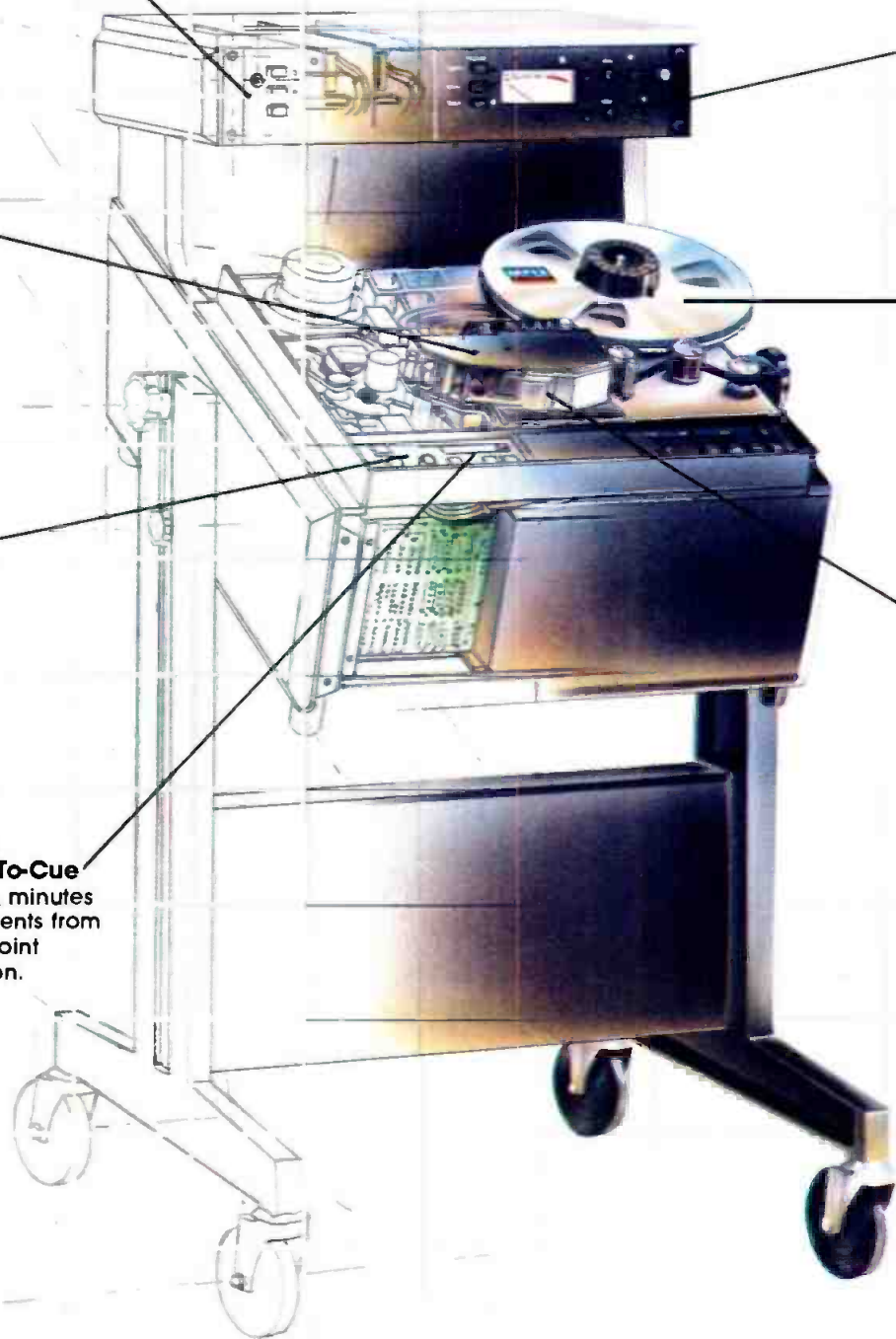
BROADCAST

Serviceability
Major electronic assemblies are plug-in and easily accessible from the front of the recorder, even when rack mounted.

Quick Change Head Assembly
Converts from one to two to four channels, or back quickly with no mechanical re-alignment.

Three Speeds with Variable Speed Operation
Machines are shipped with three speeds, 7½, 15 and 30 in/sec. Field convertible to 3¾, 7½ and 15 in/sec.

Digital Tape Timer with Single-Point Search-To-Cue
For accurate timing in hours, minutes and seconds. Rehearse segments from exactly the same cue point at the touch of a button.



PRECISION

Switchable NAB/IEC Setup

At the flip of a switch, the recorder converts between NAB and IEC setup, including bias and levels as well as equalization curves.

Microprocessor Control

New tape transport design is under the full control of the microprocessor system, ensuring safe, gentle and foolproof tape handling.

Designed For Editing

Head assembly is wide open for unequalled accessibility. Optional tape cutter and marker available. Dump edit and hands-on-reel editing modes included.

Introducing the Ampex ATR-800. More features than ever before in a broadcast audio recorder.

In a busy broadcast environment, every minute counts. That's why Ampex designed the ATR-800 with saving time in mind. With more standard features than any other recorder in its class, the ATR-800 is the perfect choice for the special audio needs of the broadcast professional. And recording studio engineers? Take note.

The ATR-800 was designed for tape editing. The wide open head assembly gives you fast, accurate tape access. Recessed head gate and transport controls prevent tape snag. And a continuously variable shuttle, under control of the microprocessor, regulates tape speed and direction.

You'll find hands-on-reel and tape dump edit modes included for convenience. The standard cue amplifier will allow monitoring of any or all channels, right at the machine while it's being cued. And with flexible transport controls, you can now mount them either to the left or to the right side of the machine —whichever way

you choose.

But the features don't stop there. You get a quick change head assembly, a digital tape timer with single-point search-to-cue, three tape speeds with built-in vari-speed, fader start for remote control from a console, simple service access from the front of the recorder and much, much more. All standard. And with a switchable NAB/IEC setup, the ATR-800 is a true international recorder in every sense of the word.

Look around, no other audio recorder has the number of standard features that meet the needs of the broadcast professional like the Ampex ATR-800. It's shipped

for rack mount installation, and it's available in console and pedestal versions as well. Look into the ATR-800. Call your Ampex dealer or write Ampex Corporation, Audio-Video Systems Division, 401 Broadway, Redwood City, CA 94063 (415) 367-2011. Sales, spares and service worldwide.



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KOJM-AM/ KPQX-FM



*Havre, MT
Metro Rank:
Below 172*

*AM/FM ENTRY Submitted by
Lee Barrett, Chief Engineer*

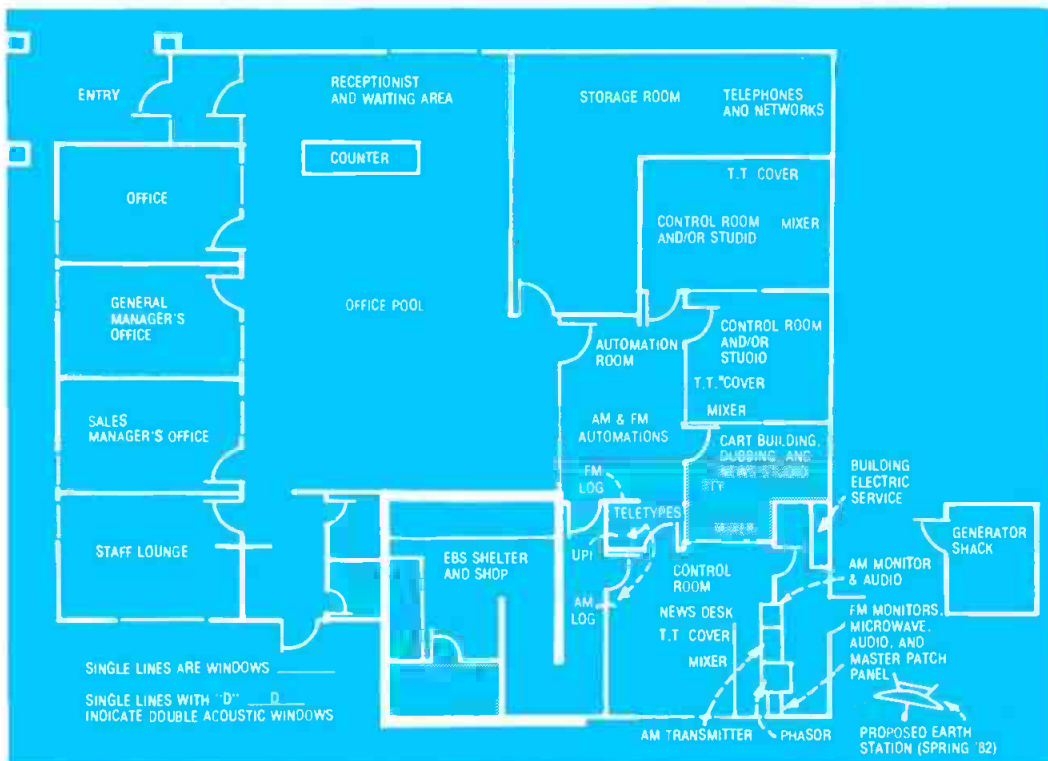
MONTANA IS OFTEN CALLED the "Big Sky Country." With an area of 147,138 square miles occupied by only a million people, there is a lot of sky to cover for any broadcast station. KOJM-AM and KPQX-FM are located in Havre, MT (pop. 15,000), 30 miles south of the Canadian line in the center of the state. Both are owned by North Montana Broadcasters, Inc.

KOJM is a 1000 W AM station, operating on 610 kHz with a two-tower array. The old but dependable Collins 20V-2 is driven by a DAP. KPQX operates on 92.5 MHz as a class C FM. The studios are microwave-linked to the Collins 831G-1 transmitter on Bowery Peak, 25 miles south of Havre. An Optimod-FM processes the FM audio. With the transmitter on a 6300-foot mountain that erupts

out of the 2300-foot prairie, the 94,000 W ERP from this site results in a phenomenal 100-mile radius of FM coverage.

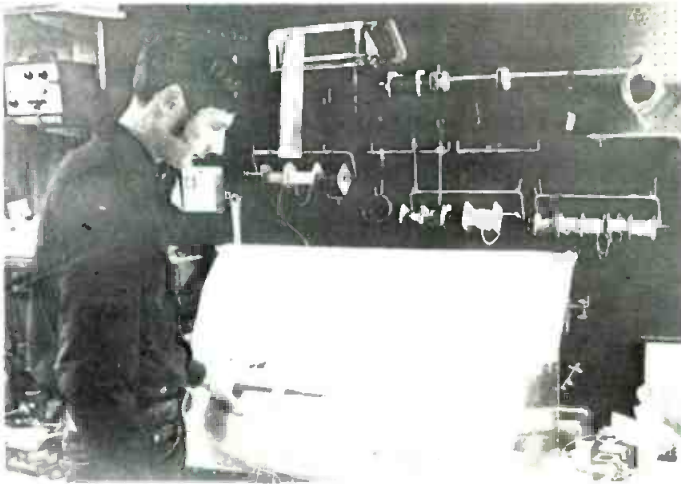
These Havre facilities serve north central Montana, with the nearest other broadcast station more than 100 miles away. Programming to everyone in this region, from local college professors to the farmer/rancher is difficult. Our efforts in that area include hourly local newscasts in conjunction with UPI audio, play-by-play of sporting events, and public affairs programming aimed at our diverse audience. Presently, KOJM features Adult Contemporary while KPQX is Country. Both studios rely on material from Concept Productions.

Being the only station in such a large area is a challenge

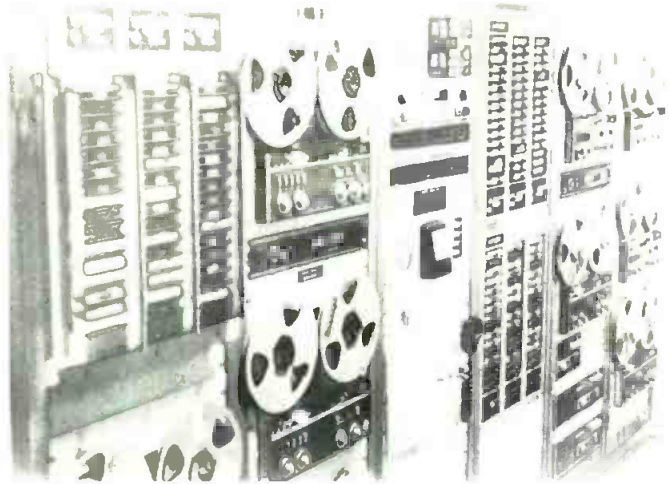


The control head above the 10-channel, modular Collins mixer was designed and constructed to allow the operator to monitor operations of either KOJM-AM or KPQX-FM and to instantly access either

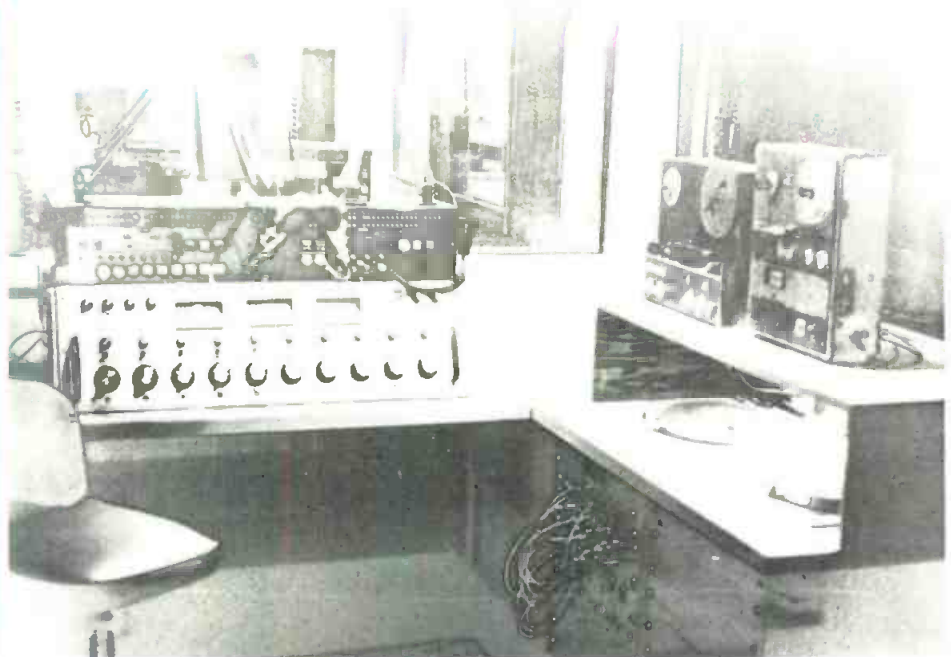
With a small staff and a diverse audience, the physical layout of KOJM/KPQX is set up for maximum observation with minimal separation of engineering components



Engineer Bob Yaw (top) checks the dimensions of a new six-channel modular mixer currently under construction for the newsroom. In addition to their metalworking expertise, the engineering staff of KOJM-AM and KPQX-FM also design and lay out their own circuits for much of the equipment in the stations



The automation room (top, right) contains two Shafer 902 1/2 automation systems. The left system is used for KPQX-FM while the right system sources audio for KOJM-AM



The control heads (to right) display station alarms, automation functions, time, and temperature. A 60-minute production timer is also included, as well as provisions to access either station live in an instant

in terms of keeping morale high and operations efficient. We constantly evaluate new ideas to combat any form of stagnation. In the engineering area, for example, KOJM and KPQX employ two full-timers. Over the last year and a half, the studio and transmitter facilities have been updated through their efforts.

The studio operation is centered around two Schafer 902 1/2 automation systems. The "showcase"-styled automation room prohibited the operator from observing from the studios the sequence of events occurring in the automation units. Initially, the engineering staff designed a remote automation display head to straddle or bolt to the top of each studio mixer. Following a few "skull" sessions, however, they decided instead to incorporate as many station functions as possible into a control head and add a new, individual studio patch panel. The resulting capabilities exceeded our expectations.

The control head extends all of the automation displays (logical and multiplexed); extends the necessary automation controls; features a 60-minute production/ramp timer and a battery-powered quartz clock; digitally displays the outdoor temperature reading from the microprocessor

weather station; presents audio and visual alarm indications from "in-house" designed sensors for EBS test received, dead-air, off-the-air, on-the-air, phase reversal, teletype alarm, and voice track/music synchronization; contains seven telephone "line-hold" switches; and allows control of either of two remote pickup two-way systems. Additionally, a single pushbutton for each station may be depressed to preempt automated operation and bring the studio on line. Operation on either or both stations with any or all studios is a simple procedure.

Ninety pairs of shielded control cable and 38 shielded pairs of audio cable are routed between studios and bused out in matrix fashion for ease of troubleshooting. Commonly used audio pairs are hardwired into the studio mixers, while the remaining lines appear at the individual studio patch panels, along with several mixer inputs.

A "party line" intercom allows use of the left studio microphone and cue amplifier on each mixer for inter-studio communications. When a studio is on-the-air, the intercom feature is muted.

Here are some other features of the station of which we are proud:

The last quarter-mile up to the KPQX-FM transmitter site requires a four-wheel-drive vehicle in the summertime. The site is located on Bowery Peak, 26 miles south of Havre, and boasts a 100-mile radius in coverage area



- Circuit designs and printed circuit boards are developed and laid out here. Modules and interface circuit boards have been developed for mixers, the automations, modulation monitors, special transmitter functions, and more.
- We have just successfully tested the prototype of a syllabic, voice-controlled switching system that eliminates hybrids from the telephone lines.
- A remote control circuit-breaker system enhances the FM transmitter site control, particularly in the winter months, when the site is nearly inaccessible.
- FM antenna deicer burns are controlled by transmitter PA parameters rather than by outdoor temperature with another unique circuit. The result is longer deicer element life.
- The remote pickup system located at the FM transmitter site is radio-controlled, requiring an FCC waiver. We incorporated telemetry into the battery-powered UHF link to help troubleshoot mountaintop problems when the power is out. This system allows us to originate remote feeds up to 80 miles away.
- A Touch-Tone system is partially installed, at this writing, to allow the operator to program the sequential automation memories from any studio.

As this article illustrates, the staff of KOJM and KPQX is working hard to be competitive, even if it is only with ourselves.

KWK-AM/ KWK-FM



St. Louis, MO
Metro Rank: 12

AM/FM ENTRY
Submitted by Andy Butler,
Director of Technical Operations

WHEN WE COMPLETED the construction of the KWK-AM studios and transmitter sites in October, 1978 (see Best Station Contest, AM/Radio Section, December, 1978), we had no idea how soon we would be back in the construction business. In March, 1979, Doubleday Broadcasting concluded the purchase of WGNU-FM and we began planning to integrate the FM and AM operations. Our format on FM would be essentially the same as AM — a well-researched, carefully controlled album-oriented rock with heavy emphasis on musically related promotions and specials. This would require the same high-quality gear that we had used for the AM and some

care to see that the two facilities could coexist peacefully. We would also have to build a new FM transmitter site since the previous owner of the FM was retaining his AM operation.

Our first consideration was the studio complex. Although the existing in-line arrangement, with direct vision from the AM control room through to the newsroom and then the production room, had proven convenient for the AM-only era, it posed several problems for dual station operation. Our primary objective in planning the new control room core was to allow for smooth, interrelated operation of the two radio stations with a minimum of confusion and maximum comfort level for the talent involved. This operation requires a good line of sight between all of the on-air rooms, and also requires complete sound isolation between the rooms. After discarding a number of preliminary sketches, we settled on a triangular scheme with AM and FM control rooms on the "legs" of the triangle and the newsroom at its center. Since we installed the newsroom gear at an angle, the newsperson can easily face either control room from the operating position, while the two control room operators are able to see each other without leaving their seats.

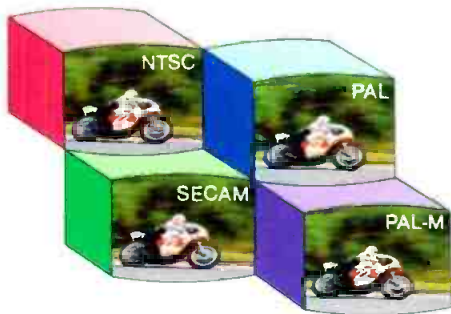
This "L" arrangement also allowed us to position a triangular "wire-room" adjacent to the control rooms so that all input and output cabling could be brought out of the studios to an easily accessible interconnect point. The old in-line AM control room, newsroom, and production room have been refitted to become two production rooms

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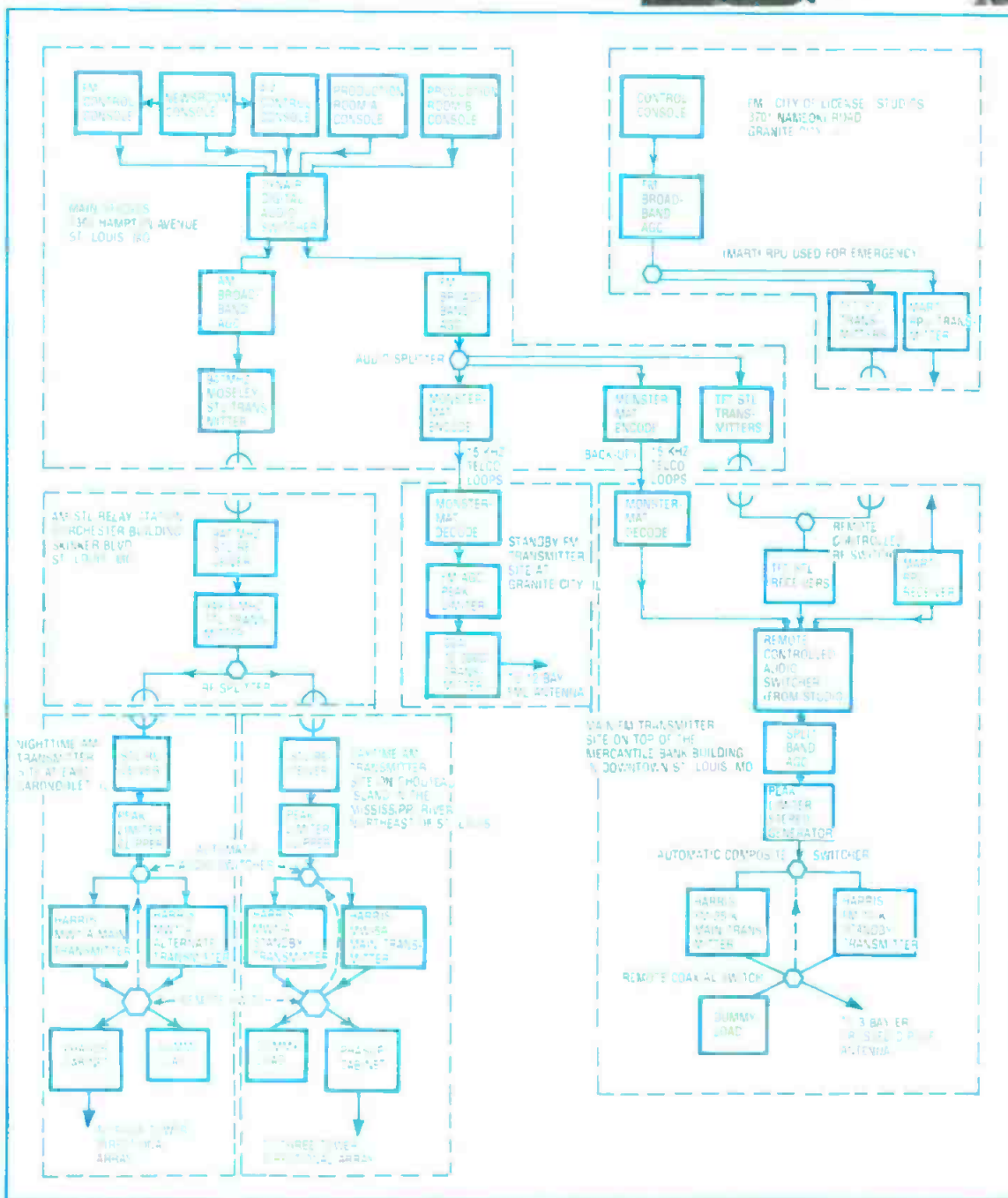
So choose Scotch 479 for your one-inch video production. You'll find it looks good from repeated mastering all the way through post production. And we've seen the test results to prove it.



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separated by a conference room/client demo room/public affairs studio.

In spite of careful attention to traditional soundproofing in the old studio complex, we were plagued by inter-studio leakage and outside sound intrusion. Rather than risk a repeat, we engaged Engineering Dynamics, Inc. to assist with the acoustical design. Dan Jordan and his crew made a series of on-site measurements that included both outside ambient noise levels and in-studio sound pressure measurements. They quickly concluded that the primary problem would be eliminating studio-to-studio leakage from the monitor speakers that, they found, were run in excess of 100 dB sound pressure level during most jock shifts.



KWK-FM control room, pictured above, features a remote-controlled McCurdy SS8600 console, ITC Series 99 cart machines, and Panasonic Technics SP 10 MKII turntables

KWK AM/FM's four transmitter sites are spread out over the St. Louis area, two are in neighboring Illinois. The system includes two different studio locations and a separate STL relay station. The diagram traces the linkages

To contain these levels, it was decided to use a floating box concept for the studios. Each studio is a cube built on a five-inch-thick slab of concrete floating on a grid of acoustic insulators. The studio walls are double thicknesses of wallboard surfaced with a special fiberglass sound soak board, and the ceilings are double thicknesses of wallboard suspended from spring hangers. They are isolated from each other by a third double-faced wallboard wall with fiberglass sound batts stuffed in both of the open areas.

Interconnect wiring is routed to the common wire room through floor-mounted conduiting that minimizes the sound leakage as it penetrates the room structure. HVAC ducts are routed to minimize inter-studio coupling and include sound attenuators to further block leakage.

The final result of the project is a complex where two disk jockeys can each play separate programming at ear-bleeding levels in the two control rooms while the news director does a dry voice public affairs program in the center studio — and all of them can work in comfort without interfering with each other.

In selecting our new transmitter site, our goal was to provide the best possible coverage to our entire metropolitan area, while escaping the unreliable support services (ac power failure, low quality phone loops, etc.) that had plagued the existing site. This pointed toward downtown St. Louis. A lease was negotiated with the Mercantile Bank Building, a modern, 36-story office complex that dominates the downtown landscape. A problem arose when we attempted to plan the equipment placement in the existing rooftop equipment penthouse. It was impossible to arrive at a reasonable layout without interfering with other building services. This was solved by "hanging" the transmitter room 10 feet in the air in the middle of the existing 40-foot high room. Our room was designed to hold the main and standby transmitter plus their support gear and the station two-way equipment, while allowing easy access for maintenance. It is operated as a sealed cube, with the transmitter drawing its cooling air from the room and exhausting into the room. The room air then circulates through a refrigeration system to remove the heat. This allows us to operate with good reliability in the midst of heavy air pollution, maintaining an equipment-pleasing 80 degrees at 50 percent relative humidity year-round.

To maximize signal coverage without resorting to chancy directionalization tricks, we chose a newly designed crossed-dipole antenna system from Electronics Research Inc. In order to accommodate the antenna and its 132-foot steel support pole, the structural engineers at Ellisor and Tanner decreed that the top section of the building must be reinforced. This was done by erecting a special "I" beam framework above the roof and tying it to the building structural steel after that steel was reinforced. All of the building materials for the project, as well as the Harris FM 25K transmitter and other gear, had to be air-lifted to the rooftop by helicopter. The helicopter also served as a "skyhook" crane to set the steel beams and antenna pole. Despite the complications in construction, the new transmitter site has proven its worth with significantly improved reception quality in all of the market and an excellent reliability record.



The engineering shop is located along the row of production studios providing quick access for maintenance. Jim Jackson, assistant director of technical operation, works on an FM limiter



News director Ed Spencer works in the center news studio with full view of the AM (right window) and FM (left window) control rooms



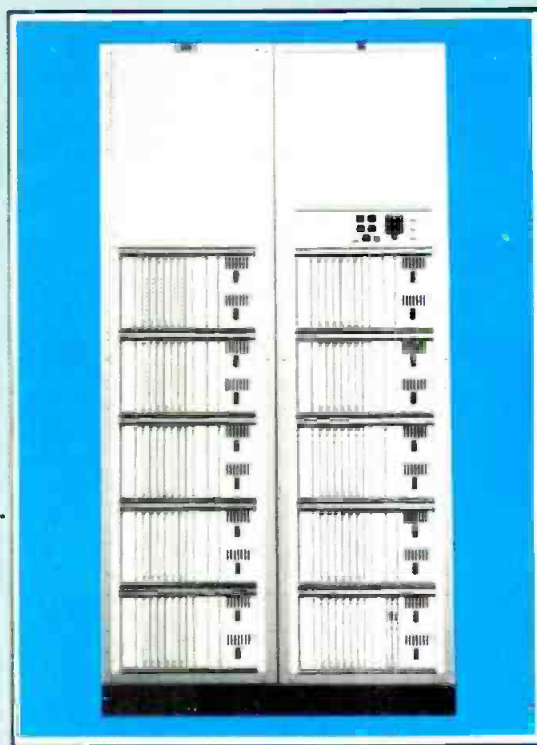
Each of the five production studios is equipped with a McCurdy SS8600 console, Technics SP 10 MKII turntables, ITC Series 99 cart machines, Onkyo cassette deck, MCI JH 110B reel-to-reel tape decks, Crown D300 monitor amplifier, Crown D60 headphone amplifier, and Beyer M-500 mics



In order to install the new KWK-FM transmitter on top of the Mercantile Bank Building in downtown St. Louis, it was necessary to use a helicopter in both equipment delivery and facility construction

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Following is a summary of test data compiled from the final test measurements made on a 50-input by 50-output audio/video switching matrix sold to Capital Cities' Houston outlet KTRK-TV. We invite comparison of these test results with our published specs and with the published specs of routing switchers manufactured by others.



50 x 50 KTRK MATRIX

KTRK TEST DATA BREAKDOWN

	Worst	Mean	95th Percentile	Published Spec
VIDEO				
Crosstalk @ 3.58 MHz	-63	71.1	65	-60 dB
Diff Gain .....	.05	.042	.05	0.1%
Diff Phase	0.1	.056	.08	0.12°
Diff Delay	1.0	.89	.95	± 1°
Freq Response .....	.05	.02	.05	± .12 dB
Hum & Noise	-79	-84.6	-80	-75 dB
Gain Uniformity, All Paths .....	.017	.006	.017	± .07 dB
Input Return Loss	46	51.2	46	40 dB
Output Return Loss	45	48.8	46	40 dB
AUDIO				
Crosstalk @ 20 KHz	-80	-84.7	-81	-75 dB
Hum & Noise	-88	-91.8	-90	-85 dBm
THD 30 Hz - 20 KHz				
@ 0 dBm .....	.017	.011	.015	0.1%
@ +24 dBm .....	.24	.13	.17	0.5%
Gain Uniformity, All Paths	0.1	.044	.09	0.2 dB
Common Mode Rejection	80	88.3	83	70 dB

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WWSA-AM/ WCHY-FM



Savannah, GA
Metro Rank: 140

AM/FM ENTRY

Submitted by
Martin Foglia, Chief Engineer

WWSA/WCHY IS A MEMBER of the Bluegrass Broadcasting family of radio stations. WWSA-AM operates on 1290 kHz at a power of 5 kW non-directional daytime and 5 kW directional night time. Its format is Contemporary MOR, with an emphasis on news, sports, and information. WCHY-FM, 94.1 MHz at 100 kW, is formatted Modern Country.

We took over WTOG AM/FM (one of the oldest established broadcast companies in the state) on October 1, 1979. Since we owned the land at the AM transmitter site, we decided to build new studio facilities there. Design of the new building began with some basic ideas, and we strived to maintain those ideas throughout the entire design period.

The first priority was to keep a healthy and uncluttered appearance. This would not only avoid the untidy look common among so many radio stations, but would also aid in the prevention of disorganized thought processes. Secondly, to give everyone plenty of room without being wasteful, we located each person's work area close to the

part of the building associated with that person's function. Our third consideration was ease of engineering. Each production or control room was laid out with complete versatility in mind. Every piece of equipment in the building is completely and easily accessible to the engineering staff.

WWSA/WCHY's building design combines aesthetics and practicality. The building is basically "L"-shaped, but the single-story structure appears enormous when viewed from the road. In reality, it encompasses approximately 8400 square feet. All the offices are aligned on the outermost perimeter, most visible from the street, which features floor-to-ceiling glass panels. The remaining exterior is covered in cypress siding.

Naturally, to go along with the new building we purchased all new equipment. This included our new Harris MW5-A transmitter installed in January, 1980. The old 1946 model RCA 5 kW transmitter, in use when we took over, was whipped into shape and acts as a very dependable auxiliary. Every functional room in the building contains one or more custom-designed cabinet fixture, with all the equipment conveniently located in each fixture.

In the news office, a custom wall-to-wall combo desk/



Each of the production studios (top right) contains Harris consoles, cart machines and turntables, Electro Sound reel-to-reels (one- and two-track), and JVC stereo cassette recorders

AM control (far right) features a Harris stereo console, two three-deck cart machines, turntables, and ITC-750 reel-to-reel machines

WCHY-FM (right) is controlled with a Harris 9000 automation system. There is also a small but well-equipped studio for live assist during morning drive



A view of the studio configurations, starting with production studio B, production A, and finally, the AM control room



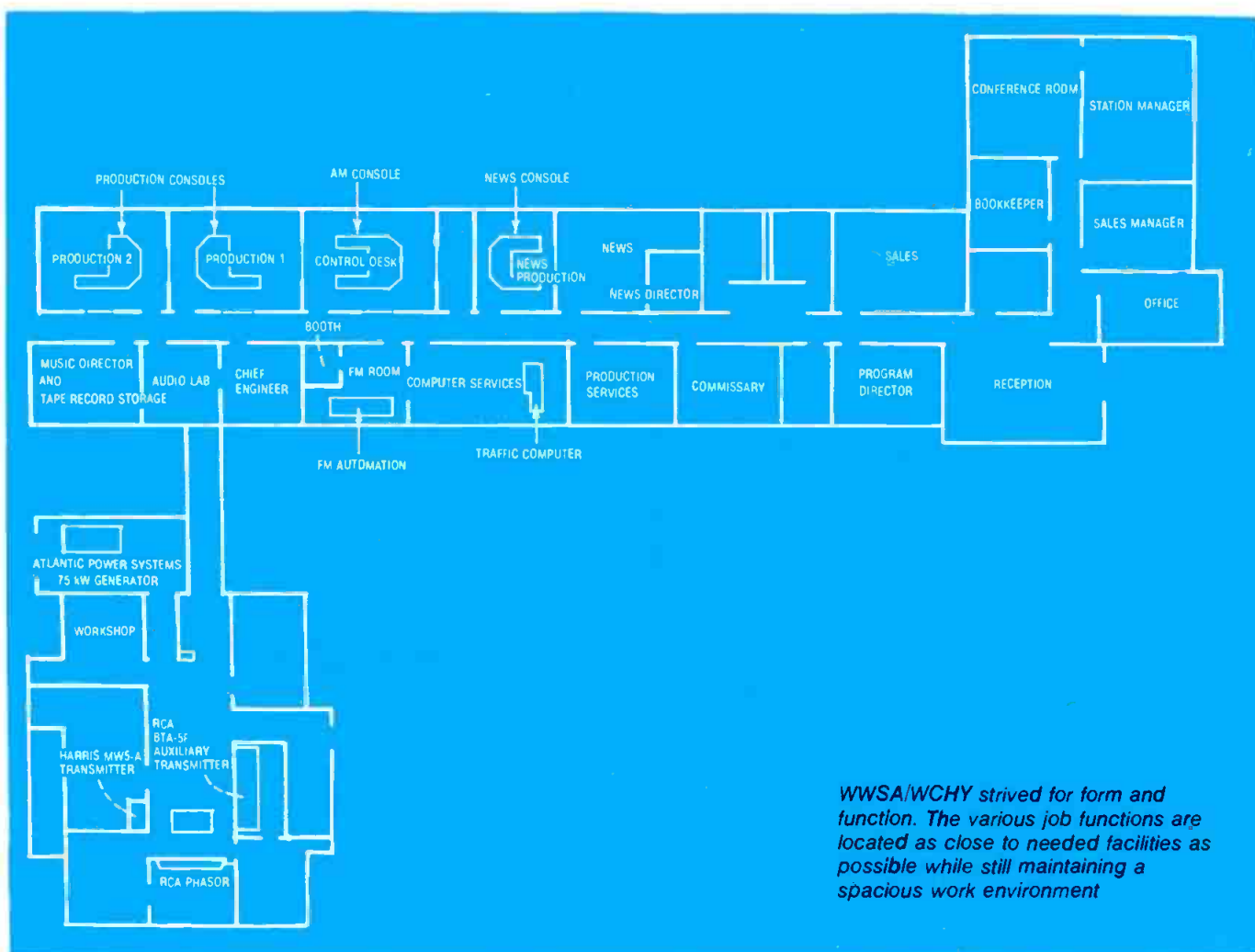
The AM control room monitor and control devices include an Orban Optimod AM, Harris AM 90 modulation monitor, Crown AM/FM house monitor amplifier, and remote metering and control



typewriter station seats four reporters very comfortably. This room also contains an ITC-750 recorder/reproducer for recording phone reports or network feeds in the event all production rooms are occupied. Adjoining the news office is news production, with a brand-new Harris Gateway 80 console, two Harris record/playback machines, and one Harris three-deck cart machine conveniently styled into a custom cabinet fixture. An ITC-750 reel-to-reel deck and Technics cassette recorder are also conveniently located here, completely remote-controllable from where the operator sits.

Directly across the hall is computer services, with WCHY-FM control immediately next door. Control boasts a new Harris 9000 automation system. To complete the versatility of this station is a compact soundproof on-air booth, complete with new Harris turntables, three-deck cart machine, and stereo 80 console. An ITC-750 stereo reel-to-reel allows this room to double as an auxiliary production room. It's main function is for on-air live assist during morning drive. The operator, who can be observed from the hallway, can observe the automation system and control terminal through the opposing window.

Directly across the hall from FM is probably the most impressive room of all, the AM control room. The operator faces the news production operator as well as all



WWSA/WCHY strived for form and function. The various job functions are located as close to needed facilities as possible while still maintaining a spacious work environment

the monitoring and control devices incorporated into the two equipment racks, one on either side of the view window between news and AM control. Our AM rack (to the left of the window) contains an Orban Optimod AM, Harris AM 90 modulation monitor, Orban monitor equalizer, Crown AM/FM house monitor amplifier, AM remote metering and control, and all the patch panels. The left-hand rack is devoted to FM, with its own Moseley remote control system and STL transmitters, McMartin air monitors, Orban Optimod FM, and standby audio chain. A large custom fixture displays a Harris stereo console and two three-deck cart machines in front. To the left are two turntables, above which live two ITC-750 reel-to-reels, fitted into an extended portion of the cabinet. All telephone lights and equipment controls are conveniently remoted for ease of operation.

Directly in line with AM control are production A and production B. Both these rooms are identical, featuring the same Harris control console as AM, four Harris record/playback cart machines, and two Harris turntables. To complete the production capabilities, each room has one full-track and one two-track Electro Sound 505 reel-to-reel machine in its own modular cabinet. These rooms also feature stereo graphic equalizers, JVC stereo cassette

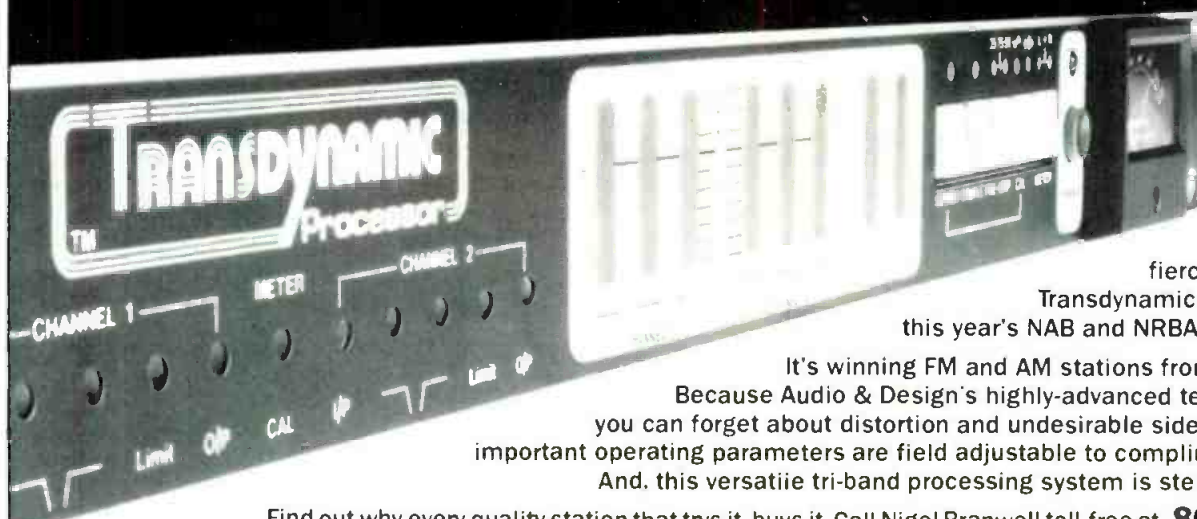
recorders, a 25 Hz generator and filter, and two DAPs for audio processing. Though the rooms laid out identically face each other, the most impressive view of the functional aspects of the building is from production B. Sitting at the control board of this room, one can view all the other control rooms and get an idea of the planning and detail work that was necessary to make this plant as versatile and efficient as it is.

Across from the production rooms is the audio lab, complete with custom cabinetry to keep it neat at all times. One must pass through this room to reach the original transmitter building, now attached to the new building by a six-foot-wide hallway and disguised to match the rest of the building. This 1200-square-foot area houses both AM transmitters and a 75 kW emergency generator system that can run the entire plant if necessary.

This superior equipment and the conscientious efforts of each individual involved have combined to give us what we consider one of the cleanest signals on either AM or FM, in the country! Clearly, this contemporary merger of design and function does more than just impress our visitors. It inspires each employee to strive for his or her utmost potential, and helps spark a healthy spirit of competition within the industry.

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TAX TIPS FOR STATIONS: NEW RULES FOR THE REHAB TAX CREDIT

By Mark E. Battersby

Important changes have been made in the law allowing tax credits for rehabilitating old buildings into studios, making this approach to station design even more attractive.

THE REVENUE ACT of 1978 created a 10 percent investment tax credit for the costs incurred in rehabilitating radio and TV buildings that were at least 20 years old. This rehab tax credit, along with the accelerated writeoffs available for fixing up any building designated as a certified historic structure, was intended to provide an incentive for broadcasters and businesses to rehabilitate and modernize existing structures and, legislators hoped, to promote greater economic stability in deteriorating urban areas.

With the passage of the Economic Recovery Act of 1981, however, the relative advantage for rehabilitating buildings would have been somewhat diminished as a result of the new rapid depreciation periods for buildings. Fortunately, our lawmakers included new rehab incentives in the new law that significantly increase the available tax credit, slightly simplify the rules, and make the rehab tax credit more attractive to both those who own their own buildings and those who lease their facilities.

As mentioned, under the old tax law, a 10 percent investment tax credit was available for expenditures made to rehabilitate any building that was at least 20 years old. That credit was a nonrefundable credit that did not reduce the book value or "basis" of the property for depreciation purposes. It was a straight financial incentive.

In lieu of the investment tax credit for rehabilitation expenditures, a station could choose to amortize the rehab



Mark Battersby, is a tax and financial consultant with offices in Ardmore, PA, who specializes in broadcast operations.

Tax Tips For Stations

expenditures over a 60-month period if the building qualified as a certified historic structure. The Economic Recovery Act, however, changes both of these incentives.

The new rules replace the 10 percent regular investment tax credit and the 60-month amortization provision for certified historic rehabilitation expenditures with a simple three-tier investment credit that takes effect after January 1, 1982. This credit will be 15 percent for structures at least 30 years old, 20 percent for structures at least 40 years old, and 25 percent for certified historic structures. Unfortunately, no tax credit is allowed for the rehabilitation or renovation of a building less than 30 years old.

As is the case under the present tax law, next year's rehab tax credits — at least the 15 and 20 percent credits — are limited to nonresidential buildings. The 25 percent tax credit for certified historic buildings, however, is available for both nonresidential and residential buildings. But remember: these credits are available only if the broadcaster elects to use straight-line depreciation for the rehabilitation expenditures.


Naturally, not every repair or improvement will qualify for the rehab tax credit. In the words of our lawmakers, there must be a "substantial rehabilitation" of the building in order to qualify for the credit.

The law states that a building has been substantially rehabilitated if (1) the rehabilitation expenditures during the 24-month period ending on the last day of the taxable year exceed the greater of (a) the adjusted basis of the property as of the first day of the 24-month period or (b)



\$5000; or (2) if it meets the requirements under (1) by substituting 60 months for 24 months. The 60-month alternative is available only if there is a written set of architectural plans and specifications for all phases of the rehabilitation and a reasonable expectation that all phases of the rehabilitation will be completed.

In addition to the necessity of exceeding \$5000 (or the building's book value, whichever is lower), there is another recently added drawback to the new rehab tax credit: for rehabilitation, the basis of the underlying prop-




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Tax Tips For Stations

erty must be reduced by the amount of the credit claimed. Unfortunately, this means that when the rehab tax credit is claimed, the amount available for depreciation purposes must be reduced by a corresponding amount. Of course, if there is a subsequent recapture of the credit, the resulting increase in tax will increase the basis of the station building immediately before the recapture event.

Recapture, or the repayment of previously claimed tax deductions or credits, formerly involved recomputing the investment credit or deductions that would have been allowed had the actual useful life been known when the asset was first placed in service. Under the new rules, if a tax credit is claimed for rehabilitation expenditures and written off over a five-year period, no credit could be claimed if the property were disposed of during the first year. Eighty percent of the claimed credit would be recaptured or paid back if the asset were disposed of in the second year, 60 percent in the third year, 40 percent in the fourth year, and only 20 percent if the asset were disposed of before the end of the fifth year.

The principal restrictions of the old rehab tax credit rules have been carried over almost intact and will continue to apply when the new rules take effect after December 31, 1981. For example, the cost of acquiring a building or even acquiring an interest in a building are still not considered to be qualifying expenditures for the purposes of the rehab tax credit. Nor are the costs incurred for renovating or fixing up other facilities such as parking lots.

As before, if more than 25 percent of a building's walls are replaced, our lawmakers don't consider the work to be rehabilitation. This limitation does not apply in those situations where existing walls are merely covered with new siding or where remodeling results in more than a 25 percent increase in the floor space of your station building.

Generally, rehabilitation is defined to include renovation, reconstruction, or restoration that helps extend the useful life of your broadcast facility, upgrades its usefulness, or aids in preserving it. Normally, of course, preserving or extending the useful life of any asset is considered to be a capital expenditure and not eligible even for the regular investment tax credit.

In other words, expenses that otherwise might be labeled as capital expenditures, such as those for the replacement of plumbing, electrical wiring, flooring, permanent interior partitions or walls, and the heating or air conditioning systems (including temperature control systems), all can qualify for the tax credit if incurred in connection with a *bona fide* rehabilitation project.

Buildings and their components still are specifically excluded from the benefits of the investment tax credit (with only minor exceptions) even under the liberal new tax rules. Ordinarily, the only way that these costs may be recovered is through depreciation deductions utilizing the new 15-year period for buildings. Even the component depreciation employed by some taxpayers in the past to speed up write-offs has been eliminated. But the rehab tax credit has been increased even more.

Unlike most of our tax credits, however, when the rehab tax credit is claimed for anything other than certified

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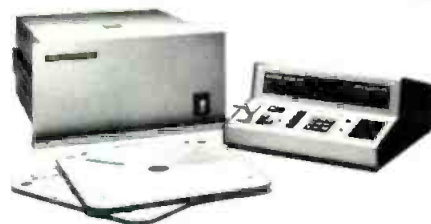


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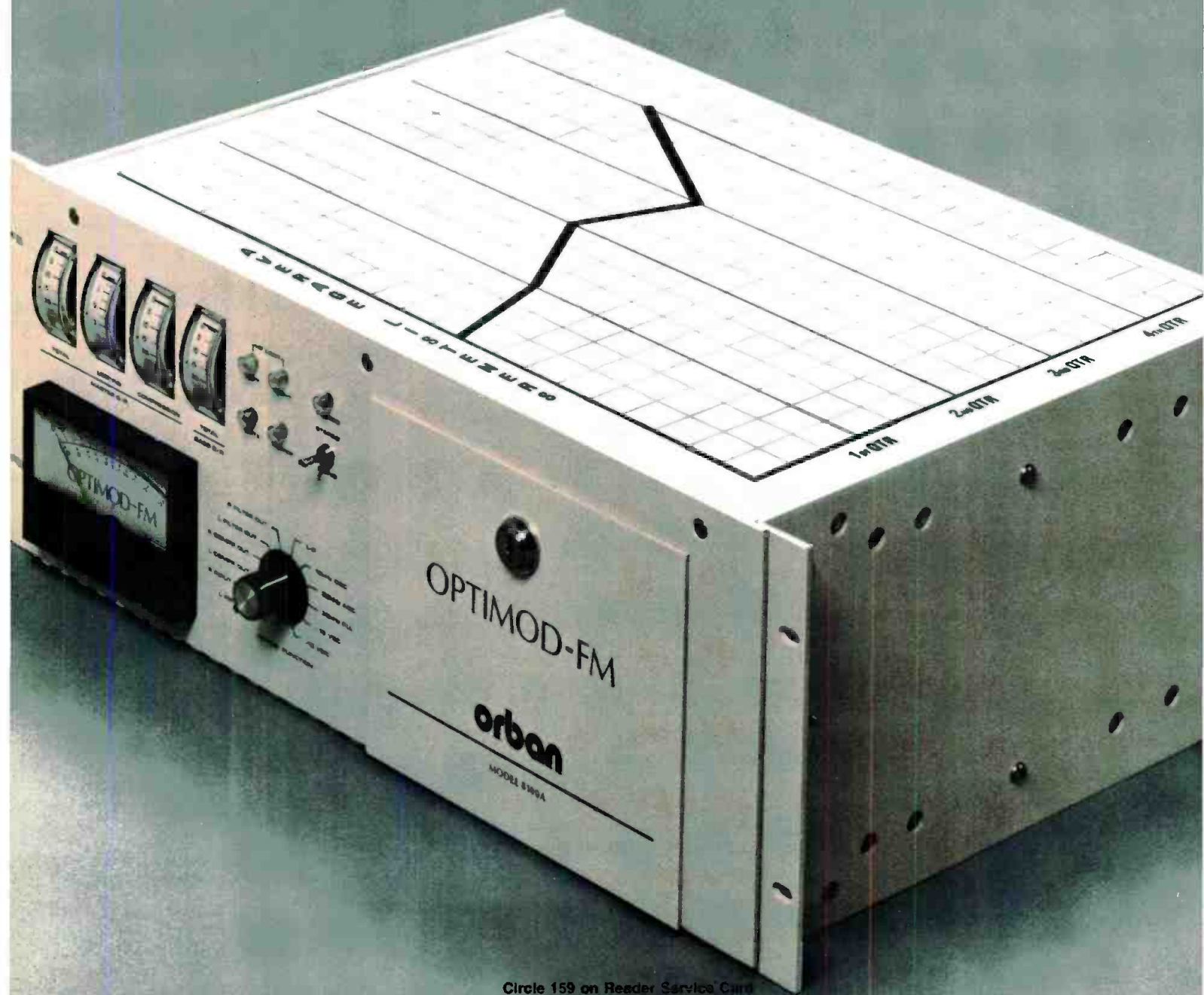
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Tax Tips For Stations

historic renovations, the amount of the expenditure available for depreciation must be reduced along with your tax bill. The minimum \$5000 in expenditures qualifying for a 20 percent tax credit will reduce your overall tax bill by \$1000. At the same time, though, only \$4000 of rehabilitation expenses will be available for annual depreciation allowances.

As an example, let us assume a \$10,000 taxable income, taxed at an effective rate of 30 percent; a \$3000 annual tax bill for five years equals \$15,000. You spend \$5000 to rehabilitate your old transmitter building, entitling you to an immediate tax credit of \$1000. In addition, this year you add a depreciation deduction of \$800 (\$5000 rehab costs less \$1000 tax credit claimed, divided by five years). This means an immediate reduction of your tax bill of \$1240 in the first year and a \$2200 savings over five years. Your \$5000 renovation actually cost you only \$2800 out-of-pocket, the balance being assumed by the government in the form of tax credits and depreciation allowances.

When it comes to the 25 percent tax credit for certified historic rehabilitation, no credit will be permitted unless the approval for the rehabilitation has been obtained from the Secretary of the Interior. This rule also applies to buildings that are located in a registered historic district, unless the broadcaster has obtained certification that the building is not of historic significance. As a penalty, anyone who rehabilitates a certified historic structure without the prior approval of the Secretary of the Interior

will be limited to straight-line depreciation.

The former tax law permitted a five-year write-off of expenditures for rehabilitating certified historic structure — if incurred prior to June 15, 1981. The new tax law provisions generally don't apply to expenditures made before January 1, 1982. Fortunately, a special rule allows a tax credit under our old rules for buildings that are more than 20 but less than 30 years old — if the rehabilitation began before January 1, 1982.

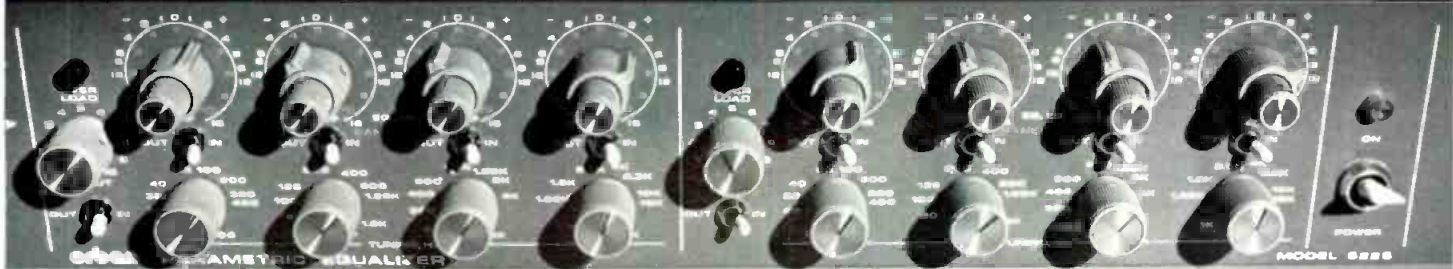
An important point to be remembered is that neither the old nor the new rules require you actually to own the building that is being rehabilitated in order to claim the investment tax credit. Since the credit is based on "rehab" expenditures, even tenants are eligible.

Rehabilitation or renovation can also include expenditures for the removal of existing interior walls, plumbing, electrical wiring, flooring, etc., as long as they are connected with the actual rehabilitation of a qualifying building. They must, of course, be treated as capital expenditures and have a useful life of at least five years.

If you should get carried away and wind up tearing down a building that has been designated as "historic," you obviously cannot claim a rehabilitation tax credit. In fact, demolition costs must be capitalized as a part of the basis of the land and, thus, may not be deducted as a loss or even depreciated.

While not everyone can afford to take advantage of these tax incentives for rehabilitating property, the newly increased tax credits combined with existing deductions for interest expenses should make fixing up your station more affordable. Just remember that the new higher tax credits don't apply until after January 1, 1982. **BM/E**

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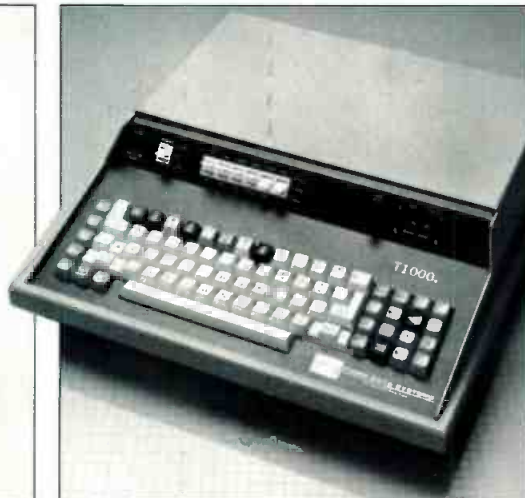
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SMPTE Show Highlights Industry in Transition

THE TELEVISION industry in a state of flux and transition was the dominant theme that emerged at the 123rd SMPTE Conference and Equipment Exhibit. High-definition television, digital video standards, the coming interface between film and television technologies — all were subjects of intense discussion as the industry mapped its future course.

In this preliminary report, *BM/E* offers an extremely abbreviated account of what happened in Los Angeles October 25 to 30. An extensive report on the show — both the technical sessions and major equipment highlights — will appear here next month.

Worldwide digital standards set

Culminating a year and a half of intense effort by various SMPTE engineering study groups, the CCIR has adopted what will become, by the end of its February Plenary Session, a worldwide standard for digital television. The revelations were made in a paper presented by William Connolly of CBS, chairman of the SMPTE Study Group on Digital Recording.

Known as Recommendation AA-11 on digital coding in television studio applications, the CCIR standard involves a component coding scheme at the 13.5 MHz sampling rate with the luminance/R-Y/B-Y ratio established as 4/2/2. Other sampling ratios have been left open for use by individual world broadcasters, provided that they remain simple derivatives of the basic 4/2/2 scheme.

Since the same sampling rate will apply to both domestic production and international program distribution, this means that the world now has a single digital standard. Though the 13.5 MHz sampling frequency was not the ideal choice of either NTSC or PAL countries, it is easily adaptable to both 525- and 625-line formats, yielding 720 active luminance samples per line and 360 active color difference samples per line in either standard. The eight bits-per-

Editor's Note: A full report on the SMPTE Technical Conference and Equipment Exhibit will appear in the January issue.



A satellite dish outside the Century Plaza Hotel during Compact Video's Imagevision HDTV transmission demonstration



The Harris Epic editor finds new applications with film material that has been transferred to videotape for rapid post-production. The system uses Gray Engineering field-updatable time code reader/generators

sample linear PCM sampling yields a 216 Mbits/sec data rate.

Broadcasters and manufacturers at the show were highly complimentary of the SMPTE's efforts on behalf of American broadcasters, who were in danger of being forgotten in the race of the worldwide broadcasting community to set a common standard. Most agreed, however, that the work had only just begun and that the actual application of the new standard to pieces of equipment would take some time.

This is especially true of a digital videotape recorder, but it applies equally to such equipment as digital TBCs and frame synchronizers. Manufacturers have been left on their own to decide which approach each will take to converting current composite sampling and processing systems into the new component scheme. Most feel a small "standards converter" black box will suffice with no significant increase in the complexity or cost of existing digital systems.

HDTV pointed at "moving target"

For many at the SMPTE show, high-definition television (HDTV) was the major topic of interest. The interest was both in the production of high-resolution images in the camera — what some have called electronic cinematography — and in the distribution of high-quality signals, perhaps by satellite, to home receivers and "mini movie theaters."

As Donald Fink, chairman of the SMPTE study group on HDTV, pointed out, however, the attempt by HDTV systems to approximate the image quality of 35 mm motion picture film is "like trying to hit a moving target." This was in response to a tremendous resurgence of interest in film origination evident at the show — sparked by Kodak's introduction of a brand-new 250 ASA negative film, 5293/7293, capable of being force-processed to 1000 ASA with virtually no image degradation. The announcement came like a breath of fresh air to the Hollywood film community which was beginning to believe that film was,

indeed, a dead medium.

Both of the cameras described as being for "electronic cinematography" were on display: the Ikegami EC-35 at the show itself, and the Panavision/CEI Panacam in a hospitality suite. But despite popular confusion, neither is capable of delivering more than an extremely good NTSC signal (both around 57 dB with resolutions approaching 625 lines); in fact, the Panacam's electronics strongly resemble the CEI 310, while the EC-35 is said to virtually duplicate the performance specs of the HL-79DAL. Their advantage is to offer the film-oriented producer a more familiar way of working



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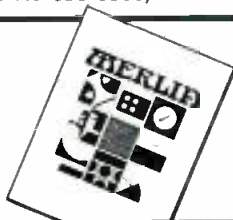
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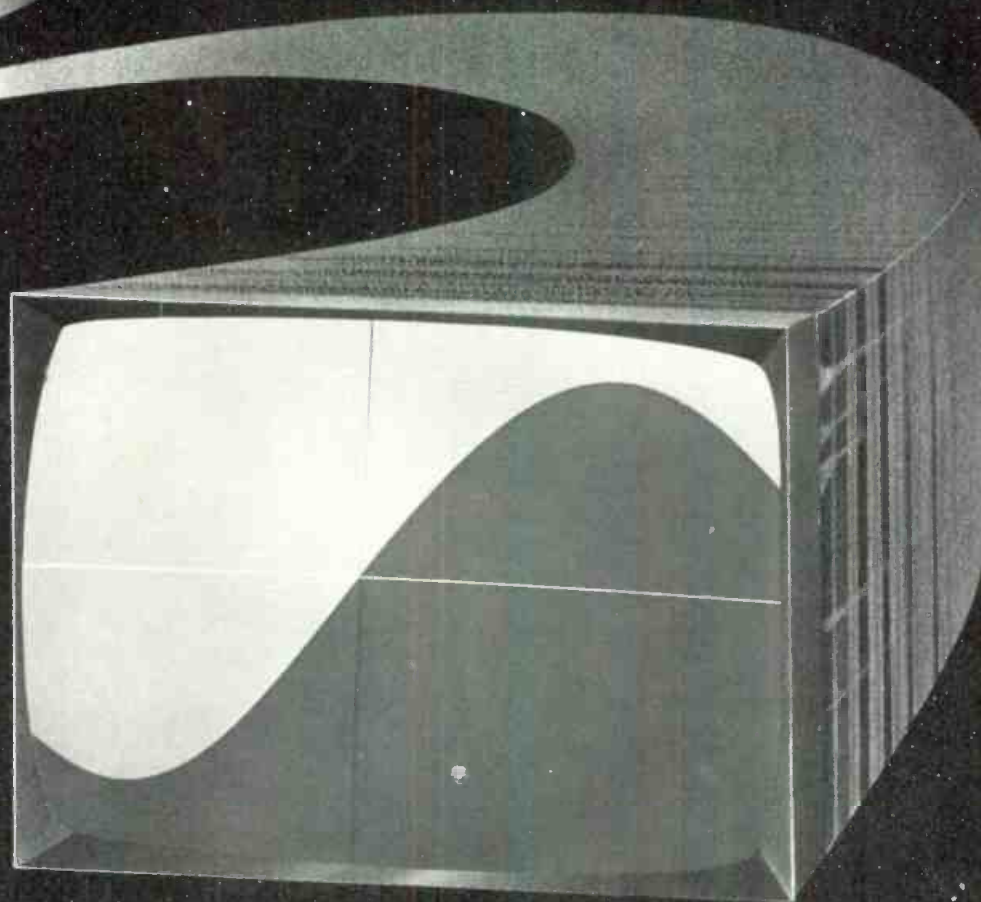
Ikegami's EC-35 camera provides extremely high-quality NTSC signals for applications such as TV commercials and program production; it is not, as some had expected, a camera designed for HDTV

in video, including film-style lenses (a Canon 5:1 zoom in the case of the EC-35, and a standard set of Panavision lenses in the case of the Panacam). The Sony/NHK 1125-line system, unveiled at the SMPTE Winter Conference last year in San Francisco and championed by Joseph Flaherty of CBS and film director Francis Ford Coppola, among others, was not on view.

Drawing an enthusiastic response from attendees, however, was the Imagevision high-resolution system from Compact Video. Utilizing a newly-developed format called PAL/AF (Phase Alternating Lines/Alternating Fields), the system is, effectively, "double PAL." With the phase quadrature encoding method, a full 655 lines of resolution can be achieved within a standard 10 MHz bandwidth — using existing or easily modified equipment.

During the demonstrations — held both during the SMPTE technical sessions and also at Compact's newly-constructed Burbank facilities — audiences were presented first with a 35 mm film print of a Western scene, then a Merlin-modified 10MHz Fernseh Type B tape of the same scene, and finally the same signals relayed through a standard RCA satellite transponder; again, the 10 MHz signal could be handled by all components within the system. Another highly-touted feature of the Imagevision process is its interchang-

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bility between 50 field and 24 frame operation, making it ideal for the transmission of feature films that have been prepared as standard film products.

The marriage of film and tape

The interface of film and television technology was on everyone's minds, both during the technical sessions and on the exhibit floor. For some, it was seen as "the last gasp of the film industry to find a way of surviving in the

increasingly video-oriented production environment." But for others it represented a merging of techniques, with both media growing from the experience.

Video-assisted film editing is definitely growing in popularity, with CMX's FLM-1 microprocessor-controlled film editor leading the way. Also involved in this development are manufacturers of sprocketed audio systems, such as Multi-Track Magnetics and WRE, who are using SMPTE time code to address, control, and interlock their systems with video recorders.

The real impetus toward the marriage, however, has come from the

manufacturers of video editing systems, for whom the production of material on film and then its transfer to videotape for editing has opened up several new markets. Harris (using Gray Engineering time code systems) and Convergence are among those most actively involved.

Telecine manufacturers, too, were present at the show in increasing numbers, exhibiting all the brand-new systems such as the Fernseh CCD unit, the Rank Cintel flying spot scanner, and RCA's newly refined TK-29 — a standard three-tube system, as is Ikegami's. Not present was the Marconi telecine, which was promised for the NAB show.

For some broadcasters, this attention to film may seem unimportant; but the interface between film and television can have important ramifications for the industry even on the most local level because of commercials production.

Single-piece systems evolve

Still another major theme in evidence was the question of single-piece camera/VCRs, first introduced at last year's NAB. Sony had its Betacam on the exhibit floor — a working model weighing 17 pounds, with a one-hour battery and 10:1 Fujinon or Angenieux lens. Sony revealed that it has "locked in" on a two-channel, two-headed



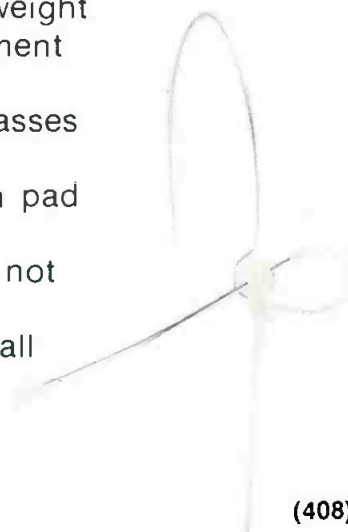
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NEWS FEATURE

(luminance and chrominance) recording format for its Beta-format cassette. Also shown was a fully developed editing recorder for the half-inch cassettes, interfaced with any editing system.

The Hawkeye was shown in RCA's hospitality suite, largely unchanged from its appearances at NAB and RTNDA. RCA seems to have settled on a three-channel recording format (along with the Panasonic "B Camera," which was also displayed), though RCA may still have some surprises at NAB. The RCA system, too, features a full complement of editing decks, players, etc., and can be interfaced with existing equipment.

In general, the movement towards single-piece camera/VCR packages appears to be gaining ground; even Ikegami showed its HL-83 with an on-board VCR — the quarter-inch cassette originally developed by Technicolor. Broadcasters appear interested in the new offerings, sensing a substantial operating advantage to be gained by single-person crews. But all the advantages may be lost if signal quality cannot be maintained or if the units become simply too heavy to hold for long periods: with separate camera and re-



Demonstration of Sony's new editing system showing complete interfascibility of BVU-800 deck (right) with new Betacam 1/2-inch player (left)

recorder, one always has the option of putting the VCR on the ground. By NAB, however, it should become clear which systems will actually become marketable products.

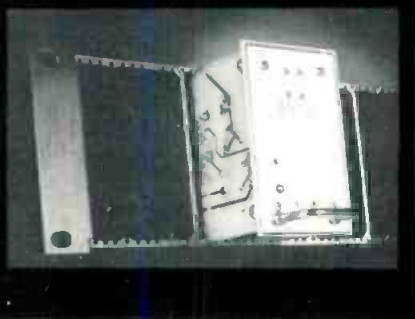
Show a complete success

This report is, as mentioned, only a preliminary rundown of major highlights of the show; the complete report will appear here next month. Suffice it

to say, however, that no matter what the details, this year's SMPTE show was a complete success. An equipment exhibit that seemed to have just enough new products to hold attention without being overbearing, together with technical sessions that got down to the business at hand without wasting time on tutorials, is a formula which the Society should study closely for future years.

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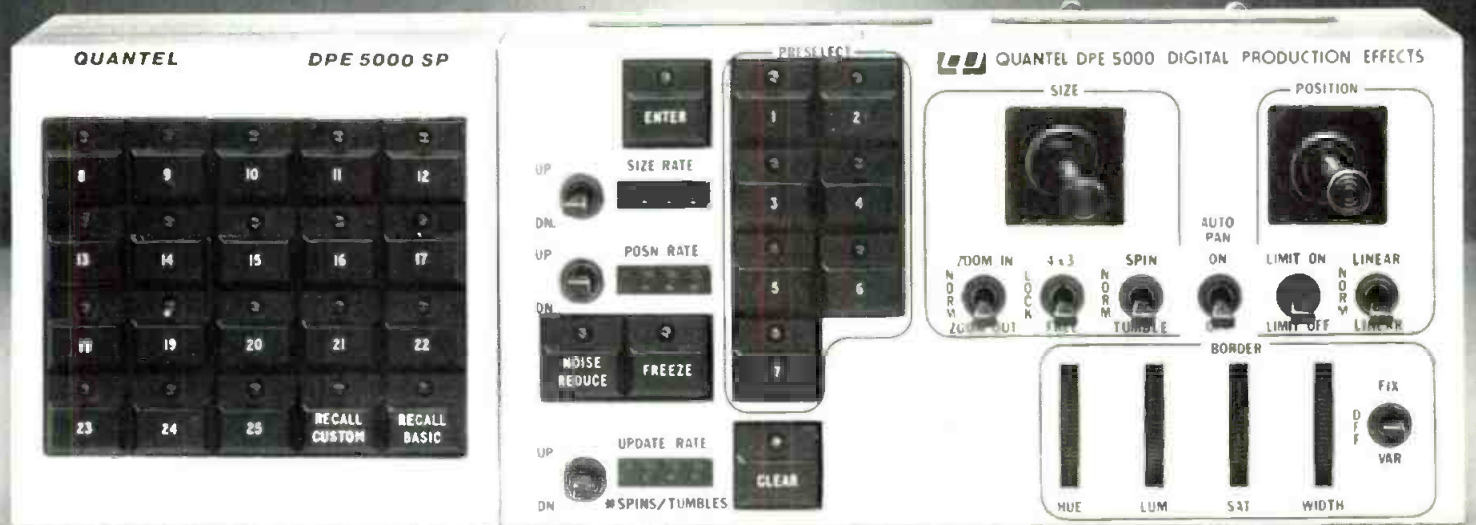


Nady Low-Noise circuitry is covered by U.S. Patent 4,215,431.

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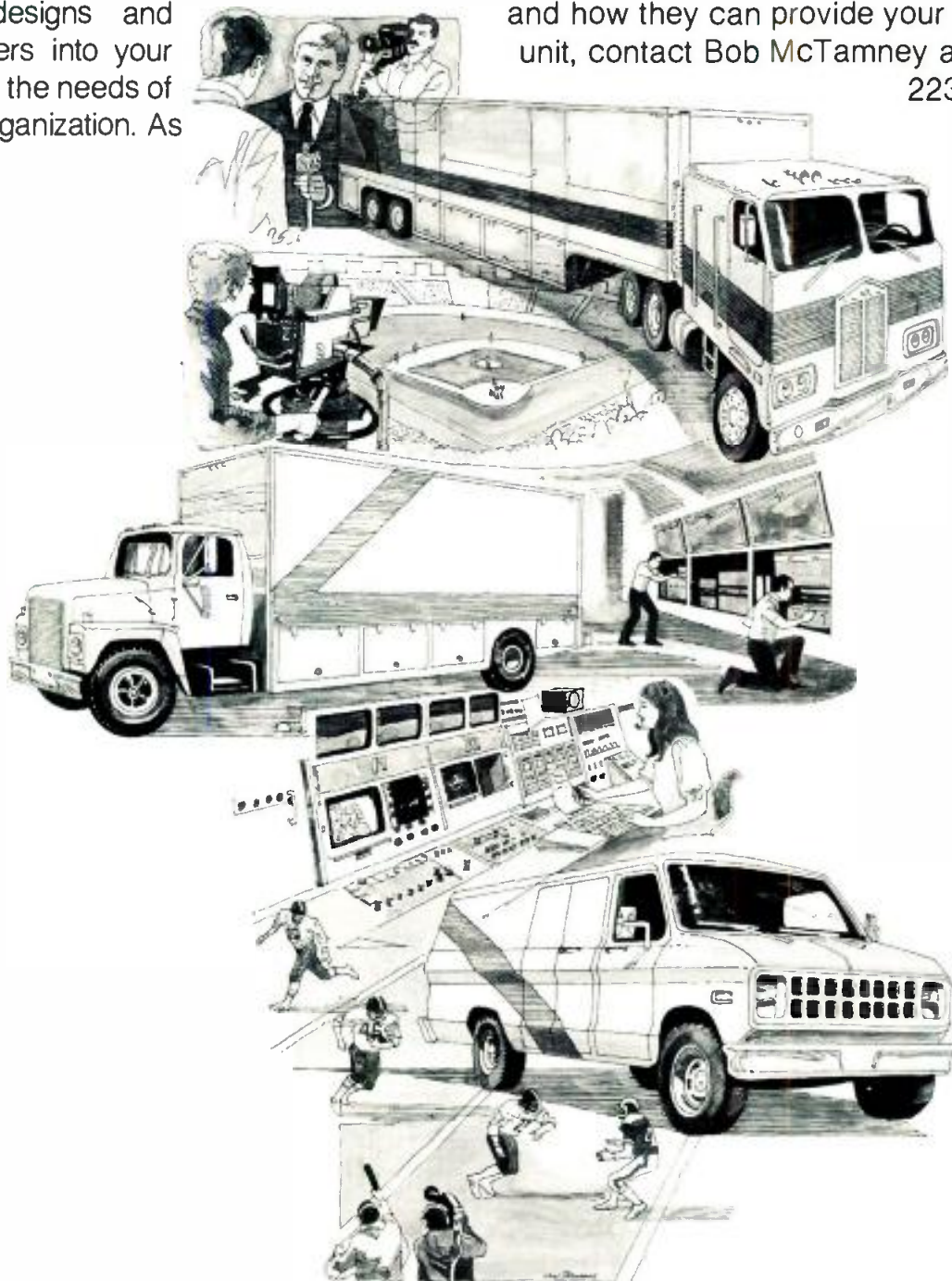
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INTERPRETING THE **FCC** RULES & REGULATIONS

The Fairness Doctrine: Section 315's Other Responsibility

By Lee G. Lovett; Lovett, Hennessey, Stambler & Siebert, P.C., Washington, D.C.

AS WE INDICATED in this column last month (see *BM/E*, Nov., pg. 127), in this issue we will discuss the Fairness Doctrine. FCC chairman Mark Fowler has included the Fairness Doctrine among those rules and policies which the FCC may seek to either modify or eliminate.

The Commission included a request for repeal of Section 315 of the Communications Act, as amended, in the legislative package recently submitted to Congress. Adoption of the FCC suggestions would result in elimination of the statutory justification for the Fairness Doctrine.

The Fairness Doctrine is an FCC policy which you as broadcasters confront every day. Since the issue will be discussed in Congress in the near future, you should be familiar with some of the rationale underlying the policy of the Fairness Doctrine. We will also briefly review the responsibilities of the individual broadcasters under the

Fairness Doctrine.

The statute

As noted above, Section 315 of the Communications Act outlines the policy known as the Fairness Doctrine.¹ The sum and substance of the Fairness Doctrine is that each broadcaster must provide reasonable opportunities for discussion of controversial and important issues in his community. The statute also extends the Fairness Doctrine to cable operators.²

Background of the Fairness Doctrine

As we told you last month in a discussion of the historical development of Section 315, Congress determined to regulate the distribution of radio frequencies. This resulted in the creation of the Federal Communications Commission. Over the years, the courts have repeatedly upheld the constitutionality of the regulation of broadcasting and have said specifically that it does not violate the First Amendment interests of broadcasters.³

In 1949, four years after the *NBC* decision, the FCC set forth the policy that has come to be known as the Fairness Doctrine in its *Report on Editorializing*.⁴ In the initial *Report*, the Commission endorsed the position of the U.S.

¹47 USC § 315 (a) (1976). This statute reads as follows: "... nothing in [this subsection] shall be construed as relieving broadcasters in connection with the presentation of newscasts, news interviews, news documentaries, and on-the-spot coverage of news events, from the obligation imposed upon them under this Act to operate in the public interest and to afford reasonable opportunity for the discussion of conflicting views of issues of public importance."

²47 USC § 315 (e) (1976).

³See *National Broadcasting Co. v. U.S.*, 319 U.S. 190, 63 S. Ct. 997, 87 L. Ed. 1344 (1943) and related cases.

⁴13 FCC 1246 (1949).

FCC Rules & Regulations

Supreme Court in the *NBC* case that the central concern of broadcasting was the public's right to be informed:

It is the right of the public to be informed, rather than any right on the part of the Government, any broadcast licensee or any individual member of the public to broadcast his own particular views on any matter which is the foundation-stone of the American system of broadcasting.⁵

Furthermore, not only must broadcast licensees present contrasting views on public issues, but the Commission determined that this was "within both the spirit and letter of the First Amendment."⁶

Twenty years later, the Supreme Court specifically held that the Fairness Doctrine did not violate the First Amendment rights of broadcasters. In the *Red Lion* case, the Court specifically held that the primary right protected by the First Amendment was the *public's right to be informed*.⁷ More specifically, the Court held that:

There is nothing in the First Amendment which prevents the Government from requiring a licensee to share his frequency with others and to conduct himself as a proxy or fiduciary with obligations to present those views and voices which are representatives of his community and which otherwise, by necessity, would be barred from the airwaves.⁸

The court interpreted an affirmative duty in the First Amendment for broadcasters and sanctioned the government promotion of a system which will ensure that the public will be informed. Thus, the purpose of the Fairness Doctrine is the promotion of an uninhibited marketplace of ideas. The Commission restated this rationale for the

Fairness Doctrine in its 1974 *Fairness Report*.⁹

More recently, the FCC has rejected suggestions to broaden Fairness Doctrine responsibilities into something akin to access channels on cable television. Several groups proposed having the Commission require broadcasters to set aside specific segments of time for use by various groups and spokespersons for those groups to present their ideas on issues of importance in individual communities.

In 1979, the Commission rejected such alternatives.¹⁰ The Commission ruled that the Supreme Court's 1979 *Midwest Video II* case foreclosed placing access requirements "amounting to common carrier obligations on broadcast licensees."¹¹ Therefore, the Commission would not adopt an access proposal as a substitute method for Fairness Doctrine compliance.

The Commission found that in informing the public about important issues, the public interest is better served by the current system in which the licensee, in exercise of its good-faith journalistic discretion, determines what controversial issues of public importance exist, what issues should be covered, and how best to present contrasting viewpoints.

Opponents have long criticized the Fairness Doctrine as

⁵*Id.*, 1249

⁶*Id.*, 1256

⁷*Red Lion Broadcasting Co. v. FCC*, 395 U.S. 367 89 S. Ct. 1974, 23 L. Ed. 2d 371 (1969).

⁸*Id.*, 395 U.S. at 389.

⁹48 FCC 2d 1, 30 RR 2d 1261 (1974).

¹⁰*Report And Order In The Matter Of The Handling of Public Issues Under The Fairness Doctrine And The Public Interest Standard Of The Communications Act*, BC Docket No. 78-60, 74 FCC 2d 163, 46 RR 2d 999 (1979).

¹¹*FCC v. Midwest Video Corporation*, 59 L. Ed. 2d 692 (1979).

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an infringement of First Amendment rights of the press. Until now, the Commission, the courts and the Congress have formed a solid phalanx in upholding the Fairness Doctrine. Chairman Fowler and the Commission majority now number among those who point to technological developments in recent years that have rendered the Fairness Doctrine obsolete. The number of radio and TV stations currently on the air, as well as new technologies like cable television and low-power TV, will do more to ensure a competitive marketplace of ideas than the Fairness Doctrine. However, it remains to be seen if the Congress accepts these arguments.

Fairness Doctrine responsibilities/licensee concerns

The vagueness of Commission requirements for compliance with the Fairness Doctrine tends to make enforcement of this policy difficult for both broadcasters and the FCC. This contrasts with the potentially severe sanctions for violating it: denial of renewal, issuance of cease and desist orders, short-term license renewals.

It is important to note that the Fairness Doctrine applies to *all* programming. In other words, a Commission licensee must not concentrate oversight on any particular program. Rather, the licensee must ensure that its entire component of news, public affairs, and other programming present balanced viewpoints on issues of concern in the community.

Please note that any issue coming under the Fairness Doctrine must be both important *and* controversial in your community before any complaint could be made to the FCC. Moreover, broadcasters are not required to give equal time (as opposed to the situation with candidates for

political office) to spokesmen for opposing views on any particular issue. Rather, broadcasters must provide reasonable opportunities to reply. On the other hand, each broadcaster has the affirmative duty to encourage various viewpoints and issues, including exercising a maximum effort to find spokesmen for positions on important and controversial issues in opposition to any aired on his radio or television station. The general rule to be followed is to give comparable exposure to opposing positions in terms of time, frequency of presentation, and scheduling.

Any complaints by the public concerning the Fairness Doctrine must first be addressed to the individual licensee. In that way, the broadcaster and concerned group or citizen might come to an accommodation before going to the FCC. However, if the complaint does reach the level of the Commission, broadcasters should note that the Commission can only decide whether the licensee acted using its reasonable journalistic discretion. The Commission *cannot* substitute its own judgement for that of the licensee.

Conclusions

The Fairness Doctrine is an attempt to ensure that the public is informed as to all issues of controversy and importance in individual communities. It is a central feature of government regulation of broadcasting. However important it is to the free flow of ideas in the United States, its vagueness makes it problematic for broadcasters. We recommend that you keep apprised of developments in Congress in the near future on this matter and consult your communications counsel on any changes that might develop in the Fairness Doctrine. **BME**

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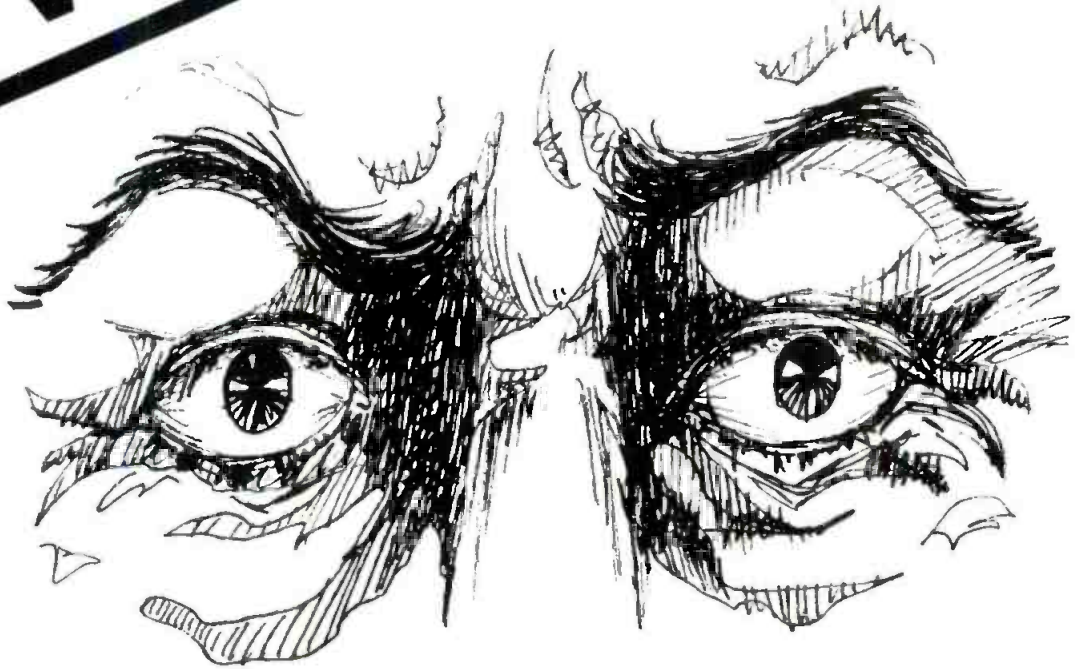
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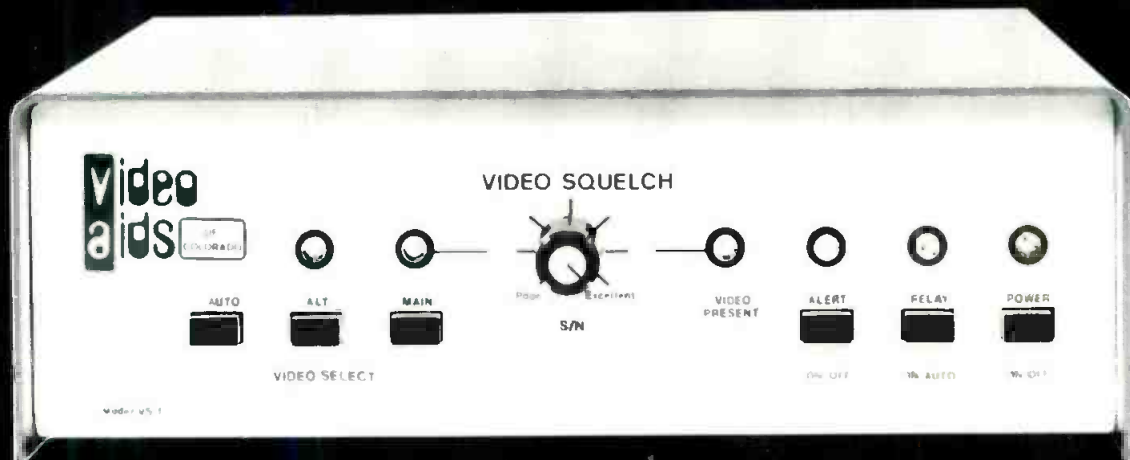
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The New

GREAT IDEA CONTEST

Here's a chance to share your own personal solutions to some of broadcasting's most vexing engineering needs: end-of-tape sensing . . . cart deck synchronization . . . on/off-air indication on the mixing board . . . distributing timing pulses . . . etc.

Each month we will present a specific engineering problem and invite you to submit ideas on how to solve it. Send in descriptions and diagrams of equipment you have already built, or ideas on how you think the problem ought to be solved. *BM/E's* editors will read the entries and select the best for publication — giving readers an opportunity to vote for the idea they consider best.

To attract the most original solutions possible, we will pay \$10 for each entry we print. In addition, the winner of each month's competition — the one voted for most often on our Reader Service Card — will receive an engineering slide rule calculator as a prize.

So put on your thinking cap and submit an answer to either of the problems outlined below. Solutions to Problem 1 must be received by December 30, 1981, and will be printed in the February, 1982, issue. Solutions to Problem 2 must be received by January 15, 1982, and will be printed in the March, 1982, issue.

Problem 1: END-OF-TAPE WARNING

There are many occasions in the use of reel-to-reel tape machines, both on the air and in production, when it is convenient or necessary to give operating personnel a clear warning that a tape on the machine is near its end. Have you a simple, foolproof, inexpensive method?

*Solutions to Problem 1
must be received by
December 30, 1981 and will be printed
in the February, 1982, issue.*

Problem 2: AUTOMATIC RECORDING

Facilities equipped with satellite receiving loops often have incoming feeds on an irregular basis. To avoid having an operator standing by 24 hours a day, is there a device or circuit that will automatically switch on a recorder and at the same time alert a technician that a recording is being made?

*Solutions to Problem 2
must be received by
January 15, 1982 and will be printed
in the March, 1982, issue.*

CONTEST RULES

- 1. How to Enter:** Submit your ideas on how to solve the problems, together with any schematic diagrams, photographs, or other supporting material. Entries should be roughly 500 words long. Mail the entries to *BM/E's* Great Ideas Contest, 295 Madison Avenue, New York, NY 10017. Use the official entry form or a separate piece of paper with your name, station or facility, address, and telephone number.
- 2. Voting and Prizes:** *BM/E's* editors will read all entries and select some for publication; the decision of the editors is final. Those selected for publication will receive a \$10 honorarium. Each month, readers will have an opportunity to vote for the solution they consider the best by using the Reader Service Card. *BM/E* will announce the solution receiving the most votes and will award the winner of each month's competition an engineering slide rule calculator.
- 3. Eligibility:** All station and production facility personnel are eligible to enter solutions based on equipment already built or on ideas of how the problem should be solved. Consultants are welcome to submit ideas if they indicate at which facility the idea is in use. Manufacturers of equipment are not eligible to enter. Those submitting solutions are urged to think through their ideas carefully to be certain ideas conform to FCC specs and are in line with manufacturers' warranty guidelines.

Mail Official Entry Form to:

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295 Madison Avenue, New York, NY 10017

Solution to Problem # _____

Your Name: _____

Title: _____

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

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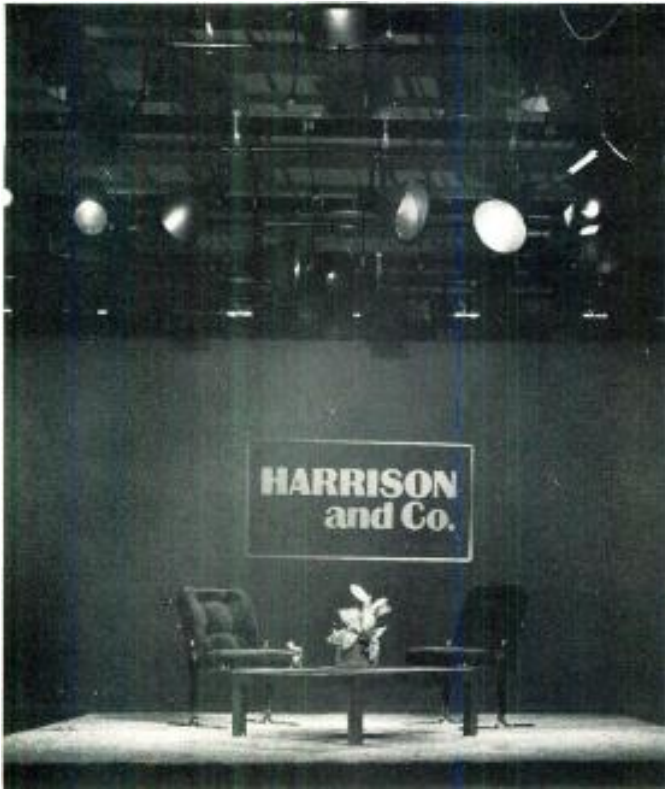


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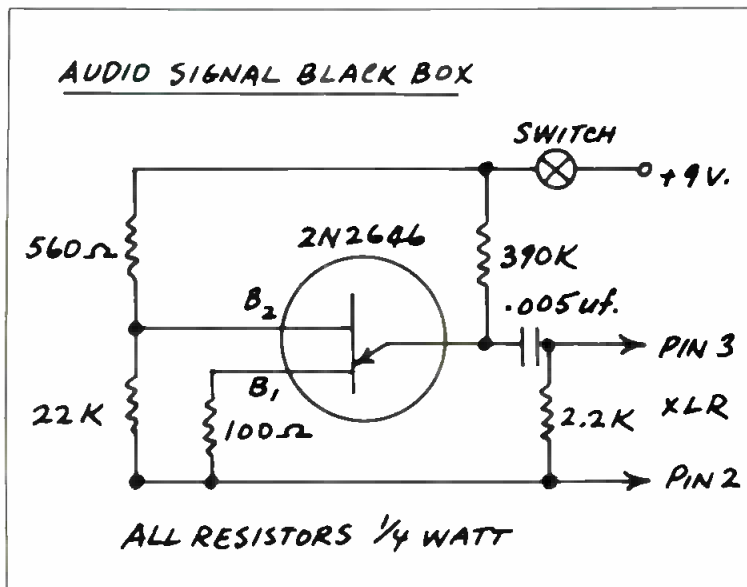
28. Audio Signal Black Box

Donald R. Beckett, Engineer
KBYU-TV/FM, Provo, UT

Problem: To identify all the studio mic lines that were cut during remodeling.

Solution: Build a small audio signal generator that is self-contained and can be plugged into the studio XLR sockets (level is suitable for mic levels or high level lines). Lines can then be found with the aid of a signal tracer or headphones.

Transistor is a 2N2646 unijunction model. All components are mounted in a Shure N3D stylus black box, including the 9V rectangular battery, which is bolted to an XLR-3-12C cannon plug. Any audio line can be checked out or identified by plugging the unit in the audio outlet and flipping on the switch.



RECORD EX

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Audio signal generator diagrammed on previous page is depicted at left and below in completed form



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29. RF Auto-Level Device

Harold A. Stanton, Chief Engineer
WHSY-AM, Hattiesburg, MS

Problem: To correct for variations in sample voltage to AM modulation monitors.

Solution: A large number of AM radio stations utilize modulation monitors that have sensitive RF input circuits, and even though equipped with manual attenuators, are easily over-driven by changes in line voltage, transmitter power change to night and day modes, etc. To correct for these changes, it is necessary to adjust the input attenuators manually.

The described circuit acts as a variable automatic RF leveling device. Since heating is involved, the variation will be to RMS value only and will not distort the reliabil-



Actual unretouched monitor images

The picture quality of $\frac{3}{4}$ " or $\frac{1}{2}$ " VTRs can be improved by RecordEx™, a revolutionary device from Faroudja Laboratories. RecordEx pre-processes video prior to recording to boost, and therefore preserves in play-back, picture details normally lost in color-under formats.

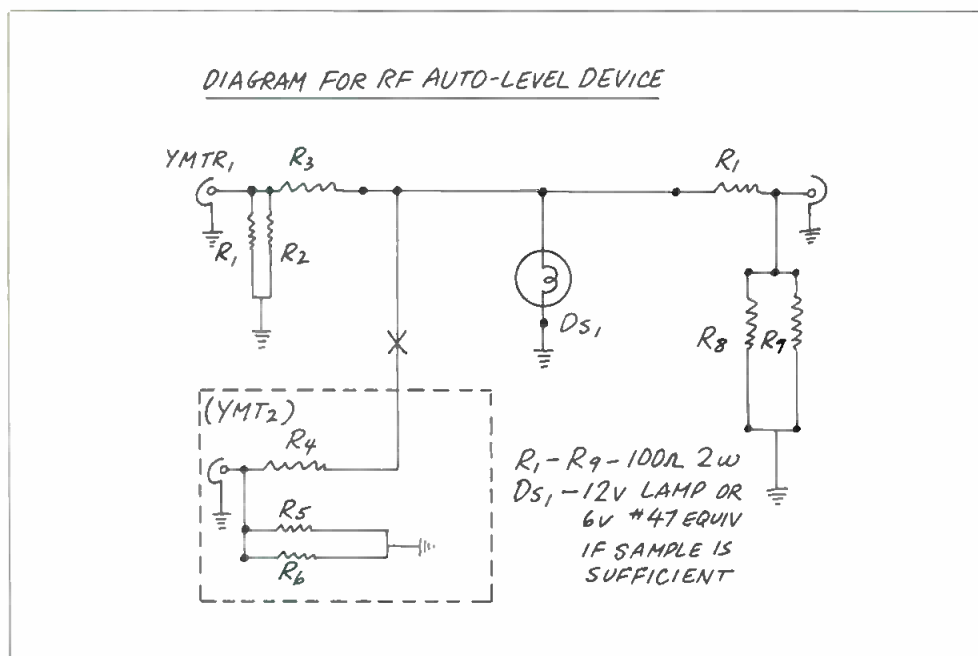
Color-under pictures pre-processed through RecordEx look natural, life-like and rich in all the nuances and detail that previously only film and expensive tape formats could preserve. Broadcasters like the elimination of the "cartoon" effect or plastic appearance caused by loss of details. Because large outlines are not modified by RecordEx, the picture does not look enhanced. It looks as if it came from a better VTR.

RecordEx is an add-on device available in a portable battery-operated configuration. Connections are easy and no adjustment is required in daily use. An AC adapter is available.

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ity of the peak indicating devices. Simply adjust your RF sample for a small glow on low power and the lamp will become more brilliant during high power operation.

The circuit shows an optional input that may be used if an auxiliary transmitter is installed. This may be deleted or added later if necessary.

30. Tape Recorder Automation

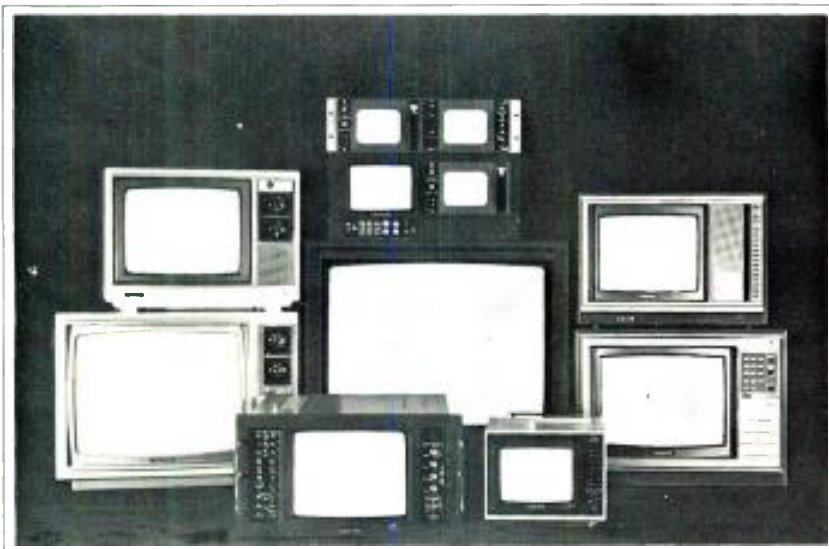
William Howe, Chief Engineer
WEIV, Ithaca, NY

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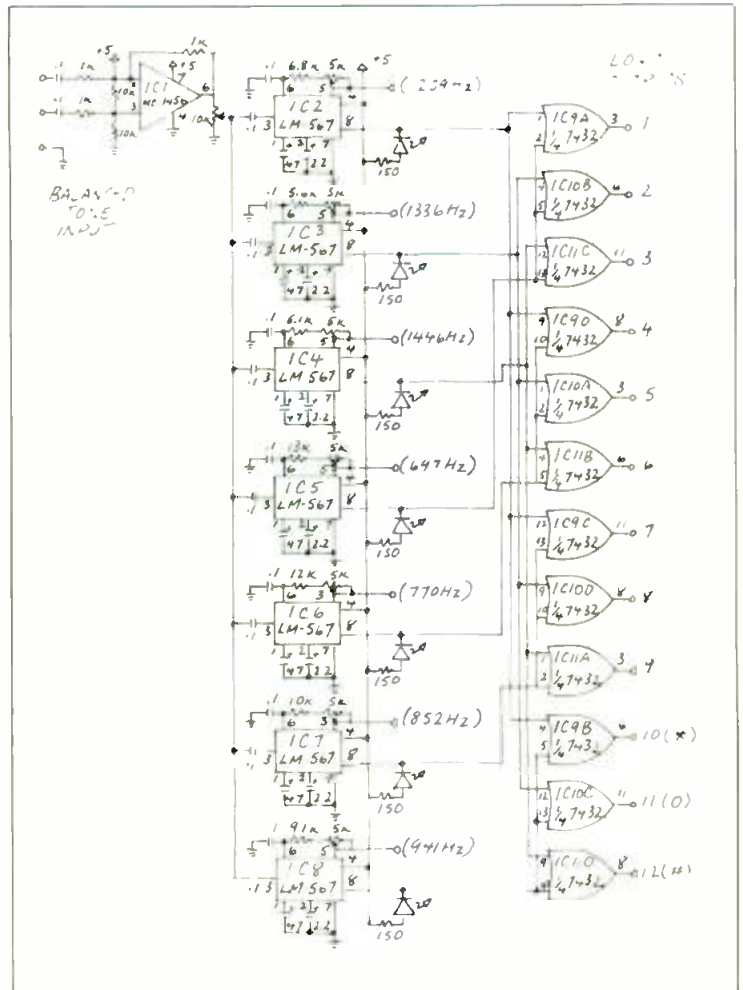
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way to automate a tape recorder to record UPI features that were to be broadcast later.

Solution: I decided to decode the Touch-Tones® that precede and follow each feature to start and stop the tape machine. Since different tones are used for different features, all that was required was to match the proper Touch-Tone number for the start and stop of the particular feature. This information was easily obtained from UPI. Available Touch-Tone decoders were very expensive, so I decided to build my own.

The LM-567 tone decoder phase-locked loop proved reliable in detecting individual tones and, when put into a combiner gate network, allowed me to select the proper two-tone combination. The frequency can be set by using a counter on the test point on pin 5 of the LM-567 and adjusting the 5K trimmer to the desired frequency or by feeding the proper frequency into the input and adjusting the trimmer until pin 8 of the LM-567 goes low. An inexpensive Touch-Tone module for generating the tones is available at Radio Shack. The LED from pin 8 to the +5 is optional, but very helpful in checking circuit operation. The capacitor from pin 1 to ground can be increased or decreased to give any time delay desired for immunity to false triggering. The 47 μ F capacitor gives about 0.7 seconds delay, which works well with the one-second tones used on some UPI features. Only the tone decoder is shown as the interface to the recorder is likely to differ somewhat with the tape machine used; also, it can be adapted to any application involving Touch-Tones. IC 1 is a unity gain stage that converts the balance input used by UPI to unbalanced for the decoder.



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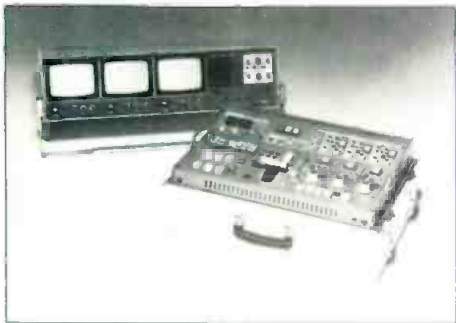
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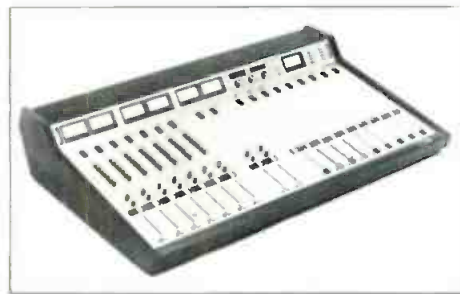
facilities. It also features automatic camera phase control and remote control functions as well as a mixer and fader. The system will operate up to three cameras and works with 12 V dc or any ac power outlet. Character

generator input with downstream can be mixed or keyed. Internal sync generator can be locked by external black burst. A plug-in special effects unit, offering 12 wipe patterns, three edge controls, and three wipe directions, is optional. Under 33 pounds. \$22,600; special effects option, \$4725. ASACA/SHIBASOKU.

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2 GHz Radio System

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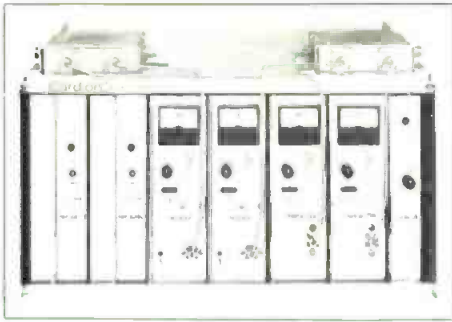
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output. Features include synthesizer frequency generation, built-in bridging, and modular design for a variety of configurations. The compact unit requires six mounting spaces (10½ inches) in a 19-inch relay rack. CAR-DION ELECTRONICS.

AM/FM Signal Generator 253

Model 1029 covers the frequency range from 150 kHz to 540 MHz (optional coverage to 1.08 GHz), with a cw RF output level of +19 dBm over the entire range. RF output level can be programmed with a resolution of 0.1 dB and the frequency can be incremented in both preset or user-defined step sizes. The unit also provides FM up to 300 kHz deviation with distortion less than 0.1 percent at 100 kHz deviation.

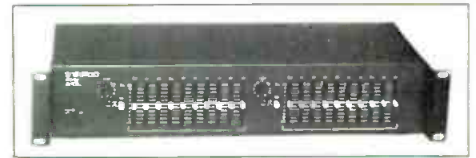
Capabilities also include AM up to 99.9 percent and phase modulation up to three radians. The microprocessor-based instrument is compatible with the IEEE-488 interface bus. It features both



talk and listen modes and free-format number entry, fixed or floating, plus fully programmable low-distortion modulation oscillator and fast FM-band sweep capability. \$13,950. BOONTON ELECTRONICS.

Equalizers 254

Model 2210 is a dual-channel octave-band graphic equalizer designed for economy and quality, according to the manufacturer. Each channel offers 12 dB of boost or cut in separate frequency bands; all sliders are center detented at



0 dB or flat position and each channel has its own output gain control. Model 2230, a third-octave equalizer, offers 27 bands of EQ from 40 to 16,000 Hz with 12 dB of boost or cut on standard ISO center frequencies. True combining filter action increases accuracy and control. The unit features built-in switchable high and low pass filters. Model 2210, \$319; Model 2230, \$429. E-V/TAPCO.

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

Sync Generator 255

TSG-4000 is an all-digital master sync generator that is fully compatible with the RS-170A standard. It permits positive identification of one field in the four-field sequence, a feature the maker

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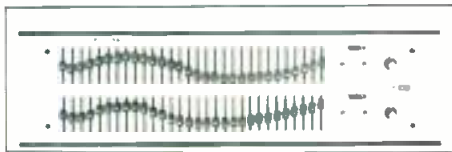
Broadcast Equipment



says is especially useful in editing. Other features include programmable pulse widths, automatic SCH phasing, front-panel test point for SCH phase verification, manual phase adjustment, switchable master and slave modes, horizontal lock protection, color field identification, multi-mode genlock, built-in reference black burst, and LED display of operating model. FERNSEH. INC.

Graphic Equalizer 256

DN30/30 is a dual-channel third-octave graphic equalizer. Each of its two dis-



crete channels has 30 bands of control, centered on standard ISO frequencies. Range control is switchable for each channel, ± 6 dB or ± 12 dB. Each channel also contains a 30 Hz, 18 dB/octave subsonic filter, switchable in or out. The unit incorporates an earth-lift switch and a system bypass facility for power interruptions. It can also be fitted with internal active crossover circuit cards in bi-amp or tri-amp configuration. Slope and center frequency are user-selectable. \$1450. KLARK-TEKNIK ELECTRONICS, INC.

Color Monitors 257

Two new 21-inch color monitors feature dc restoration, eight-pin VTR connector, separate audio (mini-phone) and video (BNC) inputs, and isolation



transformer. Model RM-21RC, a receiver/monitor, also features TV-line-VTR selection and has midband tuning capabilities. The remote control commander allows for tuning, volume control, picture level, and power on/off functions. VM-21, \$1350; RM-21RC, 1400. VIDEOTEK, INC.

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Eight-Input Line Mixer 258

Model 2050 eight-input line mixer provides a separate eight by two submix with pan pots for an additional cue/monitor mix, with a PA system for separate stereo recording mix, or as a



keyboard mixer. Cue output and built-in headphone amp are also featured. Front-panel priority jacks allow im-

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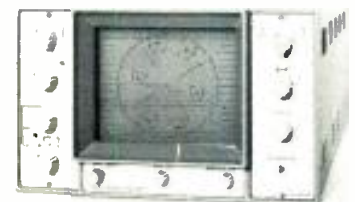
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mediate patch-in of an extra stereo signal, with "remix" control to blend the added signal with the stereo cue outputs. Three sets of stereo outputs on the rear panel allow separate monitoring of these signals. Nominal input and output levels are 0.3 V; maximum levels are 10 V for input and 8 V for output. \$200. FOSTEX CORP. OF AMERICA.

Earth Station Trailer 259

This custom-built trailer for transportable three-meter earth stations is 16 feet long and eight feet wide. It weighs approximately 2400 pounds without mount and antenna and has a load capacity of four tons. The heavy-duty trailer has tandem axle suspension, electric brakes, and 8:14.5 load range tires. The antenna mount can be properly aligned to fit almost all earth stations. The trailer can be fitted with or without the earth station mount; a trailer for 3.6-meter dishes will be available soon. CALLAWAY COMMUNICATIONS.

Digital Audio Delay 260

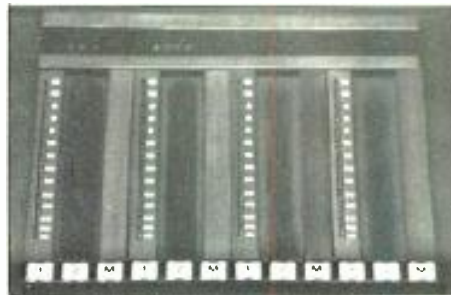
Bleepmate™ 675 digital audio delay, designed for radio station talk shows, is completely solid state for simple main-



tenance. Specifications include I/O impedance of 600 ohms; unity gain; delay of three or six seconds; frequency response ± 1 dB 20 Hz to 7.5 kHz (-3 dB at 7.5 kHz); distortion less than 1 percent THD at 1 kHz, 0 dBm; maximum program level, +12 dB; S/N, 50 dB; dynamic range, 72 dB. The rack-mounting unit measures 3.25 inches high and nine inches deep. \$1940. COMEX SYSTEMS.

Fader and Attenuator 261

The Travis fader and Sphere digital attenuator form the basis for the company's Datalog Automation System.



which places the analog signal wholly under digital control. The fader is basically a digital encoding device with no moving parts. Its 6500 series microcomputer receives and processes information from four fader units. Each fader has two preset level memories; output is an eight-bit digital word that routes to the attenuator and the automation computer. The attenuator is a resistive ladder, CMOS switching device that controls the analog signal with 224 discrete, repeatable digital steps, producing no distortion or noise. It will replace current VCAs or plug directly into the audio signal, making SMPTE time code automation available for consoles. SPHERE ELECTRONICS, INC.

Universal Battery Charger 262

Speedcharge 6000 is an "intelligent" charger for Ni-cad batteries. It incorporates a microprocessor programmed to analyze battery status and to terminate charging optimally. Mains voltage selection is automatic. Features include switched-mode, constant-current regulator for cool operation; crystal-controlled failsafe circuitry; modular, highly structured software; and fast-charge and slow-charge modes. When the battery is fully charged, a special

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tapered trickle-charge feature safely maintains the battery at full charge for long periods. The unit is suitable for all Ni-cad batteries of capacities from 3.5 Ah to 20 Ah and output voltages of 6V to 15 V. PAG POWER LTD.

Studio Monitor Loudspeaker 263

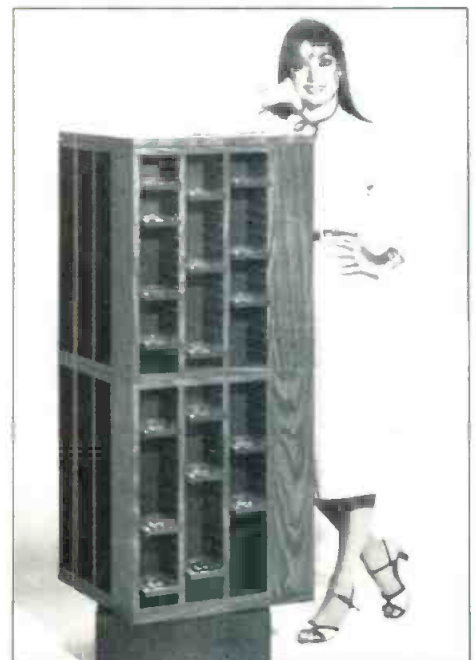
Model 9813 is a three-way speaker system using the Mantaray® constant directivity horn, the Tangerine® radial



phase plug, and LTZ (lead-zirconate-titanate) UHF driver. It also has the Altec automatic power control system designed to absorb overloads without turning off the speaker. Power rating is given as 40 W (continuous pink noise, 20 Hz to 20 kHz) frequency response 60 Hz to 20 kHz, ± 2.5 dB. ALTEC LANSING.

Cart Rack System 264

System 23 is a modular cart rack system in six basic sizes, holding 18 to 108 audio carts. Units can be bolted together to become a free-standing, rotating four-sided cart rack holding up to 1296 carts. Other configurations in-

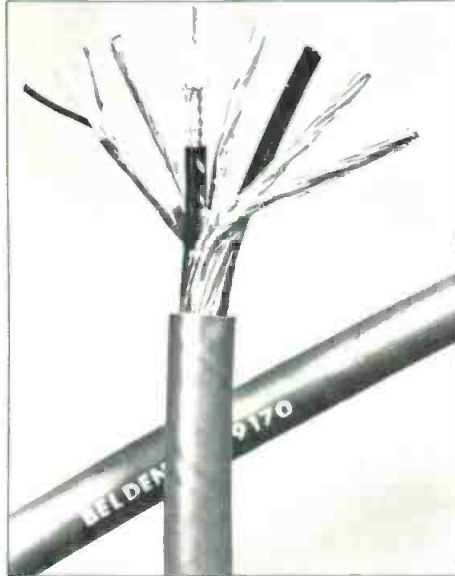


clude tabletop, wall-mounted, or rack-mounted units. The walnut-grain finished system grows to meet future needs. RUSLANG.

ENG/EFP Camera Cable

265

9170 camera cable for ENG and EFP applications consists of five twisted pairs of color-coded 24-ga. conductors, each with aluminum foil-film shield

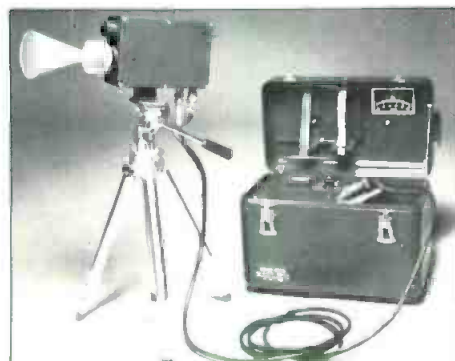


and drain wire, and two miniature 75 ohm coaxial cables, all cabled together inside a chrome vinyl jacket with outer diameter of 0.490 inches. Available in 250, 500, and 1000 foot lengths at \$319.50, \$639.00, and \$1278.00 respectively. BELDEN CORP.

Portable Microwave Systems

266

The EJ Series carry a video signal and one or two audio channels over line-of-sight paths up to 0.7 miles, using horn antennas. System is available for 7, 13, and 15 GHz bands. Systems are packaged for easy portability. INTERNATIONAL MICROWAVE CORP.



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267

These terminal block-mounted multipurpose relays offer space savings and mounting versatility, according to the manufacturer. Optional front-panel



LEDs display operational status of the four- or six-pole miniature wire spring type relays. Up to 12 relays are packaged on universal eight-inch terminal blocks. Independently operated, the relays are available with A, B, C, or D contacts and in a wide selection of operating voltages. LARCUS CORP.

Whip Antenna

268

This quarter-wave straight whip antenna, for use with hand-held radios, is constructed of 17-7 PH stainless steel with high-gloss black PVC coating. The base is fitted with a BNC connector. It is available in standard frequency ranges and is factory-tuned to discrete frequency from 118 MHz to 512 MHz. Approximate length for two-meter band is 19.5 inches. CENTURION INTERNATIONAL.

Video Display Generator

269

AG 341 is an integrated display generator that offers safe area, position marker, and pulse cross displays in one rack-mounted unit. The separate displays, keyed into the incoming video, may be selected with front-panel controls or from an optional desktop remote box. Safe area/safe title outlines



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are digitally generated as dual reticules conforming to SMPTE specs. This mode also includes a separate preset "cross hair" marker that pinpoints the exact center of the raster. The pulse cross function allows incoming video to be delayed horizontally, vertically, or both to monitor sync, burst, blanking, VITS, and reference signals. The micro mark/cursor display (one μ s intervals arranged along a digital horizontal line) permits quick and accurate measurement of timing signals in conjunction with the pulse cross function. \$1295. AMTRON.

Faders 270

3000 Series faders are reliable and offer full environmental shielding. They are available with stroke lengths from 65 to 104 mm and offer linear, audio taper, or VCA laws. PENNY & GILES.



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VCR Case 271

A new case for VCRs allows the user to operate the recorder in the case. It was specifically engineered for protection, sound isolation, and efficient operation, according to the manufacturer. Shock protection is insured with a two-inch Ethafoam interior and heavy rub-



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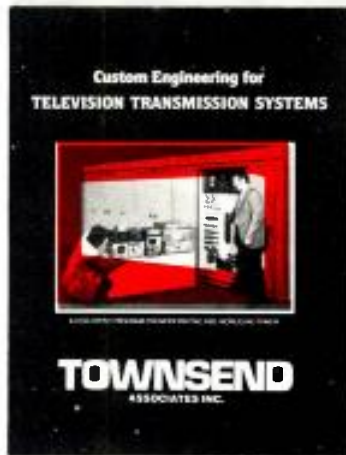
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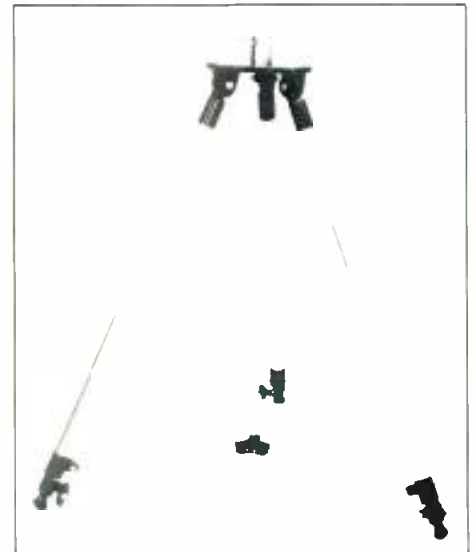
Broadcast Equipment

ber bumpers on the case bottom. A unique ventilation system insures proper air flow from under and above the VCR through the rear of the case; this area doubles as cable storage during transit. Key locks are available optionally. \$450. EXCALIBUR INDUSTRIES, INC.

ENG Tripod

272

Designed specifically for ENG cameras, the ITE-T2A lightweight



tripod supports cameras weighing up to 40 pounds. The aluminum tripod weighs five pounds and is adjustable from 32 inches to 63 inches in height. Folded width is five inches and leg angle is 25 degrees. It is adaptable to all heads and dollies from its manufacturer. Spikes and rubber footpads are optional. \$265. INNOVATIVE TELEVISION EQUIPMENT.

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Base Station Antenna

273

The PD-1612 base station antenna covers the 806-896 MHz frequency range in two bands of 60 MHz each. The seven-element single-yagi array, with 10 dB of unidirectional gain, has a 1.5:1 VSWR at 50 ohms and a maximum power input of 150 W. Front-to-back ratio is 15 dB. It consists of 3/8-inch aluminum rod elements with 1 1/16-inch diameter supports and a 28-inch boom. Rated wind velocity is 150 mph; lateral thrust at rated wind is 21 pounds. The lightweight (two pounds) antenna

is supplied with mounting hardware and may be mounted for either vertical or horizontal polarization. PHELPS DODGE COMMUNICATIONS CO.

Multi-Use Computer 274

The HP-250/30 is a versatile small business computer that can be shared by several people. Its functions include accounting, order entry, inventory control, text processing, and graphics preparation, from as many as six work stations simultaneously. An enhanced



mass memory system offers simple, fast information storage and retrieval. Optional, ready-to-use software packages include text processing, distributed system network, and a decision support graphics package. Other packages are also available. Up to 10 peripheral devices may be linked to the computer, including a printer and an eight-color plotter for graphics presentations. \$22,500. HEWLETT-PACKARD CO.

SCA Generator 275

Model FC-30, designed as a companion unit to the maker's FX-30 synthesized FM exciter, is compatible with FM exciters of other manufacturers. Audio



frequency response is ± 5 dB, 10 to 10,000 Hz, exclusive of the audio low-pass filter. THD is less than 0.5 percent within the audio passband, with 0.5 percent or less IM distortion. FM noise is 67 dB or greater below ± 6 kHz deviation at 400 Hz. Features include front-panel LED modulation indicators; full remote control capability; and memory logic. BROADCAST ELECTRONICS.

Tripod Carrying Case 276

Duratube is a tripod carrying case constructed of impact-resistant polyethylene $3/32$ -inch thick. Puncture and water resistant, the case is available in four diameters and 11 sizes to fit any tripod now in use, the manufacturer states. The 10 or 12-inch smooth-fitting end cap allows telescoping to the maximum height necessary for secure shipping. All straps are $1\frac{1}{2}$ -inch nylon with safety buckles; the tube also has a strong carrying handle. \$85.50 to \$150. ALAN GORDON ENTERPRISES.



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