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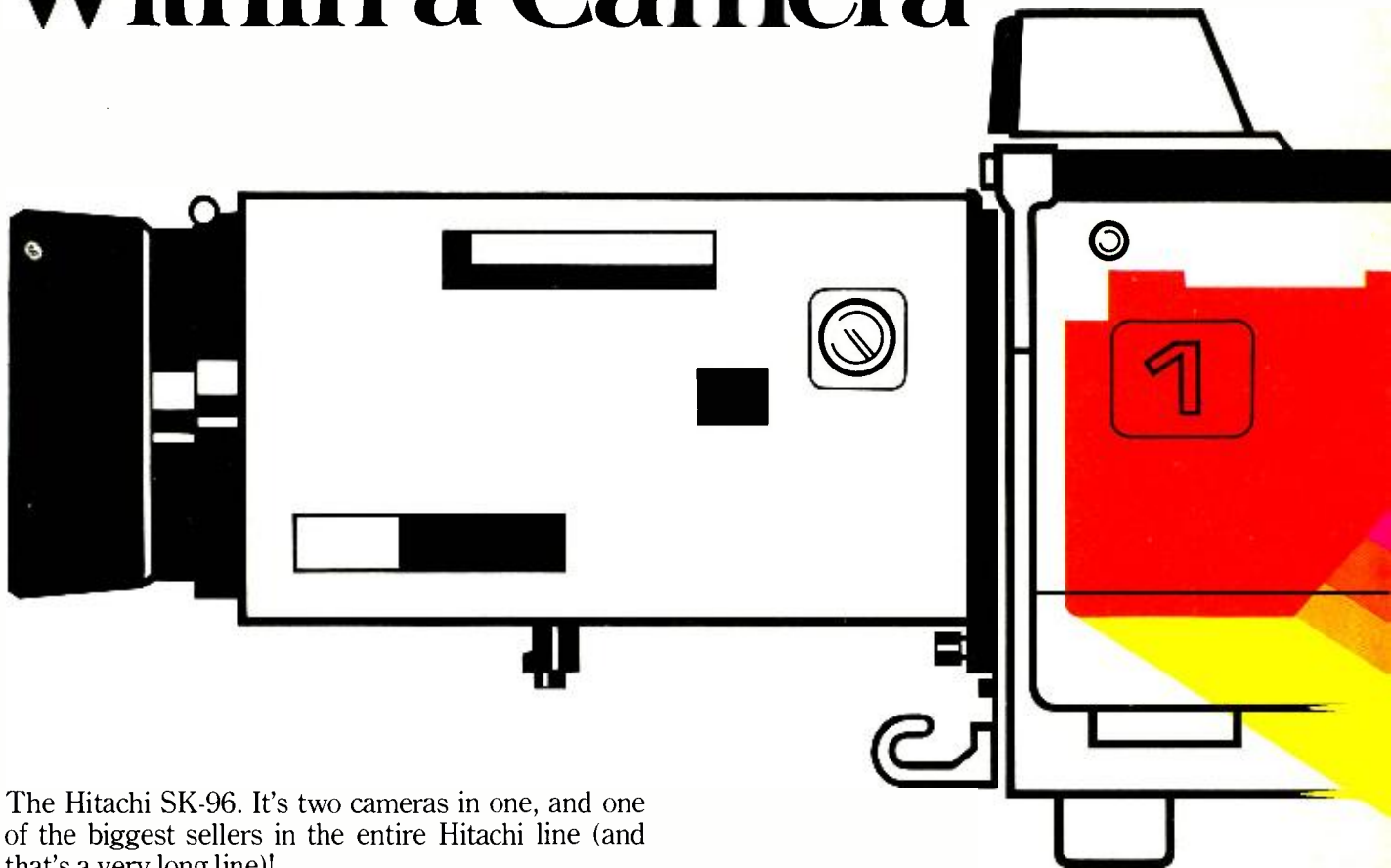
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The Inside Story of Hitachi's "Camera- Within-a-Camera"



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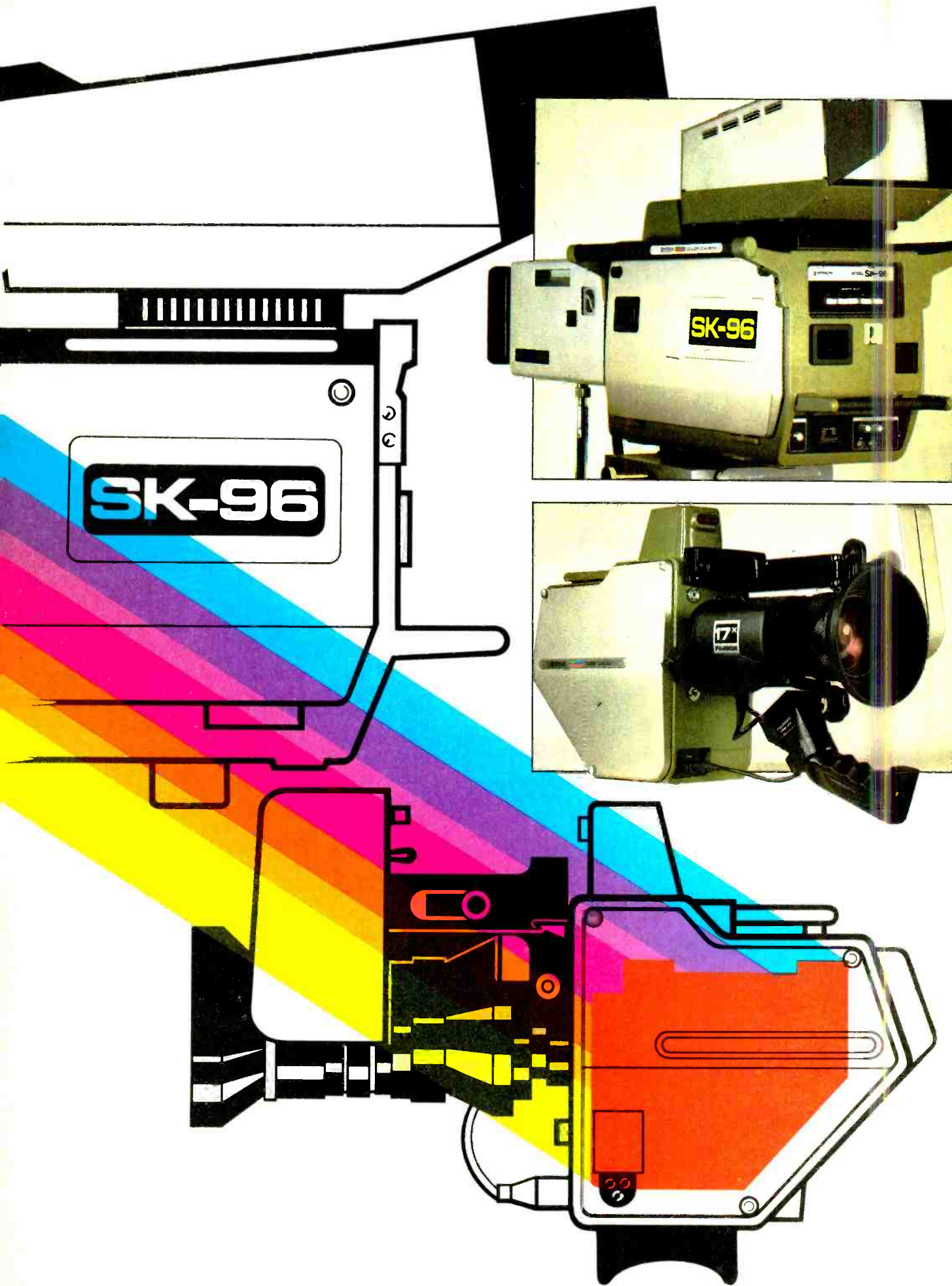
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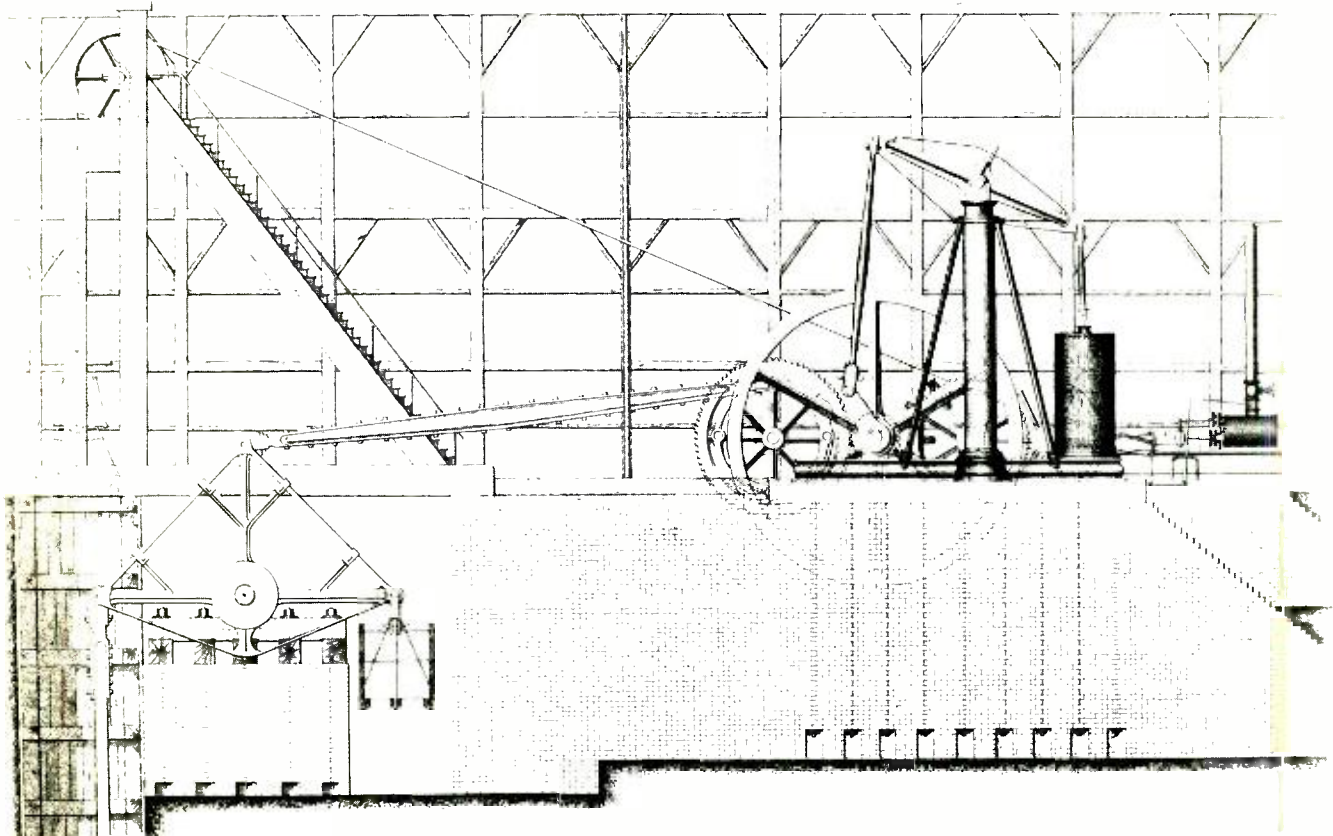
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Advancing Technology

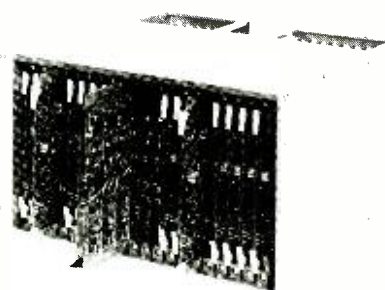


The first quartz gold strike in Grass Valley came in 1850, just two years after the Sutter's Mill discovery gave the world gold fever. A major problem in the area's new hardrock mining technology was underground flooding, but the Cousin Jacks* who migrated to California gold fields solved it with the Cornish Pump, invented about 1800.

The first ones used in the Grass Valley/Nevada City mines were powered by woodburning steam engines. Water power was substituted for steam at the Empire Mine's pump in 1886, then a huge electric motor replaced the water wheel in 1891. Ultimately the Empire's Cornish Pump operated seven tandem underground pumps along its 2,700 feet of jointed wood-and-iron operating beam, which weighed 135,000 pounds.

In 1909, after 54 years of operation, the Empire pump beam, with its eight-foot stroke/eight times a minute, ground to a halt. Another famous Cornish Pump, at the nearby North Star Mine, *operated continuously for 40 years*. But Cornish Pump technology had run its course, and they were largely replaced by systems of underground electric pumps during the first decade of the century.

Making Cornish Pumps and other heavy equipment was a local industry at the famous Miners' Foundry in Nevada City, in keeping with the 49er traditions of do-it-yourself and hard work. A hundred years later Grass Valley Group adopted those traditions, and learned the lesson of the Cornish Pump well; design for dependability, and your name will become famous worldwide.



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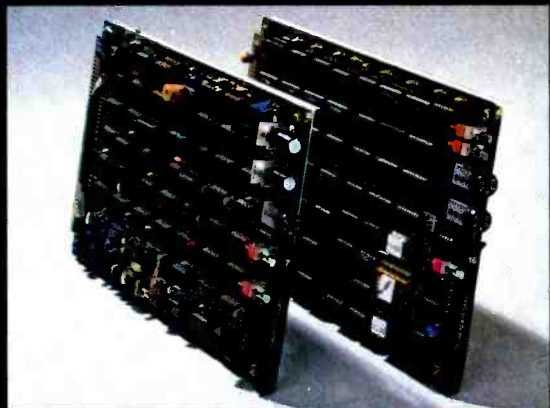
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BROADCAST INDUSTRY NEWS

Westinghouse, TPT Plan Major Merger

Marking the most mammoth merger in communications history — larger even than the now-defunct Cox-GE marriage — Westinghouse Electric has agreed to purchase Teleprompter, largest owner of CATV franchises in the country. The purchase price is reported to stand at \$646 million.

Still subject to approval by the companies' stockholders, the FCC, and other government agencies, the merger would land Westinghouse smack in the middle of the cable industry, adding Teleprompter's 450 or so cable systems to the eight Westinghouse already owns. Because of FCC crossownership rules, Westinghouse will probably have to get rid of several of the TPT systems, but is reportedly thinking of swapping these for systems in other cities.

Teleprompter's dowry includes not just the cable systems, but a 50 percent interest in the Showtime pay-cable network. The company also operates Muzak.

Westinghouse recently formed Group W Cable Productions, which has produced some programming for Showtime and is planning more; Home

Box Office is also said to be a prospective customer.

If the deal is finalized, TPT would merge with Westinghouse Broadcasting, already a formidable force in the broadcast industry. Group W stations include five VHF and a UHF, seven AMs, and five FMs, with negotiations underway for two more FMs.

Teleprompter's Muzak division made its own news shortly before the merger with its switch to satellite distribution of its programming. Western Union's Westar I satellite is delivering product to Muzak subscribers faster, with higher quality, and at lower cost than before.

Past Policy Hurt New Nets, Study Asserts

The final report in the FCC-sponsored network inquiry, issued recently, accused Commission policy of creating serious barriers to new TV networks.

The present table of allocations, adopted in 1952, was cited as the major culprit, in need of serious revision if new nets are to flourish. Also urged was the encouragement of new technologies to increase program diversity.

The concentration of economic

power in the three major networks "is in large measure a result of Commission policies that protected [ABC, CBS, and NBC] from potential competitors," the Network Inquiry Special Staff charged in its report, entitled, "New Television Networks." Regulation of the nets' behavior, however, fails in its goals because it treats symptoms rather than causes. The staff therefore urged the Commission to concentrate its efforts on increasing competition.

Also criticized were many of the FCC's multiple-ownership and cross-ownership rules, which the staff found "arbitrary and capricious." New technologies should not be burdened with similar restrictions, the report recommended.

The FCC got some praise, however, for moves such as its recent deregulation of CATV and its change of heart on regulation of direct broadcasting satellites.

FM Proposals Get Mixed Reviews

The FCC's latest plan to modify the FM assignment tables is playing to mixed reviews from the many interested par-

Cable Company Trains "Instant Producers"



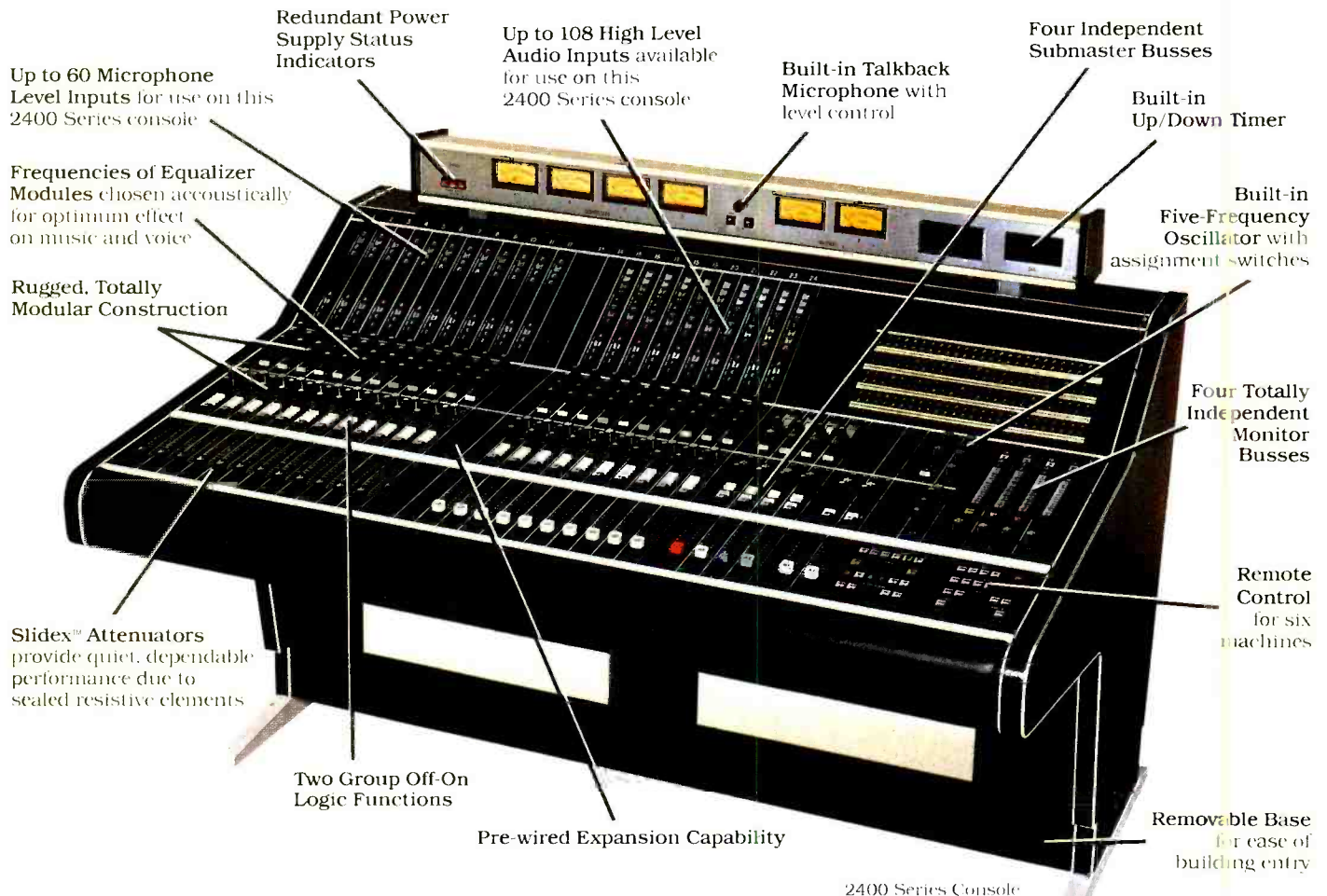
"Instant producers" Rheva Phillips and Ruth Feldman interview an antique fair exhibitor while a classmate operates the camera

Omnicon Cablevision of Illinois, Inc., needed an edge in its battle with 10 other CATV firms for the cable franchise for the Chicago suburb of Highland Park.

What Omnicon came up with — helping it land the franchise — was a free program to train local citizens as "instant" cable producers. Eight of the 20 Highland Park residents who signed up completed the course, which consisted of three lengthy training sessions. As part of their training, class members taped an antique fair in nearby Lake Forest and produced a 30-minute documentary about Highland Park's annual street fair.

Omnicon officials said the purpose of the program was to demonstrate cable's potential for vital locally produced programming. Even though the "instant producers" won't be making network-quality shows, says VP, programming, Dorinda Lee Hoarty, "when the faces on the TV screen are those of your own children and neighbors you'll enjoy the show even if there's an occasional bad camera angle." Omnicon is a subsidiary of Capital Cities Communications, Inc.

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ties that have filed comment.

Neither NAB nor NRBA seems too pleased with the plan. NAB scored what it termed the Commission's stance that smaller communities now have enough FM service and urged that the issue be referred to the Radio Advisory Board for study. Also recommending review by the Radio Advisory Board, NRBA said it supported the FCC's attempts to streamline its processes, but warned against "reckless adoption of

procedural change for the sake of procedural change."

Strong protest came from group owner Metromedia, which claimed the proposals could violate the Communications Act requirement for a hearing before modification of a broadcast license. It also pointed to results of a study by engineering firm Lohnes & Culver that showed that Metromedia's Class B FM outlets (WASH, Washington, D.C.; WMMR, Philadelphia; WMOC, Detroit) would suffer serious losses of service area under the proposals to reduce contour protection.

Also voicing concern over the contour protection and separation proposals were the Association for Broadcast Engineering Standards and NBC. The network supported the FCC's plan to require stations to operate up to the requirements for their class, however — one part of the rulemaking that also found favor with Metromedia.

A number of the opponents of reduced contour protection based their comments on a study by A.D. Ring & Associates showing significant net losses of service area resulting from the proposed rule change.

Standing out from the crowd, National Public Radio gave kudos to the proposal, calling it "an excellent means of creating . . . new service opportunities." NPR urged that a portion of the newly created stations be set aside for educational use.

Telco-Cable Rules Under Scrutiny

Seeking to overthrow a decade-old standard, the FCC has issued a notice of inquiry asking whether modifications of its telco-cable crossownership rules would be appropriate for cities.

Also before the Commission is a notice of proposed rulemaking seeking to eliminate the cable crossownership rules in areas with fewer than 30 homes per mile.

Immediate opposition to the ideas came from NCTA, which claimed that minority participation in the industry would suffer and pointed to the enormous disparity in penetration between cable and telcos — telcos reach 97 percent of homes while cable reaches only 20 percent, according to NCTA's Robert Ross.

FCC chairman Charles Ferris, in a separate statement, emphasized cable's strengths in supporting the inquiry. Cable, said Ferris, "is well on its way to becoming a strong and established player in the overall communications industry," warranting "a second look" at current policy. Commissioner Joseph Fogarty also lauded the inquiry in a statement strongly questioning the continued need for rules that may "impose too great a burden on today's consumers in terms of foregoing cable service which can be provided *now* by telephone companies."

Philips Acquires GTE's Consumer Arm

North American Philips Corp. has agreed in principle to acquire GTE's U.S. consumer electronics business, subject to approval by the firms' directors. No purchase price was announced for the deal, which is expected to be finalized sometime this month.

Included in the agreement are GTE's

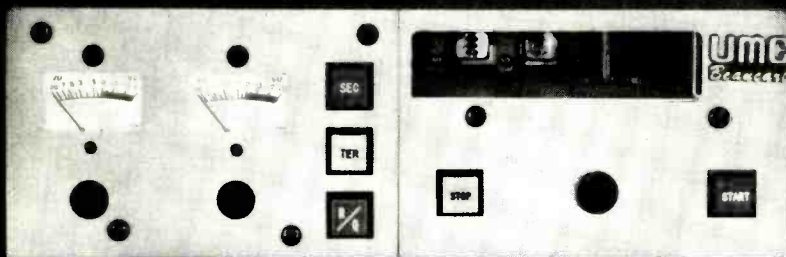
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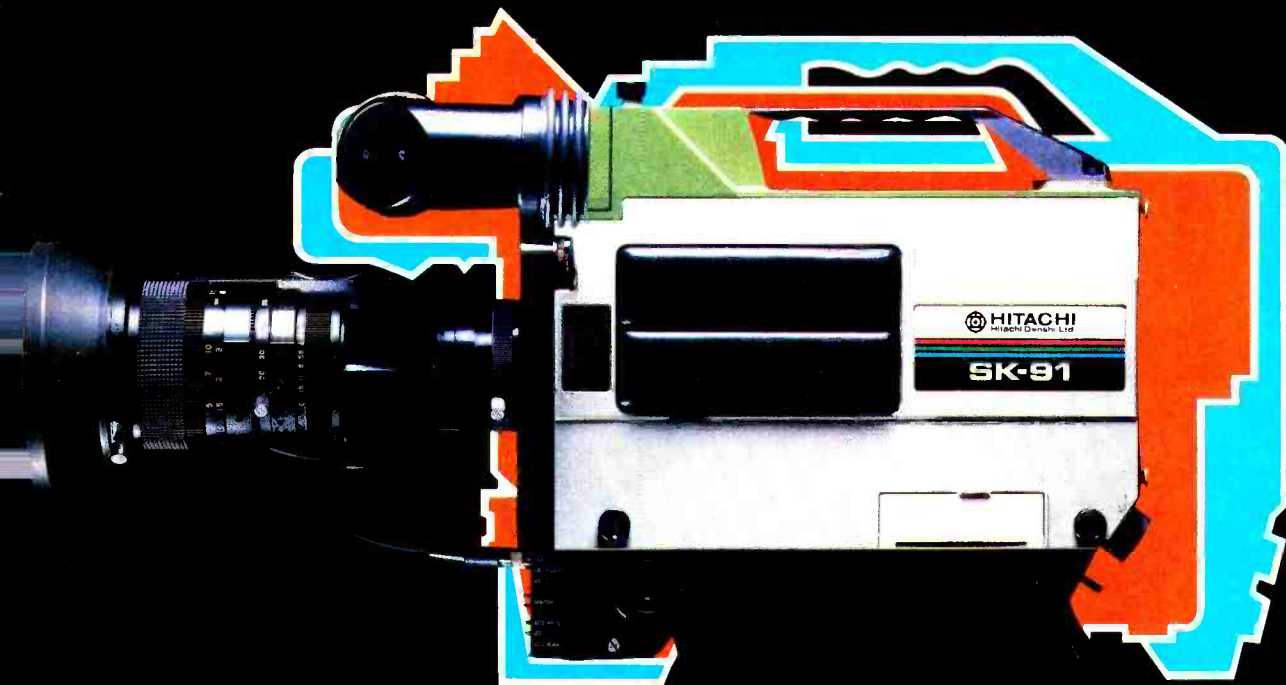
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News

Sylvania and Philco brands of TV receivers, picture tubes, and other components, plus a component manufacturing operation in Juarez, Mexico and sales, service, and distribution facilities in the U.S. and Canada. The Sylvania and Philco brand names will be maintained, according to Frank L. Randall Jr., vice chairman of North American Philips.

Randall said that he expected the transaction to greatly enhance the com-

petitive position of Philip's Magnavox Consumer Electronics Co.

Engineers Oppose Dropping License

The *SBE Signal* reports that a preliminary survey of members of the Society of Broadcast Engineers shows a solid two-thirds oppose the FCC's proposal to drop the first class radiotelephone operator's license (see *BM/E*, October, 1980). The Commission had questioned the accuracy of present testing procedures and suggested that licensees

be made responsible for insuring the competence of their employees.

Respondents to the SBE survey who opposed the change cited a number of reasons for their stance. One called an "inadequate" exam "far better than making no effort at all to control" operators of critical and potentially dangerous equipment. Another, predicting reduced quality levels, said, "Station managers will go the cheap route," while a third foresaw "chaos."

"With the expanding technology, we need more stringent tests, not elimination," wrote another respondent. "Granted, a First doesn't guarantee a good engineer just as a medical degree doesn't make a competent physician, but they both deserve to be prerequisites."

Some of the 23.8 percent who supported scratching the ticket still favored some sort of certification, perhaps administered by SBE. The remaining respondents were evenly divided between those who didn't know and those who didn't care.

Interactive Video Strong At Video Expo

The latest edition of Video Expo New York drew over 7000 attendees to view the latest from about 90 exhibitors at the Madison Square Garden show. Ann Stockwell, director of Video Expo (sponsored by Knowledge Industry Publications of White Plains, N.Y.) called the eleventh annual fair "the best show we've ever had," and indicated that attendance had risen from last year, although the number of exhibitors was about the same.

Next year's Video Expo, Stockwell told *BM/E*, will probably be even larger, with more focus on broadcasting. This year as in the past the show stressed industrial, medical, and other nonbroadcast aspects of video. A number of major broadcast suppliers were there, however, with broadcast gear on display: Hitachi, Ikegami, Sony, JVC, NEC, Panasonic, CMX, and Fujinon were just a few of the names familiar to broadcasters. Other exhibitors catering to broadcast as well as nonbroadcast fields included Anvil Cases, Fuji Tape, and ITE.

Many video companies at the Garden were pushing the theme of interactive video, showing an amalgam of video-disc systems, fast search VCRs, and other related equipment intended to permit the user a variety of ways to control the recorded information.

A highlight of the Sony booth was the Video Responder, a new interactive system designed as an educational/training peripheral for Sony's institutional Betamax and U-Matic lines. The Video Responder asks questions, automatically reviews any incorrectly an-

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News

swered questions, records the answers on paper tape, and grades them against other scores. Users can program training tapes to automatically jump from one segment to another; students get the questions in print or as part of the video presentation. Sony is stressing the system's flexibility; it will interface with video systems now in service and can use a wide variety of available videotape programs.

Misar Corp., a subsidiary of Acquis

Corp., a holding company that also owns Convergence Corp., demonstrated a voice-activated video teleconferencing system aimed at the industrial and commercial markets. Called Misar I, this is basically a microprocessor-controlled switching system for up to five specially designed RCA CCTV cameras. The microprocessor automatically dissolves between the cameras according to timed patterns initiated through a voice-activated system, switching each speaker's camera to the VCR. If a speaker holds forth too long, the system will switch from camera to

camera for reaction shots, automatically bypassing anyone who hasn't spoken for a long time. Options include Video Scratch Pad, which allows hand-drawn explanatory sketches to be recorded on the VCR, and LipLock, for aural search to cue.

A new firm, Downlink, Inc. of Putnam, Conn., a subsidiary of Black and White Enterprises (also of Putnam), was offering a small tunable microwave dish and satellite receiver for about \$4000. The company expects to sell 10,000 of the units during its first year of operation and reports that the 5000 it has already produced are sold out. Systems such as Downlink's, with tunable receivers that make possible reception of a wide range of microwave signals, have apparently raised some questions at the FCC regarding their regulatory implications.

NPR's Hetrich Wins Special Armstrong

Wayne Hetrich, senior engineer for R&D at National Public Radio, recently won a Special Armstrong Award for "significant research toward the implementation of major developments in state of the art broadcast electronics technology."

Calling Hetrich a "pioneer in radio technology," the judges cited him for his work in designing and implementing NPR's high-quality multi-channel satellite distribution system. His other achievements have included designing NetCUE, which signals indicator lights and tape recorders at NPR stations through telco-transmitted audio tones.

JVC Video Festival Honors Industry

Business and industrial video users got the chance to show off their best efforts in the first annual Business and Industry Video Festival, sponsored by U.S. JVC Corp. The competition attracted 55 entrants from manufacturing, banking, communications, insurance, and transportation, as well as hospitals, schools, and law enforcement agencies.

A gala dinner at the CitiCorp Club in New York City in late October was the scene of the awards presentation, presided over by JVC president Norizo Sakoda and national sales manager, Professional Video Division, Dan Roberts. First prize winners were AT&T Long Lines (employee communications/relations) and Fisher Scientific Co. (employee training). Fisher Scientific also received an Honorable Mention for a "consistently high level of production quality and professionalism." DeAnza College Campus Security was awarded a Special Citation in the administration/security category.



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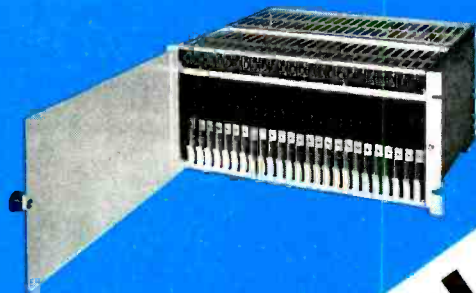
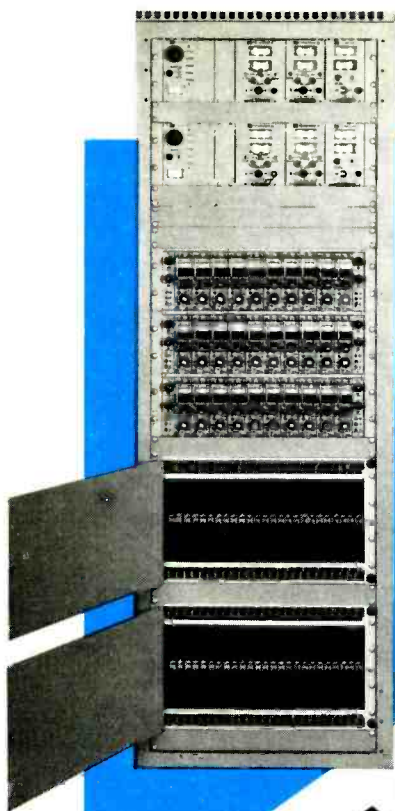
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News Briefs

Malrite Broadcasting has purchased **KNEW**, Oakland/San Francisco. The Cleveland-based firm, which operates radio stations in Cleveland, Minneapolis/St. Paul, Milwaukee, and Rochester and TVs in Jacksonville and West Palm Beach, Fla., Rochester, and Greenville/New Bern/Washington, N.C., plans to continue **KNEW's** Country format . . . Dallas businessman and broadcaster Philip R. Jonsson has bought **KLRA**, Little

Rock, for \$2.3 million from **KLRA, Inc.** . . . **K-101 FM**, San Francisco, is the latest acquisition of Charter Media.

Kicking off its Satellite Program Development Fund, **National Public Radio** has announced production grants in support of 26 new radio projects. Station-based and independent producers will share \$300,000 in funds; the programs include several from minority producers, three comedy series, and a radio drama series including three plays in Spanish.

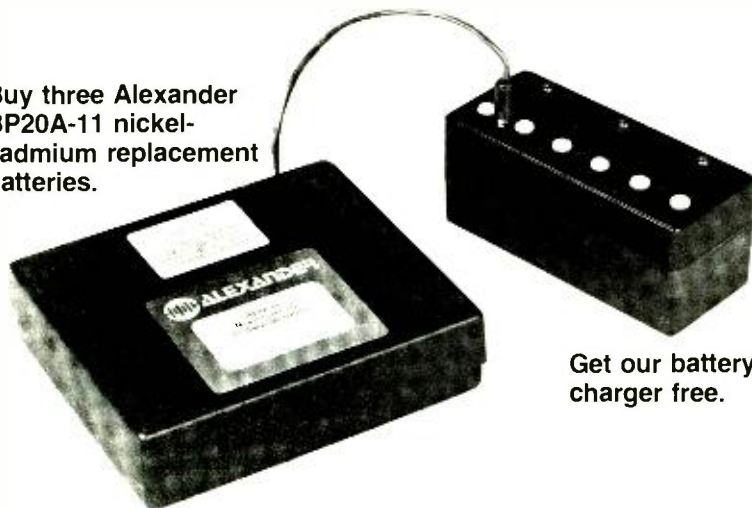
The proposed drop-in of 140 new VHF stations will hinder UHF growth,

claims John B. Summers, executive vice president and general manager of NAB. Also opposing the plan was Tom E. Paro, president of the Association of Maximum Service Telecasters. Paro said a drop-in rulemaking would be "a first step toward devastating this country's fundamental television allocations policies and as a result depriving the public of existing VHF and UHF service and crippling future UHF growth" . . . NAB has urged the FCC to thoroughly study the effects of 9 kHz AM channel spacing and to refer the question to the Advisory Committee on Radio Broadcasting.

A 20-minute cassette tape designed to assist broadcasters in complying with EEO procedures is available from NAB's Legal, Minority, and Special Services Division. The tape, which costs \$5.00 for member stations and \$15.00 for nonmembers, may be ordered from Judy Meehan, Publications Manager, NAB, 1771 N Street NW, Washington, D.C. 20036.

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We know you'll find our replacement batteries superior to lead-acid type batteries. But — if you use your old charger (developed for lead-acid) to recharge nickel-cadmiums — you just won't get the performance you need in ENG/EFP. So here's our offer: Buy three BP20A-11 replacement batteries and get our 20-11 Charger free!

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Business Briefs

M/A-Com, Inc. has completed its acquisition of **Valtec Corp.**, which will continue to operate as a separate firm under its present management in West Boylston, Mass. . . . **Audiotronics** has opened its new facility in Spring Lake Park, Minn. . . . **CBS Video Enterprises** has established new offices at 1700 Broadway, New York, N.Y. 10019. . . . **Dantel, Inc.** has moved to 2991 N. Argyle Ave., Fresno, Calif. 93737. . . . **Van Ladder, Inc.** has changed its name to **Kindwall Corp.**

Oob Harris, formerly of Drake-Chenault Programming, has formed the **Center for Radio Sales**, a new company specializing in radio sales consulting. The center is located at 2425 Torrey Drive, Tallahassee, Fla. 32303, (904) 385-6161. . . . **Amtel Systems** is a new manufacturing and distributing concern located at 11001 Donietta Drive, Huntsville, Ala. In addition to manufacturing the Visa-20 vertical interval sync alignment generator, Amtel will rep Dynaquip Electron Devices' microprocessor-based gear on an exclusive basis in the U.S.

Pierre Gaujard, president of **Antiope Videotex Systems**, has been elevated to vice chairman of the board with chief responsibility for handling joint ventures between the French telecommunications industry and U.S. companies. Antiope's recent endorsement by CBS has encouraged it to turn its marketing efforts toward this country. Anthony A. Barnett will serve as temporary president while the firm seeks senior U.S. management.

EYE-OPENERS

Just when everyone had their eyes wide open to the outstanding line of Ikegami broadcast and production color cameras, Ikegami introduced its color and B&W monitor line, engineered with the same innovative technology as its cameras. A great tradition of eye-opening continues with precision, quality and beautiful images.

The Ikegami color monitor line consists of the High Resolution Series RH Color Monitors and the High Performance Series 8 Color Monitors. The High Resolution Series RH Color Monitors are available in the 14" TM 14-2RHA and the 20" TM 20-8RH. Both provide precision color reproduction at 600 plus lines for professional studios, control rooms, remote vans, etc., and feature a high resolution CRT with High Density Dot Matrix, a switchable comb filter in the decoder, and the AFPC (Automatic Frequency Phase Control) system to maintain exceptional color reproduction. Both models are rack-mountable, with the TM

14-2RHA featuring plug-in circuit boards for easy maintenance.

The High Performance Series 8 Color Monitors are available in the 14" TM14-8RC, 20" TM20-8R and 25" TM25-8. The Series 8 monitors offer high quality color reproduction, a Shadow Mask Dot Matrix CRT, Pulse Cross Circuit, Active Convergence Circuit, low power consumption, and more.

The B&W Monitors are engineered to the same exacting Ikegami standards and are available in Triple 5", Dual 9", 5", 9", 12", 17" and 20" sizes.

Ikegami's Eye-Openers are available at most dealers. For details and additional information, contact: Ikegami Electronics (USA) Inc., 37 Brook Ave., Maywood, NJ 07607, (201) 368-9171; West Coast: 19164 Van Ness Ave., Torrance, CA 90501, (213) 328-2814; Southwest: 330 North Belt East, Suite 228, Houston, TX 77060, (713) 445-0100; Southeast: 522 So. Lee St., Americus, GA 31709, (912) 924-0061.



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When you called for gentler, more precise tape handling, we were listening. When you asked for faster, easier operation and control, we heard you. And when you told us you wanted better editing capability, we took note. Our response is the new TR-800. It's the one-inch tape system you specified. In addition, we've included some years-ahead innovations of our own.

NEVER BEFORE.



Designed for you.

Everything about TR-800 is engineered to make your job as easy as possible, from the tape-end sensing feature to the ultimate in microprocessor controls.

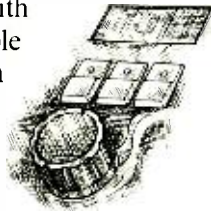
We've designed the tape path to give you straight-through threading. And tucked all electronics behind a drop-down panel for on-air accessibility. This panel includes all the

controls for the new digital Time Base Corrector (TBC-8000). The TR-800 is equally at home in a van, rack, T-cart or console. But the big feature is control. Unprecedented control.

New editing precision.

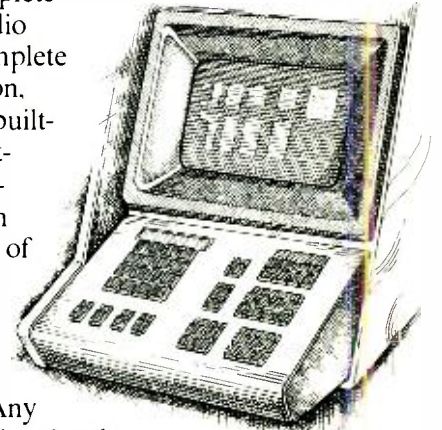
TR-800 lets you expand or compress materials to fill time slots with frame-by-frame, field-by-field precision.

With our Supertrack option, play back with broadcastable quality from reverse slow motion through still scan to forward fast motion. An LED digital readout tells you the exact tape speed. Edit with the microprocessor-controlled previewable editor, a standard feature. And we offer additional distributed processing through such accessories as Super Search Editor (SSE), a Multi-Rate Video Controller (MRVC), and a unique time code editing system (AE-800) that fully addresses C format capabilities.



A system that does it all.

Use TR-800 as an instant replay, slo mo and freeze frame unit. Use its superb editing control for special effects and precisely programmed edits. Get full video and sync record/playback capabilities plus three audio channels. Get complete video sync and audio simulplay. Get complete monitoring selection, metering and two built-in speakers. In post-production, the unrivaled acceleration and easy operation of TR-800 save time and money, while helping you turn out a superior product. Any way you use it, you're ahead.



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R&B series

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RADIO

PROGRAMMING & PRODUCTION FOR PROFIT

Short Takes

HERE ARE SEVERAL series of short programs that look useful for at least some, perhaps many, radio programmers.

Southern Baptists Entertain

Not new—much older, in fact, than any of the current format syndicators—is the programming operation of the Radio and Television Commission of the Southern Baptist Church. The Baptists got the message as far back as 1956 that in order to get on the air with their inspirational material they needed to ride in on entertainment programming that fit in the prevailing radio programs.

Accordingly, they built a plant in Fort Worth, Texas to produce radio programs, developing over the years several series with titles that make them thoroughly at home on the commercial radio scene. Most of them come in half-hour weekly segments and are sent out, two programs at a time, every other week.

The programs are free to the radio station. Delivery is currently on 7½-inch tape, but Charles Roden of the SBC told *BM/E* they are planning to distribute some programs on discs. This decision is based on the remarkable volume of usage the programs have built up over the years; discs become more attractive than tape at high-volume levels.

Major programs available at the present time include *Country Crossroads*, with plenty of music and two country-wise hosts to interview musicians; *Master Control*, interview programs on topics of great general interest with well-known people and two expert interviewers; *Sounds of the Century*, Easy Listening music ranging from great classics to familiar hymn arrangements; *Black Beat*, built around the Top 20 Black records as recommended by the Bill Gavin report, with a problem letter answered by a counselor; *Powerline*, four or five of the best current rock records (and currently aired by more than 1300 stations); and two series presenting similar material in Spanish, including an interview series with leading Hispanic personalities.

Each program includes one to three minutes of inspirational or religious material, one main motivation for the operation. Several series are primarily religious, including *The Baptist Hour* and *At Home With The Bible*.

The remarkable success of the operation is attested by the usage figures. The major programs are getting a total of more than 4000 individual airings per week (this includes a large number of repeat airings). We can certainly admire the Southern Baptists for doing well what they set out to do with the radio programs (they have them for television, too). Any broadcaster interested should write the Radio-Television Commission, SBC, 6350 West Freeway, Fort Worth, Texas 76150. Telephone is (817) 737-4011.

Business, sports

We reported on Radio Works, a short-program syndicator of Los Angeles, in the June and July, 1978 issues. Since that time Radio Works has moved sharply ahead into production and distribution of programs for national advertisers. *The Forbes Magazine Report* is a daily 2½-minute series of business comments drawn from the pages of *Forbes* and delivered to radio stations on a barter basis. The management of *Forbes* has signed an exclusive agreement with Radio Works for the series; the rotating sponsors have started with Mobil Oil, with a half-dozen other corporate giants joining in later.

The program had reached 35 stations as this report was written. Following this successful launching, Radio Works has contracted for another national series, *Action Beat*, 90-second interviews with top sports personalities by Cathy Rigby, former Olympic gymnast. More than 30 sports stars have already signed up for the series, ranging from Sugar Ray Leonard and Reggie Jackson to Chris Evert Lloyd and John McEnroe.

The sponsor is Johnson and Johnson Personal Products and the program, like that from *Forbes*, is supplied to the radio station for a barter agreement with a 30-second availability for local sponsorship. The series is targeted to young women and for the top 20 Arbitron-rated markets. It was scheduled to go on the air November 17 (after this report was written). Broadcasters can get all the data on the two series, and on others put out by Radio Works, at 6363 Sunset Blvd., Hollywood, Calif. 90028; telephone (213) 466-1935.

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Radio Programming

in this period of high car repair costs and difficult-to-find service is *Bill's Car Care*. Each segment consists of a question from an unhappy car owner about a specific problem followed by answers from a highly experienced mechanic and car-care teacher.

"Bill" is Bill Adelsperger, who has car repair certificates from several training centers of the Big Three car makers and from a number of educational institutions, including Colorado State University, Northwestern Tech, the University of Cincinnati, Lincoln Tech College—and the U.S. Army. He holds a teaching certificate for auto mechanics from the state of Ohio.

For a number of years Adelsperger has conducted a question-and-answer program on radio station WCKY in Cincinnati, which has developed a very large following in the area. He also has a weekly column in the *Cincinnati Post*, also titled *Bill's Car Care*.

The syndicated programs include questions that have come up most frequently on the WCKY phone-in program, indicating wide interest. The series is sent out on tape, 65 programs at a time to cover a 13-week period. Adelsperger and his partner in the en-

terprise, Charles Fuller, urge radio stations to use each program more than once.

They see the series as strong in attracting advertising support from a long list of businesses in car service and related fields, from body shops to rustproofers, from car washers to muffler shops, from towing services to wax manufacturers. The charge for the series is based primarily on the station's local one-minute rate, but can be negotiated for market size and other considerations.

Adelsperger and Fuller brought out the series in late spring of 1980. It now airs on about a dozen stations and has been highly successful.

BM/E listened to several sample programs and found "Bill" quiet and un-rhetorical but most convincing for the depth and completeness of his knowledge. Car owners should be elated to have Bill on tap. Interested programmers should address *Bill's Car Care* at 68 N. Dover Avenue, La Grange, Ill., 60525, tel. (312) 579-9578.

A day of Xmas music

Any radio programmer who hasn't locked up his Christmas programs may want to consider *The Sounds of Christmas*, 27 hours of Christmas music from an immense list of performers intended for both Christmas Eve and

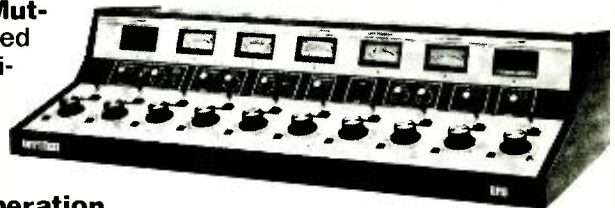
Christmas Day. It is sent out on seven-inch reels, each with one-half hour of music in two quarter-hour segments. The form basically allows for four commercial availabilities per hour.

The objective of the programming, according to Mike Shepherd, principal of the packager, Shepherd Music, is to include Christmas-related material covering the whole range of styles and periods of music attractive to one or another group of listeners. A small sampling of the artists will show the range: the Philadelphia Brass Ensemble, Elvis Presley, the Beach Boys, the Hollywood Pops, Percy Faith, the Living Strings, the Mormon Tabernacle Choir, Glen Campbell, Frank Sinatra, the New York Philharmonic, Woody Herman, E. Power Biggs, Mahalia Jackson, Peggy Lee, Lena Horne, Herb Alpert, Duke Ellington—and on for at least 30 or 40 more.

Shepherd told *BM/E* that the radio programmer is free to use only a few of the reels at Christmastime and put the rest on the shelf for insertion in the programming whenever they seem attractive. The purchase is a large addition to the station's recording library, in other words.

Charges are based on market size. For more info: Shepherd Music, 3875 Crary Drive, Toledo, Ohio 43613, tel. (419) 474-4191. **BM/E**

3 Models—6, 8 and 10 mixer dual stereo • Transformer Balanced Inputs and Outputs • 3 Inputs Per Mixer—internal pads allow mic/line selection on the same mixer • Two 4-Input Auxiliary Input Selectors—may be assigned to any mixer • Pre-fader Pushbutton Cue—in addition to normal CCW fader cue position • LED Status Indicators—color coded to aid in instant identification of function selectors • Momentary or Continuous Remote Control Contacts—internally selectable, also controls optional digital timer reset/start • Full Metering Capability—two meters standard, up to four meters and/or digital clocks and timers optionally available, all meters provided with LED peak indicators • Gain Selectable Microphone Preamps—provided with center tap access for phantom condenser microphone power, processor input/output port with buffer amplifier for outboard compressors, limiters, etc. • Programmable Muting Logic—internal pin-programmed matrix allows any selection of monitor and cue muting for the first five mixer positions • Pushbutton Aural Phase Test • Announcer's Microphone Intercom-Air Selector • Full Dual Channel Operation—Independent program and audition assignment pushbuttons • Five Monitor Driver Outputs—four muted, one non-muted • All Mixers Switch-Selectable to Mono or Stereo • Ground-Plane Techniques Used Throughout for Increased RF Immunity • Selectable Internal or External Master Level Controls • Accessories and Options—mono mixdown, high impedance (cassette) line input plug-ins, reference oscillator/line input plug-in, additional microphone input plug-ins, digital clock, digital timer, linear faders



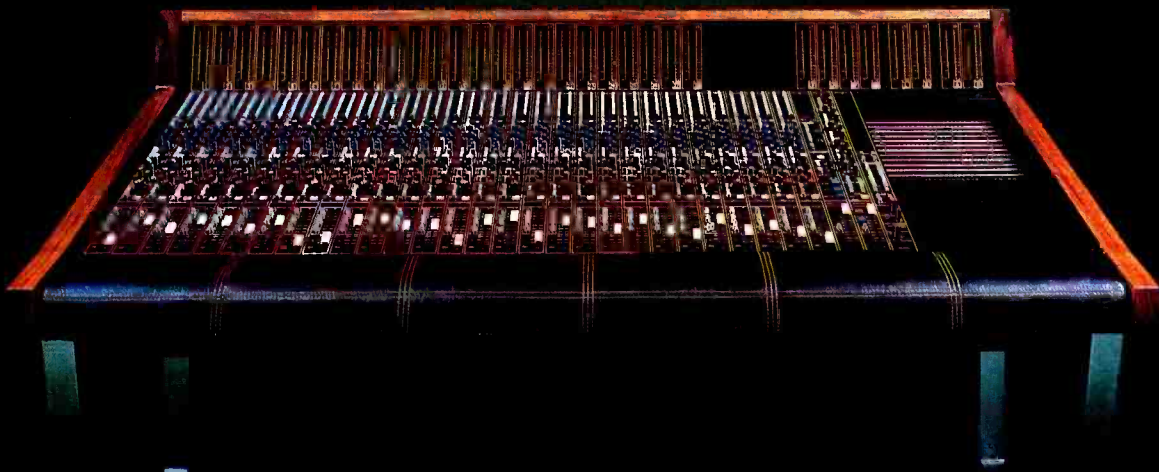
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STARBORNE PRODUCTIONS is not a format syndicator in the usual sense, but is a major source of Beautiful Music programming for a number of stations nevertheless. Jim Schlichting, founder and president, has devoted himself to helping remedy the shortfall in the supply of Beautiful Music caused by the American record industry's disdain for the genre. Following the big-bucks trail of the top rock stars and their worshippers, American record makers have virtually abandoned buyers with other tastes in popular music.

Schlichting, as *BM/E* wrote in July, 1978, has been working on the Beautiful Music gap in several ways. As an independent record producer, he has organized and directed hundreds of recording sessions, nearly all in England and Australia, using established music groups in those two countries. He has recruited a group of talented arrangers

to put the music into forms that meet the needs of American radio broadcasters.

A large number of these "custom recordings" have been done for the International Beautiful Music Association, a group of American syndicators and radio stations seeking to build up, by joint effort, the supply of the music they need. IBMA has contracted with Schlichting and with other producers of Beautiful Music, mainly in England.

Schlichting also makes many records for his own Starborne catalogue, from which they are available to any radio station or syndicator. This catalogue currently carries several hundred different recordings, and Starborne is eager to supply it to radio programmers who may be interested.

In the last year Schlichting's record production activity has built to a new high, with no less than 1100 recordings made during the year. About 65 percent of these used English groups, the rest Australian.

The operation has another expanding sector, this one under the business flag of Disc Location. For a number of years Schlichting has offered to find rare recordings on order, using his knowledge of record sources all over the world. In the last two years he has enlarged this into stocking rare and

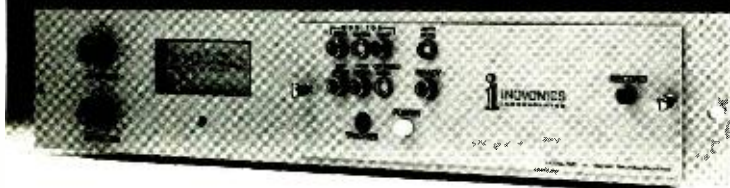
out-of-print records from many sources that he believes will have a continuing market. Some of these records are closely analogous to "remainders" in the book trade. They are still "alive" for a substantial number of buyers, but have been dropped from active distribution by the makers.

Schlichting is now selling these stocked recordings to anyone who wants them, consumer or programmer. Many of his sales at the present time come about in the following interesting way: a radio listener hears a recording that is especially appealing and calls the radio station to know where it can be bought. Frequent frustration at the corner record shop has taught the listener that this kind of music is non-existent there—the atmosphere is strictly teenager and hot rock.

The broadcaster, by prearrangement with Schlichting, immediately supplies the caller with Schlichting's WATS number. The listener's call gets the record underway by mail the next day.

The "out of stock" business has climbed to more than \$150,000 in the past year, which won't match any "gold" recordings but is splendid for a small, independent operation like Disc Location. It testifies to Schlichting's great knowledge of the music and the artists recorded over the years in this country and abroad. **BM/E**

Choose from two new recording electronics packages from Inovonics.



Model 380 is the upgraded successor to our well-known 375, used in hundreds of studios and stations around the world. With your tape transport and our 380, you have the ultimate analog recorder. Features of the 380 include:

- Advanced circuitry to reduce the effects of tape compression and phase distortions.
- Unprecedented signal and bias headroom for

full compatibility with highest-coercivity tapes.

- Two "workhorse" EQ and bias settings, plus an optimized mode with separate setup for best performance from "super" tapes.
- Compatibility with virtually any combination of transports and heads.
- SYNC reproduce and exclusive auto-mute.
- Remote control of all functions.

The perfect pair.

Use the 380 to create new, ultimate-performance recording equipment, or to give your old tape or mag-film recorder a sound so clean you must hear it to believe it. \$820.00

Model 370 is intended for routine replacement use. It is compatible with most studio transports and a wide variety of original and replacement heads. The 370 will make "new" machines out of your older studio recorders, delivering superior performance and great reliability. \$580.00

For more information, see your distributor or contact us today.

Inovonics Inc.

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Campbell, CA 95008

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...s of ten calibrated, step vertical adjustment controls with ± 12 dB boost or attenuation. Also available in a single channel version-Model 533.

The Model 537 One-Third Octave Graphic Equalizer

A single channel device, it provides ± 12 dB of boost or cut in 27 ISO 1/3 octave increments from 40Hz to 16kHz.

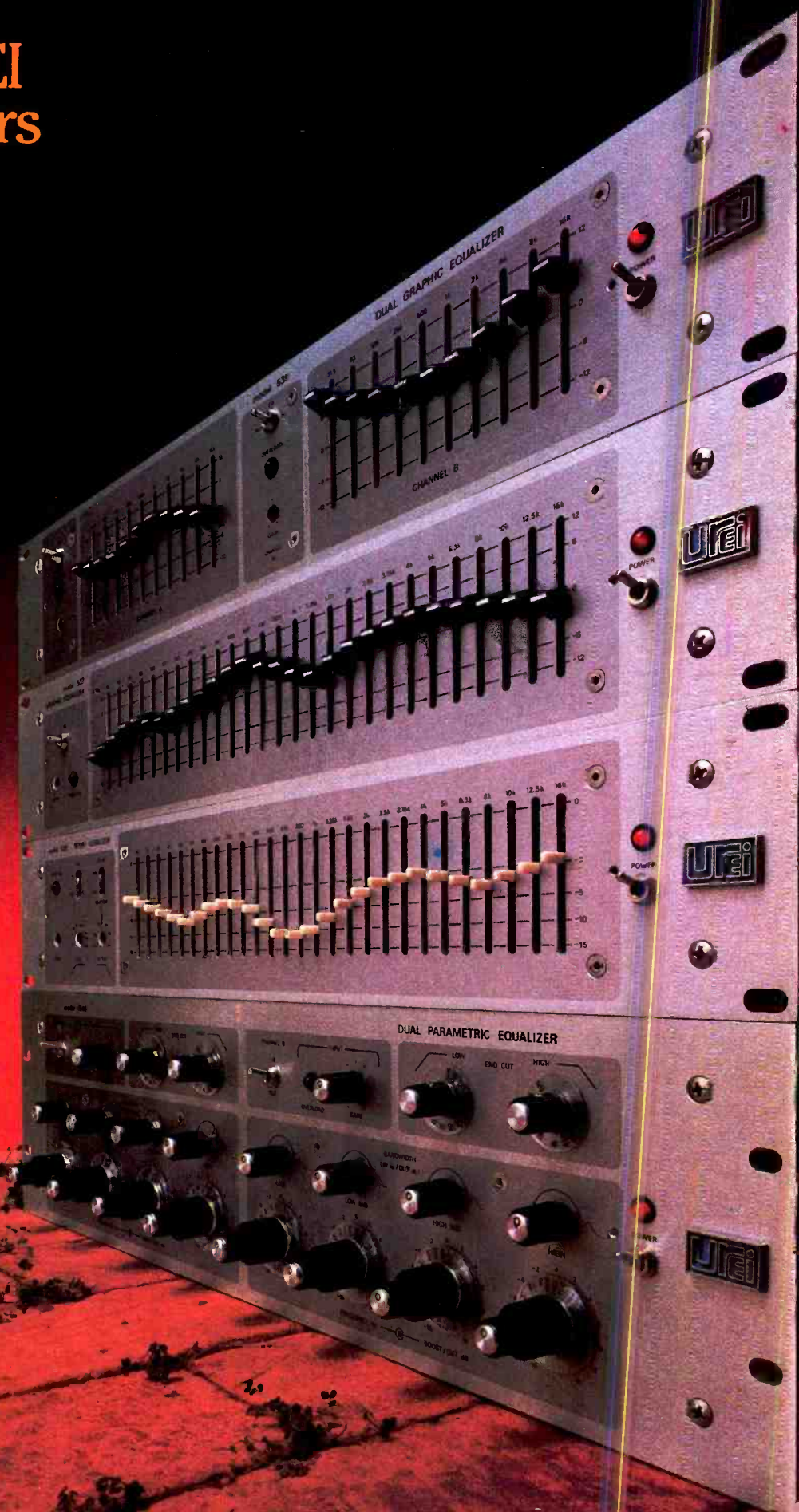
The Model 539 Room Equalization Filter Set

Specifically designed for room equalization, it offers 27 ISO 1/3 octave calibrated adjustments from 0 to -15 dB attenuation plus band-end tunable high and low-pass filters.

The Model 546 Dual Parametric Equalizer

Two independent channels. Each has four sections of continuously variable bandwidth, frequency, boost or cut; bypass for each filter section and channel; tunable end-cut filters; and 30dB gain. Also available in a single channel version-Model 545.

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Because it was designed by the people who use the camera. Not the people who built it.

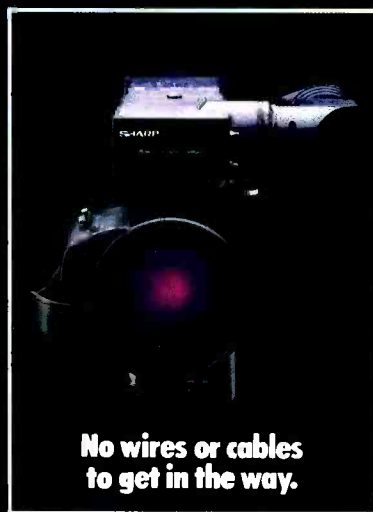
And to make ENG a breeze, you get Auto White Balance with memory. So whether you're indoors or out, the camera can be automatically

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Field Production Gets A Workout At "World of People"

FROM A WHISTLE-OFF competition in Carson City, Nev. to the grand opening of an erotic bakery in New York City, TV viewers are being treated to a potpourri of special events and unique people in a half-hour syndicated show created by Bill Hillier/Ben Okulski Productions. The new production company, in association with Meredith Broadcasting, started up earlier this year after Bill Hillier (formerly of *PM* and *Evening Magazines*) left Westinghouse Broadcasting to open shop in Sausalito, across the bay from San Francisco in Marin County (and five minutes from Hillier's Mill Valley home).

World of People is aired daily in nearly 50 domestic markets and is used in part by Canadian stations as a lead-in to local news programming. Indeed, its lively format and offbeat coverage are designed to appeal to those viewers who tune in to local news, featuring

events such as beer-drinking contests, a college graduation for guide dogs, and a seance conducted by a local psychic.

Even though the program's similarity with magazine-type shows is obvious (a good part of the show's staff came from *PM* and *Evening Magazines*) its producers insist *World of People* is not a magazine-format production.

"We'll cover people, certainly," says Bill Hillier. "But in our concept, the action and event will define the person."

Produced entirely on location, the program is unique in that it uses no studio, hosts, or audience other than those at the events themselves. On-camera talent or "presenters" are able to maintain a live-style presence and upbeat pace by following a strict schedule prepared well in advance. This allows them to "toss" the program from one event to the next, as

though it were all done live. In reality, the production company is divided into six field production units that are able to take their gear and cover events in any part of the world (a crew is now in France). Fifteen videotape segments are shot on location each week.

Besides the main production center in Sausalito, other centers are located in Houston and Silver Springs, Md., near Washington, D.C. Much of the bouncy and familiar style of the program comes from the participation of the on-camera "presenters" in the events, celebrations, and ceremonies and the energy with which the program takes the viewer from one event to another and back again. In this way it differs from the magazine-style format.

Not a magazine

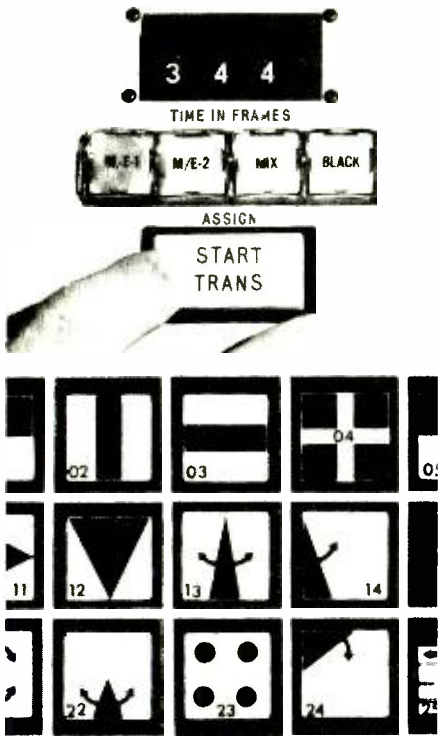
"What we are doing is covering events," says director Gary Brasher. "Oftentimes we will take the people



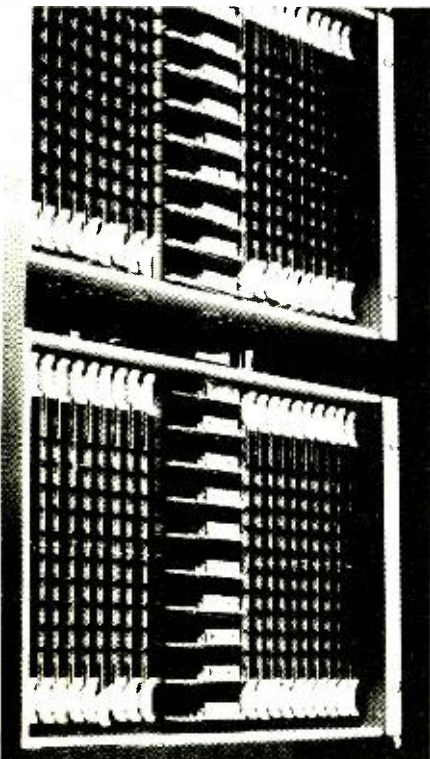
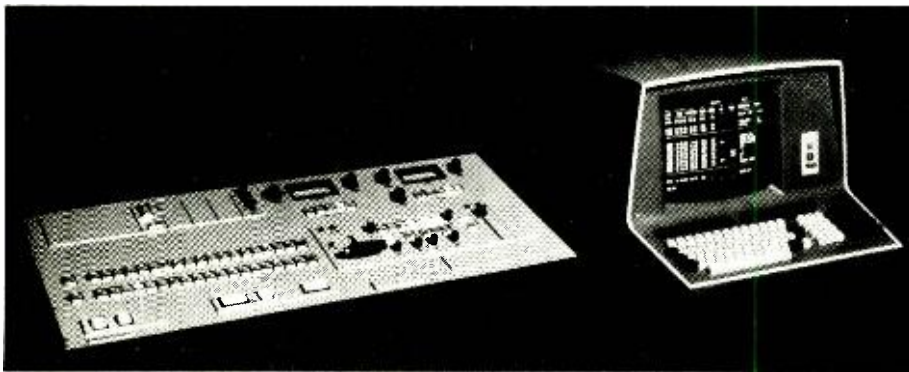
The Sausalito facility includes EC 103B edit controllers and Sony one-inch and 3/4-inch videotape recorders



World of People editing installation was done by Dave Brasher



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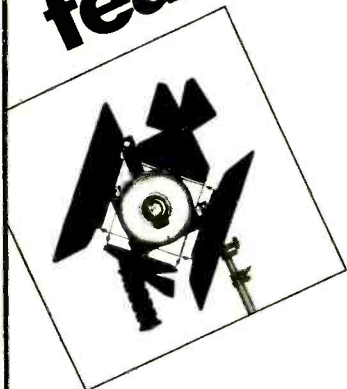
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TV Programming

that are participating and use them. But always there is some kind of event associated with what we are doing. We never go out and do a profile on someone just for the sake of doing it. That's something a magazine-type program would do. We are not a magazine. We cover events and they're never magazine-oriented."

Research people at the Sausalito headquarters and at the other offices are on the phones all the time lining up events. Under the direction of National Events Coordinators, schedules are drawn up and assignments sent to the various offices. Each center has two field production units consisting of the "presenter" or talent, a videographer, an associate videographer, and an event producer. These people cover the event, do the shooting, and return to home base where the tapes are screened and a rough edit plan drawn up. Then this material is sent to Sausalito where one of eight editors reviews the raw tape and makes a fine edit plan with all necessary cuts, bumpers, dissolves, and keys. This is then handed over to Brasher and the show's producer, Mary Anne Welker, for final approval.

"One of the big differences between producing *World of People* and a news show," says Brasher, "is that all producing is done in the field and editing in Sausalito. It's not all done by the same people."

Three edit rooms in Sausalito are dedicated to ¾-inch editing. Each room has three BVU-200s and a Convergence editing system with ancillary equipment. Hillier/Okulski has purchased four Convergence Corp. ECS-103B microprocessor-based editing systems for editing and post-

production. Dave Archer, technical director, supervised installation of the three ECS-103B systems for off-line use, each interfacing with three ¾-inch VTRs. The four ECS-103B is used on-line with two one-inch VTRs and two ¾-inch VTRs to complete the editing cycle. These systems allow the editors to use a variety of techniques such as A/B rolls, sync rolls, and switcher effects control of dissolves, wipes, and keys.

In the field, all Sony gear is used. Nearly one million dollars worth of Sony one-inch and ¾-inch broadcast videotape equipment has been purchased including six BVP-300 cameras, 12 BVU-110 ¾-inch VTRs, two BVH-1100 one-inch Type C VTRs with dynamic tracking, one BVT-2000 time base corrector, and nine BVU-200 ¾-inch editing systems. The Sony equipment was organized with help from General Electronics Systems, Inc. of Berkeley, Calif.

After the initial editing of an event, the tapes go to a post-production room where one-inch machines are used to assemble the final show, adding theme music and animation and integrating all the segments into their final order. "We don't add character generator material," says Brasher. "As the show is designed we don't use a lot of supers and keys."

Planning each show is done well in advance, though sometimes things don't work out. In such cases, the producers have to go back and regroup the program. "If it's the opening segment of a particular show," says Brasher, "then it's easy to regroup. But if it turns out that it's the last one, we have to do some reshooting in order to cover up. It doesn't happen very often. I can say that over the course of the program, I only know of two events that were re-



The concentration on editing at *World of People* takes EFP production one step closer to the style and quality associated with film production

jected after they were shot. They weren't as interesting as we thought they would be. And they simply did not come to life. There are times when the material comes in and it just doesn't sparkle."

At times like this, the crews must go out and shoot more material to make sure there's enough to present a good event. Usually, shooting is done two months in advance of air date and editing completed a month in advance.

World of People producers sometimes find it necessary to hold material for later use. An example is a story of a World War II veteran who had been waiting to receive the Medal of Honor.

"He was presented the Medal of Honor by the President," says Brasher. "We shot that a few months ago and had to hold it since President Carter was in the footage. He gave a talk and we had to hold it until after the election because of the problems that might occur regarding equal time."

Sometimes a portion of a story has to be held in order to complete the second half.

"There's a gentleman who is going to row across the Pacific to Australia, all the way, alone," Brasher relates. "We shot everything but we had to wait until all his preparations were complete and the weather was right. That footage is waiting. Another example is of a man who is going to run across the United States. We shot his departure from the West Coast, but obviously we have to wait for him to arrive on the East Coast before we can air it."

Temps back up operation

About 50 people are employed full-time by Hillier/Okulski Productions. In addition, part-time temporary people are used to back up field crews and help with the legwork coordinating events and getting research done. The temps are hired as the need arises. Many people at *World of People* are from TV magazine productions. Gary Brasher, for one, began his career at Group W's Baltimore station and was instrumental in the birth of the magazine-format program. At present, *World of People* is the only daily syndication without Los Angeles or New York offices. "Everything we need is right here," says Brasher.

Each *World of People* program covers three events. Many times the events themselves are local promotions or sponsored by private businesses. When asked if there are ever conflicts of interest, Brasher says that to his knowledge there are never problems regarding these sponsors. "We're not concerned with who sponsors it. We're more concerned with the event itself and whether the people want to see it." As a syndicated program, *World of People* is sold through Victory Tele-

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TV Programming

vision. Stations pay "cash" for the program, which contains six one-minute commercial availabilities. There is no "barter" arrangement with the sponsors of the events taped. Six commercial minutes are made available per half-hour show.

Since field production is the mainstay of the show's programming, good field equipment is a top priority. Hillier/Okulski chose Sony equipment for all field work. Each production crew has a mobile van, used primarily for transportation of crew and equipment. The program is never "live," so no microwave equipment is used. However, one type of equipment that's proved invaluable is the wireless mic. When the first crews went out to tape events, Brasher says, no audio cables were supplied. Since then, wireless mics are used to the maximum. "It gives us the kind of freedom we need. We're happy with that. We're never tied down by a cable. Once we did a high-wire act in which a gentleman walked quite a distance up. He had a wireless microphone on him so that he could comment about what it felt like. We really use wireless technology. Another time we used a wireless on a



Ken Marangel, on camera, Jennifer Terwilliger, sound, and Nigel Bullard, "presenter," make a location shot

goalie at a hockey match to get the full effect of what goes on on the ice. Wireless mics are an important part of the program. We had one slight problem once, though, when someone wearing a wireless fell into Chesapeake Bay."

Hillier/Okulski Productions has announced a second program to be avail-

able for syndication next fall. A magazine-type show, it is designed to be aired in prime access time periods along the lines of *PM* and *Evening Magazines*. A name hasn't been selected yet and producers ask if anyone has any suggestions, to let them know. **BM/E**

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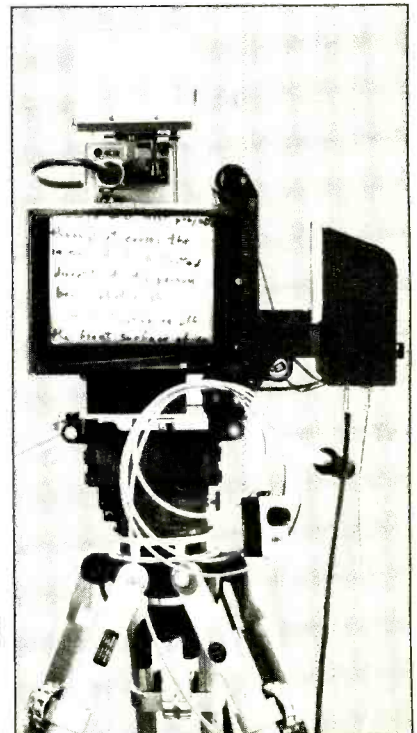
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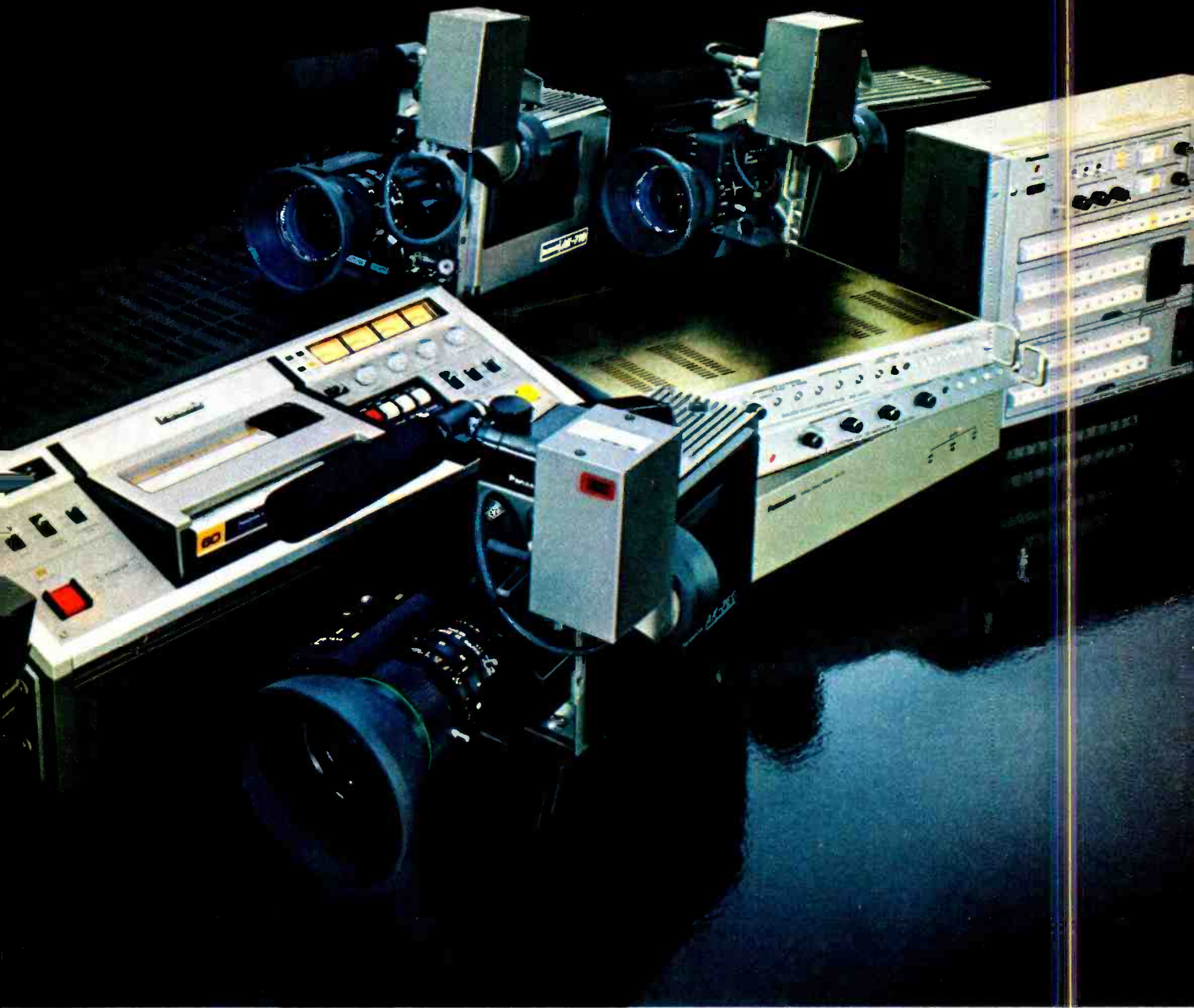
When one network executive first saw the special effects produced by the Panasonic AV-7000 video squeezer, he couldn't believe his eyes. But then he'd never seen a special effects generator that combines digital techniques with microprocessor technology. The members of the National Academy of Television Arts and Sciences were equally impressed. So impressed, they presented Panasonic with an Emmy.

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chroma key generator and the AS-1000 color sync generator. And, of course, you can look forward to even more Panasonic broadcast equipment in the future. But take a good look at Panasonic broadcast equipment now. After all, you never know: Maybe the same innovative engineering that won us an Emmy can help you win one.

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TV Best Station Award Entries

KOCO-TV, OKLAHOMA CITY, OKLA. A TV Pioneer Looks To The Future

TV ENTRY

Submitted by Ted P. Newcomb,
Vice President and Chief Engineer

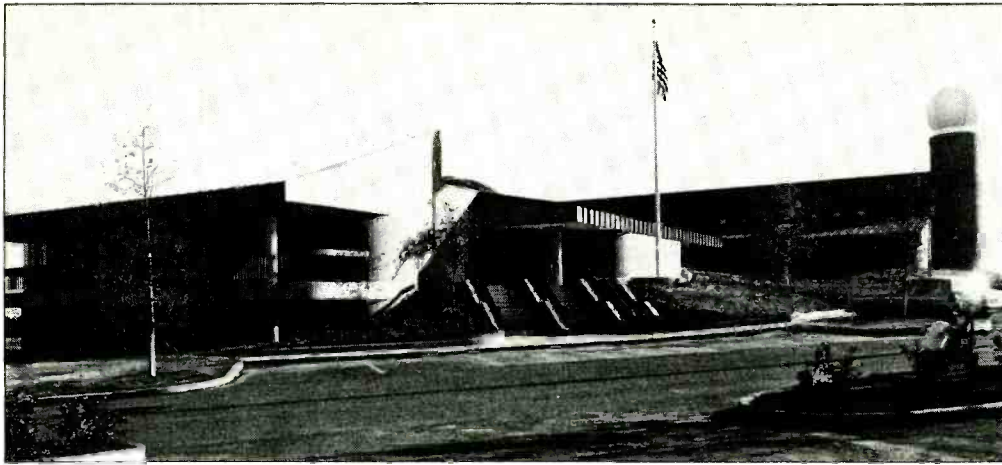
KOCO-TV WAS LICENSED in 1954 shortly after the freeze on television licensing was lifted. The station's continual growth as a leader in the Oklahoma City market warranted a new studio, and approval was given in 1978. Our transmitter site, six miles from the old studio, was in an ideal location due to accessibility to the downtown area and

proximity to other local stations.

The new studio complex had to be something different. We wanted to get away from the "square" or "rectangular" look and still have a functional facility. The architectural firm we selected, Rees Associates, was able to deliver the product.

Master control and technical center

Master control originates all on-air programming, with switching coming from the studio control room during newscasts. The equipment consists of an Ampex MC-4 A/V switcher, TeleMation Composer I character generator, Nurad and Tayburn ENG microwave receiver

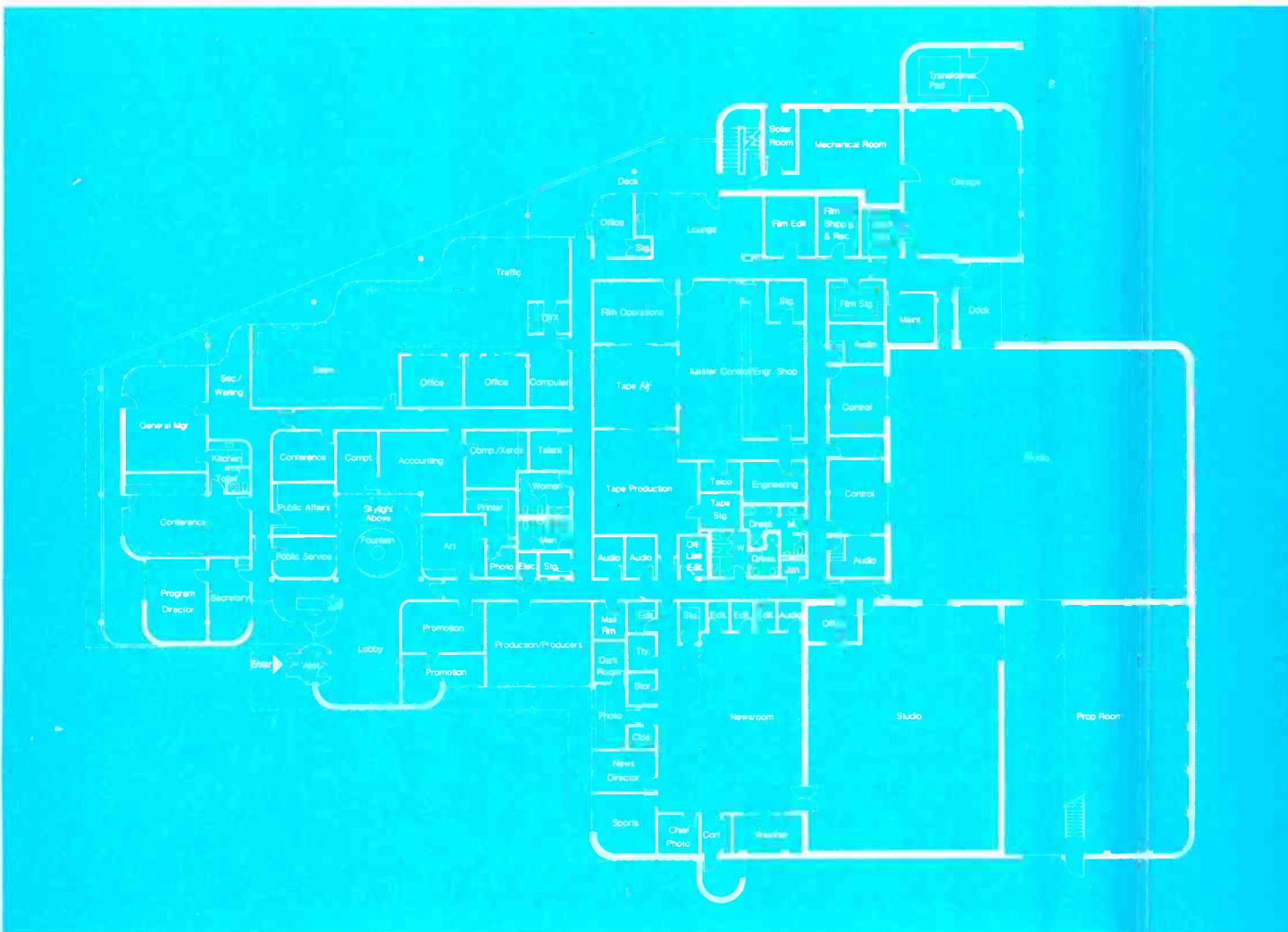


An outside view of KOCO-TV shows the marriage of form and function. The 12-foot radome for the weather radar is mounted on the tower structure and is incorporated in the overall design of the building

control, three Ampex BCC-10 studio camera controls, and two RCA TK-28 film camera controls with transmitter remote monitoring.

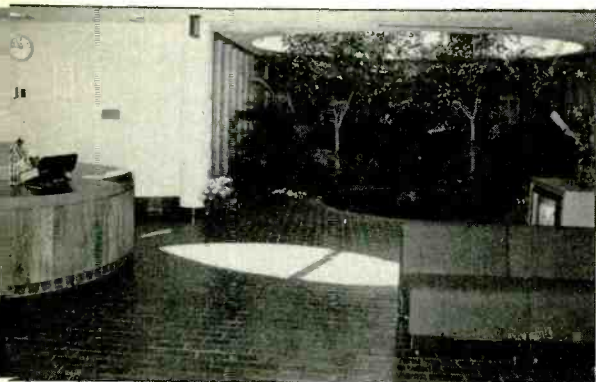
In addition to the RCA consoles, 18 Stantron custom racks house the associated electronics for the above and an Ampex 4000-H video switcher, plus pulse and video DAs, A/V patch panels, a Di-Tech 40 by 30 A/V router

with provision for three-channel audio, TSC weather radar colorizer, TSC NWS radar receiver/colorizer with dialup, Arvin color weather satellite receiver, electronics for a Vital SqueezeZoom, three Ampex BCC-10 studio cameras, microwave, monitoring, etc. The rear of the racks serves as one wall of the large engineering workshop, saving space and providing for ease of maintenance



While the building layout is unconventional, it is still built to be functional. All the operational areas are grouped in the large end of the building

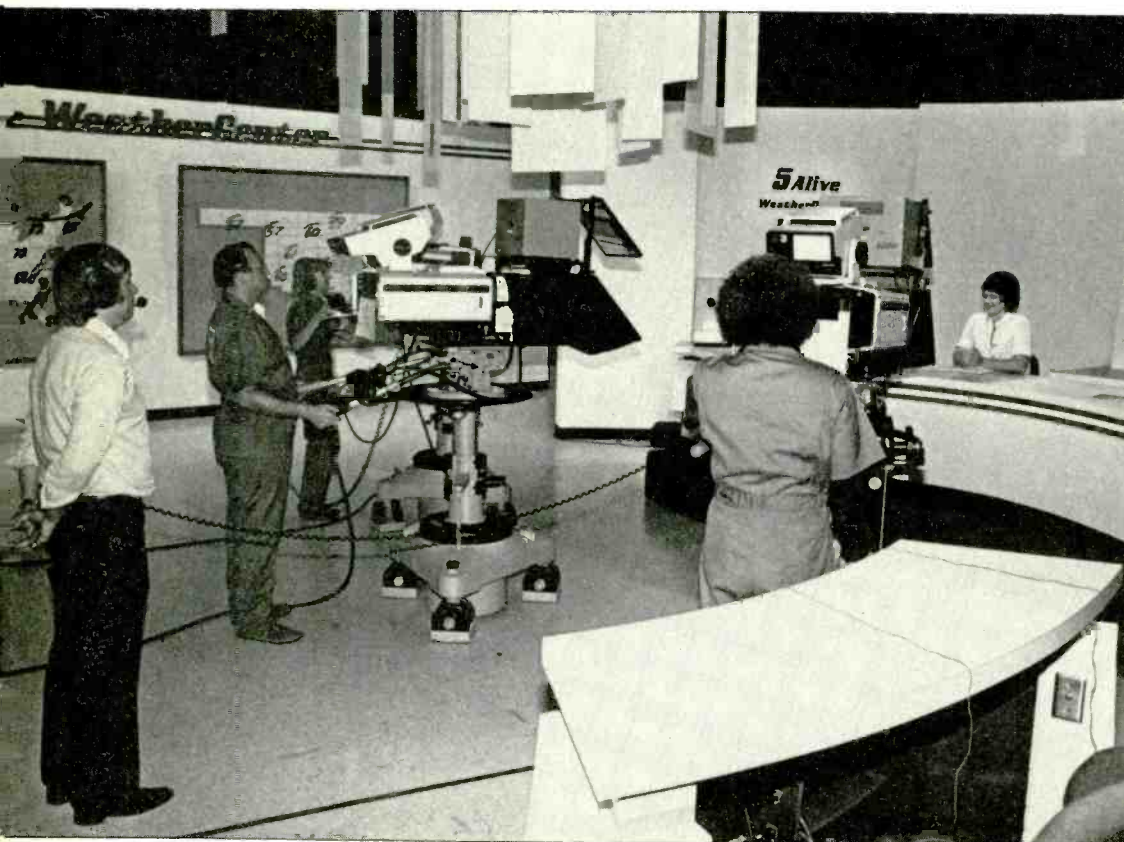
TV Best Station Award Entries



The domed atrium gives the lobby/reception area an outdoor feeling with the fountain, plants, and also plenty of sun through the skylight



The 5-Alive newsroom is also unconventional in design, but still functional. Note the design of the monitor rack on the back wall



Studio B is equipped with Ampex BCC-10 cameras. The large 5-Alive news set is housed in this studio. The panels above the set are for a ceiling effect and are lighted with various colors during the opening and closing of the newscast

from the shop area.

Tape air, projection, and tape production areas can be separated from master control by means of sliding glass doors. Any one or all of the above areas can be isolated from any other.

Equipment in the tape production area consists of two Ampex VPR-2s and two AVR-2s, cabled to the Ampex RES-1 editor. This area was primarily designed for production, but also ties in with the tape air room. The tape air area is equipped with an RCA TR-60 and two RCA TCR-100 cartridge machines. Compact storage for over 3000 carts is provided by sliding racks.

The projection room is equipped with two RCA TK-28

film cameras and associated items. A work area and storage for "spot reels" is provided.

Studios designed for production

The new facility has two large studios. Studio A measures 59 by 26 feet and Studio B is 45 by 58 feet; grid height is 16 feet in Studio A and 15 feet in Studio B. For years the production department used a "hard cyc," but with the new Studio A primarily scheduled for production, we decided to use a new "soft cyc," 15 feet high and 120 feet wide. In addition, we have a 15-foot high by 70-foot wide chromakey blue curtain and a Bedford plush porcelain blue curtain 15 feet high by 36 feet wide. The curtains are

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TV Best Station Award Entries

connected to a dual track running 360 degrees around the studio, allowing them to be moved to other areas. Studio B is used for news, with a set designed by Dyna-Metrics.

Studio A has a custom 700 A lighting panel with 26 7.2 kW dimmers, six 12 kW dimmers, six 7.2K non-dim, and a Plexus 1000 two-scene control panel. Studio B unit is a 300 A panel and consists of 16 7.2 kW dimmers, three 7.2

kW non-dim, and another Plexus 1000. The capabilities of the lighting system are too long to describe here. Large electrically controlled sound doors isolate the studios. A similar door provides camera access to the outside. Both studios are constructed with acoustic concrete blocks to aid sound isolation.

The studio control equipment comprises an Ampex 4000-H1 production switcher, machine controls, monitoring, Vital SqueeZoom, character generator control, two-way communication, and special lines for news. Pro-



Studio control room. Left to right are the machine controls, Ampex 4000-H1 production switcher, Vital SqueeZoom, and monitoring. In the foreground is the news producer area, character generator keyboard, and communications

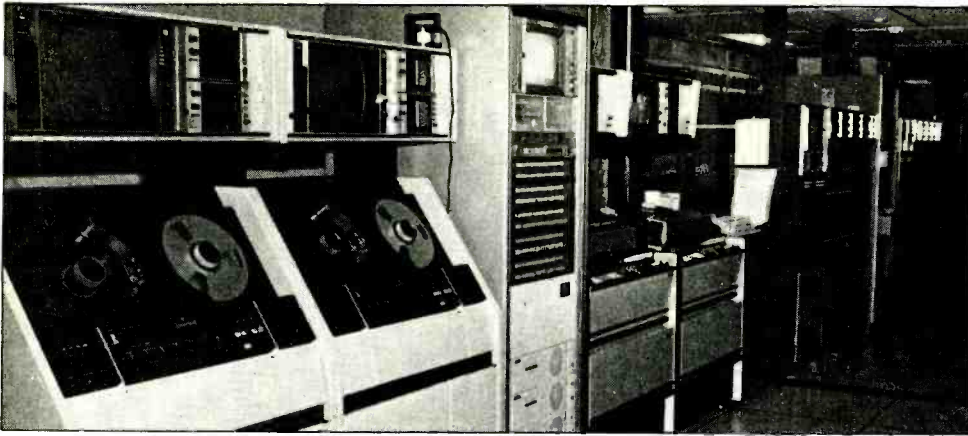


Audio control room. Audio Designs custom TV-32 audio console, Ampex ATR-700 audio tape machines, RCA cartridge tape, and timers. One timer is slaved to the directors for segment timing



Master control area. Left to right is the character generator control, Ampex MC-4 A/V switcher, Plectron control for the Nurad quad horn system, Tayburn autotrack antenna control, transmitter monitoring, Ampex BCC-10 studio camera controls, and RCA TK-28 film camera controls

TV Best Station Award Entries



Tape production area. Ampex VPR-2s and AVR-2s. The RES-1 editor (not illustrated in photo) is located to the right on a large work console. Tape area consisting of two RCA TCR-100 cartridge tape machines and a TR-60, and film area with two RCA TK-28 film islands are located in the background. Note the sliding glass doors used to separate the areas if desired

duction and newscasts originate from this area.

The audio control room is well-equipped for production with an Audio Designs TV-32 custom audio console, Ampex ATR-700 audio tape machine, RCA cartridge machine, turntables, and other equipment.

The 5-Alive news team uses seven RCA TK-76 cameras and Sony BVU-100, BVU-50, and BVU-110 recorders in the field. Four news editing stations are

equipped with Sony BVU-200 machines and BVE-500 editors, and Ampex VPR-2s. Two ENG vans and a helicopter make the live segments possible.

The move worked out well (actually, better than we had expected) due in part to teamwork by the excellent crew, and we signed on from the new facility May 19, 1980. We have a lot behind us — and a great amount ahead, in a new studio and location that we can be proud of.

WHEC-TV, ROCHESTER, N.Y. Built For Efficiency

✓ TV ENTRY

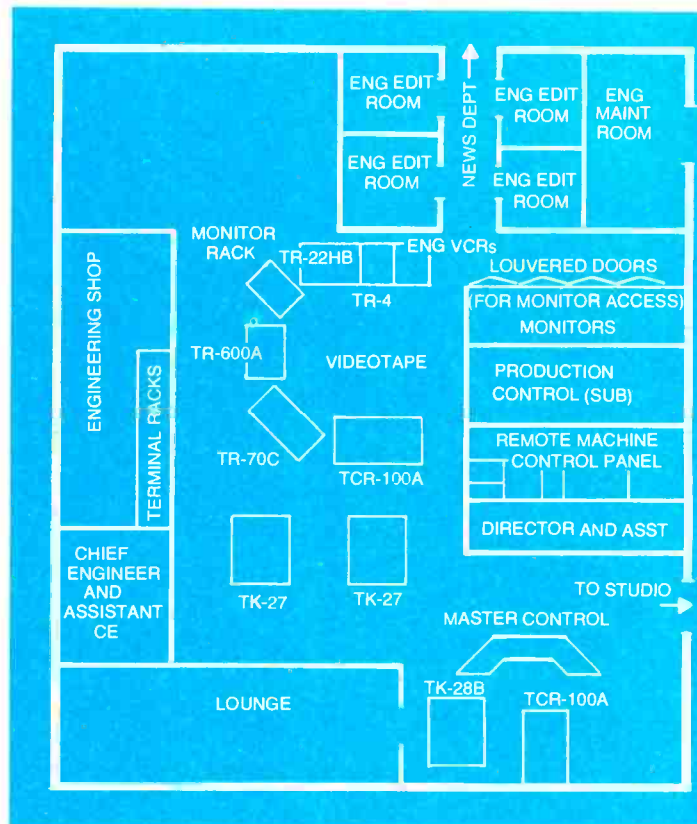
Submitted by Howard Huff,
Director, Technical Dept.,
with additional material supplied by RCA

WHEC-TV'S OLD FACILITY in downtown Rochester was right in the path of the city's urban renewal plan. There was no choice — the station had to move. Fortunately, there was land available right next door, allowing TV-10 to stay in downtown Rochester and paving the way for a smooth transition to the new facility without any interruption of service.

That was the first practical problem to overcome: setting up an initial technical operation that incorporated all the functions needed to keep a station on the air. Therefore, the equipment selected for new purchase had to serve as a mini-television station with enough hardware to keep the station on the air until all the other gear was moved from the old site to the new facility.

Installations that would take several weeks, such as pulse distribution, sync distribution, production switcher, master control switcher, a cart machine, a film island, and a reel-to-reel machine, had to be in place and working in order for us to have an uninterrupted move. We selected for the initial installation a Grass Valley 1600-7K production switcher, a GVG 1600-4S master control switcher, a GVG 400 routing switcher, an RCA BC-50 audio console, a TCR-100A cart machine, a TR-600A reel-to-reel, and a TK-28B film island.

The other concept that we wanted to incorporate in the new design was efficiency. The architectural firm of



The technical layout of WHEC is built to aid in an efficiently run operation. The equipment is placed so that there is both easy operation and communication

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Master control is right behind the production control room and has a clear view to aid in switching and previewing



The two-tiered production control room allows the producers, directors, and assistant directors an unimpeded view of the monitors without being in competition for space with the operating technicians



Barkstrom and LaCroix of Rochester came up with a design to meet that need. We had learned from our old building the things that made the functioning of the station inefficient. For example, there were people on the third floor who needed to do business with people in the basement. Time was lost going back and forth.

In the new facility, everything involved in making and transmitting the audio and video — the studio, master control, the control room, videotape, telecine, operation, film editing, news, and engineering — is on the first floor. All the support staff, sales, traffic, accounting, programming, and the executive offices are housed on the second floor.

The technical layout further illustrates the efficiency concept. In videotape, the machines are arranged in a horseshoe so that one person can easily operate the machines as needed. Our tape machines are a TCR-100A (for commercials and some news playback), TR-600A (used primarily for production), a TR-70 (used to dub tape to carts), a TR-4 (used mostly by the news department for

recording CBS network news feeds and dubbing cassettes up to quad), a TR-22B (used for program playback), and two Sony 2850s (for news VCR playback). There is a second TCR-100A in master control.

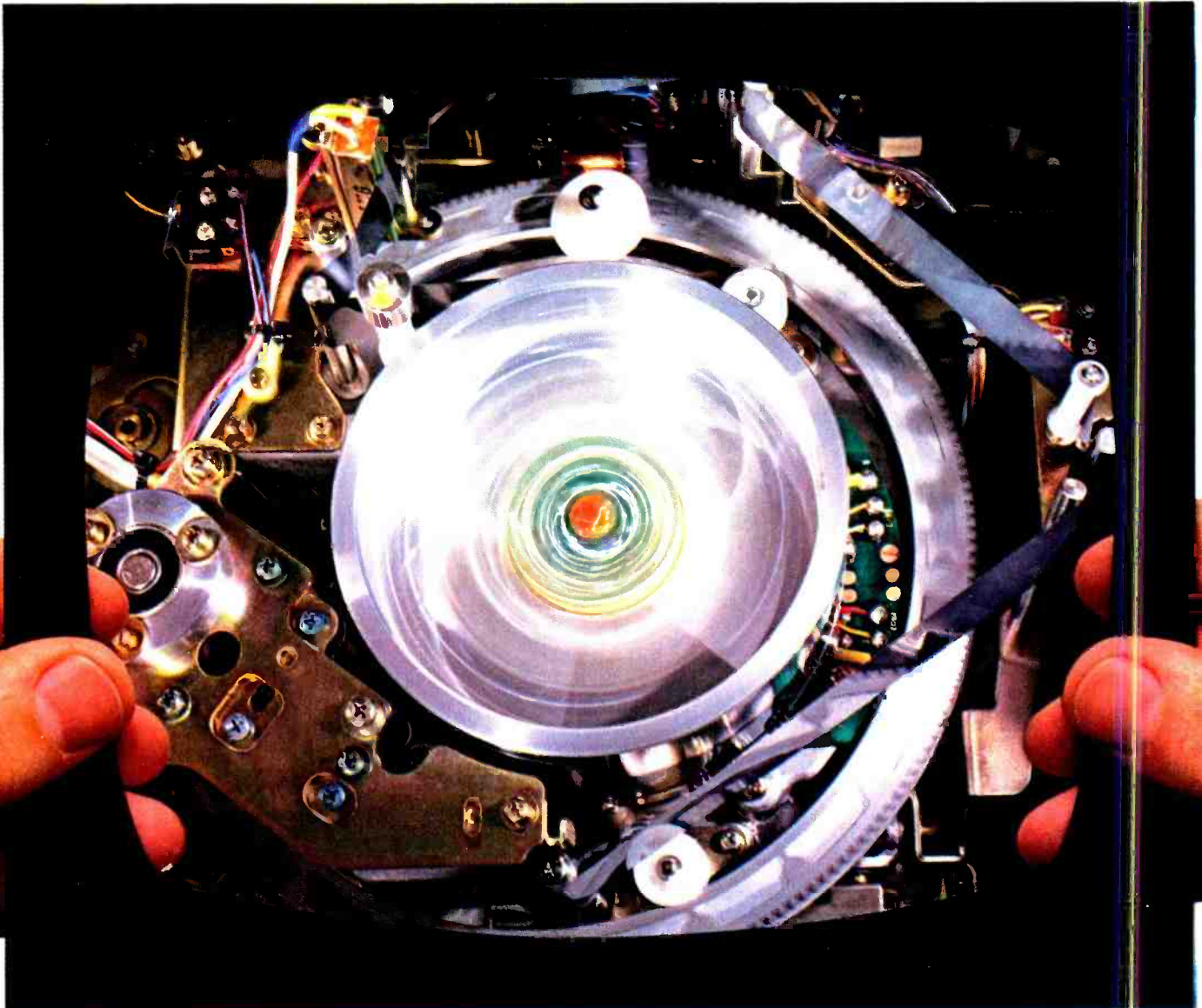
The master control area is also set up for maximum efficiency. The technician in master control has a clear view of production control for ease of switching and previewing during live broadcasts, plus close proximity to the second cart machine and the film islands (one TK-28B and two TK-27s), allowing the technician easy access for loading the carts and films.

Split-level production control

Production control is built on two levels, with the director and other production personnel on the upper level and the video and audio control positions on the lower. An aisle between the two operating levels allows for free flow between the studio and the technical area.

WHEC's new studio is 40 by 60 feet with a 90-foot soft cyc on double tracks. The lighting was designed by Imero

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TV Best Station Award Entries



The horseshoe configuration of the videotape area makes it easy for a single technician to handle many of the tape changes necessary

Fiorentino Associates and includes a patch panel control system, dimmer bank, and a portable control console. The console can be moved into master control and operated from there.

There is one other feature of the TV-10 facility which is not directly involved with production but which is unique within the design. The station uses a closed-loop heat pump for heating and cooling the building to conserve



The four ENG edit booths are adjacent to both the newsroom and production control. The VCR playbacks are also located close to the edit booths

energy. The system recycles the heat generated by the lights and the equipment. In the winter the system heats a 10,000-gallon water tank and uses the hot water to heat the building. In the summer the excess heat is forced through evaporation coolers.

WHEC-TV 10's new facility went on the air June 10, 1979, with upstate New York's newest, most up-to-date, and most energy-efficient broadcasting facility.

WSPA-TV, SPARTANBURG, S.C. Designed For Local Programming

✓ TV ENTRY

Submitted by Joseph R. Varholy,
General Manager



WSPA-TV built its new facility to serve the local programming needs at the "Crossroads of the New South," Spartanburg, S.C.

LOCATED AT "The Crossroads of the New South" is Spartanburg Radiocasting Company's WSPA-TV, Channel 7, the CBS-TV affiliate serving over half a million homes in the Spartanburg, Greenville, Asheville, and Anderson area. Channel 7 began operations in its sparkling new facility on March 31, 1979.

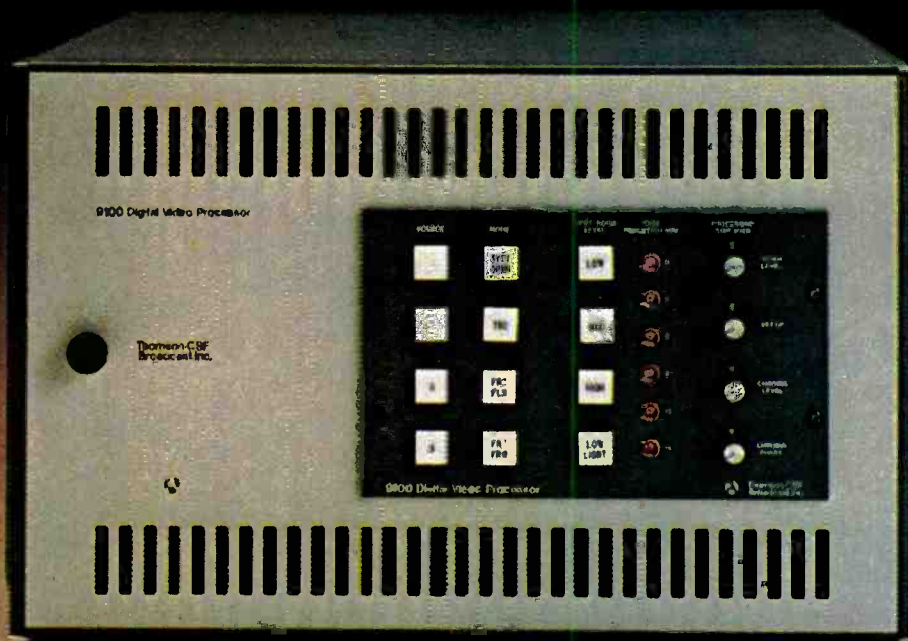
The architectural firm of John H. Summer & Associates, Atlanta, designed the station to serve local program and news requirements with a commercial production facility operating simultaneously. The building is divided into two sections connected by a lobby. One section is comprised of personnel not directly involved in live/tape studio operations: sales, traffic, business affairs, local and corporate management. A larger section includes all areas involved in operations.

The 43,000 square foot facility devotes a significant portion of its space to generous-sized studios and control areas. All control areas are constructed on computer flooring to allow immediate access to cables and maximum flexibility for future alterations.

The nerve center of the operation includes three spacious rooms for master control equipment, videotape facilities, and slide/film projection.

The master control room, 32 feet eight inches by 37½

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3M

TV Best Station Award Entries

feet, incorporates the following equipment: 60 IL master control switcher, GU 16 by 32 routing switcher, DC 52 remote transmitter control, TeleMation character generator, quality control for two LDK 25s plus two PC-70s, ADDA frame sync controls, Audio Design audio distribution amps, and an RS-232 terminal for central TCR-100.

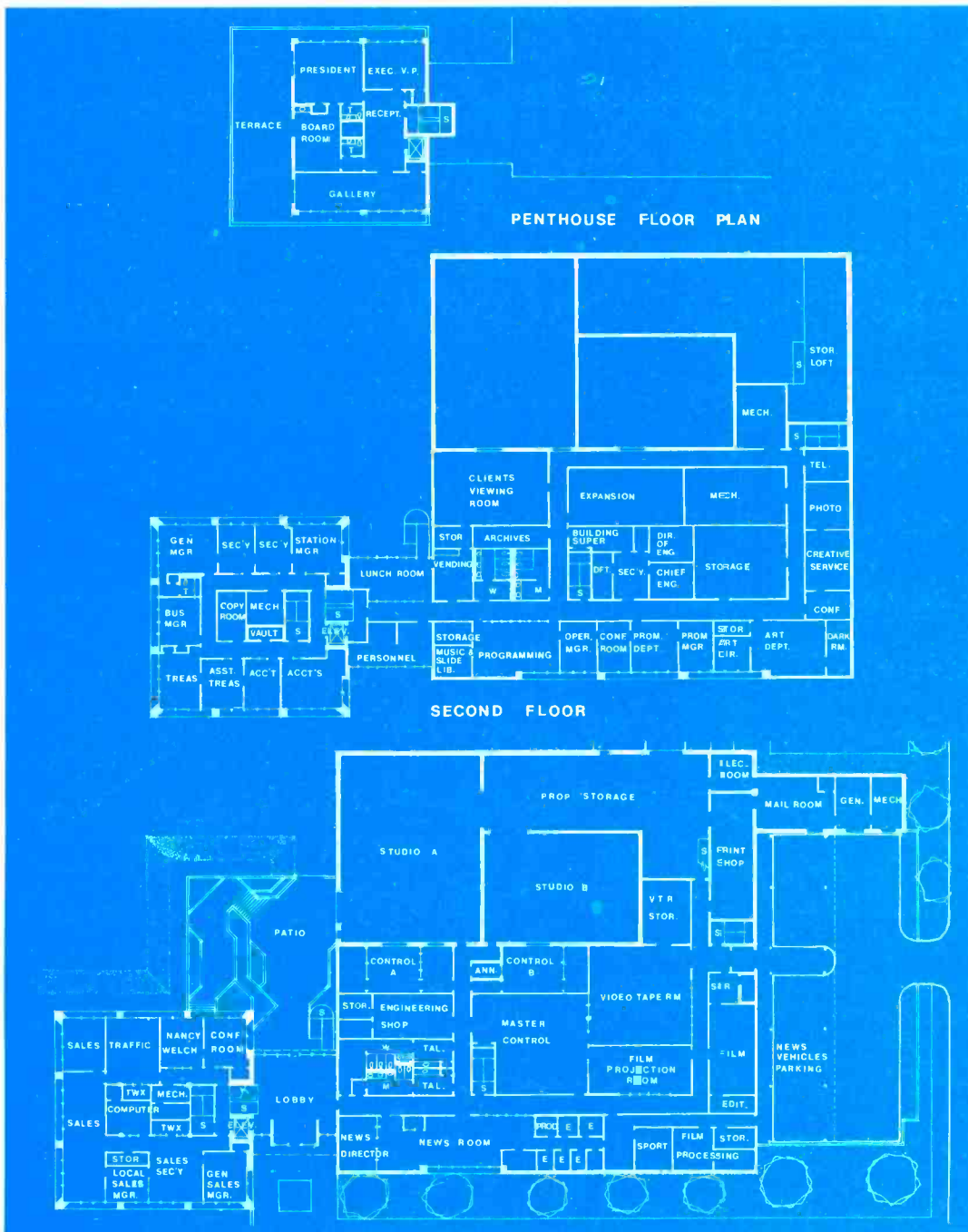
The 34 by 32 foot videotape area, adjacent to master control, includes two RCA TCR-100 cart machines, three Ampex 1200 machines, two UPR-28 Ampex one-inch machines, and two Sony 2860s for news/production purposes. The videotape area, with Storeel sliding racks, accommodates 1800 reels of tape and provides immediate access to the material.

The telecine area connects to the master control in a 24 by 16 foot room and includes two islands (a TK-27 and a

TK-28) and space for a third.

On the other side of master control are Studio A and B control rooms and studios with a connecting and spacious property room. Studio B, 35 by 50 feet, houses the permanent sets for *Eyewitness News* and the daily *Nancy Welch* program, now in its fourteenth year. Nancy's set includes an interview area and a completely equipped kitchen. The kitchen also provides local and regional agencies ideal facilities for the production of food commercials.

Studio A, 60 by 45 feet, includes a hard cyc, 85 feet long and 18 feet high, that displays a rainbow of colors or patterns from a complete variety of Mole Richardson fixtures. Both studios' lighting systems were engineered and designed by Emmy award-winner William Klages of Imero Fiorentino Associates, Inc. lighting consultants, Hollywood. With this professional system, WSPA-TV has involved itself extensively in network-quality produc-



WSPA-TV comprises two separate buildings connected by a common lobby. The larger building holds the studios, technical and operational personnel. The smaller building houses those not directly involved in live/tape studio operations

TV Best Station Award Entries



There are two permanent sets in Studio B, Eyewitness News and the Nancy Welch Show. This is a view of the interview area for the Welch Show, which has been running for 14 years



On the other side of the Eyewitness News set is the area of the Nancy Welch set used for cooking demonstrations. It also doubles as a production aid for preparing food for commercial spots



The master control area is large enough to include all the controls necessary for quality audio and video but designed for ease in handling those controls by the technicians

tions from symphony orchestra programs to local automobile commercials.

Control Room A is spacious, with separate areas for video, audio, and clients. Video includes Grass Valley's 7K switcher with Vidifont character generator custom-designed. The audio area houses the latest Audio Design board. Studio A control is comparably equipped.

The final section of the larger building's first floor is the spacious headquarters of the award-winning *Eyewitness News* team, which is 100 percent ENG.

The videotape editing functions are performed in three soundproof booths. *Eyewitness News* also maintains an operation in the neighboring city of Greenville with live microwave capability.

The *Eyewitness News* motor pool connects directly to

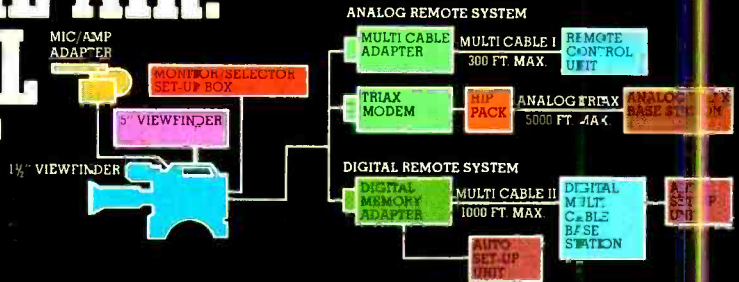
the newsroom for quick and easy storage and access. The covered area insures protection of vehicles and the very sensitive electronic gear.

The *Eyewitness News* team roams far afield throughout the day gathering stories. When they return home, however, time is precious, so the areas they have to traverse have been reduced to the fewest steps possible for maximum efficiency.

The support forces that accompany the studio productions are housed on the second floor. Engineering and production are located directly above master control with a convenient flight of stairs downward into the control room and one flight upward to the roof to attend to microwave equipment needs.

Each building has two conference rooms conveniently

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Both control rooms have Grass Valley 7K switchers. The audio board is from Audio Design and the character generator is a Vidifont

Videotape (showing here two of the three Ampex 1200s) has two Ampex UPR-28 one-inch machines, two RCA TCR-100s, and two Sony 2860 VCRs

located for personnel in that area. The promotion department adjoins the art department, which has the latest in photographic equipment: Visual Graphic Comp. POS 1 316, Photo Typositer 3100, Robertson Horizontal Camera 1518, and a Compugraphic Execuwriter I.



Studio A handles everything from children's programming to full symphonies to public affairs to commercial production



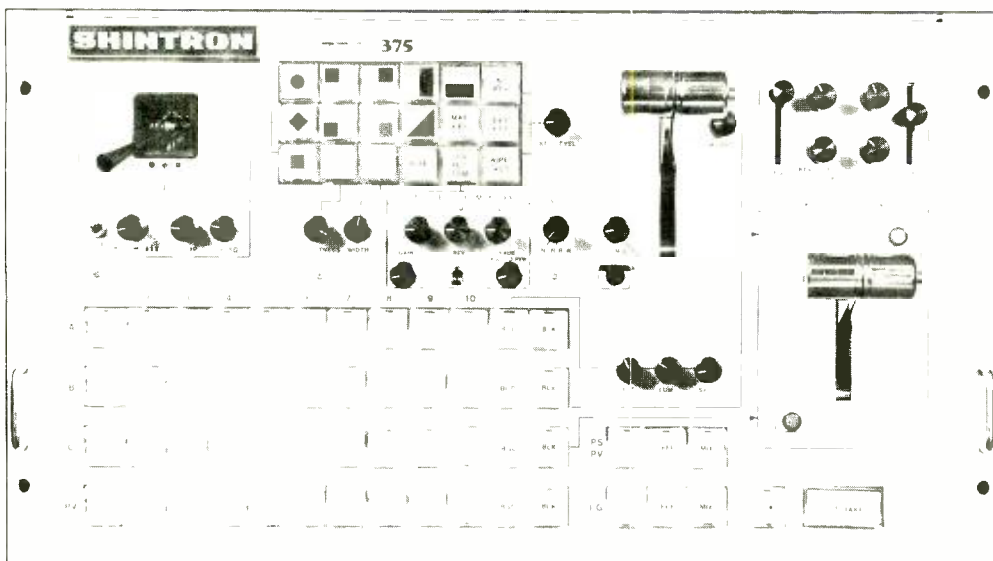
Construction took approximately one and a half years. The president of Spartanburg Radiocasting Co., Walter J. Brown, dedicated this outstanding facility in a live telecast June 16, 1979 with a distinguished array of governmental officials and broadcast executives in attendance.

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Jim Kitchell, CABLE NEWS NETWORK



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CNN has its headquarters in Atlanta, with bureaus in major cities in the U.S. and abroad. All bureaus have Sony equipment. In fact, CNN owns about 53 BVU-200A editing recorders, 17 BVE-500A editing consoles, and 28 BVU-110 field recorders.

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"As for the field recorders, the 110's, Sony equipped them with more functions at a lighter weight than anything previously available. They're the mainstay of our ENG operations.

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WNDH-FM, NAPOLEON, OHIO

A Showplace Plant Plus Localism Wins In An Agricultural Community



FM RADIO ENTRY

Submitted by C. Richard McBroom,
General Manager

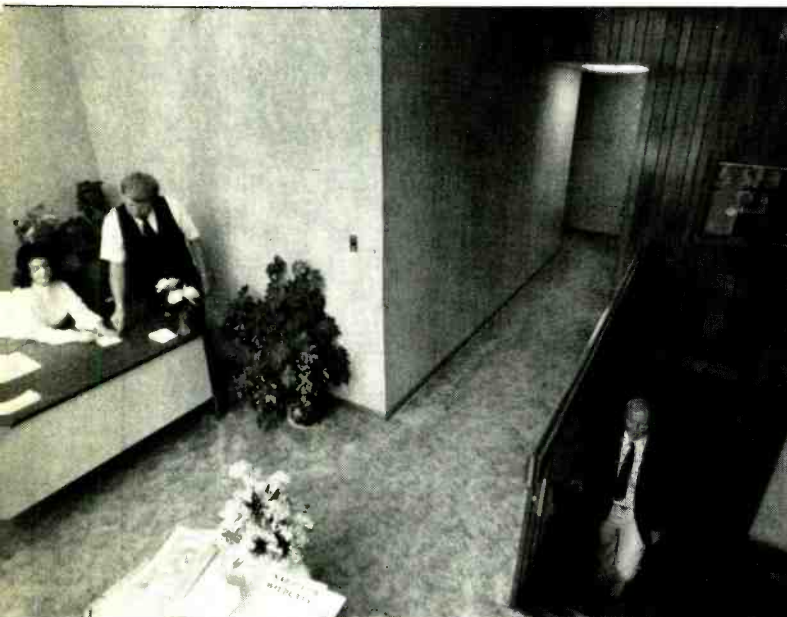
WHEN THE RAPID GROWTH of WNDH forced us in 1979 to seek larger facilities, we decided we wanted a downtown location in our city of license, with the 3 kW transmitter at a distance.

Although cost was a major consideration, so were the tax advantages of remodeling an older building. There-

fore, we leased a suitable 100 by 22 foot structure and carefully planned the most advantageous layout and traffic flow. With that completed, we hired consulting engineers to plan and install the studio facilities and retained contractors. Our staff preferred the second floor to minimize walk-in traffic, and that decision has proven wise.

We chose equipment for state-of-the-art electronics and minimum maintenance. Basically, our new equipment is Ramko, TFT, ITC, and Collins. We decided to rackmount as much as possible and provide rear access for ease of service. All wiring was preplanned and the studios are interconnected with remote starts on major components.

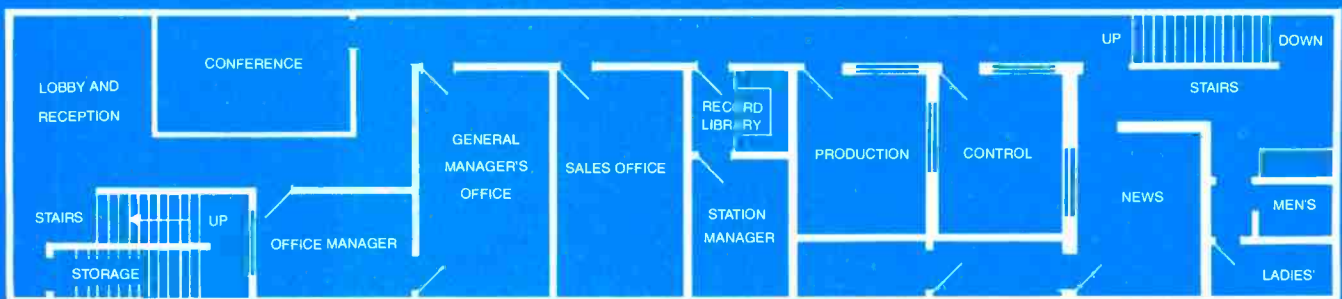
Most equipment from the old studios was replaced: we



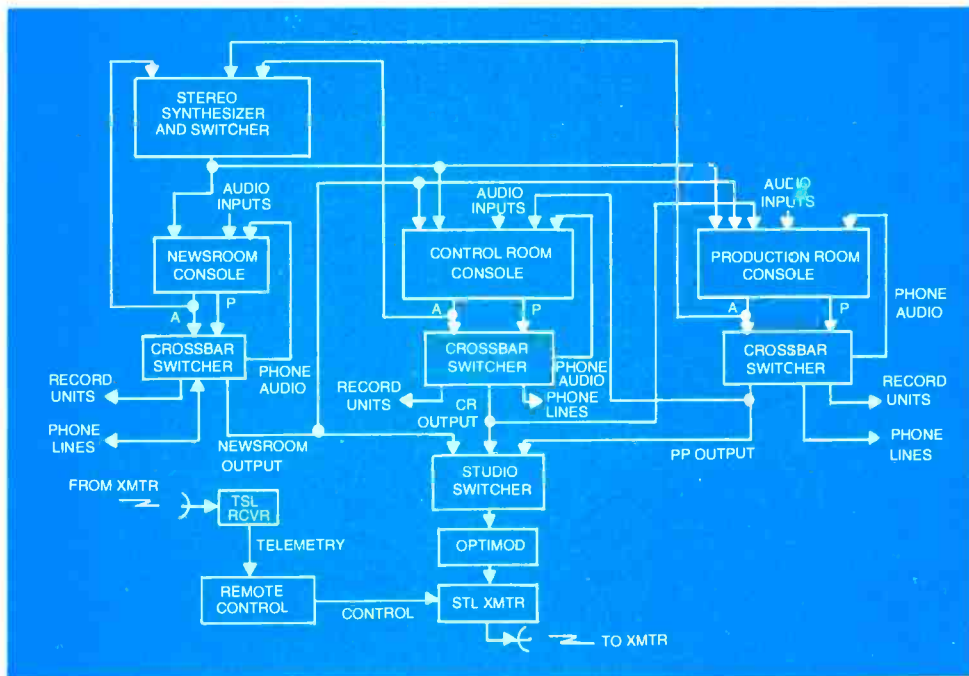
Main entry is reached by stairs from floor below, which is occupied by other businesses. WNDH plant is all on floor above the street in center of town



Main control room is setting for sportscast by Mike Reghi, sports director. Room is also center for airing discs, used for most of Adult Easy Listening programming



Second-floor area available for station, 98 feet by 22 feet, required a "long line" layout, with operation areas and office areas in sequence through the space. The three on-air areas are grouped, with visual connections



Block diagram shows audio flow through main units of plant. Any of three work areas can go on the air; output of each can be fed to others



In production room are, left, general manager Richard McBroom and, at console, station manager Bob McIlmans. Window gives visual contact with main control room



General manager McBroom shows storage space in production room for discs and tapes. Control console is in foreground, reel-to-reel machine and monitoring equipment on rear wall

reduced our automation capability and use it mostly as live-assist. Our programming is now done in-house and consists of Adult Easy Listening music, mostly on disc. In addition, we have very heavy local news, sports, and community affairs programming, a large complement of farm information and farm-help programs, and pickup of many local cultural activities, such as the popular polka music festivals. Last year we aired no less than 17 such festivals with our mobile pickup equipment. We are a CBS affiliate for national and international news.

We topped off our super-sounding studios and transmitting equipment by employing professional interior decorators. WNDH now has a home that we and the community are proud of. We could not accommodate the overflow crowds at our first open house; another open house held the following week had the same results. We have continued to show ourselves to the community by

encouraging plant tours, and group tours now average about three a week.

Equipped for super sound

All wiring is terminated on telephone-type connecting blocks. Phone panels and phone plugs were eliminated and switching panels were custom-designed. All studio furniture was custom-made by Kustom Kraft and the walls are fully carpeted for acoustic purposes. Walls and ceilings are double and triple with non-touching dead air space.

A Scully 280 reel-to-reel is the workhorse in our production room, along with an ITC Series 99 cart machine. After on-site comparisons with six quality microphones, we chose the Electro-Voice RE 420 for the main and production studios. Our Technics SP-10MKII turntables, with Shure phono pickups, have been quite reliable.

FM Best Station Award Entries

Auxiliary generators are in line at both the studio and the transmitter, a Collins 831 located eight miles away with a 300-foot tower. Our TFT dual STL equipment and Marti RPU and TSL receivers are located on the third floor, with metering readable in the main studio. The rest of the third floor is reserved for future growth and is now used for storage.

The Ramko DC 38-10 console allows the additional convenience of being able to record in PROGRAM or AUDITION so the air personality can do production or taped reports while on air. This allows great flexibility in taping the five daily calls from our meteorologists and phoned-in sports reports.

The station is now sold out nearly all the time, with a broadcast schedule running from 5:00 a.m. to 1:00 a.m. Continued growth will take us to 24-hour operation, and for those four early-morning hours we will probably use some form of automation. Our history demonstrates again that total involvement in the community is a necessity for a broadcast station in a comparatively small market.



Looking over Ramko console in newsroom, operator has view of control room, and through that to production room. Entire operation is under tight visual control

KKEE-FM, ALAMOGORDO, N.M. A Small FM Station Equips Itself To Do A Big-City Job

✓ FM RADIO ENTRY

Submitted by Richard Sweetland,
General Manager

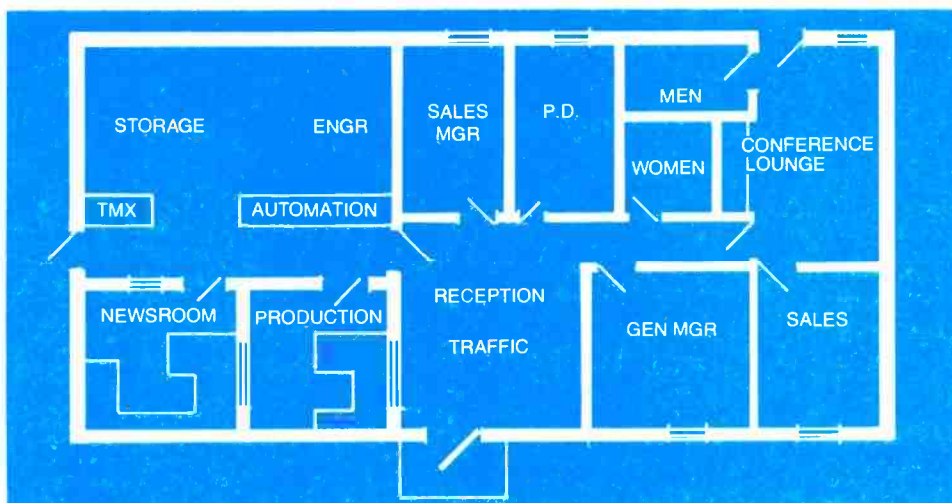
ALAMOGORDO, N. M. represents a unique situation to a broadcaster in that, although a relatively small town (30,000), it is close to Holloman Air Force Base. Many of the people stationed at Holloman are from large cities and demand a top-quality sound. So our problem was to bring major-market professionalism to a small FM station in a medium market. The only practical solution for us was with automation and syndicated programming. Fortu-

nately, our general manager had worked extensively with automation systems, and he knows their faults and their virtues.

Our philosophy is, "Do it right the first time," so we determined to design a streamlined operations center that would be as workable with future growth as it was the day we went on the air. We chose concrete block construction with stucco exterior.

The first priority was energy conservation; thus we used very thick walls and small strategically placed windows. In the desert country of southern New Mexico, this keeps out the summer heat and the winter cold equally well. Also, the ducts that carry heat away from the transmitter can be set to carry the heat outside in summer or recirculate it throughout the building in winter.

The building is 60 feet long and 30 feet wide, with the



Layout in 60 by 30 foot building is very compact; either the newsroom or production room can go on the air, or act as control room for the other

TTV 1650 camera :

COMPACT PERFORMER.



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The camera head, equipped with a prism beam splitter of large aperture, gives exceptional sensitivity and perfect colour reproduction.

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excellent registration and makes it instantly operational. In addition, the availability of a wide range of lenses gives you more versatility and ease of operation. Streaking, due to high light, is reduced to an absolute minimum using dynamic beam control (ABO : Automatic Beam Optimizer)

This compact camera compares favourably with some of the best studio cameras currently on the market.

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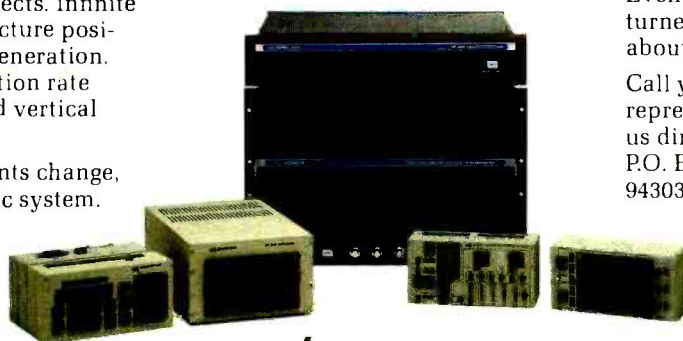
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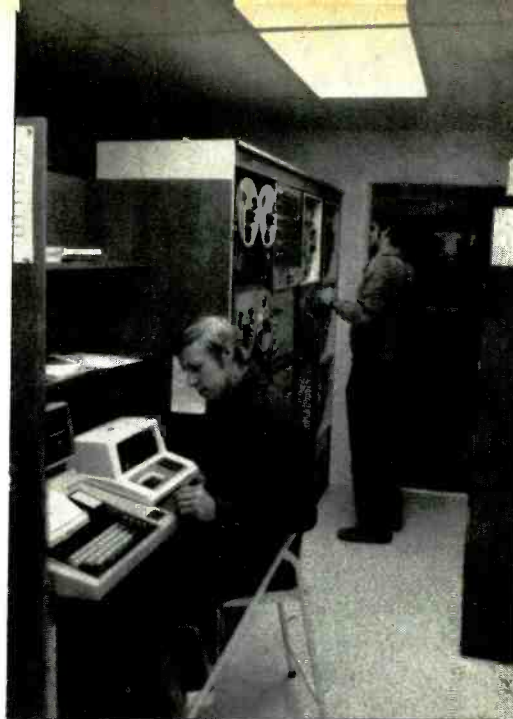
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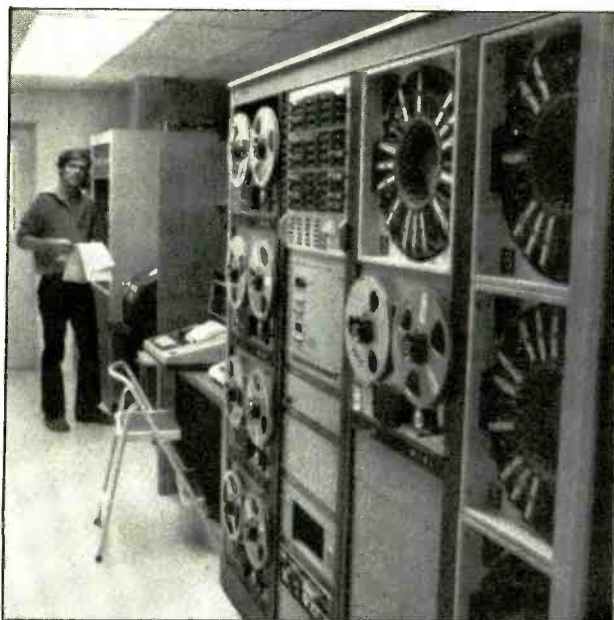
FM Best Station Award Entries



Richard Sweetland, general manager, sets up programming at input to automation system, which is to his right. Harris System 90 includes four music tape decks, an Instacart, four carousels



Sales manager Tommy Hatfield studies sequence of commercials set up, as shown on automatic logging printer at input to automation system



Automation system, transmitter, equipment racks, and teletype were put in a straight line to both reduce length of wire runs and act as a room divider



In production studio, lop-sided table space gives operator extra working area and also serves as the conference table for public affairs interview programs

1800-square foot interior divided into an operations area and an office area. The operations area consists of a production studio, a newsroom, and a large workroom containing the automation system, the transmitter, and an engineering workshop, plus a large storage area. The transmitter is the McMartin 3 kW FM model.

The news and production studios were made as much alike as possible. Both have the same basic equipment, including Ramko DC-8 MS stereo control boards, Technics RS 1500US tape recorders (one in news and two in production), and three Gates cart machines.

The control tables in the studios are laid out in a "lop-sided U" design. The control board is in the center; the

tape recorders, cart machines, and turntables are on the right, and a work area of over 18 square feet is on the left. This large table area is used not only as a work space, but also as a conference table (seating up to four guests) during our public affairs programs.

The patch panel is wired so that either studio can go live, feed the other studio, or feed the automation system for live assist programs. That is, either studio can act as control room for the other or can go on the air directly. All commercials are produced in the production room.

Local news is important in Alamogordo, so the newsroom is designed to give the news director full work space. A full-size desk and typing table, a large built-in

FM Best Station Award Entries

book case for storage, and the essential filing cabinet are all provided for news preparation. Since most of the news is gathered and prepared before noon, the news studio is relatively free in the afternoon when the production load is particularly heavy. Therefore, it is equipped with a turn-



In general manager's office, the computer for accounting automation is set up next to work table, with input keyboard and readout screen on table

table so that it can be used as a second production studio. The teletype is beside the transmitter, just outside the door of the newsroom. This minimizes its noise, yet keeps it convenient to the news director.

Windows in the front wall of each studio make both studios visible from the front office. Visitors can be given a complete tour of the operations area without ever leaving the office.

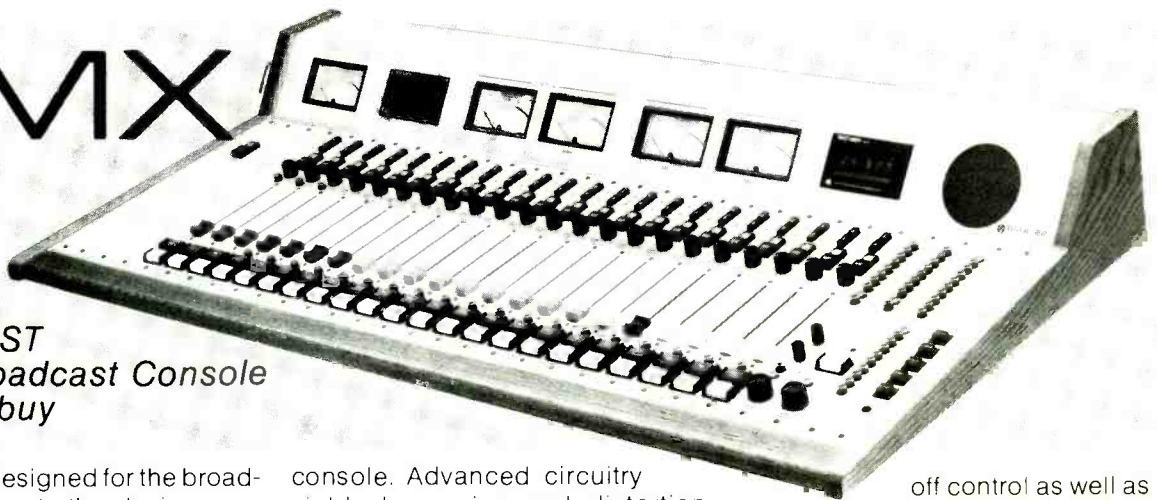
The automation system and transmitter act as "room dividers" in the workroom, separating a hallway to the studios from the large work area in back. Steel shelves further divide the work area into two smaller areas, one for storage, the other for engineering use. This gives us maximum space utilization and flexibility. We can change major pieces of equipment, take full advantage of the storage space, and rearrange the workshop without tearing out walls.

The automation system is a Harris System 90, and includes four music tape decks, an Instacart, four carousels, and a voice track tape deck. The AP audio news service is wired into the system for automatic recording and playback of AP network news. System 90 can program almost 4000 events and is also equipped with automatic logging, a traffic director's dream come true.

Since operators are not always alert and standing beside the equipment, a metallic tape at the end of each reel sets off an alarm that must be manually turned off. This attention-getting alarm can be heard all over the building and it gets an immediate response. The wiring for the entire operation is laid in trenches under the floor.

The other half of the building is used for office space. Since sales, operations, and traffic interact, these offices

BMX



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The BMX is designed for the broadcaster who wants the design, performance and features of a custom console, at an "off the shelf" console price and delivery.

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console. Advanced circuitry yields low noise and distortion along with excellent frequency response and headroom/overload capability.

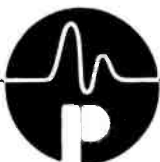
All input and output modules feature audio patch points for the convenient connection of auxiliary signal processing equipment. CMOS Logic is used for input channel on/

off control as well as remote control facilities.

The microphone modules feature remote control of on, off, cough and talkback while the line modules provide the commands for the control of turntables and cartridge/tape decks. In addition, the on, off and cue status of the line modules is remote controllable.

BMX . . . Best by Design, Construction, Performance and Features

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Circle 135 on Reader Service Card



Large work area and ample storage space in newsroom reflect importance of news in the community. Rick Haskell, news director, is writing a newscast for later airing

are placed in conjunction with each other.

Any radio station is only as good as the sound it produces, and our sound must be that of a major-market station. We decided we could sound professional only with music syndication. A preliminary survey led us to an Adult Contemporary format, and after much investigation we decided to use Dick Wagner's Concept Production to supply our music programming.

Wagner's DJs prepare a fresh show every day with music on one tape and voice on another. Our operators synchronize the voice track with the music tapes. In addition, each DJ produces a customized tape, with material we supply, to "localize" the programming. This tape includes PSAs, promos, station liners, weather conditions, and mention of local events. When we receive these tapes, we dub them onto carts and program them into the format, giving us personality programming through automation and creating a "live" sound.

Naturally we devote a large section of our programming

to community affairs, with a series of local interview programs, local "billboard," local sports, and others that make a station an essential part of a medium-sized community. Our facilities, as already noted, are set up for convenient production and airing of the public affairs and community programming.

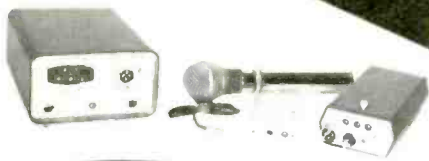
It was on July 21, 1980, that we went on the air with our 3 kW signal. At present we broadcast 19 hours a day. Commercial growth has been fairly slow but steady, and we are sure that it will carry us, probably in a few months, to our goal of 24-hour programming.



Window in wall of reception area gives view into production studio. A similar window in opposite wall of production studio allows visitors to see through into newsroom

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Circle 185 on Reader Service Card

FM Best Station Award Entries

WADB-FM, SOUTH BELMAR, N.J. Turning A Domestic Garage Into A Modern Broadcast Plant



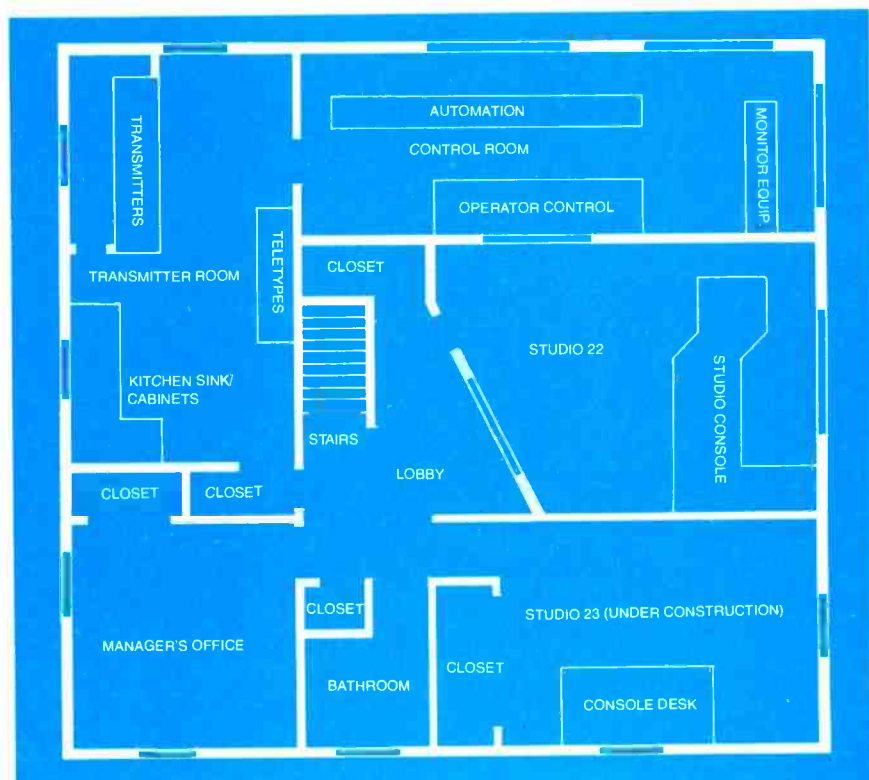
FM RADIO ENTRY

Submitted by Kenneth R. Peach,
Station Manager



Station manager Kenneth Peach records a commercial at the production console, which is in "Studio 22," a large room which was formerly the living-room of upstairs apartment, also used for interview shows, on-air election coverage, etc.

Floor plan shows how station was fitted into apartment. Transmitter is in former kitchen. Automation and main control are in porch space, enclosed to make room



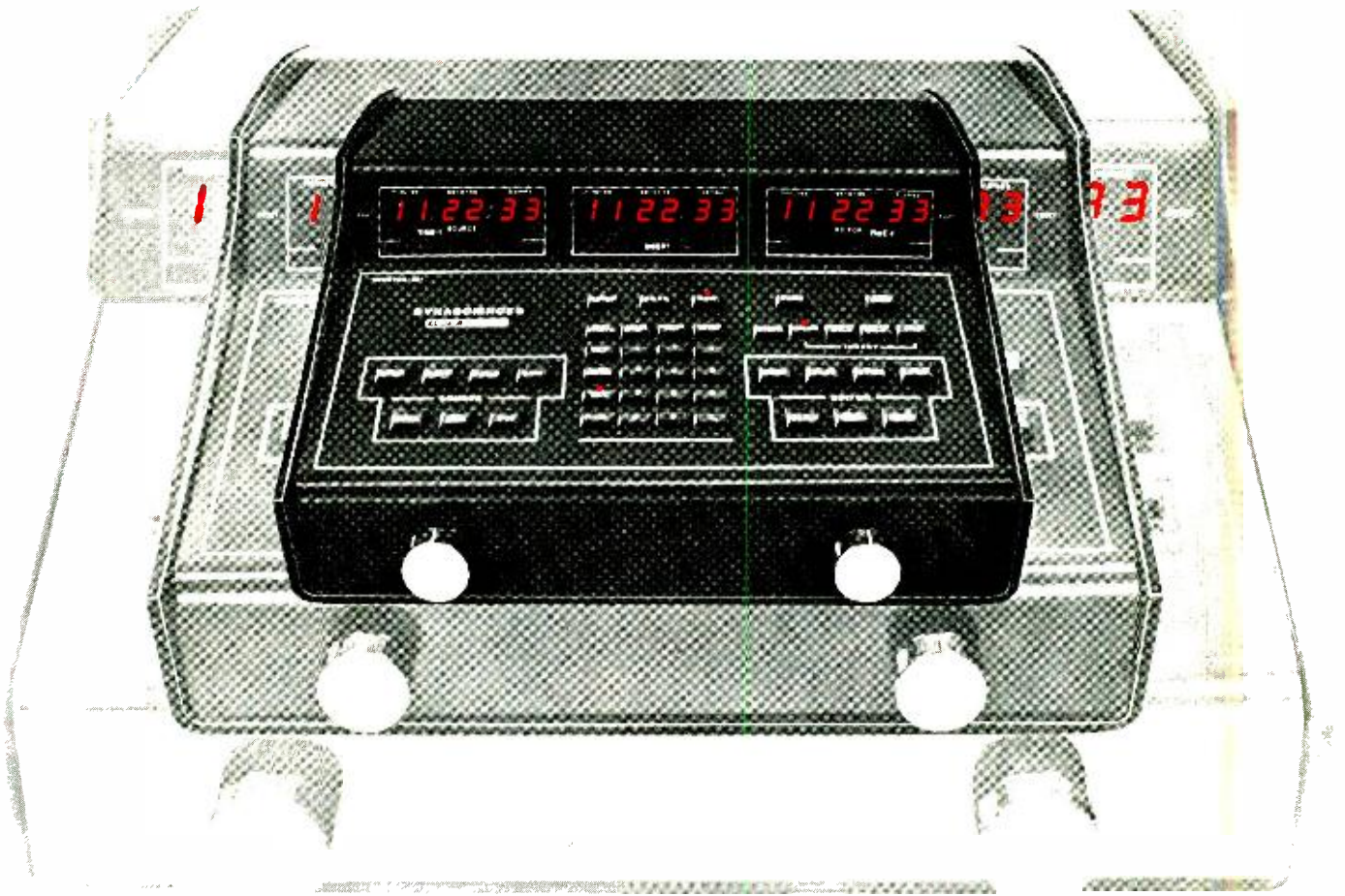
WHAT DO YOU DO if keeping the legal distance from stations on your channel in New York and Philadelphia, and keeping out of the Atlantic Ocean, leaves you less than five square miles in which to find a home for your broadcast station?

To establish WADB-FM, going on the air with 3 kW of ERP in South Belmar, N. J. in 1968, we leased the most likely building available in the area, a domestic garage with an apartment on the second floor. The Atlantic Ocean is less than a half mile to the east. By careful planning, and by installation of the most complete, automated equipment for the main jobs we wanted to do, we turned that garage into a thoroughly modern broadcast plant on which we have built a successful radio operation.

WADB broadcasts 24 hours a day to residents of Monmouth and Ocean Counties along the New Jersey shore, using a 200-foot monotube steel tower. Our format is contemporary Beautiful Music supplied by syndicator RPM, with heavy emphasis on locally produced community programs and news. Special features include the Wall Street Journal business report, Shadow Traffic reports, weather reports by a staff meteorologist, and radar weather reports from the National Weather Service.

Those "locally produced community programs and news" are by no means extras: they are essential to our position in the community, our hold on local listeners. There are eight other stations in the area, and most of the New York radio stations also come in strongly. We are under the typical suburban "umbrella."

WHY BUY MORE EDITOR THAN YOU WANT—



OR LESS EDITOR THAN YOU NEED?

E-x-p-a-n-d-a-b-l-e! That's the word for Dynasciences' Series 80 Editor/Controller.

Need only a few functions now? Planning on doing more? Have a temporarily limited budget? Series 80 lets you expand your capabilities as your editing requirements expand. Easily. Logically. Economically.

Dynasciences' Series 80 Editor/Controller is microprocessor-engineered for speed, reliability and versatility. As your editing needs increase you expand into the next level—adding to your capabilities.

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Check the chart to see how easily the Series 80 expands. And call, write, or circle the number today for further details about Dynasciences' Series 80 Editor/Controller. Dynasciences Video Products, a unit of Whittaker, Township Line Road, Blue Bell, Pa. 19422. Telephone: 215/643-0250. Telex: 846358.

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- Two-Level Timer
- LED Readout
- Key Pad
- Preview
- Return to Entry Point
- Return to Exit Point
- Stack
- Edit Trim
- (2) Interface Cables
- *SMPTE Time Reader (2 CH)
- *Fade to Black and Back
- *Audio Pitch Control

80A LEVEL 2

- Direct Interface
- (2) VTR Control, 3/4" or 1/2"
- Variable Speed Search
- Random Access
- Flying Cue
- Insert Time Selectable
- Two-Level Timer
- LED Readout
- Key Pad
- Preview
- Return to Entry Point
- Return to Exit Point
- Stack
- Edit Trim
- SMPTE Time Reader (2 CH)
- Split Edits
- *Fade to Black and Back
- *Auto Pitch Control

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- 100 Event Memory
- Active List
- Ripple
- Overlay
- Manual Review
- Mark In
- Mark Out
- Time Code Compute
- *Fade to Black and Back
- *Switcher Interface
- *1/30 to 70X SMPTE Reader
- *Floppy Disk Memory

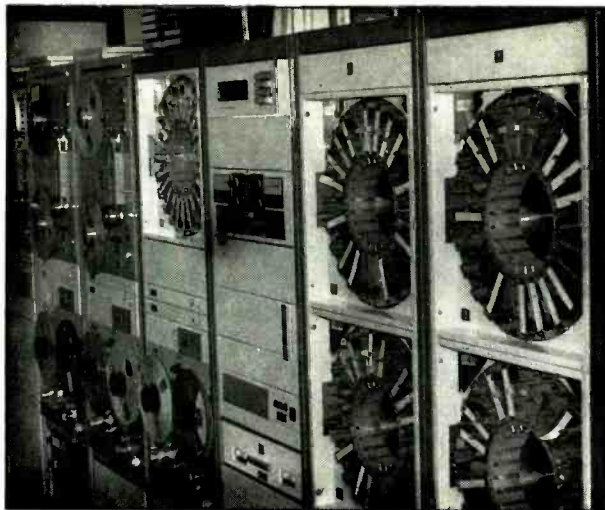
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Whittaker

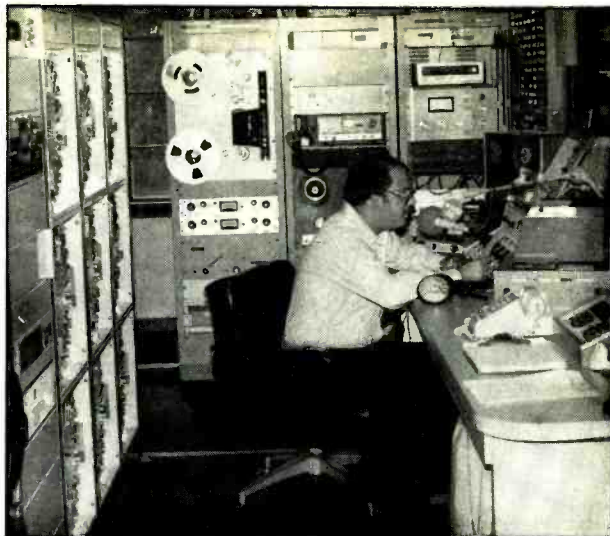
DYNASCIENCES
VIDEO PRODUCTS

Circle 247 on Reader Service Card

FM Best Station Award Entries



SMC-DP2 automation is one of largest in use; it drives 10 carousels, eight reel-to-reel machines, has 6000-event memory



Main control room has automation system in back of operator, police scanner and CB equipment in racks to his left; room is also used for newscasts. Bob Hartman is on the air with evening sports cast. Upcoming events are on readout to his right



Outside view shows general character of garage converted into broadcast plant. FM antenna is on self-supporting steel monotube, seen next to left corner of building



Manager Peach is at production/studio console. Mic inputs for interview programs are on front of console housing; guests' chairs can be grouped around unit, with operator facing them for hand signals. Control and interviewing are combined

To stay alive in this big-city competition, we needed two basics: strong, continuing identification with our own community, something the big city stations cannot supply; and a completely big-city sound for our programming. We put in equipment to make all the various jobs easier to do, lessening the load on the staff so they can put full effort into the local news and community programs. Secondly, we put in automated programming equipment, and chose a syndicator with a totally professional sound, so that our music can stand comparison with that of any of our competitors for consistency and polish.

In 1968 we put a Schaffer 800 automation system on what had been the front porch of the apartment in the building. With the syndicated music service, the announcer-newsperson could concentrate on gathering news and doing production while the automation handled the routine on-air switching work. This gave WADB, with its small staff, the big-city sound we had to have.

In 1977, our original Schaffer system was replaced with the current SMC DP-2 automation to handle the rapidly increasing commercial load. Sales offices were constructed in the downstairs garages while upstairs areas were converted to studios and operations.

Our DP-2 has a 6000-event memory which enabled us to completely program the system when it was installed to handle all our operations, seven days a week, 24 hours a day with no need to reprogram. Only minor daily changes

are necessary to add and remove commercial schedules.

A control head and Texas Instrument 700 printer and cassette deck in the downstairs traffic office enables us to get a printout of any part of the computer memory and to store the memory on cassette for reloading in the event of a computer malfunction (the computer memory does have battery backup). The DP-2 controls three Scully 270 and three Ampex 440 reel-to-reel machines for music playback, 10 carousels for commercials and short feature programs, a single-play cart machine for news, and a time announcer.

The control room also serves as a newsroom and is equipped with a Scully 280 recorder, police scanner, CB transceiver, slow speed auto-logger recorder, Heathkit digital weather computer, hands-free Heathkit telephone amplifier, and a CRT displaying upcoming DP-2 memory events.

Thus we have made a heavy investment in equipment that helps us to do the job. This has made it possible for us to hold down labor costs, but more importantly to do the job well while freeing personnel to put large effort into the local community-and-news operations. Another point: the investment in equipment allows us to operate efficiently in a control room only nine by 24 feet.

The living room of the apartment was converted into WADB's "Studio 22." Production of prerecorded commercials and community programs as well as live

election night coverage originate from this studio, which is equipped with a switcher control to route it directly into the transmitter. Control room equipment can be patched into the studio to supplement the two Revox A-77 recorders, two single-play cart recorders (Tapecaster and SMC), two QRK turntables, and Collins microphones. Remote metering of transmitter functions is provided, as is remote control of all equipment for ease of operation.

The recording engineer faces the guests to facilitate hand signals and interviewing. The studio is also equipped to record off all incoming telephone lines and feed produced tapes into the phone for client review. A wall at one end of the room has been angled and carpet squares placed on the walls for soundproofing and to improve acoustic characteristics.

Demand for the production facilities has increased to such an extent that we are building a second studio to accommodate the requests for time. Most visitors remark that the "small home" atmosphere of the studios helps to put them at ease.

The kitchen of the converted apartment now holds two Collins transmitters, associated audio processing equipment, and Extel teletypes for UPI, the National Weather Service, Wall Street Journal business reports, and a cleartext computer-produced program log. Our primary audio chain includes an Optimod and Collins 831D-2 transmitter placed into operation just this year.

Our previous transmitter, a Collins 831D-1, is now the auxiliary unit, fed by a separate audio chain utilizing a CBS Audimax and Volumax. If there is a failure in the transmitter on the air, a Collins 377D-2 transmitter switch places the other transmitter on the air within one minute automatically.

The transmitter not in use terminates in a dummy load for off-air testing. Dual Collins exciters and program feed lines insure that we stay on the air. Both transmitters have been walled in to provide for more efficient cooling and quieter operation and to improve the appearance for tour groups and visiting clients.

By constantly investing in new technology, by incorporating strong local and station talent in our community affairs programs, and by making the most of our limited physical plant, we've been able to build a devoted listening audience and a long list of satisfied clients.

MORE RACK SPACE LESS FLOOR SPACE



Ruslang's new RL 2000 VTR Console offers more rack space while taking up less floor space. Constructed of quality materials, this compact unit is attractive and sturdy with the look of expensive walnut furniture. Other wood grain finishes and solid colors to complement your studio decor are available. Add a standard 10½" monitor overbridge that can be expanded to give even more rack space, plus an optional, easy to take off back panel, and you now have the most versatile and best looking console on the market at a fraction of the cost of steel. For complete details, contact . . .

RUSLANG CORP.

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RIGER



"Slow motion for me is never decorative."

Robert Riger is a producer-director at ABC Sports exclusively involved in directing slow-motion inserts. Soon he will work with John Huston on sports sequences for Mr. Huston's new feature. Here Riger tells us how he has made the stadium his studio:

"I'm probably unique among the cinematographers and television directors in that I was trained as an artist. What I liked to do best was sports drawings. I had an appetite for teaching or learning how an athlete performs technically. I don't care what the final score is but rather about how the double play ended the inning. In six years with *Sports Illustrated* they published over 1,200 drawings on all sports. Then in 1960 I picked up a 16 mm camera for the second time. (The first time was when I was 9 years old and took neighborhood movies.)

"In 1964 I went to Innsbruck for ABC. In those days there was no videotape equipment, no stop action, no slow motion. Using still photographs and drawings, I was actually able to show the skiers' ski-tips an eighth of an inch from the pole. This was a forerunner of today's technology. I took high-speed sequence pictures anywhere from 5-10-20 pictures a second in black-and-white stills. Then as now, I focused on the moment I thought would be the crux of the race.

"Different sports require different camera speeds. Most people don't realize

that. For figure skating you need 100 frames. For a jumping horse, 200. For a race horse, 400. You have to balance the time you have to tell your story against the slow motion, and you need to record the action clearly. My success has been knowing how much slow motion to use. How much the eye needs to see something sequentially. The other half of my pictorial success is angle and position.

"Slow motion for me is never decorative. I use it for information. I'll never use it for a *Bonnie and Clyde* ending — the ballet of death thing. Sports are very poetic and beautiful...the grace and movement of human figures and animals.

"I'm one of the few cinematographers who uses prime lenses in motion picture work. I very rarely use a zoom — maybe one in thirty jobs. With my prime lenses, I get more sharpness and more light. And I've used only Kodak films. They are truly exceptional. I've used every motion picture film that Kodak has manufactured.

"The basic need for me has been clarity. What I do is combine all the qualities of creative filmmaking with hot-line journalism, not giving anything away and still getting the same emotional response. That's the key. The stadium is my studio, and my works are moments which have been achieved — or not achieved — by athletes. The most satisfying single scene I

ever shot was in the Winter Olympics at Lake Placid. I'd set my camera at the most difficult gate of the downhill run. I knew that I would get the highest dramatic moment there, either success or failure. The stage was set. Then a favorite came down two miles of mountain, and his binding exploded right before my camera. In that moment a man had lost the medal. The film camera achieved a moment that no other camera on the course recorded. That's the challenge today: to show somebody something they have never seen before."

If you would like to receive our quarterly publication about motion picture production for television, Telek, write Eastman Kodak Company, Dept. 640, 343 State Street, Rochester, NY 14650.

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America's Storyteller

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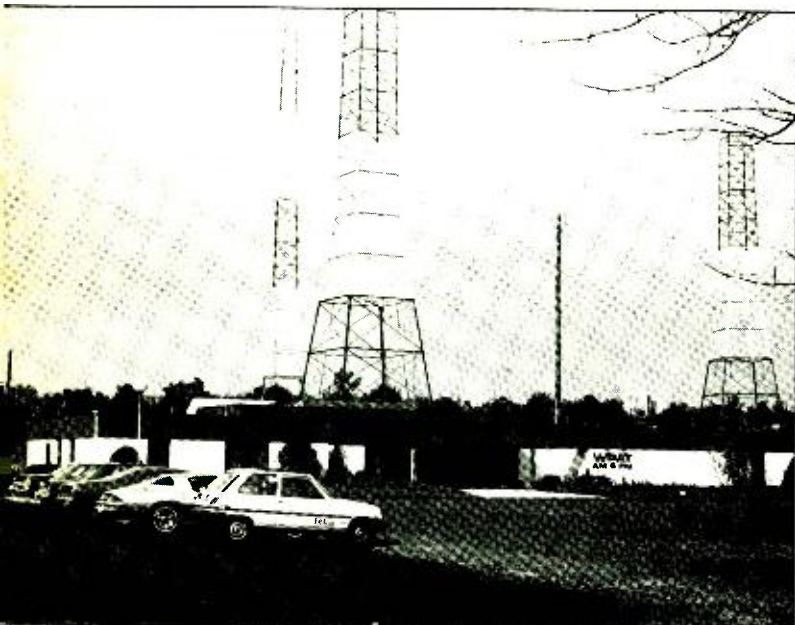
www.americanradiohistory.com

WPAT-AM/FM, PATTERSON, N.J. Super-Audio Wins Fair Share Of Megapolitan Audience



AM/FM RADIO ENTRY

Prepared by *BM/E* in collaboration with
Kenneth W. Stout,
Chief Engineer



The WPAT AM/FM plant, in Clifton, N.J., has the four-tower directional antenna array for the AM signal directly in back of the one-story studio and operations building. The AM pattern points toward New York City

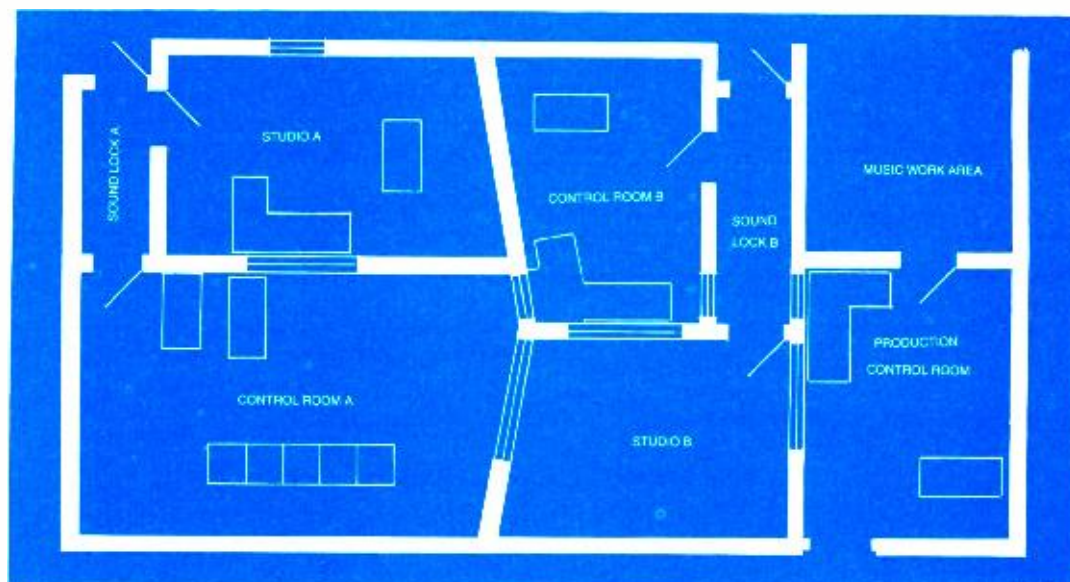
WPAT-AM/FM, licensed to Patterson, N.J., is a large element of the radio landscape in that city. But it also competes for a share of the huge New York listening audience, 10 miles from the station's Clifton, N.J. plant.

WPAT has remained prosperous for more than a decade with an "easy listening" format. For some time this was a mixture of semiclassical and Beautiful Music; currently it is Beautiful Music syndicated by Schulke Radio Productions.

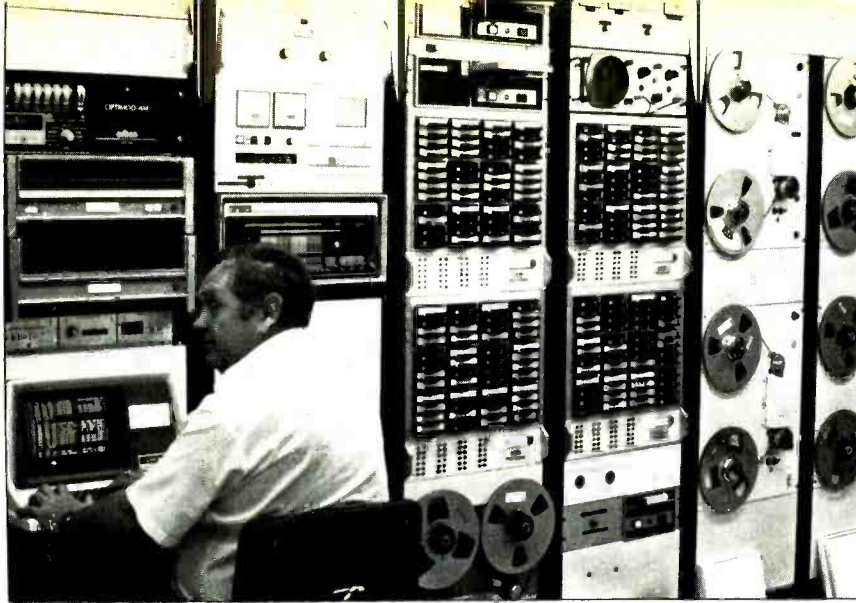
Programming is handled differently on the AM and the FM. Two IGM automation systems, one for each station, are handled with a strong lean toward "live assist" to keep a fresh on-air character. AM features a heavy concentration of local news, community, and public affairs programs that successfully established WPAT as the "home" station in its New Jersey area, including a number of the satellite cities.

The AM signal also reaches New York City with a four-tower directional array that has a pattern spread toward the east, nulled toward the west. AM power is 5 kW. WPAT holds a respectable position in the New York AM ratings.

The FM antenna is right in New York, with plans almost final as this is written to move it from the Chrysler Building, its home for more than a decade, to the new World Trade Center tower in lower Manhattan. The transmitter will be in the tower with the antenna, reached by a Moseley STL from the studios, which can view the New York tower on a clear day. ERP is 12.5 kW. WPAT has been strong enough in the New York FM ratings for success, rising slightly in the latest book from earlier good positions.



Floor plan of operations area shows corridor across the top, giving access to "sound locks" that lead to studios and control rooms. Angled wall improves acoustic performance of studios and control rooms. The two automation systems are side by side in control room A



Chief engineer Kenneth Stout sits at readout screen on automation system. Reels on far right hold syndicated programs; commercials are on carts in center racks



Kenneth Lamb, director of operations, sits at console in control room. Window to his left shows sections of the automation equipment. Readout screen shows upcoming items on the automation system



Lamb is at console in studio A, with automation systems in front of him and to his right in main control room beyond window

Kenneth Stout, chief engineer, says that WPAT's understanding of the Beautiful Music listener is basic to this success. This listener, once won over, tends to stay, but can be driven away by very small amounts of distortion in the signal (not analyzed as such, just perceived as "not pleasing").

This applies especially to women listeners, whose sensitivity to intermodulation distortion is extremely high. Stout and his aides therefore maintain a constant effort to keep the quality of the WPAT signal as high as possible.

This has led to extensive modification of nearly every main unit in the plant. The automation systems run on relays rather than VCA switchers because of Stout's objection to distortion in the latter. All amplifiers in the automation system — in the audio chain, in fact — are from McCurdy Radio in Toronto. Consoles are modified McCurdy. The tape machines on which the Schulke tapes are played are Scully 270s, again extensively modified for lowest possible noise and distortion.

Stout says that the result of his efforts, through the tape

machines and up to the audio processor, is currently a 74 dB signal-to-noise ratio and 18 dB of headroom before the harmonic distortion hits 0.1 percent. The distortion measures 0.04 percent at normal operating levels, according to the Sound Technology distortion meter.

The processor for FM is a brand-new system developed by Alfred Antlitz, chief engineer of WFMT in Chicago (see Best Station story on WFMT in the December, 1979 issue). The Antlitz processor, now on the market, has feed-forward control with a computer analyzing the signal at every instant before it reaches the processing section. The computer then directs the processor to carry out action that will cause the least damage to the quality of the signal, while keeping the modulation acceptable and preventing transmitter overload. Available actions, none applied on a constant basis, are peak limiting, clipping, preemphasis change, and slow AGC. There is no noise reduction system in the plant. Stout says he was willing to trade off a slight loss of noise margin to avoid the distortion of noise reduction systems.



View from main control room looking into the on-air interview and newsroom, with mic stands around table. Beyond that is production control room

Other units in the chain are a Harris stereo generator, Moseley STL to carry the composite signal to the transmitter, the new Broadcast Electronics FX-30 exciter, which Stout finds of very high quality. All have been carefully "tweaked" or modified for top performance. One in-

KMPS-AM/FM, SEATTLE, WASH. Country Station Returns To The Front With New Plant

AM/FM RADIO ENTRY

Submitted by Ron Norwood,
Program Director

WHEN AFFILIATED BROADCASTING took over Country stations KMPS-AM/FM, Seattle, in 1978 it was obvious that the plant had to be upgraded. The decision to move from our old location on Harbor Island was prompted by the Port of Seattle's wish to turn the land into a parking lot.

We decided to start fresh in a completely new location with mostly new equipment. We took a suite on the fifth floor of an office building in downtown Seattle, putting us near major business and government offices as well as entertainment and sports complexes like Seattle Center (Space Needle) and the Kingdome. A prime view of the city's waterfront is one of the bonuses of the location.

Our objective was to revitalize the country music output of the station, getting enlarged FM coverage with a high-quality signal. This meant a practically new plant in important respects. We sell the two stations together but they are programmed separately, except during morning drive time when they simulcast. We do all the programming in house.

teresting refinement in the STL installation was careful placement of the STL transmitting antenna for lowest multipath distortion in that path. Stout says that STLs sometimes have multipath distortion all their own, entirely aside from that between main transmitter and consumer receiver. The STL transmitting antenna at the Clifton plant was put in a "cherry picker" and raised and lowered until multipath distortion hit a minimum.

On the AM side the processor is an Optimod AM, again somewhat modified. One objective was to eliminate the clipping of high-level violin tones, frequent in Beautiful Music. Stout says that such clipping causes IM distortion that is particularly displeasing to the listener.

The AM transmitter underwent heavy adjustment, particularly in the power supply, which was found to be one main cause of distortion running over eight percent. After refinement of the power supply and some other sections, the transmitter's overall distortion dropped near one percent.

The plant's many other refinements, such as the elimination of transformers in the audio chain, each gains an additional inch or two in the fight on distortion. An intensive maintenance program is also vital. Intense effort goes into periodic adjustment of the AM directional array for broadband performance at each tower and overall. This involves an all-day joint effort by Stout and the Carl T. Jones engineering firm of Falls Church, Va.

Obviously this kind of plant refinement is a continuing process: Kenny Stout is always on the lookout for "better" audio equipment. It is his vital contribution to the strength of the station with listeners in the immense New York metropolitan area.



The newsroom serving both AM and FM has windows to FM control on one side, to AM control on the other. George Garrett, news director, is on duty putting news together

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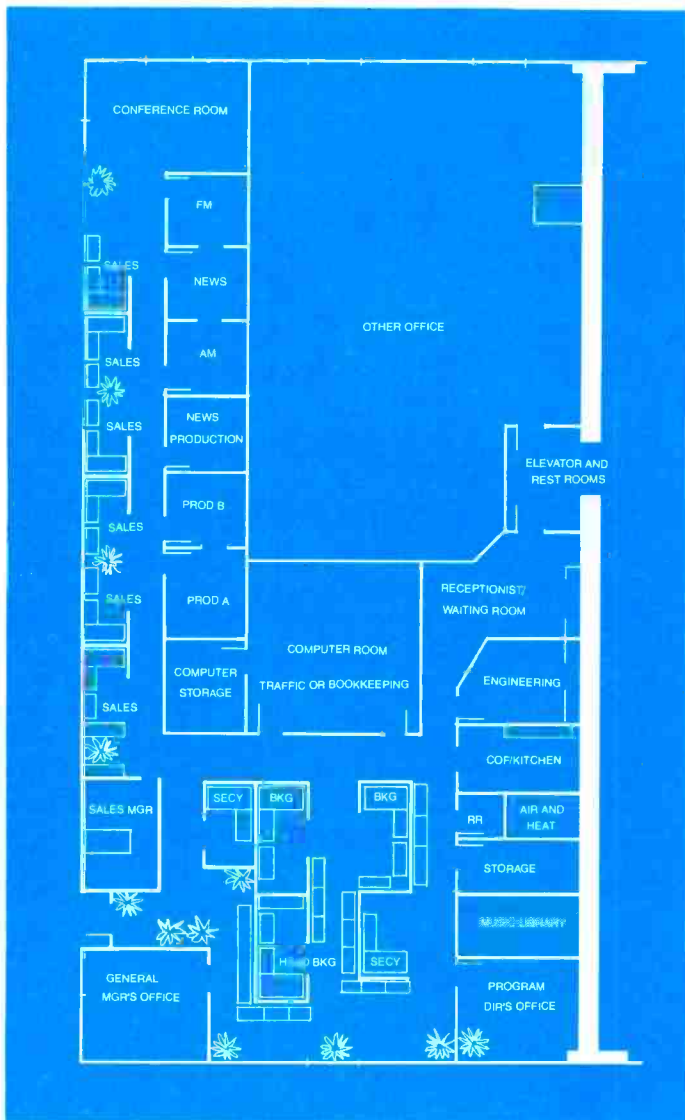
AM/FM Best Station Award Entries



AM control room has cart machines on each side of console, with monitors and transmitter control in overhead console to right. Ed Dunaway, on-air man, is on the mic



In one of the production rooms, there are two Scully reel-to-reel machines, Technics turntable, RCA console, ITC series 999 cart machines. Other units are out of view



Floor plan shows how operating and office areas are built around offices of another business. Production and control rooms are in a straight line, with clear views through the line

The floor plan was designed to allow easy traffic flow between work areas and to effectively utilize somewhat limited space. Since both main control rooms are full stereo there was no need to designate separate AM or FM production studios. The move and new equipment have set us up for AM stereo as well as increased our production capabilities.

Studios were placed to allow an outside view without having sound-sensitive areas on an outside wall; they were also built to be as sonically dead as the state of the art allows.

KMPS uses a Datapoint computer system with Station Business Systems programs for logging, billing, record keeping, sales reports, etc. The computer operations area is enclosed within the complex, with a glass wall on one side to allow precise temperature control as well as security.

Glass between the main control rooms and the newsroom allows visual contact between rooms while maintaining aural integrity. The production studios are glassed on the hall side with glass between production A and B. All studios have separately controlled track lighting and fluorescents.

Construction began with the routing of Belden multi-pair shielded cable through conduit from each studio to the engineering office. Cables were terminated with punch blocks on each end. All program, switching, and telco loops terminate in the engineering office where splitting is done with Ramko DA-16BR-E DAs. A large conduit also runs from this room to a weather-head on the roof. This conduit holds various antenna leads as well as the cable for a Texas Electronics remote outside temperature sensor with readout in the newsroom.

One of our primary concerns was redundancy — we wanted all music studios to have immediate access to both AM and FM program lines. Our director of engineering, Jim Eberhart, designed and built a pair of switchers that fit the bill nicely. With this system, each studio can feed stereo or mono to FM or AM with the flip of a switch at the operating position. Since all consoles have stereo and mono mixdown outputs and metering, all studios can feed AM and/or FM program lines. Both stations' air monitors

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- Complete frame synchronization on all inputs including TBC, freeze and Velcomp capabilities.
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NEC DME Control features:

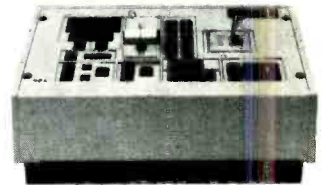
- Operation with DME or existing DVE® Digital Video Effects System for full digital control of all system functions.
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- solarization effects, freeze frame or freeze field and real time frame entry of effect duration... all effects instantly and exactly repeatable.
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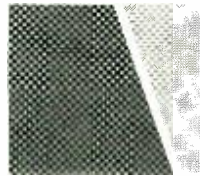
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Shure goes on location with the first superstation



Photo: Courtesy of Ravinia Festival



fact:

WFMT, Chicago, uses the SM81 Condenser Microphone

WFMT, Chicago's fine arts station and the world's first network transcontinental-satellite classical music station, is continually dedicated to providing the very best broadcast quality—even when broadcasting live remotes.

After WFMT engineers did detailed examinations of all the problems and acoustical considerations inherent to remote broadcasting, they chose the Shure SM81 Condenser Microphone for a wide variety of program material and locations.

The SM81 is the only condenser microphone WFMT engineers found that is capable of withstanding the 100° heat and 100% humidity sometimes encountered over the stage in the open-air concert pavilion at Ravinia Park, near Chicago. Yet, the sound quality is so good that they also use the SM81 in the more intimate and totally enclosed Murray Theatre at Ravinia, where the Chicago Symphony Chamber Players perform.

Shure SM81's are also used by WFMT to record live performances in the highly acclaimed Myra Hess Concerts presented in the Chicago Public Library Cultural Center, as well as live programs from the Milwaukee Symphony, the Houston Grand Opera, and Chicago's Music Hall and Old Town School of Folk Music.

The SM81 has even been chosen over other condenser microphones for studio work, including the popular Studs Terkel Program, because of its superior sound over Studs' previous (and very expensive) microphone.

We would be happy to provide you with full technical details about the Shure SM81 condenser microphone. Please write for AL577A.



Shure Brothers Inc., 222 Hartrey Ave., Evanston, IL 60204
In Canada, A. C. Simmonds & Sons Limited
Manufacturers of high fidelity components, microphones,
sound systems and related circuitry



**SM81
Condenser
Microphone**

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AM/FM Best Station Award Entries

are available in all studios. Since equipment configurations are essentially the same in all studios, operations can be moved from one room to another with a minimum of inconvenience.

Another requirement for the new studios was "sudden" voice communications between control rooms and news. The telco dialup intercom is too slow and awkward and we didn't want to clutter the studios with separate intercom units. Eberhart and chief engineer Norm Fish came up with a system of relays using already existing amplifications, mics, and studio monitors. To speak to another studio the operator needs only to drop the mic pot into cue and press the proper button, built into the console. The relays are hidden under the counter top and powered by the console power supply.

Our criteria for purchase of studio equipment wasn't particularly unusual — reliability, ease of operation and maintenance. All studios except for news production have RCA BC-300 10-channel boards, stereo in music studios and dual-channel mono in the newsroom. These consoles have built-in digital timers, stereo/mono outputs and inputs, phase check buttons, and built-in remote start buttons.

All our music has been on Capitol Audiopak carts loaded with Ampex hot tape for years. With music on cart there was no need for more than one turntable in each control room. Turntables are Technics SP10 Mark IIs with Audio-Technica tonearms, Stanton cartridges, and

Ramko preamps. All studio microphones are Shure SM-7s except for an Electro-Voice RE-20 in the newsroom. Studio monitors are JBL-4311s driven by Crown D-75 amps.

One production studio uses a pair of Lang parametric equalizers (UREI graphics on order) and a JVC KD3030 rack-mounted cassette deck. Each production studio has two Scully 280-B reel-to-reel machines with vari-speed mounted in Ruslang cabinets. All other studio furniture was constructed to our specifications at a local cabinet shop. ITC Series 99 "full dress" cart machines, chosen for primary music carting in each production room, have practically eliminated phase problems for us. All other cart machines at KMPS are by ITC, including two 3-Ds in each control room. We saved four Ampex 350 series tape decks from the old studios, to which we added new In-ovonics electronics.

Overhead consoles in the control rooms hold the monitor amps, transmitter monitor and control units, EBS units, and miscellaneous controls. We use an RCA BTR-30A remote control system for AM and the TFT 7601-C for FM. Recent purchases include two Onan emergency power units, redundant TFT 7700 STLs for FM, new Collins transmitters for AM and FM, and miscellaneous support equipment. All studios are set up to feed and record from the phone, of course, and many office phones are equipped with QKT couplers and mute switches for phone-out music research.

We have been operating from our new plant for nearly a year now, and the results in listener response have fully justified the care and the money we put into it.

KRE-AM/KBLX-FM, BERKELEY, CALIF: Super-Clean Signal Gives Jazz New Life

✓ AM/FM RADIO ENTRY

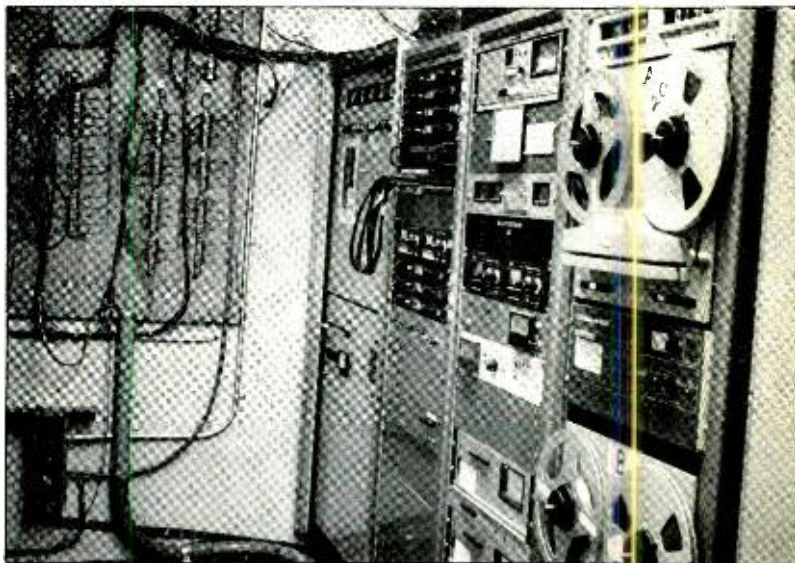
Submitted by Jerry Kupfer,
Director of Engineering,
Inner City Broadcasting Corp.

INNER CITY BROADCASTING CORP. acquired KRE-AM and KBLX-FM in the spring of 1979. The building dated back to 1938 during the "golden age of radio," but was obsolete in both studio facilities and equipment quality for our envisioned needs.

Both stations had been using a jazz format, but audiences had been dropping because of a noncompetitive signal and other errors in operation. We decided that the sooner complete modernization could be achieved, the better would be our chances for success in the market. We set a goal of one month to do the job, and chief engineer Art Leberman with aides Bill Sacks and Tim McGovern jumped into quick-paced work.

Because the studios were so close together, special care was taken with soundproofing in our construction work. We erected dual beamwalls with enclosed insulation and exterior sound absorption panels, rerouted old ventilation and heating ductwork, and installed soundtraps.

Japp Diedrich, a local carpenter, worked closely with us in designing the interior to match our custom furniture, including shelves built into the walls for storage of cartridges, albums, and tapes. His close cooperation with the



Engineering core and AM transmitter are mounted in line in room formerly used for FM transmitter, which was moved to mountain site for greatly improved coverage

on-air staff proved crucial, as walls often were being knocked down within three feet of spinning records.

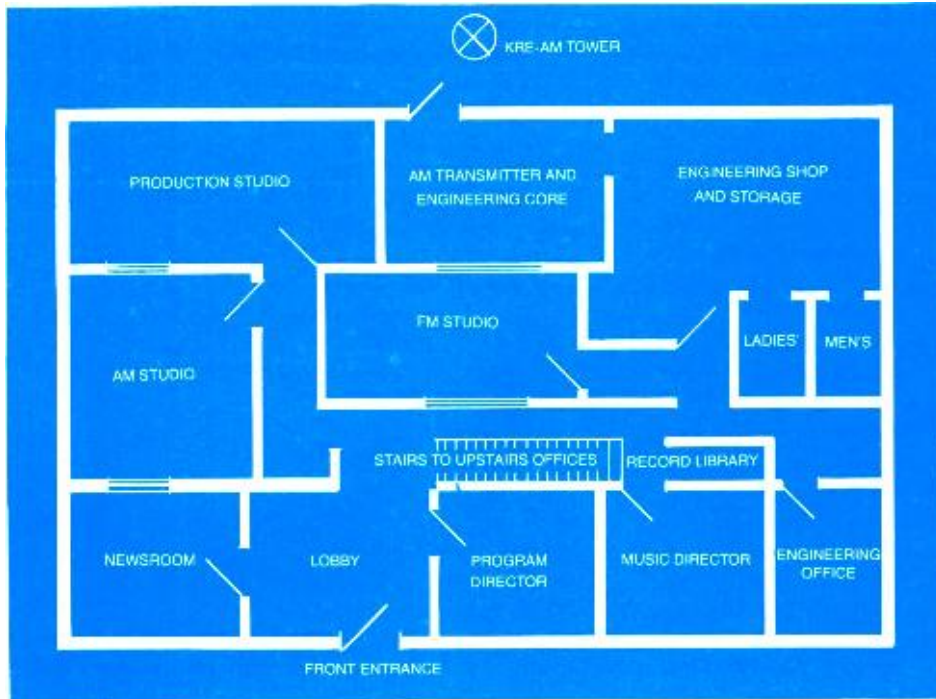
Since we would be moving one FM transmitter to a new location and donating our "antique" 1948 Western Electric transmitter to a museum, we designated this area as a master control core where all studio inputs and outputs

AM/FM Best Station Award Entries

could be routed. Multi-cable was run to this area from all studios and a distribution network of patch panels and MAP DAs were wired in. All phone terminations, remote

control, and monitoring systems are centrally located here for ease of audio processing setup, test measurements, and necessary patching of remotes or studio lines. We also moved our new Collins 828D-1X AM transmitter and TFT FM composite STL into this area.

Our first order of business was an FM transmitter site



Floor plan of operations area shows excellent layout for efficient operation of two stations. The FM transmitter is several miles away on mountain overlooking area. Offices are on floor above

Dane Jubera On Harris Broadband Phasor Design



**Dane Jubera, Lead Engineer, Antenna and
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"Harris engineering has been instrumental in promoting excellence in broadband phasor design. This is especially important as the industry prepares for AM Stereo. Our custom broadband designs provide low envelope distortion levels and wider frequency response, without compromising stability and adjustability. At Harris, we combine the talents of a select professional engineering staff with the technology of computer-assisted design techniques. Consequently, our product delivers improved performance in directional as well as non-directional modes."

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FM studio has turntables to right of operator for origination of all programming from discs; DJ Clifford Brown Jr. is on air. Remote control and status units are in racks behind him

change. The FM antenna, mounted on our backyard AM tower at 170 feet, found itself dwarfed by the nearby Berkeley Hills and too low to effectively penetrate the hills and valleys of San Francisco across the bay. Fortunately, a new tower was being erected on Mount San Bruno south of San Francisco, the site of many of the area's FM antennas. This allowed us to relocate to 1300 feet with a line of sight projection to the entire bay area.

Back at the studios, our limited space had to be reworked into an efficient operating facility without interrupting the on-air activity. The AM studio was operating out of a corner of a massive studio once used for live bands and choirs and shared with the automation system (to be

removed), the record and tape library, and office space. We decided to divide this room and create a new AM studio and production facility (which formerly operated in tight quarters with mono equipment). Also on the agenda was moving the expanded newsroom into a new area to accommodate both live and recorded news reports.

When our construction permit for the FM transmitter site move was granted, we installed a Collins 831/F-2 10 kW transmitter on Mount San Bruno with our Harris FM 10B as a backup. We also installed a Collins 377D transmitter switcher along with a coaxial relay to bring up our spare transmitter automatically in the event of failure. This system is controlled and monitored from our Ber-

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AM studio is between production room and news studio, and is, like other rooms in plant, laid out for high efficiency in a small space. Discs are in racks at right, carts at left



Production room has reel-to-reel recorders, turntables, cart machines around operator. Audio processing equipment is just to rear right of console



Another view of production room shows shelves in rear wall with tape, carts, and discs. Console is similar to others in plant, making for ready use by personnel

keley studios with a TFT remote control and status indicator system.

Since we planned to put all music on the air from discs, doing our own programming, our studio equipment was crucial. We chose to keep the jazz format for the AM operation, but to shift the FM, with its greatly expanded coverage, to a contemporary young adult sound. Pacific Recorders and Engineering BMX Series consoles and their customized furniture were installed in the AM/FM production studios. AM turntables are Technics SP10 MKII mounted in isolated turntable pedestals weighted to insure proper isolation and tracking stability. The Audio-Technica AT 1005 tonearms use Stanton pickups. All carts are played on Ampro 3500 Series machines

equipped with timers and fast forward options as an aid in production work. Rebuilt Ampex 350 tape machines with Inovonics electronics are used in the AM and FM studios for air checks and airing of taped material. The production studio, where all commercials, promos, and public affairs shows are recorded, utilizes two MCI JH 110 two-track tape machines.

Our AM studio, stereo for future AM stereo operation, feeds our custom-built 1 kW Collins pulse modulated "Power Rock" transmitter. The excellent modulating capabilities of this transmitter along with our custom tri-band audio compressor unit created by Bill Sacks has given us a bright, clean sound quality for our AM jazz format with the maximum signal capability for a Class 4 station.

The newsroom, with two editing and recording stations for simultaneous taping and editing of feeds and reports, looks directly into the AM studio for live AM newscasts and connects to the FM studio via intercom for ease of remote live hourly newscasts.

Starting from scratch gave us the opportunity to construct carefully and design for all future contingencies. Despite our fast pace, we took extreme care in our grounding systems. A two-inch copper strip running throughout the facility and connected to all equipment prevents any RF interference in our 1 kW transmitter and the KFRC 4 kW transmitter, which is dplexed with us, both within 50 feet of our studios. The unique audio muting of the Pacific Recorders consoles, cutting off all channels when any piece of equipment is not on air, combines with care in all equipment terminations and connections to give us excellent signal-to-noise on both our systems.

Extreme care with signal quality throughout the chain, modifying much equipment for lower noise and distortion, has given us the very clean, bright signal we wanted. The listening audience has responded with strongly increasing support for our stations.

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DC control and th

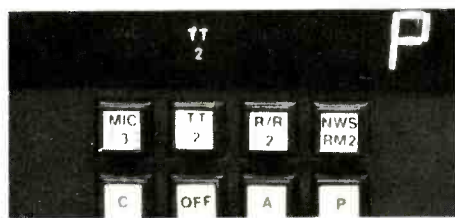


Introduced by Ramko in early 1975, DC control of all audio attenuation and switching has since proven itself so superior to conventional methods of audio control that most manufacturers of consoles are still trying to catch up.

The three major advantages are:

1. The DC controlled console exhibits far less susceptibility to RF pickup and external interference than conventional consoles that control audio directly. The conventional console must route all of its audio from the inputs to the various controlling elements (mixers, switches, etc.) and then finally to the console output. The DC controlled console, on the other hand, eliminates all of this audio wiring and thus reduces the pickup of outside interference.
2. It is also less prone to be affected by mechanical malfunctions or problems such as those from scratchy pots or noisy switches.
3. Since all audio switching is done through DC control (+6V or -6V), all internal and external functions (mute, on air lights, remote equip. start/stop) are programmed by simply setting internally located switches. Only one pot is needed to control both left & right channel audio simultaneously (stereo); thus the tracking error normally associated with dual ganged pots is eliminated.

No soldering or internal wiring is necessary to set up or change the "ON AIR" light relay, muting, or AUX MUTE relay. All of these functions are programmed through internally located switches, which can be changed at any time.



What's happening. At a glance.

The labeled, computer-type, push-buttons and corresponding back-lighted displays afford the operator instant recognition of the next happening, which one to push, and what is happening now or what has already occurred.

Although we automatically send you a form (at time of ordering) that enables you to tell us how you would like your console labeled, your unit comes with a full set of additional labeling so that you may easily change at any time desired.

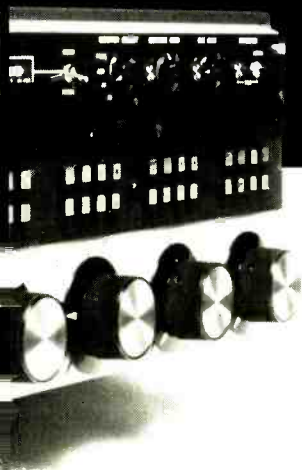
The large LED output mode display has two separate functions. The lighted

decimal point, which lights whenever that mixer is potted down into CUE, is also a blinking warning light whenever this channel has a live microphone activated. The second function of this display tells the operator whether he is in the Program (P), Audition (A), Cue (C) or Off (blank) mode. It is important to note here that the operator has 2 separate means of initiating the Cue mode. One in the normal fashion of potting down and one via the output mode select switch (C). Thus he may go directly to Cue by pushing (C) without having to change the mixer setting.

The exclusive patch panel for selecting input gain offers extraordinary flexibility. At any time, any input can be made to accept anything from a mic level through a line level signal. Not just mic or line level but anywhere in between. Thus on our 10 mixer model you have a minimum of 4,194,304 combinations of mic through line level inputs. And you can accommodate mics and high level inputs or the same mixer simultaneously. You simply plug in the prescribed resistor(s), which are included with your console, and that's it.

All the push-buttons on the console are super-quiet. Not the usual loud, clanking, short-lived mechanical switches. The push-buttons switch and route the audio through solid-state logic, error-free, in less than 2 tenths of 1 millionth of one second. No pops, clicks or momen-

superior console.



Features

- Dual channel
- 5, 8, & 10 mixer versions
- 4 inputs per mixer
- Patch panel gain select inputs
- Back-lit status displays
- Built-in talk back
- Solid state led VU meters
- Mono/phase meter on stereo consoles
- Mono output on stereo consoles
- Custom lettered input push buttons
- Two cue modes (push button and/or pot down)
- Plug in electronics
- Differential balanced inputs and outputs
- DC control—no audio on front panel
- Zero tracking error on stereo consoles
- 3 power supplies w/AC line filtering
- High Z bridging inputs
- Switch selectable cue and mute on all inputs
- Optional digital clock and production timer
- Optional remote equipment start/stop
- 4 year parts and labor warranty
- 2 week trial period

tary feedback with partially actuated switches.



The pure clean difference.

It all comes down to a marked difference in reproduction.

FIRST, all inputs and outputs are solid-state balanced. Unlike transformers they are quite insensitive to impedance mismatches. In fact the mismatches can be millions of times. And can be more than the specified impedance without any noticeable effect on distortion or response. Not so with the average audio transformer as even a couple times mismatch can invalidate the console's performance.

SECOND, our solid-state devices exhibit far less distortion and flatter response than even the finest transformer available today.

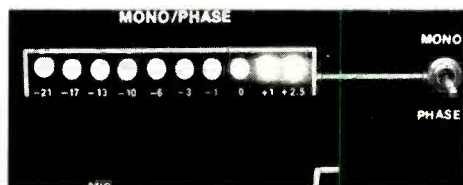
THIRD, since the solid-state devices are purely resistive they are much less susceptible to hum, RF and other external interference.

A FOURTH and very large consideration is the LED "VU" meter. This solid-state meter (SSM) has an exceptionally fast response and you can actually see overmodulation peaks. With a mechanical

meter you can't. Couple this with the electronic circuit that gives the SSM "VU" ballistics on the decay and you end up with a tighter, cleaner sound than ever before. At the same time, your normal audio power level is still maintained. In addition, the bright red and yellow LED display is legible up to 30 feet away.

Although the mono DC-38's have a meter for each output, we took the stereo versions a step farther. In addition to the left meter and the right meter (switchable, Aud. or Prog.), we included a third to monitor the stereo mix (mono) output.

By throwing a switch located next to it, this meter is converted to a phase check meter and may be used to check the stereo phasing of any and all of the console input sources.

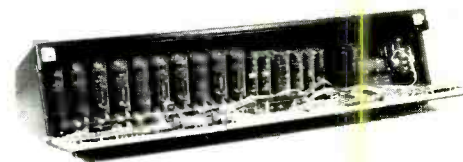


Reliability particulars.

All of the LED's and lamps have a life expectancy of 11 years. The push-button select switches are spec'd by the manufacturer at 20,000,000 operations (1 actuation every 30 seconds, 24 hours a day for over 19 years). The mixer pots are a custom design using glass-hard, conductive plastic. The mechanical construction of these pots is so sturdy

that they tolerate even the heaviest handed operator.

In addition, all of the quad operational amplifiers are burned in for 3 days to insure reliability. Since the power supply is the backbone of your console, you will find not one, but three separate supplies! One for the main audio, one for the monitor amplifiers, and one for the displays. These supplies are fully protected against shorts and overheating and utilize massive heat sinking rated much higher than necessary.



The two week trial.

Put the DC-38 on trial for a full 2 weeks. Put it through a battery of tests or on the air, or both. You'll find that with all that sophistication it's a breeze to use and amazingly rugged.

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

RAMKO

WKYK-AM, BURNSVILLE, N.C.

Well-Equipped Plant Puts

1000- Watter On Top Of Five Counties



AM RADIO ENTRY

Submitted by Michael A. Sink,
Vice President, Operations

LOCATED IN BURNSVILLE, a town of 1400 in a county of 14,000, WKYK operates with 1000 W AM non-directional daytime and 250 W directional at night. The nighttime pattern covers the valley below Mount Mitchell, the highest peak in the eastern U.S.

Our owner, Mark Media, Inc., believes you don't have to be in a big town to do big things. Although there are five other stations in a five-county area plus a dozen other AM and FM signals coming in, WKYK has been dominant because of professional management and staff and dedication to meeting local needs through quality programming and community service.

WKYK moved to its new 3200 square foot building on Main Street in January, 1975. The transmitter is in the same building, with three tall self-supporting towers just behind on Main Street. A hall runs the length of the building with studios and offices on either side, so one can go directly to each work area. Studios and transmitter equipment are across the back of the building, with no windows. In addition to the basic heat pump system, a secondary heating and cooling system is provided for the studio areas.

Our format is Modern Country during the day and Adult Contemporary at night, with Sunday devoted to live religious programming.

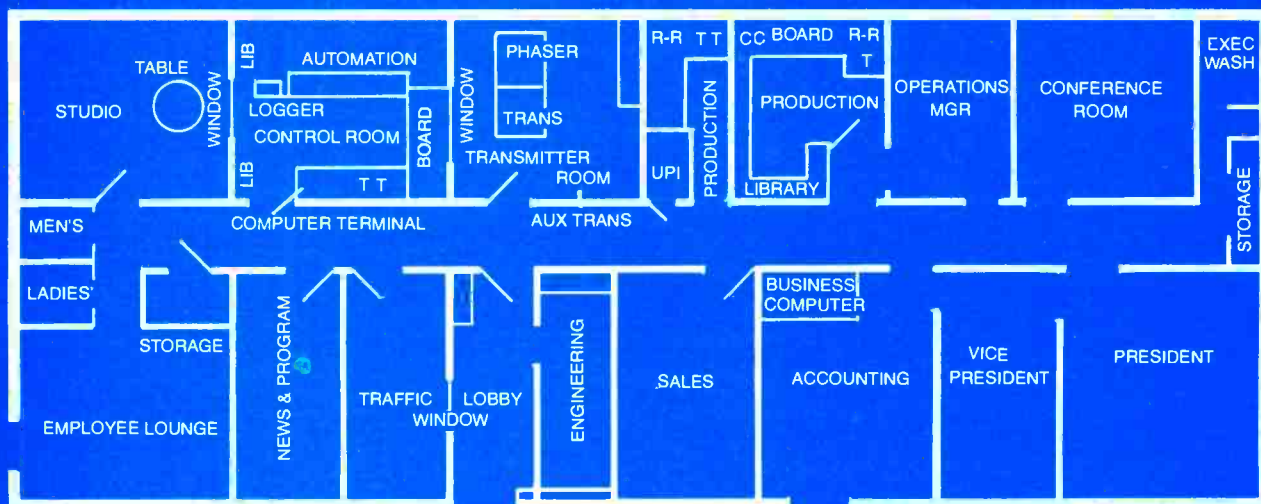
Control room

The main control room is the heart of our on-the-air sound. New operators are initially scared of our Cetec 7000 automation system, but soon love it. The automation includes four reel-to-reel music decks and one fill music deck, two time-announce ITC playbacks, two AudioFiles for random selection of 96 carts, and an automatic logging system with a terminal for system programming and display.

The traffic office across the hall has a secondary printer that can search and display anything in the computer memory, with all information available in seconds from the control terminal. Program information is stored in the memory for seven days ahead, and changes can be made at a moment's notice or programmed seven days in advance. All the music is played off reel-to-reel; our supplier is William B. Tanner Co.

This room also houses all the equipment needed to go on air live with the push of a button, making live inserts easy. One button puts you back on the automation. The patch panel allows everything to be put on the control board.

The same equipment used live is also used for recording, including two turntables, a Spotmaster five-spot five-playback cart machine, and an ITC record/play unit. One reel-to-reel of the automation can be used for record



Plan of WKYK puts all operating spaces along one side of main corridor, offices on the other side. Main control room holds most of audio line and the automation system; transmitter and phasor are in next room



Main control room, automation in center, console to the right. Cart player is to left of console



Another view of main control room shows turntables to right of operator, automation readout and control in right corner

and another for playback. Also in the room is a cassette deck, a tuner for rebroadcasting ball games, a weather alert, and a TV screen to show what is displayed on the automation terminal. Cable TV is also wired in for the weather channel.

The information that will appear on the automatic logger is typed on the terminal screen and goes on to the cart even as the voice is being recorded. A time clock turns on and starts timing a spot when the cart starts. Weather and local comments are easily put on cart and put into an AudioFile slot to be played at the properly programmed times.

There is also a digital clock with digital temperature readout. Lights flash for incoming phone calls and when the front and back station doors are opened. The computer changes the power and the directional and nondirectional signal pattern at the proper times and sounds an alarm for the operator to check for a proper change; a flashing light in the control room also signals this alarm.

A different beeper sounds at the top of every hour, reminding the operator to read the transmitter meters, and

an alarm sounds when the music reels run out. The rack to the left of the operator contains the modulation monitor and the antenna monitor, a DAP audio processor, and the EBS equipment. Even though the transmitter is just through the window, there are remote meters for ease of monitoring and a panel containing transmitter functions — filaments on, plate on, and indicator lights, as well as high and low power and day and night signal patterns of the main (CCA) and the auxiliary (Gates BCIG) transmitters.

The studio for live programs and groups is just behind the announcer. The two other production rooms can be brought into the control board. Two mobile units used for remote broadcasts and sports and news reporting can be communicated with by a squeeze-to-talk phone and can go on the air immediately.

Production rooms

Production room 1 contains a control board smaller than the others in the building, but very useful with the use of a patch panel, plus a Revox reel-to-reel, turntable, and

AM Best Station Award Entries

Production room 1 has turntable, reel-to-reel machines, console, cart players. Library of carts and discs is around other walls of room



Production room 2 has equipment similar to room 1, is next to UPI news machine enclosure for easy news production



Outside the building is one of the two mobile units, which can feed news, sports remotes, and other outside broadcasts to the studio via UHF radio. Remotes can go on the air immediately, if wanted

two record/playback cart machines. Also in this room are the five different production libraries. Both production rooms and the main control room can simultaneously be used for production while the automation runs everything smoothly.

Production room 2, like all rooms for recording in our plant including the main control room, has carpeting on all walls for better sound. Capable of live on-the-air use, this room is equipped with a Spotmaster control board and two Spotmaster playback and record cart machines, a cassette deck for record or playback, and two Revox reel-to-reels — a B77 and an A77. The B77 has variable speed control. Two Technics turntables with variable speed control and an equalizer aid production. The board can bring in the main control room and other production room and dub between them. The Mutual network news is also run into the control board from a satellite receiving dish mounted behind the building.

Ours is a heavily equipped plant for a 1000 watt in a small town. But every item of equipment has pulled its weight in the successful operation of the station.

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WQOK-AM, GREENVILLE, S.C. Upgrading To Keep Ahead In A Top-50 Market



AM RADIO ENTRY

Submitted by John Francioni,
Chief Engineer



Main control room is all-stereo, to be ready for AM stereo. Equipment can be used in standup operation; most music is on carts. Program director Gary Jackson conducts air show

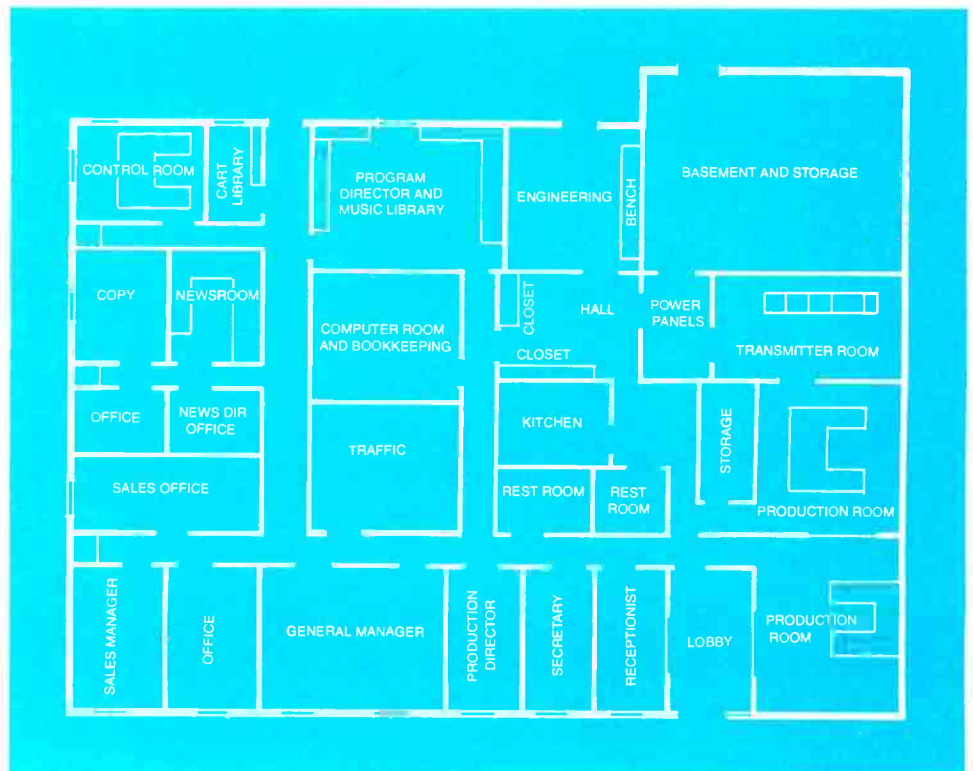
Plan of station shows new wing (left end) with new main control room and newsroom. Offices were also enlarged

LIKE SO MANY AM stations in medium and large markets, we are facing growing competition from the leading FM stations in the area. Our music is Adult Contemporary, and we do the programming ourselves with a system that is basically "live assist." In addition, we have a very heavy program of local news and community affairs programs, with many "live" remotes from events of every kind in our area.

To accommodate the station's steady growth we recently added a wing to our building, allowing the construction of a brand-new control room completely in stereo to anticipate AM stereo. We are building a second, enlarged production room, also all-stereo, to raise our efficiency with the increasing commercial production load. These and other improvements seem to us vital to the maintenance of our position in the market.

For the new control room, planned as the first of several stereo studios, we bought all new equipment. A Harris 10-mixer stereo console accommodates the two triple-deck cart machines and the other inputs. Although WQOK is all-cart, we wanted access to turntables in the control room. Two drawers on each side of the custom-designed cabinet house the turntables, which can be pulled out for use.

Our engineering department designed a very flexible sequential cart system for our library of over 4000 carts. Secondary and tertiary tones trigger carts in different positions by the setup of external switches, or stop down after any cart. A timer resets automatically at the start of



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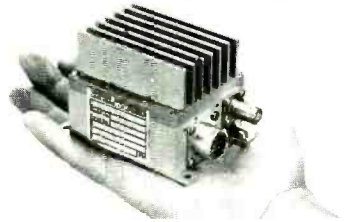


The Hughes Helicopters 300C makes airborne Electronic Newsgathering affordable for most stations and marketplaces. The newest addition to the ENG field combines the Ahead of TIME technology of the Hughes 300C and microelectronics to produce the most economical airborne ENG system available.

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maneuverability and wrap around cockpit design allows you to follow all the action.

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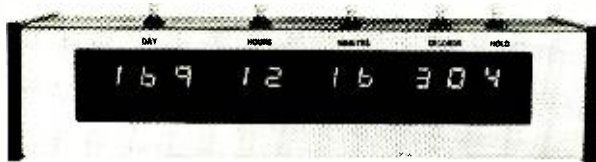
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AM Best Station Award Entries

the next event. This system allows the announcer to load up at least six carts and be hands-free for a complete set of commercials or music. An alert light informs the announcer of the timing of the music.

Transmitter monitoring equipment, reel-to-reel recorders, and other control room equipment are installed in custom-built cabinets overhead. Also overhead, on the wall in front of the announcer, is a complete light signal system that alerts the announcer to any emergency or other event, such as network feeds, teletypes, incoming calls from repeaters, or EBS.

Repeater system

A large part of our success lies with our total community involvement. The recent addition of a 450 MHz repeater system has given us the ability to be the most mobile station in the market in programming as well as news. Maximized by its location on Paris Mountain just north of the city, the range of the Marti repeater system is 30 to 60 miles under normal conditions. News and programming functions are entirely separate; each has a complete chain to the studio with separate receivers. Each mobile unit will transmit its assigned frequency, but can switch to the other department's channel for communication between mobiles or for backup in case of failure.

This flexibility came in handy during the Presidential campaign when President Carter came to town, making three stops and speeches in the area. With fixed transmission points set up at each stop, we could have the President on air live from one location while the other locations communicated with the newsroom on the other channel.

We have two mobile units: our "Q" cruiser and our Disco van. The first has a Microtrak stereo console, turntables, and mic channels for any kind of remote broadcast, plus the dual-channel Marti UHF equipment. The Disco van, used for promotions, carries a large portable sound system with 1000 W of audio power and a professional light show. We lease it to disco parties, school dances, and other events — it's booked for every weekend for months ahead. The engineers who operate it split the fees, with the station taking only a part representing cost.

Newsroom

Custom-designed by our engineering department for a two-person staff, the newsroom serves as news production area and on-air studio. Equipment includes an Ampro Microtouch console, an Ampex AG-600B, a Superscope C-204 cassette deck, a Gates Criterion, and an ITC PD-II. The newsroom also has a "Speakerphone" option on one telephone, a 16-channel Regency programmable scanner, a Regency "Weather-Alert" radio, and a Secode remote control for the news repeater base station. Above the operating position are warning lights for the ABC network, UPI teletype bulletins, and intrastation intercom.

Channel one of the Ampro console feeds the control room, the Criterion cart machine, one of the Ampex dual inputs, and, if needed, one of the two newsroom telephones. Channel two feeds the PD-II, the cassette deck, the other Ampex input, and, optionally, the other phone. This makes it possible for one reporter to conduct a telephone interview or go on air while the other processes audio for on-air use. During the Carter visit one channel broadcast the remote while the other controlled feeds to



In transmitter room, chief engineer John Francioni adjusts the receiver for the UHF repeater signal, coming from mobile units. Transmitter is to his right



Announcer Chris Scott is in old production room, being converted to stereo. Equipment includes turntables, console, cart machines, reel-to-reel tape machines



In newsroom, all news is gathered, edited, and put on the air. Control console is center rear. Other units: cart players, reel-to-reel machines, weather equipment, cassette player



New production room, all in stereo, has top-grade audio equipment throughout, including special effects systems for making commercials lively and effective

stations in Columbia and Charleston.

Another important part of our upgrading is our new stereo production room, again anticipating AM stereo. A Cetec Centurion II stereo console, processing units from UREI and Orban, Ampex 440 reel-to-reel recorders, and Technics turntables with variable speed allow our production department to turn out commercials of top quality, with special effects as wanted. This quality in commercial production is necessary to stay competitive.

The room is in front of the building, visible from the lobby through a glass window, so we included variable track lighting, cork and wood chips on the walls, and cabinets custom-built for elegant appearance as well as utility. The announcer has a full view of all equipment and can reach all controls from one spot.

In the most recent ratings WQOK is maintaining its market position; we attribute a good part of this to the improvements in our plant.

KPRK-AM, LIVINGSTON, MONT. A Small-Market AM Plant Set To Move To The Future



AM RADIO ENTRY

Submitted by Kent L. Colby,
Vice President and General Manager

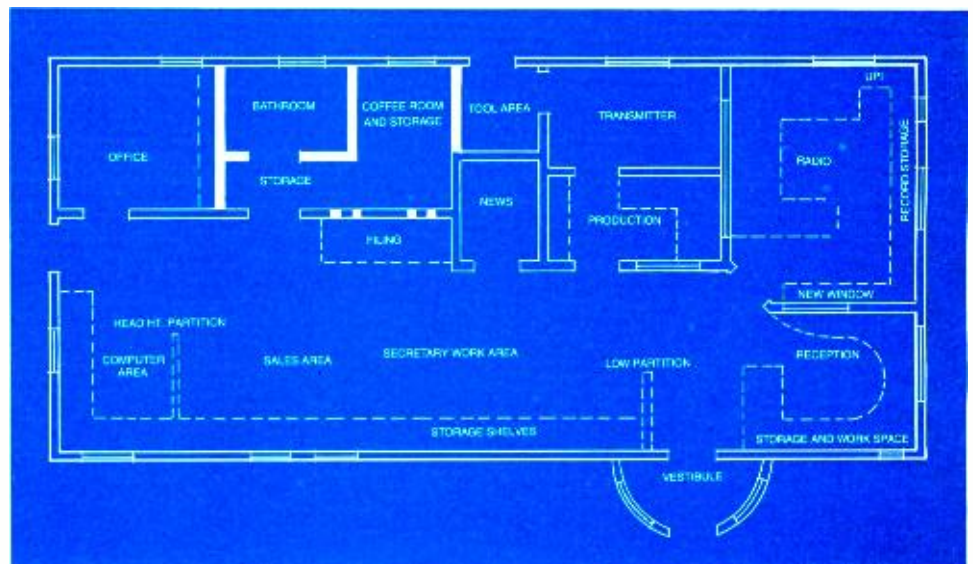


Building used by KPRK since its 1947 opening had an apartment into which the station could expand. The management took all additional building space in 1979 to enlarge plant

ESTABLISHED IN 1947, KPRK by 1979 was bursting its housing and pushing its equipment and personnel hard; business had increased by more than 50 percent in the last two years. The owners were lucky: the original building, with an ultra-modern (almost Buck Rogers) exterior, had included an apartment into which the plant could expand. Management strove to keep this exterior theme while developing a highly functional and efficient new interior.

KPRK is a 1000 W station by day, 250 W at night, with a Contemporary Country format during the day and a

Floor plan shows how entire space in building was utilized for upgraded broadcast station. New equipment went in to convert whole audio line to stereo



more rock-oriented style after dark. Programming is all done in the station, and nearly all music goes on the air from discs. The station also emphasizes local news and public affairs programs. Its remote pickup equipment can be driven directly to the scene of news action, with full two-way radio equipment to get the news to the studio.

The renovation and expansion effort produced a new plant before the end of 1979. The office area was consolidated to accommodate the present staff and house a computer and traffic and bookkeeping system. Its "open" configuration allows for expansion to up to twice the present number of office personnel.

The control room is equipped with a Broadcast Audio console with 24 inputs and four outputs and expansion room for up to 48 inputs. Studio layout is of a "cockpit" nature with everything within the operator's reach. All motor functions are remote-controlled at the board's "on" buttons monitoring equipment. The monitor, limiter, and AGC are mounted overhead. This housing also acts as a sound baffle to deaden the room. Announcers work standing up or from a padded stool, allowing for better breathing posture and unrestrained movement.

The layout is also designed for live interview programs with ample room for three or four guests to be interviewed by the announcer, eyeball to eyeball with no additional personnel required. The telephone is equipped with a speaker phone, again giving the operator "hands off" operations and allowing the guests to hear incoming calls during telephone call-in programs. The clock and future weather instruments are at operator eye level. All equipment is tied together at terminal blocks, again to ease maintenance and to expedite troubleshooting.

The newsroom and production rooms can be brought up in the control room for live programming from either. Also in the interest of small-market economy, both reel-

DELTA BROADCAST PRODUCTS

AMC-1



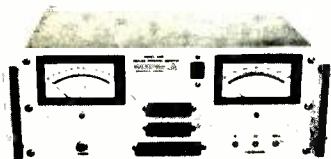
The **Amplitude Modulation Controller** is the only modulation controlling system that provides a completely closed loop around the transmitter. The sampling of actual modulation levels after the PA output network assures precise adjustment for optimum modulation levels. The AMC-1 also keeps a digital count of positive and negative overmodulation bursts for both present and previous one minute periods.

DAM-1



The **Digital Antenna Monitor** couples pushbutton ease of operation with digital accuracy. The DAM-1 will accept RF samples from up to 12 towers (with an auxiliary panel) and features $\pm 1^\circ$ phase and $\pm 2\%$ current ratio accuracies. Remote panels and other accessories are available.

AAM-1



The **Analog Antenna Monitor** gives stable phase and ratio readings even in high RF fields. Separate phase and ratio mirrored-scale meters assure accurate meter indications.

TMCS



The **TMCS Antenna/Transmitter Remote Control System** offers complete transmitter and antenna parameter control for stations utilizing the DAM-1 Antenna Monitor. Alarm indications and failsafe circuitry is also provided, giving complete transmitter system control.

APC-1

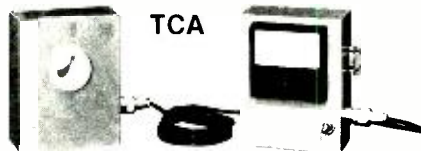


The **Automatic Power Controller** is your insurance against citations for over- and under-power operation. The APC-1 continuously monitors the transmitter output power, and makes automatic power adjustments with the transmitter loading control. This assures proper power adjustment at all times.

6730-E
6740-B



Designed to switch two transmitters from antenna to dummy load, the 6730E interfaces with 1 5/8 inch coaxial cable. For 3 1/8" lines, the 6740-B transfer switch is used. Either manually or remote controlled, the **Transfer Switch** is fully interlocked and can be wired to existing equipment to prevent "hot" switching.



State of the art antenna current metering has arrived in the **TCA Ammeter Systems**. Accurate, Modulation-free, temperature stable current indications are found in the TCA. Models include single and dual scale meters.

TCT



Delta's **Toroidal Current Transformers** provide accurate sampling current and phase values without the problems associated with sampling loops. Three output voltage ranges are available, as well as high voltage models for high-power facilities.



OIB-1

OIB-3

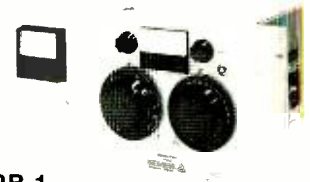
The **Operating Impedance Bridge** measures the impedance of networks, radiators, and the like while they operate under full power. VSWR as well as complex impedances of up to $400 \pm j300$ ohms can be measured.

The **OIB-3 Operating Impedance Bridge** provides extended resistance and reactance ranges, measuring up to $1000 \pm j900$ ohms. The bridge has a built-in carrying case and RF amplifier for improved matching.

RG-3



The **Receiver/Generator** combines a two-watt RF output and a correlation detector circuit that virtually eliminates interference problems. The RG-3 can be used in conjunction with any conventional impedance bridge including the OIB series.



CPB-1

The **Common Point Impedance Bridge** is designed for permanent installation and allows continuous monitoring of the common point, thus facilitating network adjustment. This model can be provided with one of Delta's TCA ammeters mounted in the front panel.

DPM-1



Delta's **Digital Panel Meter** displays up to sixteen channels of information in a 1/2 digit LED display. Any combination of operating parameters can be selected, such as plate current and voltage, common point current, base currents, etc.

DELTA ELECTRONICS



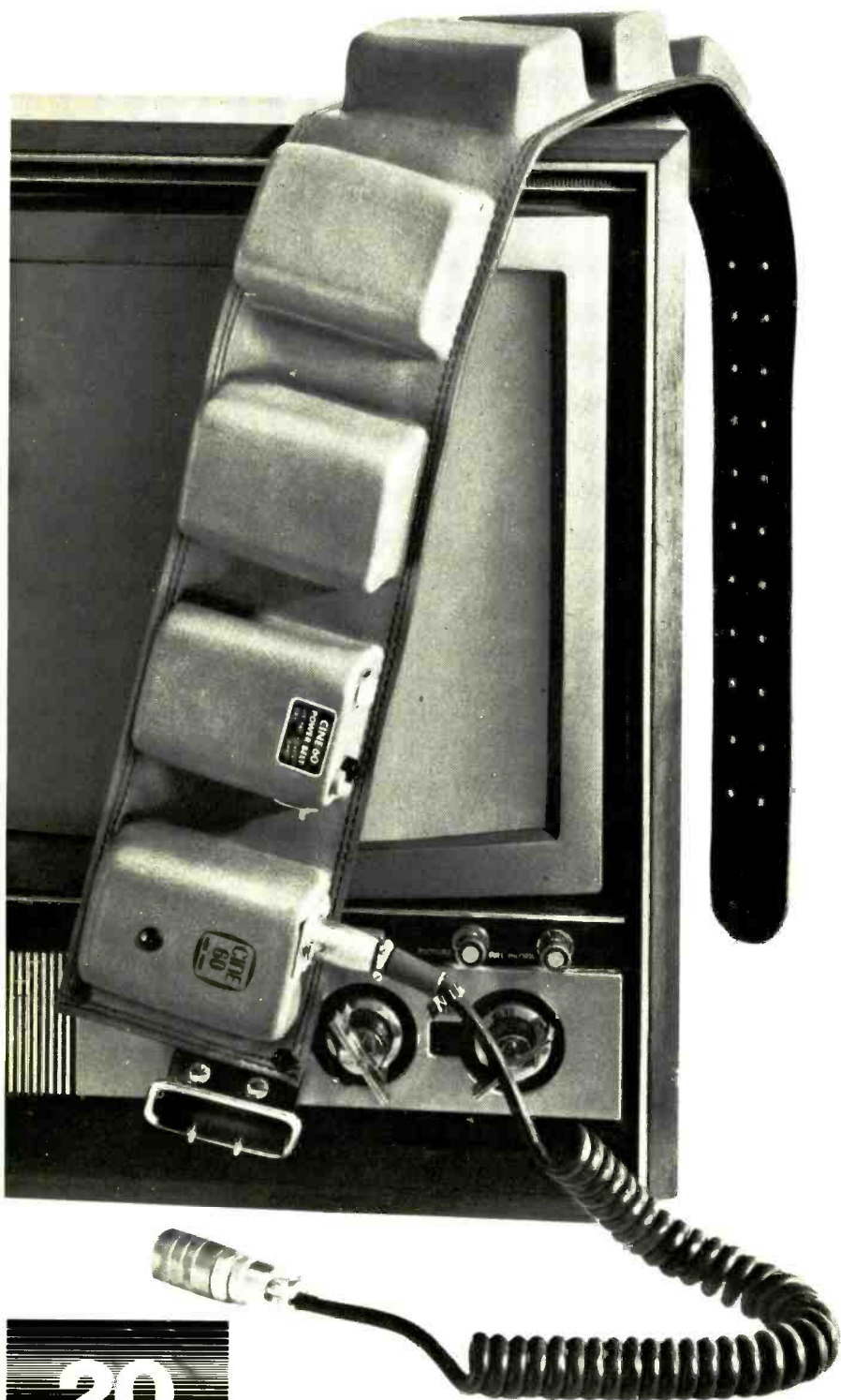
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AM Best Station Award Entries



Large office space stretches the length of one side of building, with sales, computer, administrative, and storage areas included

to-reel recorders in the production room and control are remoted to both studios to give either the capability of two machines, an asset for dubbing and news delaying.

The entire control room is wired stereo right up to the limiter, ready and waiting for AM stereo. The turntables are from Technics, with phono pickups from Stanton. Our studio was planned to produce a top-quality sound, positioning us firmly not only for the present but also for the technical future.

All support equipment is mounted below in ventilated cabinets on hinged racks that will lay any and all equipment out for ease of maintenance. The front of the overhead rack is also hinged for easy equipment maintenance. The limiter and AGC are wired with bypass switched to eliminate downtime for maintenance. All equipment is tied together at terminal blocks, again to ease maintenance and to expedite trouble shooting.

The production room uses the former control room console, and again everything is located for operator convenience. The newsroom is equipped with telephone coupling, dubbing capabilities, cassette, and cart equipment. All studios are linked through windows to provide visual contact when joint production is involved.

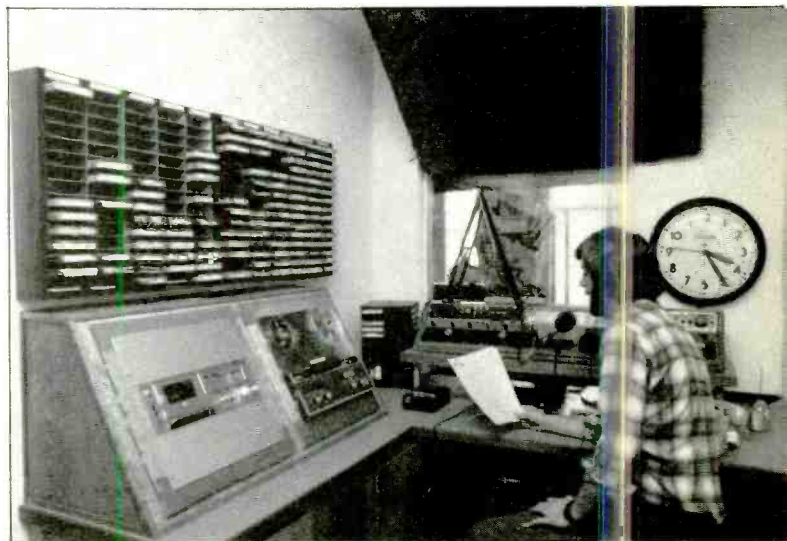
Windows also connect the studios and lobby area, allowing visitors to observe the total operation without interrupting the announcers. The control room announcer is surrounded with windows to the outside which not only let the sunshine in, but also make him or her part of the world and allow accurate weather observations.

The entire facility is bright and airy, making for very positive working conditions with many plants throughout to add warmth. The manager's office doubles for sales presentations as well, with complete reel-to-reel, cartridge, cassette, turntable, and mixing equipment to eliminate tying up the production studio. In addition to on-air, the production room can be fed into this office for complicated presentations as well.

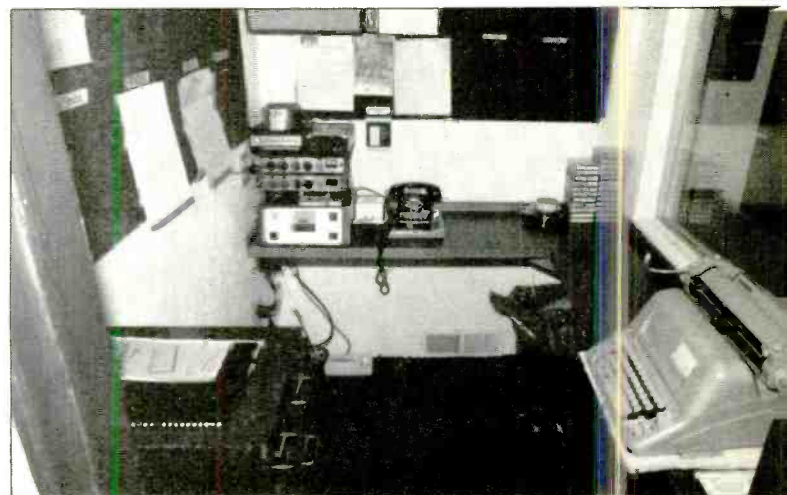
KPRK has also installed complete emergency generation equipment to keep us on the air in those emergencies when radio is the only source of communications. Looking toward the future in another way, the station has the building space to add an FM operation, which the management may want to do at a later date. We could, for example, move our AM transmitter out to a small building in the yard, next to the antenna, and use the vacated space as the main FM control room. Thus our new plant is very satisfying, both technically and psychologically.



Main control room has console on stand above turntables; height allows operator to stand or work from a high stool. Monitor, limiter, and AGC are overhead



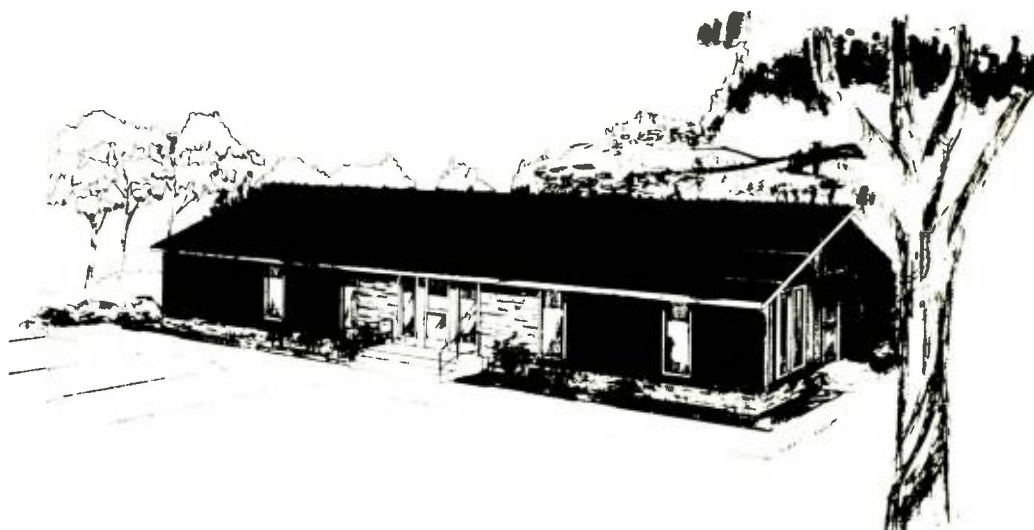
Production room also has console on posts, holding it above turntables. Bob Brown reads copy for a commercial being recorded. Transmitter is through window to his right



The newsroom has telephone coupling equipment, cassette and cart playing and recording equipment, dubbing capability. Windows link it visually to other areas



SUGGESTED EXTERIOR



SUGGESTED EXTERIOR



SUGGESTED FLOOR PLAN

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NRBA Convention Strong: Registration Up, Board Expands Activities

THE COMPETITIVE situation in the broadcaster-convention arena got an additional push from the National Radio Broadcasters Association annual meeting and exhibits at the Bonaventure Hotel, Los Angeles, October 5 through 8.

NRBA announced a total of 4300 at the convention, up from 3800 last year. The Board of Directors, meeting just before the show, overruled an earlier decision of the Executive Committee to shift the date of next year's convention and voted to hold upcoming meetings on the dates established last year. (At press time, NAB announced a change of date for their 1981 Programming Conference, to August 16-19, to avoid running at the same time as NRBA 1981, slated for September 20-23.)

A member of the board told *BM/E* that the feeling was strong against a change of date to avoid the confrontation. One main reason was the great difficulty in finding another attractive date at a suitable place. Also persuasive was the fact that NAB had chosen the date long after NRBA had made its original announcement.

The board also instituted several expansions of legal and promotional activities, giving strong signs of organizational vigor. With NRBA regions expanded from nine to 15, the board now consists of 36 members elected by popular vote in each region. Officers elected were: president, Sis Kaplan, WAYS/WROQ, Charlotte, N.C.; board chairman, Robert Herpe, General Communications Corp., New Haven, Conn.; vice president east, Stephen

Trivers, Fairfield Broadcasting; vice president west, Bill Clark, KABL, San Francisco; secretary, Bernard Mann, Mann Media, High Point, N.C.; treasurer, Ted Dorf, WGAY, Silver Spring, Md.

The convention was characterized by a high proportion of excellent and well-attended management and engineering sessions; a larger number of programmers on the exhibit floor and in the hospitality suites than at any earlier convention; hardware exhibitors up in number from last year, but showing a fairly small number of new items of equipment; and a very large contingent of new and old computerized business systems. *BM/E* asked several of the programmers what they would do about next year's conflict of dates; all registered, "don't know yet."

Also far stronger than at earlier conventions were firms offering services of many kinds, from station brokerage to sales seminars.

Hardware news

Some outstanding hardware innovations on the exhibit floor are noted here, in no particular order. Audio and Design Recording, an English firm now also established in Bremerton, Wash., brought the Transdynamic Processor, which can add a three-band processing system to professional level control amplifiers. The unit allows for extremely flexible and accurate handling of each of the three spectrum bands and is available in versions for both AM and FM. *BM/E* listened to program material

treated by the system and compared it with the same material sent straight through. The processed quality was excellent. The unit seems to be an addition to the group of audio processors now available that produce very low distortion.

Aphex Systems, Ltd., starting a few years back with an "aural exciter" of somewhat mysterious nature, which won a very large following in recording and broadcasting, has "come clean" on the product, and has developed a line of related products to sell. The Aphex Exciter adds carefully controlled amounts of second harmonic distortion, which for many ears provides sharper definition to the sound, especially on voices, strings, and percussion instruments.

Aphex introduced at the show the Model 602B, designed especially for broadcasters, with input and output circuits for easy insertion in the broadcast audio chain. There is a bypass switch and a failsafe relay that automatically bypasses the unit if it goes down. Controls allow the straight and the processed sound to be mixed for the most pleasing effects.

Delta Electronics brought a new, very complete remote control system, the RCS-1, readily and simply convertible to an ATS. The channel complement is flexible, with a modular system that allows the user to start with few channels and add more at any time. In addition to all the usual and necessary status, metering, and control functions on each channel, with very complete CRT readout, the system has some interesting refinements. It can be called on a dialup phone after hours and includes a speech synthesizer that will report back "verbally" on important status and metering facts. If some parameter is critically outside tolerance the system will "call" the engineer on the phone to report that fact. A nice addition is a patented bargraph system that gives a continuous visual indication of modulation percentage.

Eumig continued its effort to make the audio cassette into the recording medium for broadcast automation. The firm showed a further development of its system using computerized control of a stack of cassettes, introduced at the April NAB. New at NRBA was the "Jock-Mate," which adds easy live assist operation to the system. Eumig



Broadcasters looking at new hardware crowd floor at NRBA Convention

claims very high audio performance and a minimum of stereo phase problems for the mono listener to FM.

Denon, a branch of the Japanese firm Nippon Columbia, which now has its American headquarters in Fairfield, N.J., brought a new version of the broadcast turntable introduced at earlier shows by American reps for Denon. The new RP-60 has characteristics aimed specifically for American broadcast practice — quick start and complete remote control. Denon claims the ac motor reduces low-frequency noise below that of many dc-motorized tables. Other characteristics are at the very high levels of the new turntables that have revolutionized disc playing in broadcasting. Denon also showed for the first time in the U.S. its DN-94R reel-to-reel tape machine, which also ranks with state of the art equipment.

Kahn Communications, in the forefront in recent years for its AM stereo system, brought several audio processing and telco line units. Symmetra-Peak improves modulation density by shifting asymmetrical peaks to symmetry status. Lines-Plus uses two telco lines for one signal to extend the frequency range. Non-Symmetra-Mod supplies low-distortion 125 percent modulation for AM transmitters.

Orange County Electronics continued its development of flexible processing equipment with the VS-3 FM stereo system. This limiter/compressor has a plug-in card that can incorporate all the settings chosen by the broadcast programmer for his format. If there is a change of format or the programmer wants a different sound at a different time of day, another card can be substituted. Orange County also announced early availability of an Aphex Aural Exciter for the "semipro" market. The operation is the same as in the large Aphex Exciter, but the unit is smaller, has fewer controls, and will retail for around \$450. Orange County says full production will start before the end of 1980.

RCA announced that its new 5 kW, all-solid state AM transmitter, the BTA-5SS, is on extended trial for regular service at WWSW, which has an eight-tower directional array.

Sound Systems, Inc., of Long Island City, N.Y., a spinoff from the out-of-business Automated Processes, appeared first at the April NAB. For NRBA, it brought more models of the plug-in amplifiers and opamps that represent improvements on the familiar Automated Processes line. Among them were the UA200 line/booster amplifier, which has gain adjustable from unity to 49 dB, three identical outputs which can be used separately or in series, and extremely low distortion and noise. Another was the MP208 microphone preamplifier, with gain ad-

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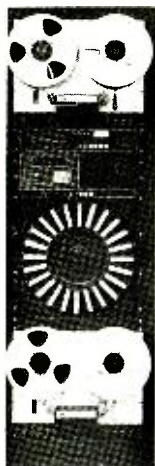
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NEWS FEATURE

justable 20 dB to 70 dB, less than 0.05 percent THD at 18 dBm output, and noise equivalent to an input of -129 dBm. It also has three separate output windings.

Time and Frequency Technology, in addition to showing its established line of remote control and STL equipment, emphasized a new low-cost receiver for responding to the EBS two-tone alert signal. Intended for use in homes, businesses, schools, etc., the new EBS receiver has decoder circuits that turn it on when the two-tone EBS signal comes in so that the emergency messages can be immediately received, whether a regular radio at the location is tuned to the EBS control station or not. A safety feature of the receiver is that it is continuously tuned to two broadcast signals. The receiver automatically aligns itself with the first station from which the two-tone EBS signal comes in and from then on reproduces all material from that station until the emergency is over.

The new Optimod-FM Model 8100A was compared with the 8000A at the Urban booth. Also, Urban's new 674A Stereo Graphic Equalizer was demonstrated.

Harris Corp.'s new MSP-95 FM audio CPU (composite processing unit) was introduced at NRBA. It uses an integrated design suited for FM stations using an STL link and will drive composite studio/transmitter links or wide-band input of any FM exciter. The CPU uses digitally synthesized modulation and a patented "Dynamic Transient Response" DTR filter, which will hold overshoot on any program material to two percent or less. Harris claims the unit will maintain a high stereo separation under 2 to 6 dB increase in loudness with low crosstalk and low IM distortion.

A program logging system came from Hallikainen & Friends, another exhibitor at NRBA. The logger consists of two separate systems: the encoder and decoder. The encoder takes the English message from a CRT terminal, generates NAB-standard AFSK tones, and records these on the cue track of the tape, timing and controlling the signals. The decoder takes the logging data during tape playback and prints the data. Hallikainen also displayed its digital telemetry remote systems.

MEI Microprobe Electronics displayed its Log 4 Automation System with new 48-event Model 100MP Programmer. Radio Computing Services was offering the Selector Music Selection System with Digital Equipment Corp.'s 1103 minicomputer. RCS sells the system for \$30,000 with maintenance fee. Sono-Mag Corp. had a new

system, the Mini-Pro 1. This "live assist" programmer is designed for reel, carts, and RSC-100 Carousel machine control. With optional equipment it will log time, channel number, and encoded information in either automatic or manual mode.

Continental Electronics made a first appearance at an industry show with units of the Collins broadcast equipment, recently taken over from Rockwell. On the floor were the 1 kW AM, 5 kW AM "Power Rock," 10 kW AM, 25 kW FM, the FM exciter, and consoles familiar from the Collins line. The additions to the Continental inventory, which has been strong for years in high-power AM transmitters, make this firm a major factor in the transmitter market, here and abroad.

Neal Ferrograph introduced a new four-channel logging recorder, with each channel independently recordable and playable. Recording time is 12½ hours with long play tape. A second machine can be connected to the first, to start automatically if the tape breaks on the first, or in routine use within 15 minutes of the end of the tape on the first. After reloading the first machine, the automatic take-over transfers recording from the second machine back to the first.

Broadcast Electronics brought an FM exciter, the FX-30 — the first unit of the kind for this firm. It has already won praise from users (see Best Station story on WPAT in this issue).

McMartin Industries introduced a number of new products. Included were an FM exciter; stereo and mono audio processing units; a stereo and SCA generator; and a new STL system.

Growing penetration of satellites into radio broadcasting was evident in many exhibits. Wold Communications had on the floor one of its mobile uplink trucks, which can pick up radio or television signals at any point and send them up to a satellite. The unit looked very complete and efficiently organized, with exterior connectors for the cables bringing in the program material and a trailer on which the uplink antenna rides to the point of use behind the truck. Inside the truck are two independent amplifier and modulation chains, with all adjustment and testing equipment mounted in racks for instant use.

More than 35 suppliers of programming — syndicators, producers of shorts and specials — were on the floor or in the hospitality suites. Many made announcements of new programs or new syndicated formats. The major ones will be summarized in upcoming columns in the Radio Programming department. A few of the most interesting, along with other material, appear in this month's Radio Programming column.

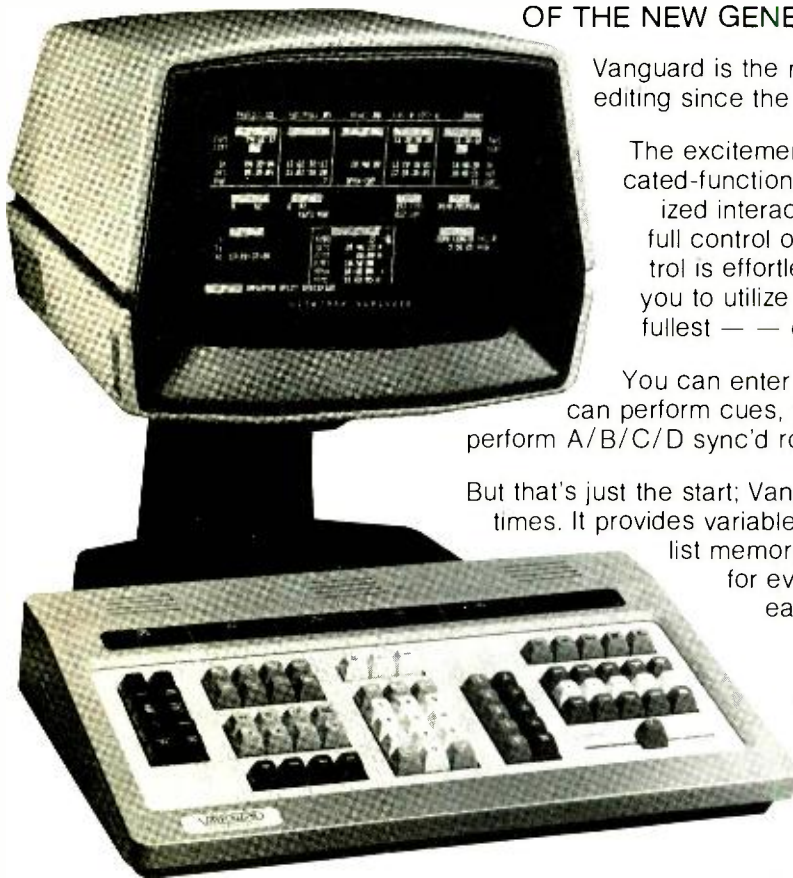
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Auto assembly from up to four sources is standard, as are paper tape edit list input/output, teletype edit list printout, and scrolled CRT edit list output. And if you wish, floppy disk is available.

It's all here, and at a price that's about half of what you'd pay for just one Type-C VTR with TBC.

And, just in case you're not ready to convert to Type-C, it will probably come as no surprise that Vanguard also interfaces to more than 35 other makes and models of decks, including quads, 3/4 inch cassettes, 1" Type-A/B, multi-track audio recorders, and the Rank Cintel scanner.

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NEWS FEATURE

Data by SCA: strong growth

Four exhibits devoted to the use of SCA channels for data of various kinds testified to large growth of this service, which brings "extra" money to a growing number of FM managements.

AmNET/American Quotation is a firm based in Champaign, Ill., which uses a network of SCA channels leased from FM stations to supply businesses with fast transmission of data to separated branches or to other businesses. Transmission equipment is installed at the subscriber's main office and reaches the FM station leasing the SCA service via telco line. Receiving/decoding equipment and either hard copy printout or CRT screen readout or both go to the receiving locations.

A somewhat similar operation was described by Commodity Communications Corporation, of 175 West Jackson Blvd., Chicago. This SCA user, however, concentrates on supplying subscribers with "instant" quotes on all major commodities from the commodity markets in New York, Chicago, and Kansas City. The firm has developed readout units of various sizes with pushbutton control allowing the user to call up any of more than 200 specific

commodities, getting such data as high/low, last trade, daily close, change from last close, and more. The system also supplies general market news, price charts, and other material. Subscriber fees are on the order of \$300 per month.

A third, very sophisticated system (not a service operation in itself), called Datavox II, was shown by Johnson Electronics of Casselberry, Fla., veteran builders of SCA receiving and transmitting equipment. Datavox is a digital transmission system that can transmit via standard FM, SCA, telco lines, microwave, or satellite links; SCA has been most popular for cost and efficiency. The system allows the FM station to make use of the SCA channel for three lines of digital transmission without interfering with background music or other voice or music use of the channel. Johnson has developed a complete set of transmit and receive units, including a transmit data terminal with controller and with CRT readout for word processing to allow sending typed messages. Also included are transmit and receive modems, receive copiers/printers, and SCA tuners.

Radio Data Systems, a wholly owned division of Bonneville International Corp., offers a general data transmission service using mostly SCA channels. Radio Data supplies all

necessary hardware and software "except the SCA generator and monitor." A spokesman told *BM/E* at the show that the service is growing at a phenomenal rate, with prospects for nearly a 100 percent increase in subscribers within a year. The firm is actively recruiting FM stations in the top 100 markets to join in by leasing SCA channels for the service: rent paid goes up as the number of subscribers increases. The company announced plans to use satellites for the service for long-distance (eventually nationwide) transmission to reach the FM stations in the target cities. Radio Data is based at 669 N. 10th West, Centerville, Utah.

Technical sessions

Among the technical sessions, which were uniformly excellent, two stood out particularly. One, titled "The Last Black Box," was a discussion of the more sophisticated requirements for top-level audio processors. The moderator was Harvey Rees of Carl T. Jones Associates, with panelists Greg Oganowski of Gregg Laboratories, Bob Orban of Orban Associates, and Craig Siegenthaler, chief engineer of KISW in Seattle. All made highly enlightening comments on the design of refined processors.

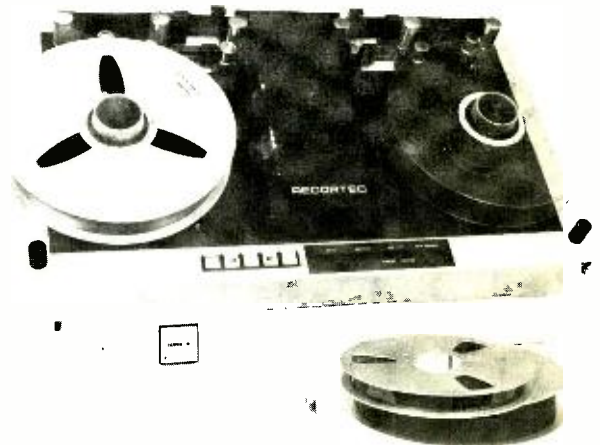
The second noted session, "Things Ma Bell Never Taught You," was the

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



Production Studio, WRBR-FM, South Bend, Indiana.

In all the years I spent in broadcast and related studio production work, my greatest frustration was the fact that no manufacturer of loudspeaker systems seemed to know or care enough about the real needs of broadcasters to design a sensible monitor speaker system that was also sensibly priced.

Moving to the other side of the console presented a unique opportunity to change that and E-V was more than willing to listen. When I first described to Electro-Voice engineers what I knew the Sentry 100 had to be, I felt like the proverbial "kid in a candy store." I told them that size was critical. Because working space in the broadcast environment 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*. However, the mounting hardware had to be a separate item so that broadcasters who don't want to rack mount it won't have to pay for the mounting.

The Sentry 100 also had to be very efficient as well as very accurate. It had to be designed so it could 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.

In the next breath I told them the Sentry 100 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.

Not only did it have to have a 3-dB-down point of 45 Hz, but the Sentry 100's response had to extend to 18,000 Hz with no more than a 3-dB variation.

And, since it's just not practical in the real world for the engineer to 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.

Since I still had the floor, I decided to go all out and cover the nuisance items and other minor requirements that, when added together, amounted to a major improvement in functional monitor design. 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, so the walnut hi-fi cabinet was out. 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.

That was well over a year ago. Since that time I've spent many months listening critically to a parade of darn good prototypes, shaking my head and watching

some of the world's best speaker engineers disappear back into the lab to tweak and tune. And, I spent a lot of time on airplanes heading for places like Los Angeles, Grand Rapids, Charlotte and New York City with black boxes under my arm testing our designs on the ears of broadcast engineers.

The year was both frustrating yet enjoyable, not just for me but for Ray Newman and the other E-V engineers who were working on this project. At this year's NAB show it all turned out to be worth it. The Sentry 100's official rollout was universally accepted, and the pair of Sentry 100's at the Electro-Voice booth was complemented by another 20 Sentry 100's used by other manufacturers exhibiting their own products at the show.

What it all boiled down to when I first started the project was that I knew that the Sentry 100's most important characteristic had to be *sonic integrity*. I knew that if I wasn't happy, you wouldn't be happy. I'm happy.

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NEWS FEATURE

final session of the convention. It brought together Mark Durenberger, engineering specialist of Milwaukee, as moderator, with Steve Church, director of engineering, Liggett Group, Buffalo; John Higdon, chief engineer, Broadcast Technical Consultants, San Jose; and William Ruck, engineering manager, KFOG, San Francisco. Two representatives of Northwestern Bell Telephone, due on the panel, could not

get into Los Angeles because of the smog.

All those present displayed encyclopedic knowledge of the equipment available from the telephone company and from others for interfacing broadcast studios with telco lines. They were also detailed and graphic on the hidden booby traps in telco connections and on the most advantageous methods of dealing with telco personnel:

A session not on the official agenda on the first day of the convention supplied one of the best moments of

rhetorical drama. In a meeting sponsored by McGavren-Guild of New York, Dr. Richard Rosenbloom, Harvard professor of business specializing in communications industries, told an audience of several hundred radio broadcasters that the time would come when a radio broadcast transmitter and antenna tower could be seen only in the Smithsonian Institution. He tempered the blow by saying that the indicated changes would come gradually. But he advised those present to look ahead by thinking of themselves as suppliers of a service — information and entertainment — which could be delivered by various methods. He mentioned methods which may become important in coming decades.

Computers for radio

While makers of broadcast equipment and program syndicators made the NRBA exhibit hall a familiar marketplace, a new wave of computer companies was attracting interest among radio people. One station owner from South Carolina told *BM/E* that she was looking "just to see" what was new even though her station already had a business system. Her advice: "Don't buy just because it's cheap." Her station had been through three systems before settling on one. Besides providing guarantees for hardware maintenance and software services, computer systems should be able to evolve along with the growth of a broadcast operation.

Several of the business automation companies brought systems and equipment they had introduced in April at the NAB Las Vegas convention. In this group were Broadcast Management Concepts, with their MAPS system; Computer Concepts Corp. using a Wang computer and their own software; Computer Management Systems, with BMIS (Broadcast Management Information System), which has both in-house and on-line versions; and Nidus Systems, with a Model 130 automation system using a mini-computer by Computer Automation, in house.

Custom Business Systems and IGM carried forward their plan for an interface to connect the two systems for total business and program automation, first disclosed at the Las Vegas NAB. At NRBA, the interface was in operation on the floor, and operational features of the combined system were demonstrated.

Business systems familiar from earlier exhibits were those of Automation Electronics, Chase Media, and Station Business Systems. Thus the NRBA continued strongly the upsurge in marketing activity among new and old business automation system suppliers, which was a marked feature of the Las Vegas NAB convention. **BM/E**

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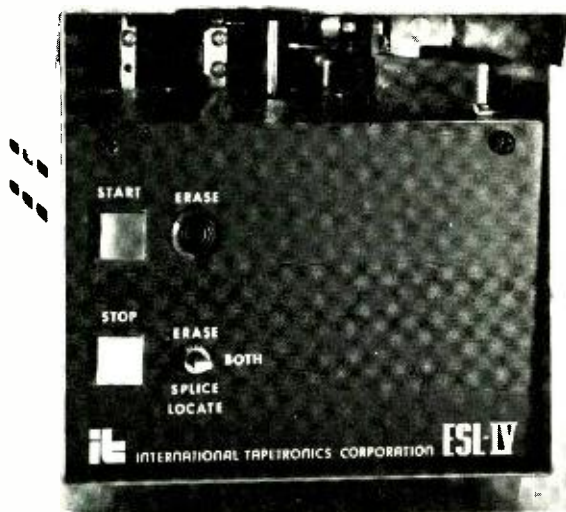
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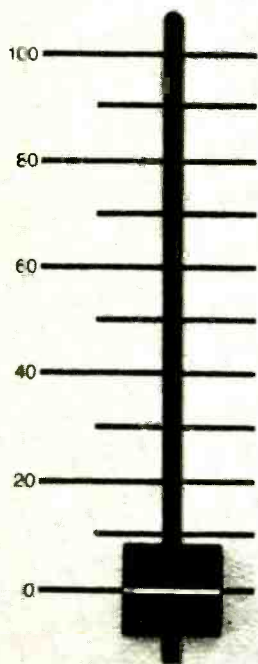
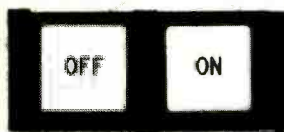
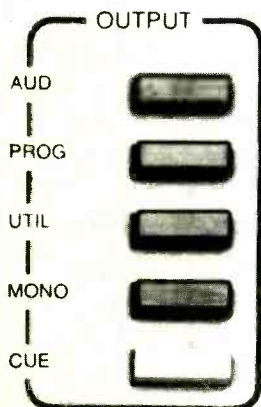
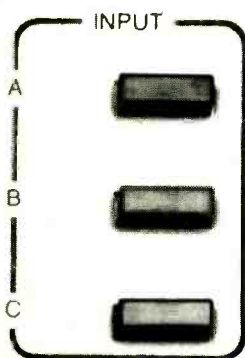
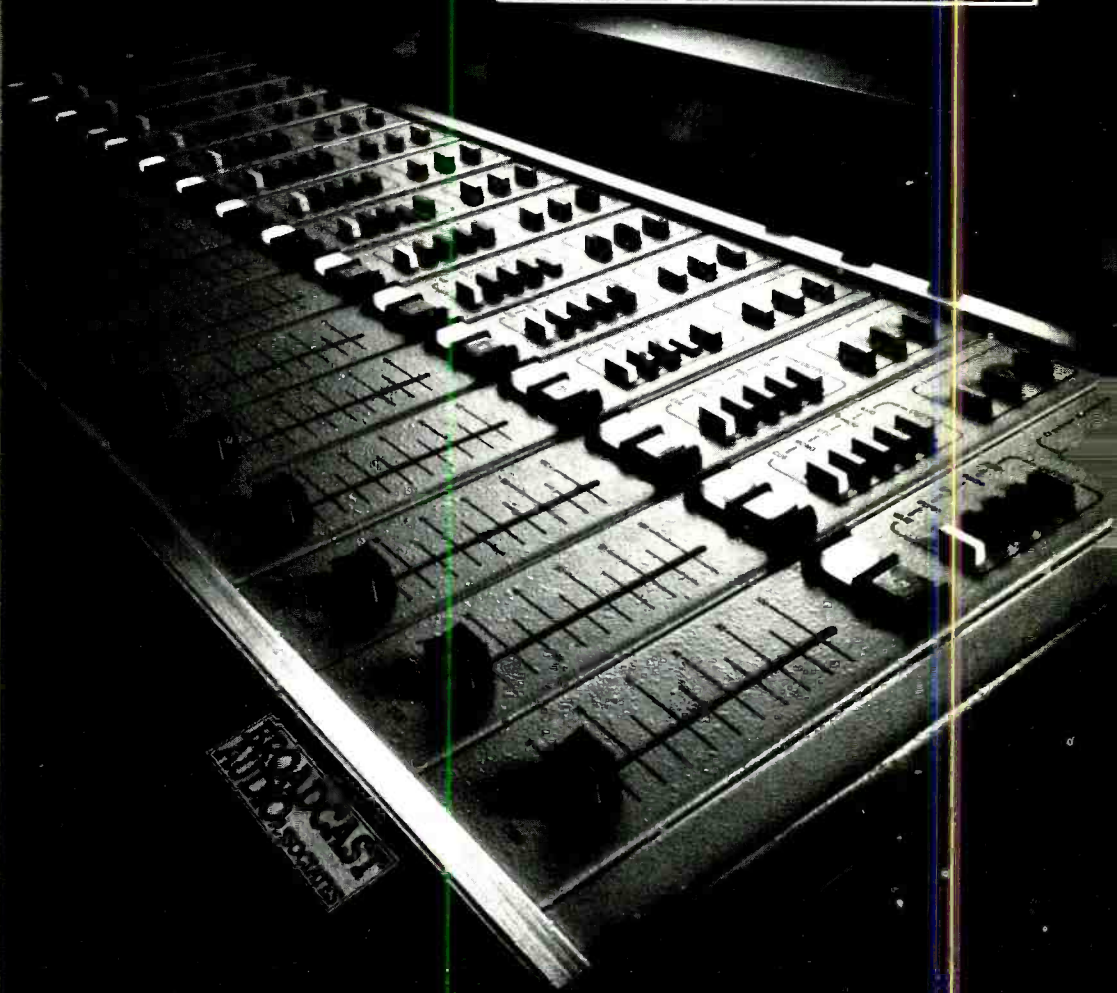
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Maintenance	A	A	A	A	No record here in field!

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QUALITY SOUND: 70 dB S/N ratio and 40 dB stereo separation from 50 Hz to 15 kHz with 50 dB @ 1 kHz crosstalk between main and subchannels.

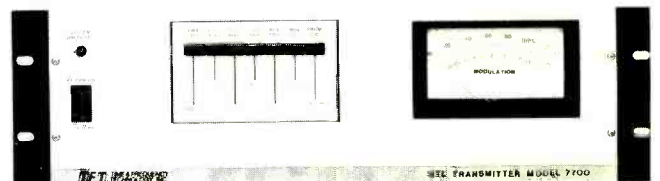
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INTERPRETING THE FCC RULES & REGULATIONS

FCC Changes EEO Processing Policy — Again

EQUAL EMPLOYMENT OPPORTUNITY problems are a pitfall broadcast license renewal applicants must avoid to sail through license renewal. The question is how to avoid problems.

All broadcast licensees must file an annual employment report, FCC Form 395. Of course, this report profiles each licensee's employees by job category, sex, and minority status. The Commission uses these annual reports, together with the licensee's equal employment opportunity program, to determine whether Commission licensees might be discriminating in any way against women and minorities in employment.

Recently, the Commission has once again changed its processing guidelines for the employment programs. Henceforth, all stations with more than five employees will receive an in-depth review of their employment programs if they do not meet certain stricter employment targets. This article will review these new processing guidelines. In addition, we will discuss the Commission rationale behind the decision, including the Commission's emphasis that a review is a *procedural matter* and does not necessarily imply any sanction.

Earlier standards

The Commission first adopted EEO processing guidelines in 1972. The procedures have changed periodically in the intervening years. The most recent set of guidelines, prior to the new 1980 procedures, was adopted by the FCC in 1977. Under the previous guidelines, stations with five to 10 full-time employees were subject to in-depth EEO review at license renewal time only if their employment records showed no women or minorities at all had been employed during the license term or if no females or minorities were in the top four job categories.¹ Stations employing 11 or more full-time employees were subject to review if they did not employ women or minorities on their full-time staffs at a ratio of 50 percent of their workforce availability overall and 25 percent in the upper four Form 395 job categories (the 50/25 processing guidelines). That is, if women and minority groups composed 52 percent and 20 percent, respectively, of the workforce in Community A, they should compose at least 26 percent and 10 percent, respectively, of the station's employees overall and approximately 13 percent and five percent, respectively, of its top four job positions.

Revised processing guidelines

One entire license renewal period has passed since those 1977 guidelines were implemented. In light of that fact, the Commission outlined the new guidelines earlier this year.² The Commission clarified the new guidelines in a formal decision denying petitions for reconsideration by the National Association of Broadcasters and several licensees.³ The new guidelines cover all licensees em-

ploying more than five people. In addition, the new guidelines institute an automatic review program for all stations with workforces larger than 50 employees. The new processing guidelines are as follows:

- Stations with less than five full-time employees will continue to enjoy exemption from having a written EEO program;
- Stations with five to 10 full-time employees will have their EEO programs reviewed if minority groups and/or women are not employed on their full-time staffs at the 50/25 processing ratios for overall employment and the top four job categories, respectively;
- Stations with 11 or more full-time employees will have their EEO programs reviewed if minority groups and/or women are not employed full-time at 50/50 processing ratios for overall employment and the top four job categories, respectively; and
- In addition, all stations with 50 or more full-time employees will have their EEO programs reviewed.

In the August 18 decision, the Commission stressed that the processing guidelines are merely a procedural device, a screening mechanism. Such a screening mechanism assists the Commission in determining which of the approximately 3000 broadcast licensees who file renewal applications every year will have their station EEO programs reviewed in depth by the FCC staff. However, the guidelines, since they are only a screening device, have no bearing on any final Commission determination. The Commission explained:

The failure of a station's employment profile to meet those guidelines does not of itself result in any Commission sanction. Rather, the Commission staff inspects the station's EEO program and, where evidence of good faith efforts and/or mitigative circumstances are found, the application is cleared for completion of routine processing.⁴

The decision went on to indicate that under the 1977 guidelines, approximately 60 percent of all station EEO programs had been reviewed. Of these, 80 percent were cleared for renewal processing with no EEO-related sanction of any kind.⁵ In other words, approximately 88 percent of all EEO programs either cleared in Commission outright or did so after staff review. Moreover, the Commission found that "overall industry employment in the top four job categories actually equals 50 percent parity

¹ These are: (1) officials and managers, (2) professionals, (3) technicians, and (4) sales workers. Category 1 includes such jobs as corporate officers, general managers, chief engineers, or news directors. Category 2 includes all on-air personnel, newsmen, producers, attorneys. Category 3 includes all engineers, sound, and camera personnel. Category 4 includes all account executives and sales managers. This is *not* a definitive list. For a complete explanation, see page 2 of the "Instructions" to FCC Form 395.

² *Equal Employment Opportunity Processing Guidelines*, FCC 80-61, 46 RR 2d 1963.

³ *Equal Employment Opportunity Guidelines for Broadcast Renewal Applicants, Memorandum Opinion and Order in RM-3635*, FCC 80-389, 47 RR 2d 1698.

⁴ *Memorandum, supra*, 47 RR 2d at 1691.

⁵ *Id.*

FCC Rules & Regulations

figures which we established [in 1977] as the guidelines with stations employing 11 or more individuals full-time."⁶ In 1979, 21 percent of all top four category employees were women and 11.7 percent were minorities, in both cases approximately 50 percent of their respective presence in the nation's labor force.⁷

Commission rationale

The Commission repeatedly stressed that these guidelines are not quotas. Nor are they substantive in nature. Rather, if a station meets either the 50/25 or 50/50 processing guidelines, depending on the size of the station's workforce:

There is a *prima facie* showing that the station's minority and female employment falls within a 'zone of reasonableness' . . . [However], whether the station's employment falls within a 'zone of reasonableness' involves all the facts of the case. . . Our in-depth review is not premised on the belief that an employment profile which 'fails' the guidelines evidences discrimination, but that such a profile raises sufficient questions as to compliance with our rules, and therefore with our ability to determine that renewal would be in the public interest.⁸

Thus, the decision relates to procedure rather than substance.

NAB challenge

In addition to challenging the Commission on the nature of the guidelines, the NAB had challenged the Commission as to the nature and scope of FCC jurisdiction over EEO questions. The Commission pointed to court

decisions that stated quite the opposite. The Commission's ruling stated:

Our actions in this area have been subject to repeated judicial review. The Court of Appeals' recent comprehensive opinion on this issue . . . did not conclude that the Commission's authority to conduct EEO reviews was in question, or that our reviews were too stringent, but, rather, that on occasion we had not probed deeply enough into licensee employment practices.⁹

The Commission did acknowledge the point that there are certainly highly specialized (usually technical) areas of broadcast employment where women and minorities are not yet very numerous. The Commission said that such factors would be taken into account during the in-depth review. Also, the requisite skills for certain jobs and statistical data to show the lack of certain workers should be submitted by licensees.

Conclusions

Broadcast licensees should carefully monitor development in this area. The Commission noted the substantial progress made by larger stations (see above). This fact accounted, in part, for the decision to strengthen the guidelines for stations in the five-to-10 employee category. The Commission also noted that the courts had admonished that the "zone of reasonableness" can be expected to contract as licensees endeavor to comply with the EEO rules. So, you can expect that the Commission will monitor these matters closely. Consult your corporate and communications counsel if you anticipate any problems.

BM/E

⁶ *Id.*, 1696.

⁷ *Id.*

⁸ *Id.*, 1692, citations omitted.

⁹ *Id.*, 1694.

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- Alarm circuits that monitor the audio subcarrier, video, and RF level. A summary alarm contact closure, as well as front panel LED indicators. Internal logic prevents a summary alarm for a loss of uplink modulation.

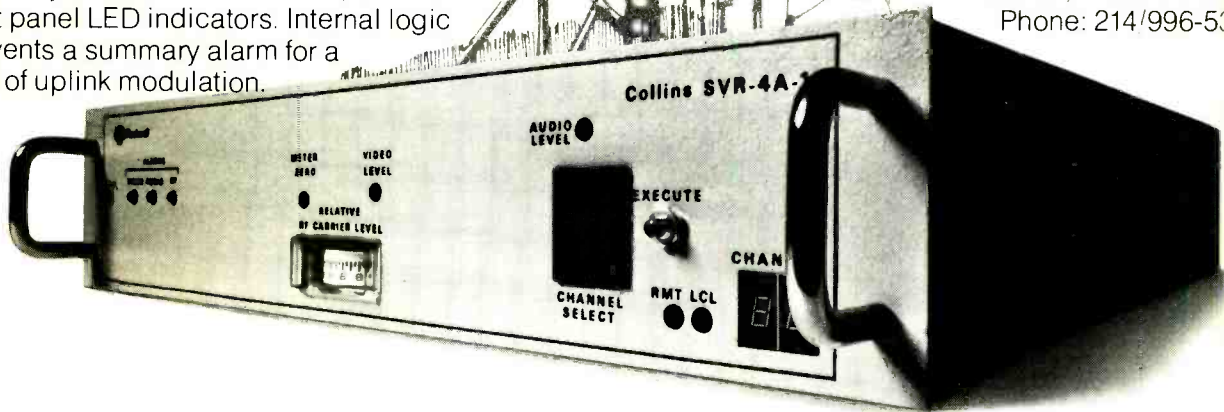
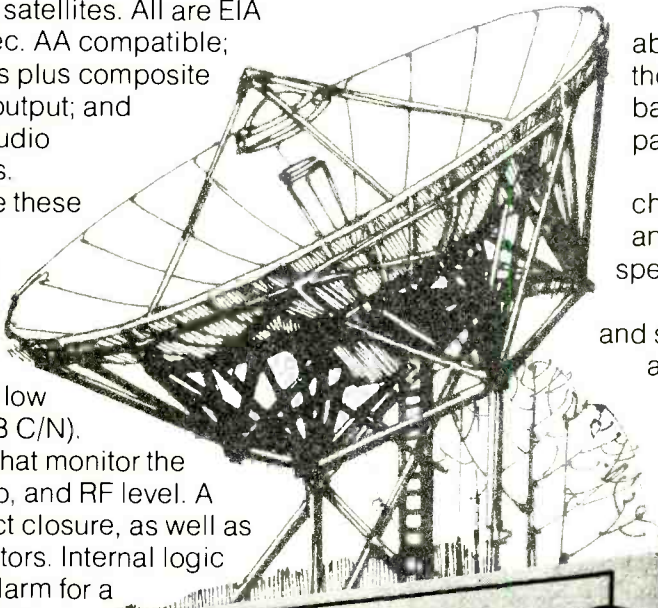
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GREAT IDEA CONTEST

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Editor's Note: Before attempting to implement any Great Idea involving the modification of equipment, station personnel should check with the equipment manufacturer to insure that no violation of warranty will occur.

If the Great Idea involves any technical standards governed by the FCC, stations should make sure that the idea will in no way cause a violation of FCC rules.

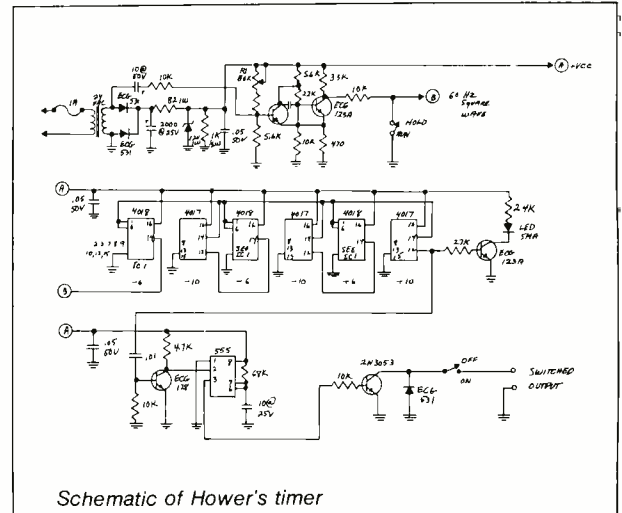
27. High Accuracy Timer

Scott Hower, Chief Engineer
KRQQ-FM, Tucson, Ariz.

Problem: To automatically record network news through the night.

Solution: We built a timer, locked to the 60 Hz line frequency standard, that would provide a start pulse once each hour to a cart machine or other tape machine. The timer converts the 60 Hz sine wave from the ac line to a square wave. Dividers then reduce the 60 Hz signal to a

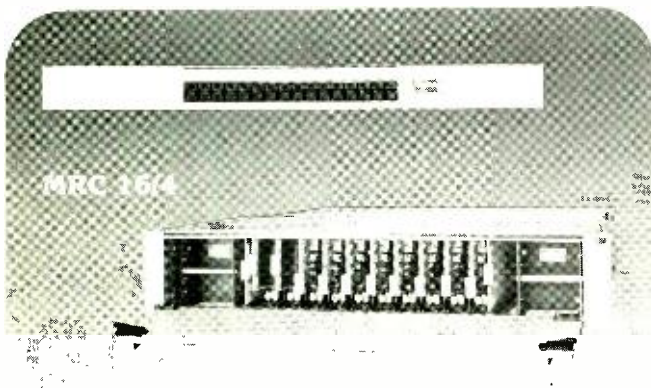
30-minute on/30-minute off square wave. A 555 timer provides a half-second pulse, which in turn drives a 2N3053 transistor. This transistor switch activates the remote start circuit of a cart machine or other device.



Schematic of Hower's timer

R1 is adjusted to provide a square wave with equal on and off times at point B. A scope is used for this noncritical adjustment.

An LED indicator and a HOLD/RUN switch were added to aid in setting the proper start time. When the unit is powered up, the timing cycle is usually near the beginning of its one-hour duration. But this is not always the case, and should not be depended on. An LED at the output of the divider chain indicates when the cycle starts by turning on. To set the timer, plug in the unit, wait until the timer



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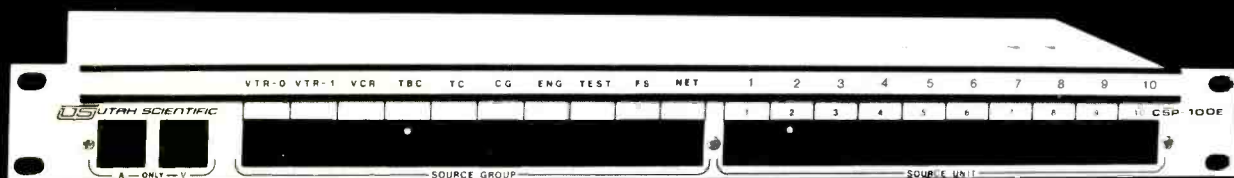
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Great Ideas

on and applying power to the LM3909, which is an LED flasher. The red LED will keep flashing until the scr is reset, indicating to the operator that a message has come over the line and is recorded on the tape. The operator then just flicks the switch marked "Vox" off and the recorder is turned on and the red LED reset. After listening to the tape, the operator places the machine in RECORD and flicks the vox switch on, and the circuit is ready for the next message.

29. Network Delay System

Dan Case, FM Engineer
WQLN, Erie, Penn.

Problem: To develop a system for delaying network-fed programs one-half hour.

Solution: When WQLN-FM began producing a daily 30-minute news program at 5:00 p.m., we needed to push an NPR program back 30 minutes. Just recording the program in half-hour segments and quickly rewinding them for immediate airing wasn't working. We needed a simple, foolproof system that could be easily learned and executed even by a temporary, fill-in operator.

Our solution came from the good ol' "seven-second talk show delay cart" system. We were about to purchase two new mono cart recorders (to record carts for our sister TV station), so we ordered them equipped for delay operation. We chose ITC RPD machines because they accept a C size cart and use an independent playback head and playback electronics for delay operation, allowing the use

of the same record head for normal and delay recording.

Basically, the system is the same as the "seven-second" system, but with a 30-minute cart. We very carefully wind exactly 30 minutes of tape on a C size cart. The C cart is mandatory because it is the only size that accommodates a full 30 minutes of tape.

A spare set of contacts on the normal/delay switch provides +24 V dc from the machine's power supply to a spare pin on the remote control connector when the machine is in DELAY mode. This voltage operates a delay that selects the appropriate input and output for the mode in use. The levels are all preset, so all the operator has to do is insert an erased cart, switch to DELAY, push RECORD, and push START. In operation, the operator simply listens to the output of the cart machine on cue and joins it just as if he or she were joining a live network line.

In our operation, running approximately 90 minutes a day, the carts are good for about three weeks between windings. Obviously, a fully loaded C cart is just about the worst possible case as far as cart machines go, so mechanical and electrical maintenance of the machines is just as important as proper cart rewinding. Close attention must also be paid to the physical condition of the carts for long-term success.

To the purist (myself included), the inclusion of something as technically hideous as a cartridge delay in an audio chain that originates with a super-quality 15 kHz satellite channel could be considered an abomination. We are really quite surprised, however, at just how well this system sounds when it is properly set up and maintained. It has been in use here at WQLN-FM for well over a year now, and we have had relatively few problems with it.

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speeds and in all operating modes to an accuracy of 0.5%.

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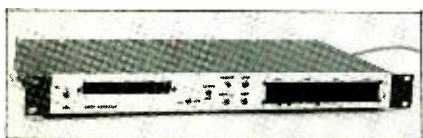
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BROADCAST EQUIPMENT

Time Code Generator 250

SETC-1 is a SMPTE time code generator that allows sprocketed film media to be interfaced and synchronized with non-sprocketed video or audio tape. It interfaces with conventional sound dubbers and projectors via a shaft encoder. Because it generates precise SMPTE code without requiring a control track on the film itself, it eliminates the need for special sound heads, preamplifiers to read it, and the problem of noise bleed between tracks, according to the manufacturer. A bi-



phase encoder attached to the drive motor of any conventional film transport translates the transport's speed and direction to the unit, which outputs this information in the form of time and video frames. It also displays the time

and user bit data in SMPTE format. Precise and readable time code data are provided in forward and reverse, up to six times synchronous speed. Time code can be started, stopped, and re-started at any point on the film. MULTI-TRACK MAGNETICS.

Noise Reduction Systems 251

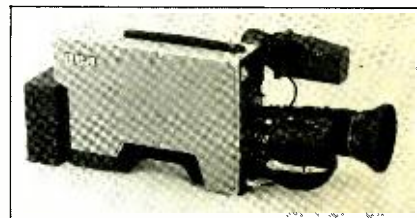
Model 140 noise reduction system is a basic two-channel Type II system designed for broadcast applications. It provides a consistently high level of programming when switching among various sources, according to the manufacturer, and is optimized for use with transmission and storage mediums having limited or irregular high frequency response characteristics, such as cart machines, VTRs, or STLs. It features RFI-protected active balanced inputs, single-ended output with on-board pro-

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vision for Jensen output transformers, barrier strip termination for inputs and outputs, and Encoded Disc decode capability. Model 150 is a two-channel Type I system that provides small studios with twice the noise reduction circuitry of previous units at no extra cost. It stacks easily for use with different multi-track formats and provides fully simultaneous encode and decode. DBX.

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Model TK-86, successor to the popular TK-76, features a new mechanical design with a form-fitted curved bottom that aids in weight distribution and balance and provides improved operator



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comfort. The camera retains its rugged, rain-tight design. Electronic improvements result in lower power consumption while providing higher sensitivity and improved light bias, according to the manufacturer. A full range of remote configurations is available, from a remote control panel to multi-core or triax operation. Wireless triax EFP systems are also offered. The camera uses low-capacitance Saticons or lead-oxide tubes; it features a built-in holder for snap-on mic connector, and a chromakey adaptor. RCA BROADCAST SYSTEMS.

Color Monitors

253

The CTVM 3 Series of Barco color monitors was designed for stability, geometry, and color fidelity. Each monitor can be supplied to the user's specific requirements by specifying screen size, CRT-type resolution, special facilities, decoders, and mechanical construction. CTVM 3/37 is a 15-inch unit for limited-space VTR applications; CTVM 3/51 offers a 20-inch



screen, the largest that fits into a 19-inch rack. Either the Delta Gun Shadow Mask CRT, for exact color reproduction, or the Slot Mask CRT may be specified. The four available resolutions are: picture in line slot mask, standard, medium high, and ultra-high. Pulse cross operation mode, split screen mode, RGB and coded video inputs and vectorscope output, and RGBS output and subcarrier frequency test output are available with either CRT. Features include automatic frequency correction, preset brightness controls, automatic and manual degaussing, and switchable color temperature. ROHDE & SCHWARZ SALES CO.

Wireless Lens Control System

The WRC-3 three-channel system for remote iris, focus, and zoom lens control is an FCC-certified wireless servolens-control system for professional motion picture cameras. It eliminates the need for any physical contact or cable connections between the camera assistant and the motion picture camera, making it ideal for handheld film-



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10 years and hundreds of applications prove it. These ECS enclosures provide instant portability for electronic equipment. 17 standard rack heights from 5.37 in. (136MM) to 47.37 in. (1203MM) and capacities from 20 lb. (9 kg) to 320 lb. (145.3 kg). Tough pressure molded fiberglass enclosures are supplied complete with shock mounted aluminum rack, removable covers, heavy duty handles and latches, gasketed closures and air valve. Available with a full line of accessories and drawers

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For further information write to Stanton Magnetics Inc., Terminal Drive, Plainview, N.Y. 11803



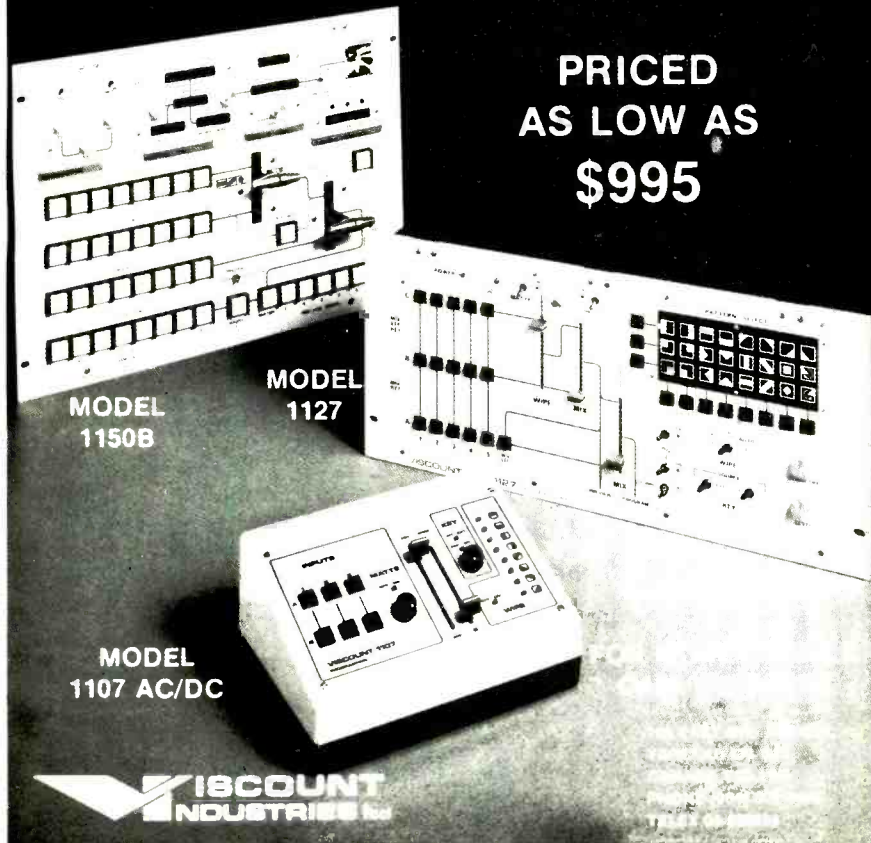
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Broadcast Equipment

ing with or without Steadicam and for crane and dolly shots. The battery-operated system consists of a handheld wireless transmitter (operated by the camera assistant) and a receiver that activates the lens servo-motors controlling iris, focus, and zoom functions. Lens bracketry and gears are available optionally for a wide variety of lenses. \$3250. CINEMA PRODUCTS CORP., 2037 Granville Ave., Los Angeles, Calif. 90025.

Tape Transport Console

254

The RL 800 tape transport console, which accommodates all standard 19 by 15 3/4-inch tape decks, features seven inches of conveniently angled rack

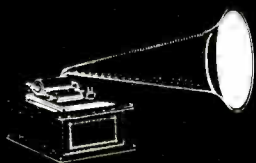


space positioned immediately below the deck. An additional 14 inches of rack space is in the console's lower front portion, and an overbridge rack is available optionally. Other features include tilt-up quick access to tape transport for servicing. The optional back panel is attached with Velcro. RUSLANG.

Routing Switcher

255

The 6010 self-contained broadcast routing switcher is suitable for many applications. The basic switcher is 10 by one, video only, mono or stereo audio only, or AFV with mono or stereo audio in one rack unit. One or both audio channels may be replaced with time code or control bus. Additional 6010s may be used to expand to 20 by one or more. Remote control via shielded audio pair may be factory-installed or field-installed. Tally and parallel BCD control are available. Other features include two outputs per bus (video and audio), loop-through video inputs, bridging audio inputs, vertical interval switching, low power consumption, and all-electronic switching. IMAGE VIDEO LTD.



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AMA41

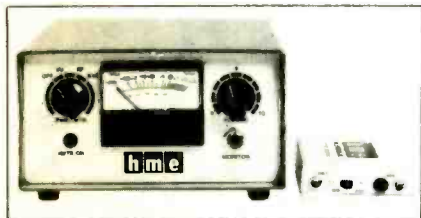


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These four UHF wireless microphone systems operate on 400–470 MHz, offering the user more additional open channels of operation than are available



in the VHF radio bands alone. All are based on the maker's Dynamic Expansion design concept, which reproduces the input signal linearly to over 100 dB. Both the System 24E "Body Pac" and the System 27E handheld UHF systems are available with standard receivers as well as portable receivers for ENG/EFP use. \$2825 to \$3075. HMELECTRONICS.

Microphone Booms

257

Four new microphone booms from Gitzo are lightweight and solid, with minimal motion and noise. They have a deeply anodized, corrosion- and rust-proof finish. Extensions glide smoothly and lock firmly on fiber sleeves, with soft cushioned locking rings. The largest section has two soft grips, 30 inches apart. Two holes on both ends guide the mic cord through the inside of the boom. Models range from 555, ¾ inches in diameter and extendable to 4½ feet, to 559, 1¼ inches in diameter and extendable to 11 feet. All collapse to 2½ feet. \$49.95 to \$99.95. KARL HEITZ, INC.

Equalizer

258

Model LR-1008 one octave band equalizer employs 10 infinite gain multiple feedback filters with optimally selected Q for proper combining with adjacent filters. High slew rate, low noise operational amplifiers assure low distortion and low noise, according to



the manufacturer. Close tolerance components maintain proper filter centering on ISO frequencies. The unit is packaged in a standard 1¾ by 19-inch rack-mounting chassis and has a removable front cover that allows access to the controls, 10 rotary action locking potentiometers. McMARTIN.

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SS8800

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