

DECEMBER 1982

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BME

BROADCAST MANAGEMENT ENGINEERING

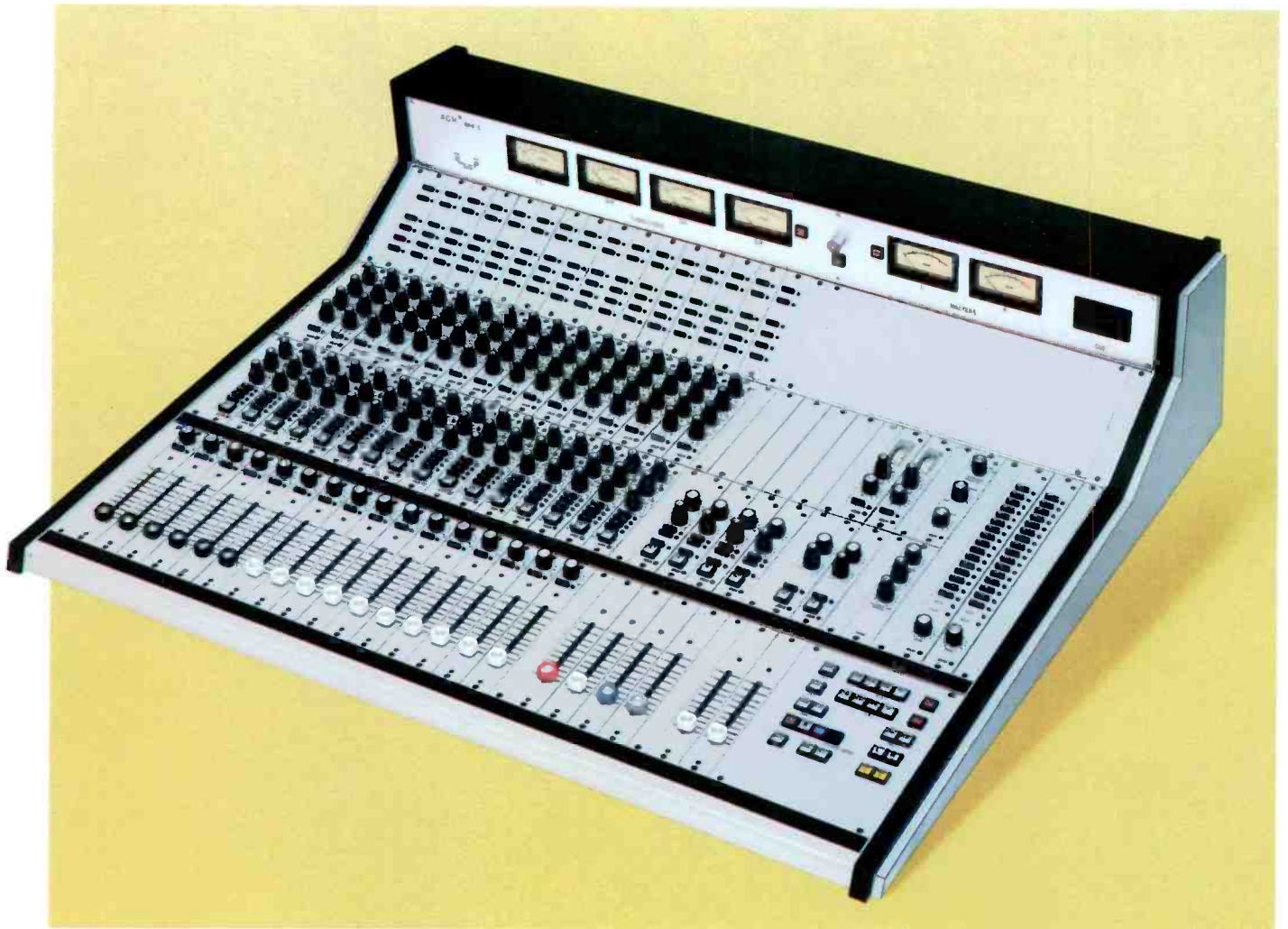
WNEV GOES
TO HALF-INCH
Pg. 33

THE 1982 NOMINEES FOR

THE ANNUAL BEST STATION AWARD CONTEST

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THOMAS D BUCKLEY JR TECH FRM
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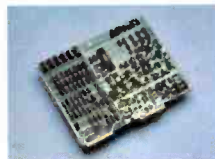


In fact two channels of time base correction with 2:1 digital effects are priced at only \$18,950.

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BROADCAST MANAGEMENT/ENGINEERING

DECEMBER 1982

VOLUME 18/NUMBER 12

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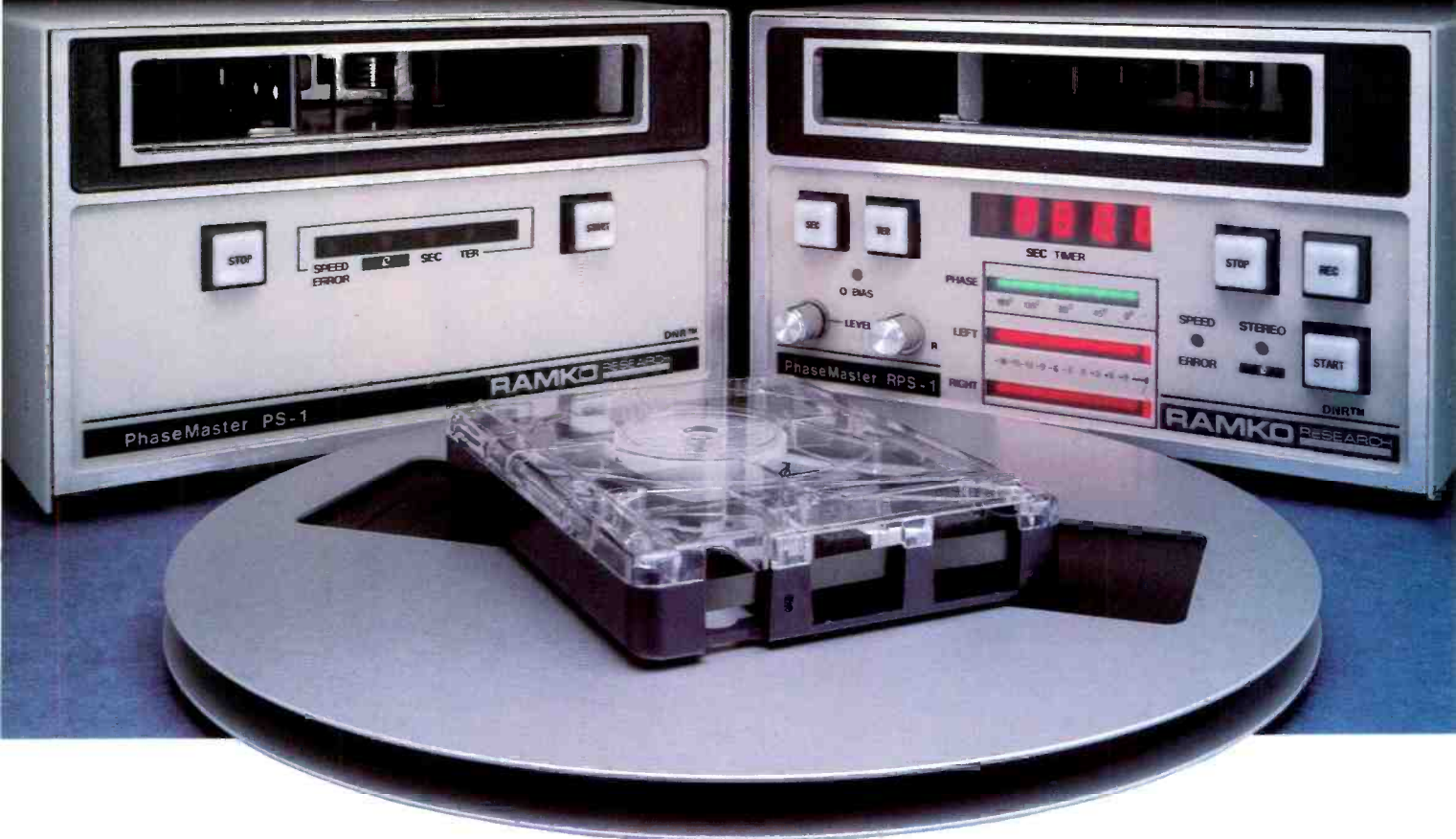
1982 BEST STATION AWARD CONTEST NOMINEES

39 Many entries were received; three for each category were selected by *BM/E's* editors. Here's your chance to find out how this year's entrants have designed their troubles away. **Vote for the Best Station in each category on the ballot card, page 41.**

- 40** **Television**
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WZZK; WNUS; WJYN.
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The Performance of an Open-Reel Recorder.



At Half the Price of Its Nearest Competitor.

Let's face it, the secret to better cart machine performance isn't in the cartridge, it's in the machine.

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Add to this the performance specifications that rival open-reel recorders and the best mechanical design you've ever seen in a cart machine.

Here's the best news yet: PhaseMaster can be performing in your studios for as little as \$1,091.* At \$2,600, our Stereo R/P is about half the price of the ITC/3M Series 99B. And the margin's even wider with Tomcat.** If you've given thought to adding the Phasechaser, you're now up to, or over the price of a new PhaseMaster with all of its inherent advantages.

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*Model PM-1 mono playback.
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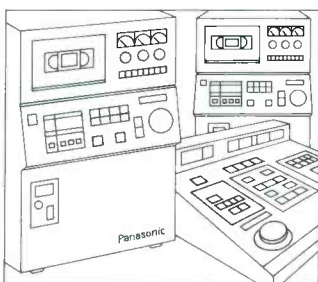


The brilliance in its design shows up in its picture. Introducing Panasonic Recam.

Total freedom from video cables isn't the most important reason to buy Panasonic Recam. Recam's exciting combination of a new recording system and a 3-tube prism optics camera is. Especially when you consider the result: Broadcast quality from 1/2" VHS™ recording tape.

Recam: The System

The Recam system consists of the AU-100 portable VCR, the AK-100 3-tube prism optics camera and the AU-300 playback editing system. Together they add a new dimension



to ENG and EFP.

Here's how: Unlike conventional recording systems, Recam records frequency modulated luminance signals on a single-slant track. At the same time, I and Q signals are recorded on another parallel track. By assign-

ing separate FM frequencies to the I and Q signals, color noise, streaking and other two-phase color problems are eliminated because only the final product is NTSC encoded.

The AU-100 has a direct-drive motor for precise tape movement and a capstan motor designed for reduced gyro effect. And for accurate assembly edits after every shot, the AU-100 backspaces 30 frames every time the VTR trigger is released.

The AU-100 also records audio on two longitudinal tracks and time code on a

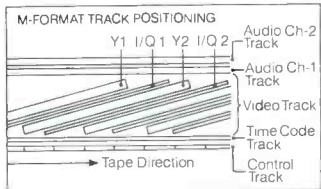
third track. The AU-100 supplies a constant read-out of vital operating conditions including drum and capstan lock status, slack tape detection, dew warning detection and a lot more.

Proven Prism Optics Performance

The AK-100 camera gives you the choice of 2/3" diode-gun Plumbicon® tubes or 2/3" Saticon® tubes. So you can shoot under a wide variety of lighting conditions without worrying about lag, blooming or burn-in.



Resolution with the Plumbicon configuration is 600 lines with a S/N ratio of 59dB, while the Saticon version produces 550 lines and a S/N ratio of 58dB. For added dynamic range



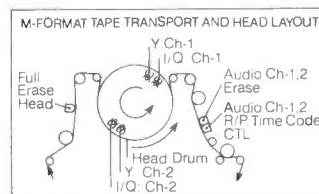
and reduced comet tailing, the AK-100 includes feedback beam control. Dynamic focus and corner registration compensation circuitry add to picture

quality as do horizontal and 2-line vertical contouring. There's also switchable black stretch and knee circuits for detail retention in dark or bright areas of the image. An eight-bit A/D and D/A converter with memory automatically adjusts white and black balance.

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Recam looks even better when you look at the AU-300 playback editing system. In fact, a Recam dub is actually superior to a 3/4" master. The reason: The AU-300's six-head scanner plays and

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Panasonic Recam. It gives you the convenience of a recorder/ camera with

the picture to measure all recorder/cameras by.

Plumbicon is a registered trademark of N.V. Philips for TV camera tubes. Saticon is a registered trademark of NHK (Japan Broadcasting Corp.).

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BME 1282

A Proud Tradition

IN AN INDUSTRY which changes as rapidly as broadcasting, it is sometimes difficult to identify traditions which are more than just three or four years old. New ideas come in place of old, new people come and go, new technologies are developed. That is why *BM/E* is so proud of the tradition represented by the publication of this year's nominees for the Best Station Award competition.

Station and studio design has always been of major interest to this publication, almost from our premiere issue in 1965. In August 1969 we published our first special issue devoted to station modernization—featuring stories on KOWN, Escondido, CA (which had set up one of the country's first shopping mall studios), Tele-Measurements, Inc. (a teleproduction facility housed in a former candy factory in Clifton, NJ), and WJAS, Pittsburgh (which had created its station inside the glass walls of the city's first "vertical garage").

Then, in December 1974, we published our first Best Station Award Contest. KVOO-AM, Tulsa, proudly described its two Schaffer Audiofile cart automation systems; KRDO TV/AM/FM, Colorado Springs, CO revealed how it had used three four-inch wiring ducts that allowed the interconnection of its AM and FM operations; and WTCN-TV, Philadelphia, had just installed five RCA TK-45s "valued at \$80,000 each."

Some things have changed, of course. The stations represented in this year's contest have taken advantage of the very latest in technology—both the kind used to construct the facility and the kind used to produce and distribute the signal. More than ever the needs of the production department are being met by building and studio designs that foster a creative, flexible environment. And today's designers have taken into account that elusive but so important factor "*human engineering*."

But some things do not change—and that's why we're so proud. *BM/E* was founded 18 years ago because we saw the future of the communications industry as its ability to communicate, to establish a meaningful dialogue between engineering and management . . . those who use the equipment and those who design it . . . those who create the signal and those who put it on the air . . . those who plan new facilities and those who work in them. What the industry needed, we felt, was a timely, accurate, trusted source of information on the latest trends in technology. And a place where both the reader and the marketer, the engineer and the station manager could find a free exchange of ideas.

Today more than ever the management/engineering/production interface is the guiding force behind every major decision at broadcast and production facilities. No engineer decides on his own to build a new studio; no management decides to upgrade operations in a vacuum; no production department acts unilaterally to provide new graphics capabilities; no technician decides it's time for a new transmitter. Today's well-planned broadcast facility represents a harmonious effort by all concerned to make it the best-engineered, most profitable, most enjoyable plant that has ever been built!

That's still the spirit behind *BM/E* today, and why our 12 nominees for the coveted Best Station Award have taken such painstaking effort to prepare their entries. These stations are the finest the country has to offer—not the most expensive, but those which have achieved the most with whatever resources were at hand. We urge you to show your support of the effort by voting for your favorites on the ballot card. Equally as important, one of the finest traditions in broadcasting is in your hands.

A DIGITAL EFFECTS SYSTEM SO ADVANCED, EVEN WE DON'T KNOW ALL IT CAN DO.

Maybe we'd better explain.

We do know the limits of our new E-FLEX DVE® system.

It's just that those limits are so theoretical, they have almost no impact on what E-FLEX can do in the studio.

And what it can do in the studio is virtually limitless.

To start with, E-FLEX has some of the most sophisticated effects ever offered in a digital video system. Like a new, two-channel reciprocal function. Our mosaic and posterization effects. Multi-move, so you can put up to 16 copies of a moving image on the same screen. And a trajectory function that lets you control the movement of an image along a curved path.

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And that's all the more reason to call for a demonstration tape today. Because once you've seen a little of what E-FLEX can do, nothing will stop you from discovering the rest on your own.

NEC

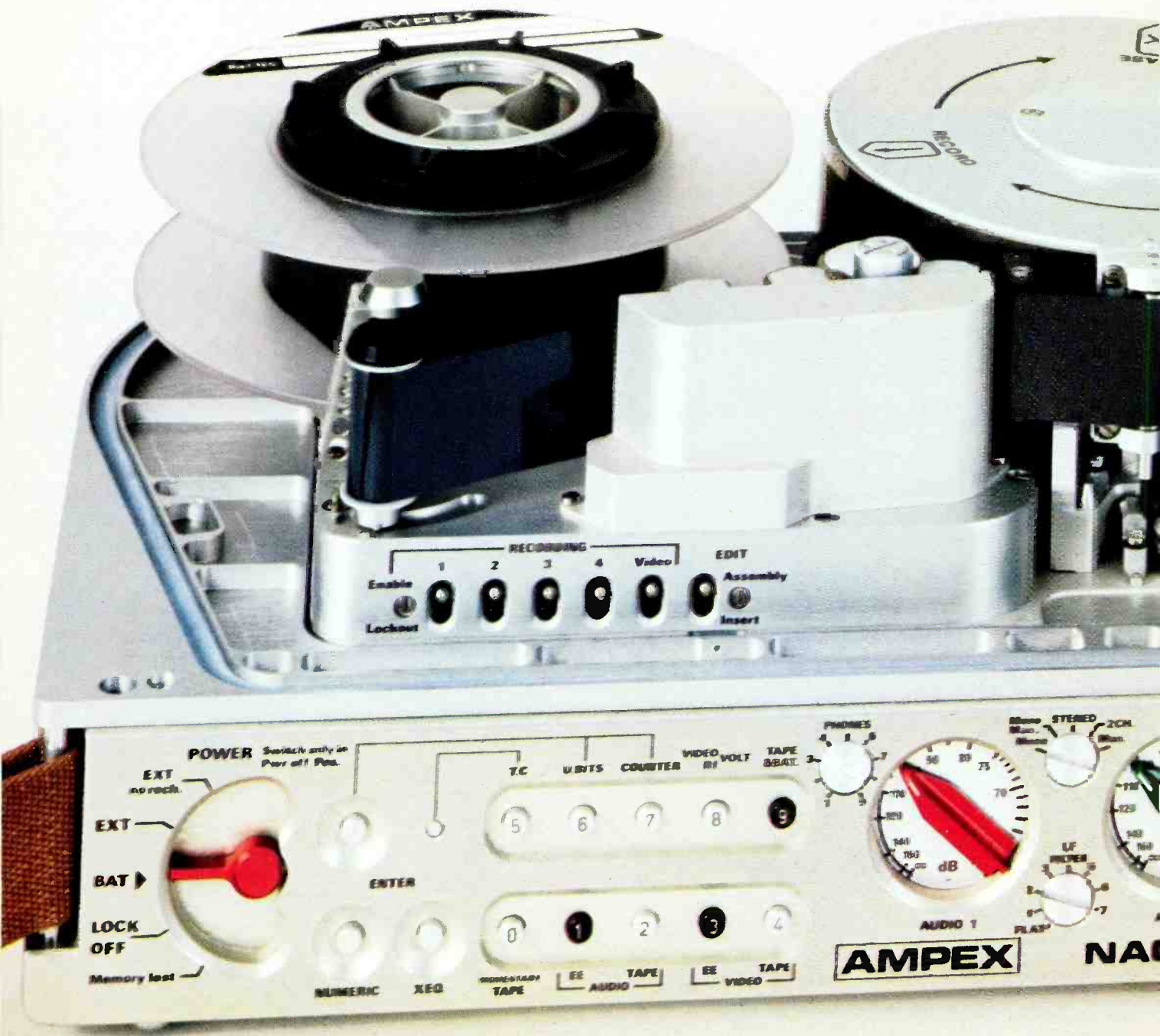
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VPR-5 is as small as a briefcase, yet it delivers the quality and editing capability demanded from any full performance C-format VTR.

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And it features: dual micro-processors, two high-quality audio channels plus a SMPTE/EBU time code channel, dual-cue editing for studio-type control of playback review and other edit-related functions, unique LCD display of VU and PPM levels, an audio confidence playback selector independent of the video, and a rugged aluminum alloy casing.

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Metromedia Plans National Satellite TV News Service

Hoping to fill the national and international news void for independent television stations, Metromedia Television has announced plans to start a flexible, satellite-delivered prime time news service next year.

As described by Metromedia, Prime Time News (PTN) will be offered to stations live each weekday in prime time, with a choice of several configurations. One format feeds subscribers five sections of national and international news, anchored by section and including local production elements, which the subscriber can then integrate into a 30-, 60-, or 90-minute broadcast. Alternatively, subscribers can select a half-hour, network-quality national

newscast to stand by itself, or the same national newscast with local open and close and space for local inserts.

An official startup date for PTN has not been announced, but a Metromedia spokesperson in New York estimated that the service would be on-air by June. Terms for subscribers have yet to be decided, the spokesperson said. He indicated, however, that Metromedia would offer the service to existing ITNA affiliates at "the same price they agreed to pay for next year."

Metromedia says PTN will "employ the largest independent news staff in the country." It will draw on news staff and resources at Metromedia's stations, as well as full-time correspondents in the U.S. and overseas. Metromedia is selling its WXIX, Cincinnati, and WTCN, Minneapolis-

St. Paul, and acquiring WFLD-TV, Chicago; its other stations are WCVB, Boston; WNEW-TV, New York; KTTV-TV, Los Angeles; WTTG-TV, Washington, DC; and KRIV-TV, Houston.

The spokesperson also indicated that PTN is "merely the first product of Metromedia's news effort," although it will remain the most important.

Another attempt at the indie news market was recently announced by Gannett Broadcasting and Telepictures Corp., who have named September 19, 1983 as the on-air date for a joint venture dubbed "Newscope." The live, satellite-fed news program will be offered six days a week to subscribing stations, who will add local anchors, supers, and graphics.

Besides the seven Gannett stations,

RCA, Sony Score with Half-Inch Sales

Determined to slug it out in the marketplace, RCA and Sony both recently announced major sales of their respective half-inch camera/VTR systems. Field Communications has already started ENG operations at four of its stations with RCA Hawkeye one-piece units; Corinthian Broadcasting announced a mammoth purchase of Sony Betacams at last month's SMPTE show.

The four Field UHF independents (WKBD, Detroit; WLVI, Cambridge/Boston; WKBS, Burlington/Philadelphia; and WFLD, Chicago) purchased four Hawkeye camera recorders, eight Hawkeye studio VTRs, and four edit controllers. They are shooting, editing, and airing local news entirely in the modified VHS format. Until the Hawkeye purchase, none of the stations had had local news since 1970, when newsfilm operations were suspended.

Field's director of engineering, Al Martin, says he's extremely pleased with the quality of the half-inch units. Hawkeye's immediate availability was a deciding factor in the purchase, Martin explains; he says half-inch was the natural choice for the stations because of its high quality, low cost, and inherent labor savings.

The Corinthian deal, announced over champagne at the Sony booth by Art Biggs, VP of engineering, and



Camera operator at WKBS-TV, Philadelphia, keeps an eye on the news with the station's new Hawkeye.

a glowing Neil Vander Dussen, president of Sony Broadcast Products Co., consists of 75 Betacam one-piece units and over 50 Betacam editing systems and accessories. The \$5 million purchase will enable a complete conversion to half-inch for all news and field production for the group's KHOU, Houston; KOTV, Tulsa; KXTV, Sacramento; WANE, Ft. Wayne; WISH, Indianapolis; and WVEC, Hampton/Norfolk.

Asked about a memo in which CBS network engineering head Joe Flaherty reportedly urged affiliates to hold off on half-inch purchases in the absence of a single format, Biggs replied that the lack of a unified format posed no problem for Corinthian,

and reported that the group's serious investigation of half-inch began when SMPTE announced its inability to reach a compromise. Five of the Corinthian stations are CBS affiliates.

Biggs' sentiments on the format question are echoed by Martin, who says, "From our standpoint, it's not a problem." Martin believes that half-inch will become a major force in the industry, even for non-news applications—perhaps eventually supplanting two-inch cart and cassette machines.

After receiving the Betacams this spring, the Corinthian stations will edit U-Matic VCRs. By early 1984 all editing and airing will be on half-inch, according to Biggs.

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clients already signed include outlets of such group broadcasters as Scripps-Howard, Meredith, Capital Cities, McGraw-Hill, and Outlet Co.

Citing High Costs, Oak Shelves Early DBS Start

Oak Industries has pushed back the proposed startup date for its DBS system from 1984 to 1986 because of "economic and technological realities which have emerged since we an-

nounced our original plan in April," according to Oak president and CEO Everitt A. Carter.

The company decided to terminate an agreement with Telesat Canada to lease four transponders on ANIK-C2, to be launched next year, and to wait until it can launch its own bird in 1986. Oak says the move will save about \$80 million.

Because ANIK-C's transponders operate with only 15 W of power, receiving antennas would have to be larger and more costly than the small dishes

suitable for true DBS services. Oak reportedly feared that consumers would balk at paying \$600 or \$700 for the four-foot dishes, and that it might have to purchase many for lease to subscribers. In addition, said Gary T. Barbera, president of Oak Satellite Corp., "Our new estimates of the costs of reorienting home antennas . . . are high enough to make reorienting economically unjustifiable."

Oak also was concerned, reportedly, because its lease of the ANIK transponders was guaranteed only through 1985. The company stressed, however, that it remained committed to putting up a DBS system, with Carter predicting "that by 1990 DBS will be a cost-effective and profitable system for delivery of video entertainment and information." He also revealed that Oak is seeking a joint venture partner for its DBS enterprise.

Another name in the DBS arena, Satellite Television Corp., recently asked the FCC to revoke rival United Satellite Television's application for a quasi-DBS service scheduled to debut next year on ANIK-C. STC claims that the USTV proposal is primarily for a direct-to-home service, and therefore should be subject to the same regulatory restrictions as other DBS services. The filing came in support of a petition filed by United States Satellite Broadcasting, a subsidiary of Hubbard Broadcasting that has applied for a DBS license.

BVT Steps Up Promotion of "World System" Teletext

British Videotex and Teletext (BVT), hoping to increase its foothold in the U.S. teletext market, has announced a major marketing push aimed at television broadcasters in this country. The British standard, which BVT has dubbed "World System Teletext," is "a hard-nosed commercial success" in Britain, according to BVT president Bill Shrimpton, who says he is "confident of high success" for the system here.

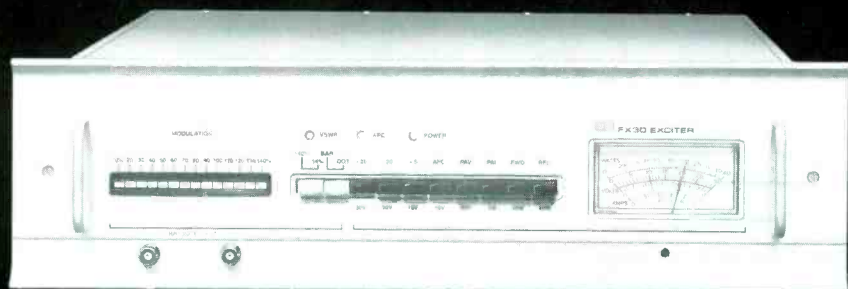
Britain's Independent Television (ITV) currently runs an advertiser-supported, over-the-air teletext system known as Oracle, available to any viewer with a teletext decoder. Dick Lutz, BVT vice president, said ITV expects to take in about \$1.70 to \$3.40 in advertising revenue this year for each of the half-million teletext-equipped sets it serves; by 1985, Lutz said, the projected figure is \$8.50 per set, with the number of sets expected to be in the millions.

U.S. broadcasters should not wait for the proposed North Ameri-

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- "Best Performer on the Market." KSTP, St. Paul, MN
- "More Dynamic Response." WGAY, Silver Spring, MD
- "Exceeded Specs." KISW, Seattle, WA
- "Quietest Exciter on the Market." KBZT, San Diego, CA
- "Great Company-Great Product." WBCY, Charlotte, NC
- "Dramatic Improvement in Sound." .. WSSH, Lowell, MA
- "Fantastic! Beautiful Exciter." WEZB, New Orleans, LA
- "Works Great." WSTO, Owensboro, KY
- "Terrific! Industry Standard." WPRO, Providence, RI

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(turn page)

RCA

NEWS

can Broadcast Teletext Standard (NABTS), BVT officials counsel, but should move forward with the British system, which is already operational in 12 countries. Shrimpton said the system "well matches the particular needs of the U.S. market," especially in terms of cost-effectiveness and ruggedness.

Questioned about the graphics capabilities of British teletext as opposed to NABTS, executive vice president Trevor Armstrong said five tiers of display sophistication are available for the system, but that BVT has not been emphasizing the more advanced levels because decoder chips are not yet available. Chips are plentiful for the more basic tiers, he said, and claimed that at least six U.S. manufacturers have produced designs for teletext-compatible receivers. He contrasted this with what he termed the lack of receiver availability for the teletext system CBS is now introducing.

System cost to broadcasters opting for the BVT-promoted system could run anywhere from \$20,000 to \$250,000, depending on the sophistication of the system. Most systems will be in the under-\$100,000 range, Armstrong predicted.



Atop a 30-foot scaffold, camera operator shoots diving competition at the World Swimming Championships in Guayaquil, Ecuador, with an RCA TK-780 triax camera. CBS-TV covered the event with technical assistance from F&F Productions of St. Petersburg, FL, subsidiary of Hubbard Broadcasting. (PHOTO: CBS SPORTS)

lites in as little as five years, according to Electronics, Missiles, and Communications, Inc. (EMCEE).

The space mirror, a passive device that reflects electromagnetic signals in a wide range of bands, including those currently used for broadcasting, would float 62 to 125 miles above the earth with a coverage area about 1000 miles in radius. It would be kept aloft by a beam of electromagnetic radiation; its extremely light weight (only a few grams for a mirror 10 feet in diameter) makes this possible.

Communications costs would be lower with the mirror than with satellites, according to EMCEE, which estimates construction costs for the mirror and its base station at only \$10 million. The company has not estimated launch costs, but predicts these, too, would be far lower than for satellites.

The low cost of the mirror would especially suit it to communications in less developed countries, as well as a wide variety of uses here. Theoretically, any number of users can bounce signals off the mirror simultaneously.

EMCEE concedes that the mirror is not without problems, technical as well as regulatory. The graphite fibers proposed for the mirror deteriorate rapidly

EMCEE Plans Development of Low-Cost Space Mirror

A lightweight "space mirror" of ultra-thin wires could provide a low-cost alternative to communications satel-

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in space because of the high concentration of atomic oxygen, giving them a useful life of only a few weeks. A major R&D focus, therefore, is finding a protective coating for the fibers.

The company also anticipates regulatory problems for the mirror, which could allow broadcast stations to increase their coverage areas. James L. DeStefano, EMCEE's executive vice president, said "We don't really think the service will be stopped entirely, but we're certain there will be hurdles to overcome."

EMCEE holds the patent for the space mirror, which was developed by Dr. Paul Csonka, a physics professor at the University of Oregon, Eugene. Research on the idea's feasibility is underway at the Stanford Research Institute in Menlo Park, CA, under the direction of senior physicist Dr. Julius J. Muray.

U.S., Japanese Labs Seek Vertical Recording Format

A large increase in the information density of magnetic tape recording, well beyond the maximum possible with current methods, is now being

sought in a number of American and Japanese laboratories through the development of vertical, or perpendicular, recording.

Vertical recording puts the two pole pieces of the magnetic gap on opposite sides of the tape, rather than on the same side. Thus, the magnetic field is perpendicular to the tape and goes through it, rather than being parallel to the tape and near one surface.

In addition, the needle-shaped magnetic particles are aligned vertically with respect to the tape so that the ends of the particles are tightly packed together at the tape surface.

Researchers describe the technique as probably several years from full development, with commercial use even later than that. However, at least four major U.S. companies, among them Ampex and 3M, and several in Japan are believed to be working on vertical recording.

Proponents disagree at the present time as to the expected gains. Some say potential bit density is 10, 20, or more times the present upper limits. Others say the outlook is for a three or four times increase. However, even a three times increase would benefit au-

dio and video recording, especially digital forms.

Corrections

Please add the following companies to your copy of The Source (*BM/E*, September 1982):

MODULATION ASSOCIATES ★

897 Independence Ave., Mountain View, CA 94043

(415) 962-8000

Earth stations, receiving dishes.

TELCOM RESEARCH ★

1163 King Rd., Burlington, ONT, Canada (416) 681-2450

SMPTE time code generators, reader/generators, time code reader/character generators.

★ means **Verified Source**.

In addition, Crown International should be listed in the Audio Amplifiers section of the Instant Source Locator. The telephone number of Convergence Corp. should read (714) 549-3146.

A typographical error on p. 48 of the October issue ("ABC's View from the Inside Out") left readers with the impression that ABC plans to operate a radio-controlled transmitter in a racecar at 6 W. The correct power is 0.6 W.

Tried and True

Broadcasters have always been able to rely on Barco CM series utility color monitors to show true colors and picture noise. Now these same monitors offer even more with the addition of pulse cross and preset controls.

The CM-series monitors are now ideal for editing suites because they allow editors to match true colors. And the CM series never softens or masks noise. Editors see exactly what goes out on line in the preview mode.

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And you can choose from medium, standard or high resolution delta dot tubes. All models are fully modular. The medium resolution CM-33 HRB offers a phosphor triad pitch of .43 millimeters and the CM-51 HRB .47 millimeters. Other features include switch selectable scan/overscan and an RG off switch for easy set-up.

The CM-33 HRB with pulse-cross is priced under \$2500.

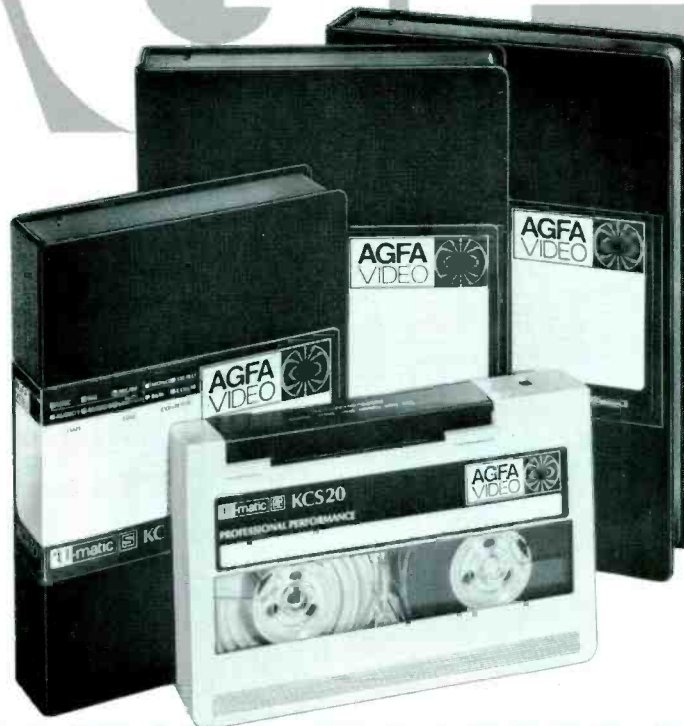
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KCA 30	30 min.
KCA 60	60 min.



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NEWS BRIEFS

The National Cable Television Association has issued a **call for technical papers** to be presented at its June 1983 conference in Houston. Deadline for abstracts is January 14; call Katherine Rutkowski at (202) 775-3636 for further details . . . The League of United Latin American Citizens contends that ABC, CBS, and NBC, along with various production studios and advertising agencies, have **failed to cover Hispanic Americans** in a positive and complete manner. The group recently

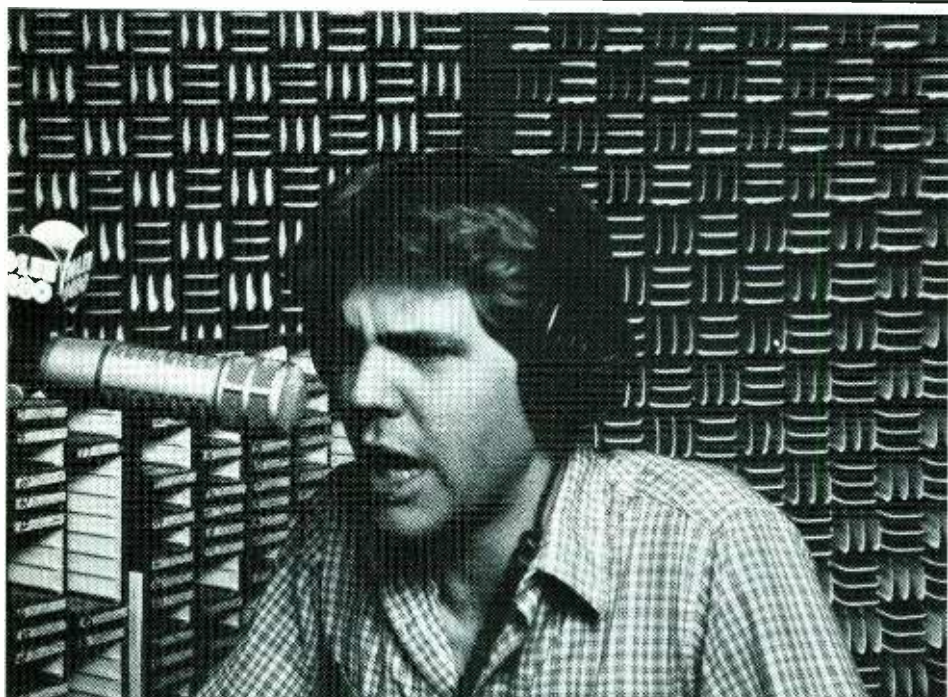
filed an employment discrimination complaint with the Equal Employment Opportunity Commission . . . Arbitron will produce special reports on **Hispanic TV viewing** for the New York, Los Angeles, and Miami ADIs under an agreement with Spanish International Communications Corp., licensee of WXTV, New York, KMEX, Los Angeles, and WLTV, Miami.

FM listenership is leveling off in the top 10 markets, according to an Arbitron analysis of its spring 1982 ra-

dio survey. Overall increase, after 11 boom years, was just 0.2 percent to an average 55 percent share of all listening . . . The three major TV networks **will not be replaced** by cable TV, according to George Gerbner, dean of the Annenberg School of Communications. Addressing the Women in Cable conference at the University of Pennsylvania, Gerbner predicted that to attract advertisers, cable would be forced to program mainstream material similar to much current broadcast fare.

The Joint Committee for Intersociety Coordination (JCIC) has **selected NAB to chair** its recently formed steering committee to coordinate work on developing advanced TV systems standards in the U.S. . . . The FCC will probably decide before the year is out whether to **decrease satellite spacing** to two degrees from the current four. A decision would pave the way to license grants for new satellites, which have been held up while the spacing issue was pending . . . Doubleday Broadcasting Co. has petitioned the FCC to **change its ownership rules** to allow broadcasters to own 14 radio stations of any variety, rather than the current maximums of seven AMs and seven FMs . . . Accepting an award from the National Black Media Coalition for his **commitment to equal rights**, FCC commissioner Joseph R. Fogarty said, "One of the real regrets of my term has been the fact that more has not been done to encourage the entry of minorities into all areas of telecommunications." The biggest problem, he claimed, is money.

The **Gabriel Awards**, in their seventeenth year, have honored Robert Keeshan ("Captain Kangaroo") and newsman Bill Moyers with the 1982 Personal Achievement Awards. Two Boston TV stations, WBZ and WCVB, received Gabriels for overall standard of high quality in creative programming; KMOX Radio, St. Louis, won in the radio division. Award-winning programs were "Bill," produced by Alan Landsburg Productions for CBS-TV, and *A Prairie Home Companion*, produced by Minnesota Public Radio . . . **KOMO-TV**, Seattle, garnered the top Community Service Award of the National Broadcast Association for Community Affairs for a two-week broadcast campaign that aired September 1981 . . . **KFMB** Radio, San Diego, took the Best of Show award for radio in the 1982 San Diego Press Club annual competition. The station was also recognized for best spot news coverage . . . **WCET-TV**, Cincinnati public television station, has joined the Public Service Satellite Consortium.



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BUSINESS BRIEFS

American Satellite Company and **Telesat Canada** have signed the first umbrella agreement to implement the recently approved intergovernmental arrangement for Canada/U.S. fixed satellite transborder service.

Patapsco Designs announced the purchase of the assets and business of **Datametrics Time Code** from **Datametrics-Dresser**. . . . **Shure** has formed a new division responsible for manufacturing, sales, and marketing of microphones and circuitry products **Conrac** has formed a new na-

tional service organization for repair, parts, manuals and training programs A new Instrumentation and Technology group structure designed to increase innovation and lower manufacturing costs has been announced by **Tektronix**.

Netcom International and **Transportable Earth Stations, Inc.** have signed an agreement for the joint operation of a nationwide fleet of transportable satellite uplinks **Matthews Studio Equipment** has opened a new facility in New York City to be used as

a hands-on showroom and for repair, parts, and service.

Chyron has announced that fiscal 1982 showed a sales gain over 1981 of 33 percent, while net income rose 83 percent **Scientific-Atlanta** revealed an increase in sales in 1982 over 1981 of 22 percent, but recorded a drop of 26 percent in net earnings **Quanta Corp.** announced a record year in sales for fiscal 1982.

Capital Cities Communications has purchased \$1.4 million worth of **Ampex VPR-2B** and **VPR-20B** recorders. **Fisher Broadcast** has purchased six **Sony BVH-2000** VTRs for two of its TV stations, **KOMO** in Seattle and **KATU** in Portland **RCA** has sold transmitting equipment, cameras, and VTRs to **LeSea Broadcasting** for two of its Indiana TV stations; the sale is valued at \$2 million A new UHF TV station in Charleston, WV, **WVAH**, has purchased a new **RCA** transmitter and antenna **RKO Radio** will use the **RCA Americom** audio digital distribution service for program transmission; **RKO** will use **Scientific-Atlanta** equipment.

Topaz has introduced a new power conditioning selection guide to help users of electronic equipment New lighting effects patterns and designs are detailed in a brochure from **The Great American Market**.

Harris has received an order for transmitting and control equipment from **WFYR-FM**, an **RKO** station **KGAN-TV**, Cedar Rapids, IA has contracted with **Harris Corp.** to buy a 60 kW transmitter, a circularly polarized antenna, and a facility control system. The sale is valued at \$1 million.

Hans Batschelet has been named VP for marketing at **Studer Revox America** **Comsat General** announced that **Robert Kinzie** has been elected as president of the corporation **Harrison Systems** has recruited **Dave Purple** as its sales and marketing manager for broadcast products **Oak Communications** has three new personnel changes: **John Donohue** is the new VP of manufacturing; **C.J. Bach** is the new VP of sales; and **Michael Shaughnessy** is the new VP of market planning and development.

Comtech Data has added **Allen Scharf** to its staff as director of audio/video operations The new sales manager/radio products at **Television Technology** is **Bill Harland** **Sonny Funke** is **Sound Technology's** new broadcast representative for California and Arizona **Crown** has appointed **Charles Gushwa** as its new marketing manager **Stuart Kravitz** is the new director of marketing for **Comark Communications**.

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*Polyphase PDM—U.S. Patent 4,164,714 and other U.S. and foreign patents pending.



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RADIO

programming & production

WESU, at Wesleyan University, A Power In Connecticut

DOUGLAS BERMAN, program director of WESU, an FM station putting out 1.5 kW in Middletown, CT, has to solve problems that most program directors can usually ignore. His station is licensed to, owned by, and operated by the Wesleyan Broadcast Association, a nonprofit cooperative of students at Wesleyan University.

Although WESU could be labeled a "college station," it is unlike many in that it is not owned by the university and has no role in the curriculum—there are no broadcasting courses at Wesleyan.

On the other hand it is not solely a source of entertainment for on-campus listeners either. Berman describes the special nature of WESU in several ways.

"Our primary coverage area is a large part of central Connecticut, reaching up to southern Massachusetts and down to the Connecticut shore. We try to give various groups of people throughout the area, and not just those at the university, programming they want and cannot get elsewhere."

He points out that both entertainment and information are central objectives.

"We are conscious of the huge store of information and expertise at the university, material with authority and interest well beyond the qualities of what most commercial stations can afford to put on the air. It is exciting to get as much of this as we can into our programming."

The programming in a typical week indicates that WESU is using these resources. At Wesleyan the student cooperative itself is the licensee, directly responsible to the FCC for proper operation. The university is a kind of avuncular partner on a modest scale. Several faculty members are on the Association's board of directors, and the on-air use of faculty and administration gives the university an honest stake in the operation. There is, for example, a yearly call-in program with the president of the university taking on all callers, answering questions from the campus and anywhere else.

More important to success are the devotion and talent of the individuals who run the station. The Association has a large-scale indoctrination and training program to keep the ranks full against the yearly losses to graduation. Anyone

can join in a four-phase training program, which progresses from general instruction to hands-on experience in the production studio and the on-air room.

Every student who stays with the program for two full semesters becomes a member of the Association, entitled to vote for its officers, and for the operating personnel.

Nobody gets paid—it is all voluntary. The operating expenses of the station, recently around \$20,000 a year, come from a student activity fund, to which every student makes a contribution.

It is clear that the system is passing on to the apprentices not just adequate training but the habit of excellence. The open and democratic system of control evidently brings to the top individuals with the ability to maintain that excellence.

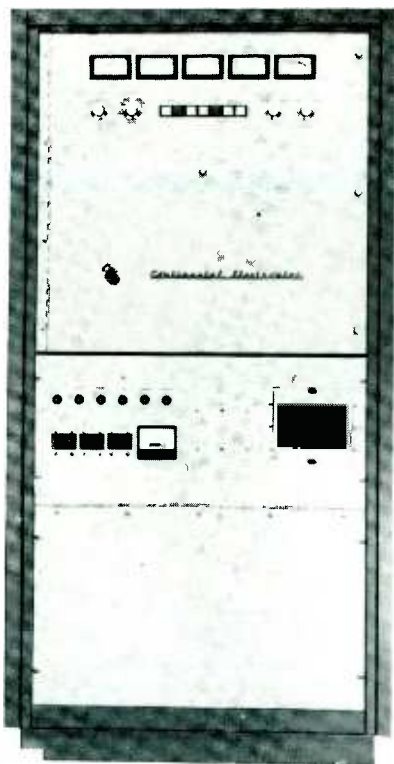
Being excited about radio at an early age is one way to develop this ability. Association president Tracie Thompson, for example, took a course in radio in her high school in Albuquerque, NM, and got hooked. She joined up for WESU in her first fall at Wesleyan



Douglas Berman, program director of WESU, finds rich material in Wesleyan's store of music, science, political information.



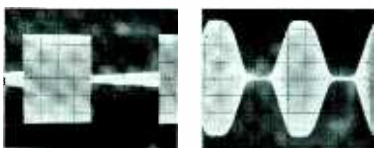
Tracie Thompson (left), president, and Judy Korin, general manager, learned to run WESU, were elected by co-op "owners."



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Circle 119 on Reader Service Card

RADIO PROGRAMMING

(she is now a senior). She progressed through all phases of the station operation, and was voted president over a year ago.

The kind of programming the station does appeals to her strongly: the block segments addressed to various constituencies, each block exploring in some depth a particular area, which gives the programming both variety and substance.

Douglas Berman, too, got an early start. While in high school in Briarcliff Manor, NY, he worked as an intern at a local commercial station. He progressed to an on-air slot in a Sunday program, then to PSA director, and to commercial production.

He joined WESU when he came to Wesleyan in the fall of 1980, and was elected program director in 1981. In the summer of 1981 he worked as a production assistant at WNEW in New York, and the following summer he had a similar job at National Public Radio in Washington.

WESU is on the air 24 hours. At 7 a.m. from Monday through Friday there is *Daybreak*, which the station describes as "just the right mixture of old, new, and unusual rock to wake you up with a smile." The operators make the most of their freedom from top-fortyism or any other form of mass popularity constraint.

From 11 a.m. to 2 p.m. every day is an all-classics section. This again covers a very wide range. Once a week it includes a concert of the Chicago Symphony, obtained on tape from WFMT, in that city.

The 2 p.m. to 6 p.m. slot is called *All That Jazz*, which includes the whole sweep of jazz from early forms to late experiments, with a core of mainstream jazz.

After that comes *Music for the People*, which the station calls "Connecticut's finest Soul program." At 9 p.m. begins *The Rock Slot*, devoted to new kinds of rock, innovative material that rarely gets on the air. At midnight comes *The Ends*, experimental, electronic, and atonal music from Stockhausen to Glass and Lucier. The audience for this is comparatively small but is definite and strongly appreciative, according to Berman.

Finally, from 3 a.m. to 7 a.m. is *Last Call*, another descriptive title, when nearly anything goes (within FCC and legal constraints). Anyone with a hilarious, or shocking, or far-out idea may get a chance here. An example is a recent series called *Bad Music*, presented by a student who managed to make the program side-splitting with mock-finicky comments.

For music, the station has some special advantages. All the record companies, including big ones, and the small ones with special programming, are generous with their new releases because they know that even very special material will get air play to an appreciative audience.

In addition, the music resources of the university itself are substantial, with the music faculty and students as active performers, and with frequent concerts on campus by visiting artists. The station has permanent audio lines into several of the campus concert halls, and can make live tapes of most concerts. The station often interviews the visiting artist, sometimes using faculty members as questioners and commentators.

Some other segments of the all-tastes and special-group music blocks are weekly slots for gospel, world music, African music, reggae, folk, bluegrass, blues, Latin music—the last is one of several programs addressed to the large Latin community in Hartford.

In its news, discussion, and public affairs programming, WESU shows its strong information and service orientation. National and international news comes from UPI. The station's own news department produces a regular local news segment, including such topical exercises as recordings of street interviews carried out by a walking reporter.

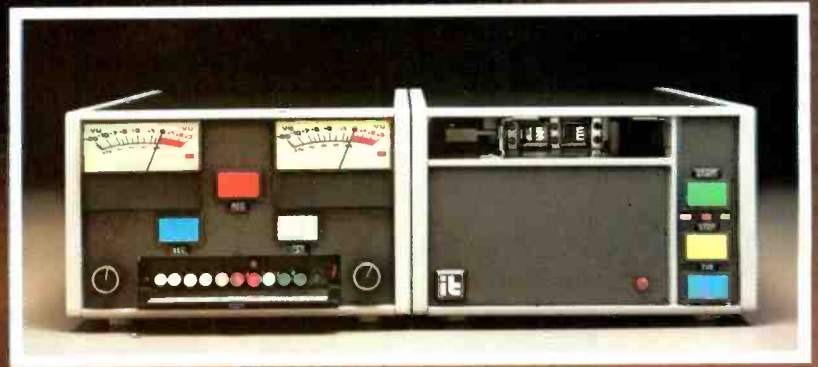
There are discussion programs on subjects important to the southern Connecticut community, with frequent appearances by experts from the faculty. Political campaigns get intensive coverage; on election nights, WESU has reporters stationed at the various campaign headquarters, with lines into the station for live interviews.

WESU pays attention to its audience. Requests come in during the music sessions and are complied with if at all possible. The mail is also evidence that the various segments of the audience welcome their respective segments of the programming.

On the technical side, the station is well set up. The on-air room has Technics turntables, Autogram console, ITC cart machines. Production uses a Harris "Executive" console, Technics turntables, two Ampex 440B tape machines, Sennheiser 421 mics. There is a conference room for accommodating groups, and a news preparation area. The transmitter is a Harris 1H3, the exciter a Collins 310, the limiters from Moseley (no compression is used), the monitoring from TFT. Richard Walsh, chief engineer of WHCN in Hartford, acts as technical adviser. **BM/E**

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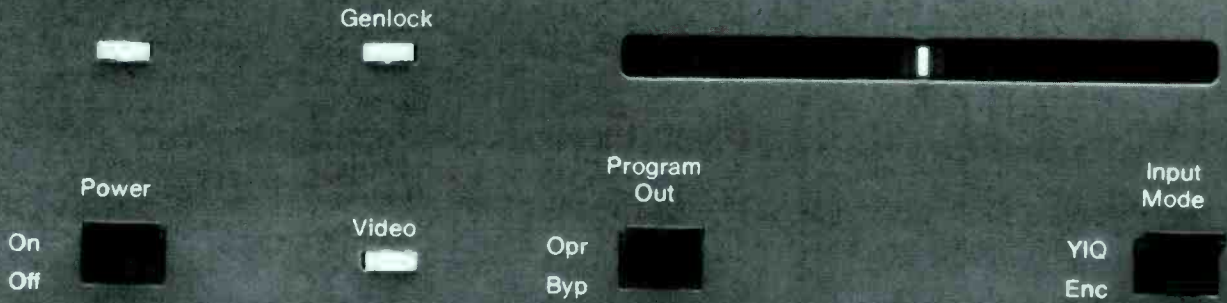
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TELEVISION

programming & production

\$2 Million Investment Buys WNEV-TV a New Look for *Look*

WNEV-TV, THE BOSTON CBS affiliate, is no stranger to attention. Its licensee, New England Television Corp. (NETV), won Ch. 7 from former owner RKO General in a now-famous FCC license battle. But the broadcasting community has once again focused interest on the operation, which is pouring both a lot of capital and a lot of human resources into several highly innovative technological and programming ventures.

The first move in the multi-stage revamping of WNEV's image is *Look*, a daily two hours of locally produced programming that was scheduled to premiere November 29. *Look* marks the first large-scale use of the new broadcast-quality half-inch video equipment (see *BM/E*, October 1982, p. 18), and director of engineering Karl Renwanz says stations all over the country have been calling to ask about the gear. *Look* will be a particularly rig-

orous proving ground for half-inch because the entire show will be produced, edited, and aired in the new format.

"Our field crews are absolutely thrilled and astounded by how great the video looks and how good the sound is," Renwanz says. Surprisingly, half of the eight *Look* crews prefer to use the Ikegami HL-83 cameras and HM-100 VCRs in the two-piece configuration, with the recorder carried on a shoulder strap and cabled to the camera—perhaps because of the unfamiliarity of one-piece operation.

The Ikegami unit differs from many camera/recorders in that the recorder bolts onto the side of the camera, not the rear. Renwanz says this arrangement doesn't interfere with the excellent balance of the HL-83. The recorders utilize the modified VHS M-format developed by Matsushita (Panasonic) and RCA.

To further enhance freedom of movement, WNEV has ordered "a whole bunch" of Vega wireless microphones: 12 Traveler 1 units for the field and four Professional 2 Dynex models for studio use. The RF mics, Renwanz says, will sever the last cable connection between the camera and the world.

O pioneers!

Renwanz is well aware of his pioneering role in the acceptance of half-inch video technology. "I feel a little like Christopher Columbus," he laughs, but points out that for a project of *Look*'s magnitude, half-inch was the only alternative that made sense. WNEV knew the show would require enormous amounts of field and editing equipment. Its high cost put one-inch out of the question, and 3/4-inch quality wasn't up to the standards Renwanz had set for the program.



Chief engineer Renwanz (left) and engineering manager Lay check the signal in the main edit room for *Look*. Fortel TBCs are just below twin monitors.

TELEVISION PROGRAMMING



In another *Look* edit room, operator edits a segment on *Convergence* ECS-103B. Amdak monitor displays edit menu.

Being at the forefront of half-inch video has given Renwanz a bird's-eye view of the format's potential problems and their solutions. "I'm tired of hearing the industry cop out and complain there's no standard yet," Renwanz grumbles.

M-format, Renwanz explains, has the same problems as any new format—it needs a wide variety of equipment modified to interface with it. Test equipment is a particularly important area, especially since the YIQ video is in component form.

"We still need to find out what distortions are likely with the YIQ in order to design proper test signals," Renwanz says, noting that some standard test signals don't give the proper results with the M-format. Even WNEV's recently purchased Leitch DTG-1000 test generator, a sophisticated piece of electronics, doesn't fully satisfy the station's need for testing.

One goal, according to Renwanz, is to have the signal remain in the YIQ format for all monitoring and testing. Achieving that would require yet another piece of YIQ equipment—a YIQ monitor.

Editing system interface

Another compatibility problem the station encountered was finding proper edit interfaces. The studio recorders—31 Panasonic AU-300s—were destined for eight edit rooms, each with its own video editor. Several manufacturers responded to the station's plea for interfaces, and Renwanz finally decided to go with *Convergence*, purchasing seven ECS-103Bs and an ECS-103A. Fortel redesigned a time

base corrector for YIQ compatibility, and the station bought a number of the units.

The editors each interface with three Panasonic AU-300 studio recorders. Each edit room also includes a Digital Video Systems Phaser II TBC/frame synchronizer and a Tektronix 528A waveform monitor. A Grass Valley distribution amp in the main edit room distributes pulse, time code, and color bars to the other rooms.

Audio gear in the edit rooms includes Otari MX-5050B quarter-inch ATRs, Technics turntables, Crown D-75 audio amps, Electro-Voice Century 100A speakers, and Shure mic mixers.

Another problem was that the edit suites required a switcher that keeps the signal in the M-format. At press time, Renwanz was working on modifying a switcher but was unable to give full details. One of the exciting things about being one of the first large users of half-inch broadcast equipment, Renwanz says, is the ability to identify needs and work with manufacturers to fill them.

The look of *Look*

The \$2 million of new equipment WNEV purchased for *Look* (plus another \$1.5 million for the news department) is an essential part of creating what the station hopes will be a distinctive look for the program. So much new equipment was ordered that, according to engineering manager Brian Lay, "We have a guy who spends his life tracking down shipping problems." Just a month before air date, the station was still filled with shipping boxes containing all kinds of equipment: Sony monitors, 15 Sachtler lightweight tri-

pods, all the large and small pieces of the \$3.5 million purchase.

The overall look for the program, which airs 4:00 to 6:00 p.m., is "homey," according to Renwanz. A more detailed description of what the program is striving for comes from VP of programming Jeff Schiffman, who is executive producer for *Look*. (Senior producer is WNEV's Raysa Bonow.)

"We started shooting in mid-October," Schiffman relates, "partly to get used to the equipment and partly to develop the style of shooting we wanted."

Like the program itself, Schiffman says, the style of shooting is intended to be "very human, warm, and accessible to the audience." The show airs live each day, with a high proportion of previously prepared material, all produced with the feel of being inside the story. Inserts are open-ended, introduced and concluded in the studio. The camera crews try to give viewers the perspective of participants in the story.

To facilitate this, Schiffman says, the station is aiming for a style of shooting that's less slick than a standard magazine format, even though segments are edited and post-produced.

"To get the live feeling, some pieces may be purposely raggedy," Schiffman explains. "Of course, this style is not appropriate for all material—some items require traditional storytelling techniques."

The show's format, too, is a departure from traditional magazine programs. Each day of the week has a "vertical" theme that runs through the four half-hour sections, similar to the special sections many newspapers run. Guest hosts each day deliver the theme-related material, working along with the show's two full-time cohosts. Monday's theme is relationships, Tuesday's is health and science, Wednesday's is food and nutrition, Thursday's is the coming weekend, and Friday's is lifestyles.

Each day except Monday highlights a "cover story" and several "sidebars" on the theme, all introduced by the day's guest host. The guest hosts are drawn from the ranks of *Look*'s 20 to 40 columnists, who rotate through the show telling video stories about their particular specialties. Because of the high degree of interest the show has sparked, WNEV has had no trouble locating guest hosts. "We've had to weed out, not search out," says Schiffman.

The Monday theme, relationships, requires special handling because, as Schiffman puts it, "Relationships are evolving and complex and not easily dealt with in the video format." In-

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TELEVISION PROGRAMMING



Redesigned newsroom at WNEV is behind the news set, giving viewers a peek behind the scenes.

stead of a cover story, the relationship theme moves around an ongoing "story of the week," which continues throughout the entire week and may be revisited in future weeks. The story of the week is hosted either by one of the two *Look* cohosts or by an expert in the field of interpersonal relationships, selected from the stable of columnists.

Look also has more traditional "horizontal" elements interlaced with the vertical format. These elements, which are not part of the daily themes, run horizontally through the week's programs, occurring each day at the same times. They include a short news segment each half-hour, describing events in informal language and trying to maintain a sense of excitement. In the first half-hour, regular, ongoing fashion updates are tied to the news.

After 5:00, sports becomes another horizontal element. The after-5:30 section also includes an outdoor piece. A "meal of the day" is cooked in the studio; menu and ingredients are given in advance so viewers can cook along.

In another unusual feature, the *Look* crew does live inserts from a different location each week—a place where people ordinarily watch television, such as a home or department store. People at the location are asked their opinions and reactions to the show while it is on the air. Other horizontal features include two lengthy consumer sections each night (one a question-and-answer section that takes phoned-in questions), interviews with celebrities in the news, and clips from *Soap World*—the last being the only outside-produced material *Look* airs.

The enormous amount of self-

produced material necessitates a large staff, and *Look* employs almost 60 full-time staffers and an additional 15 or 20 part-time people, including the columnists. It also necessitates a hefty budget. While Schiffman will not give figures, he says that the amount of money "is comparable to what we'd have to spend on syndicated material to fill that time slot."

Looking ahead

Preparation for *Look* started before NETV even took over Ch. 7. Station president Win Baker, credited with the idea for the program, is also responsible for the name and for the station's acquisition of exclusive U.S. video rights to the old *Look* magazine logo.

Renwanz came on board on WNEV's on-air debut date, May 22, 1982, but he had already served as an engineering consultant for the new management while still at his old position at WGBH, the Boston PBS station. Product evaluations and facilities design for the extensive project took months, and the first edit rooms went on line in October, when field tests and initial production started.

At present, the edit rooms and *Look*'s other functions are housed in temporarily leased space next door to Ch. 7's main facility. Renwanz expects the entire operation to move to the main building next May or June, when WRKO-AM and FM, which still reside in the building, move out.

Reworked news department

As part of the reworking of the news department, the station has installed an IRIS II still store from Harris Corp.,

which has replaced all slides for news and production. The still store can be operated from six remote locations "almost simultaneously," Renwanz says. Also new are a WeatherGraphics computer weather system from McInnis-Skinner Associates; two Chyron IVB graphics systems, one for *Look* and one for news; and a Grass Valley Mark II DVE digital video effects system. Renwanz recently ordered a GVG 300-3 switcher, due to arrive in 1983.

WNEV also purchased two ENG-equipped GMC Suburbans from E-N-G Corp. for its news department, along with a Wolf Coach van for *Look*. All three vehicles have telescoping pneumatic masts and M/A-Com microwave equipment.

Looking to the future

It would seem that a project like *Look* would keep a station busy for a while, but the people at WNEV are keeping one eye focused far ahead.

"Our long-term objective," says Schiffman, "is not to rely on syndicated programming, but to program the station ourselves in all key areas." *Look* is just the first step—albeit a giant one—toward that goal, and the success of *Look* will lead to further discussion of the next steps of what Schiffman calls a "tactical strategic plan." On the technical end, Renwanz expects the station to go all half-inch for field production, including news, early in 1983.

Careful planning, willingness to take some risks, and a vision of the future are the new bywords at WNEV. As Schiffman puts it, "We're trying to develop a television station that makes sense."

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Best Station Award Contest Nominees

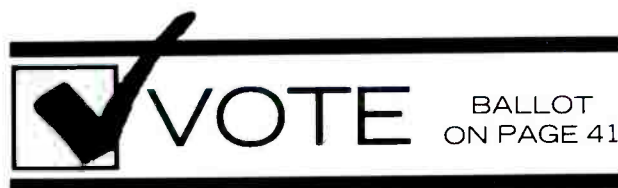
Here, arranged in four categories—Television, AM Radio, FM Radio, and AM/FM Radio—are the nominees for *BM/E's* annual Best Station Award competition. Our editors carefully selected these from the many entries that were received; now it's your chance to select the winner in each category by voting with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

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

To vote, simply select your favorite station in each category, check it on the ballot card (page 41), and drop the card in the mail. Each winner will receive a handsome plaque, to be presented by *BM/E* at the 1983 NAB Show, so we must receive the ballot *no later than January 31, 1983* to be eligible. But please read the entries and vote now while they are still fresh in your mind.

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

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KICU-TV

San Jose, CA

NON-ADI MARKET TV ENTRY

Submitted by Jim Kraenzel,
Chief Engineer,
and Jim Evers, Operations Manager

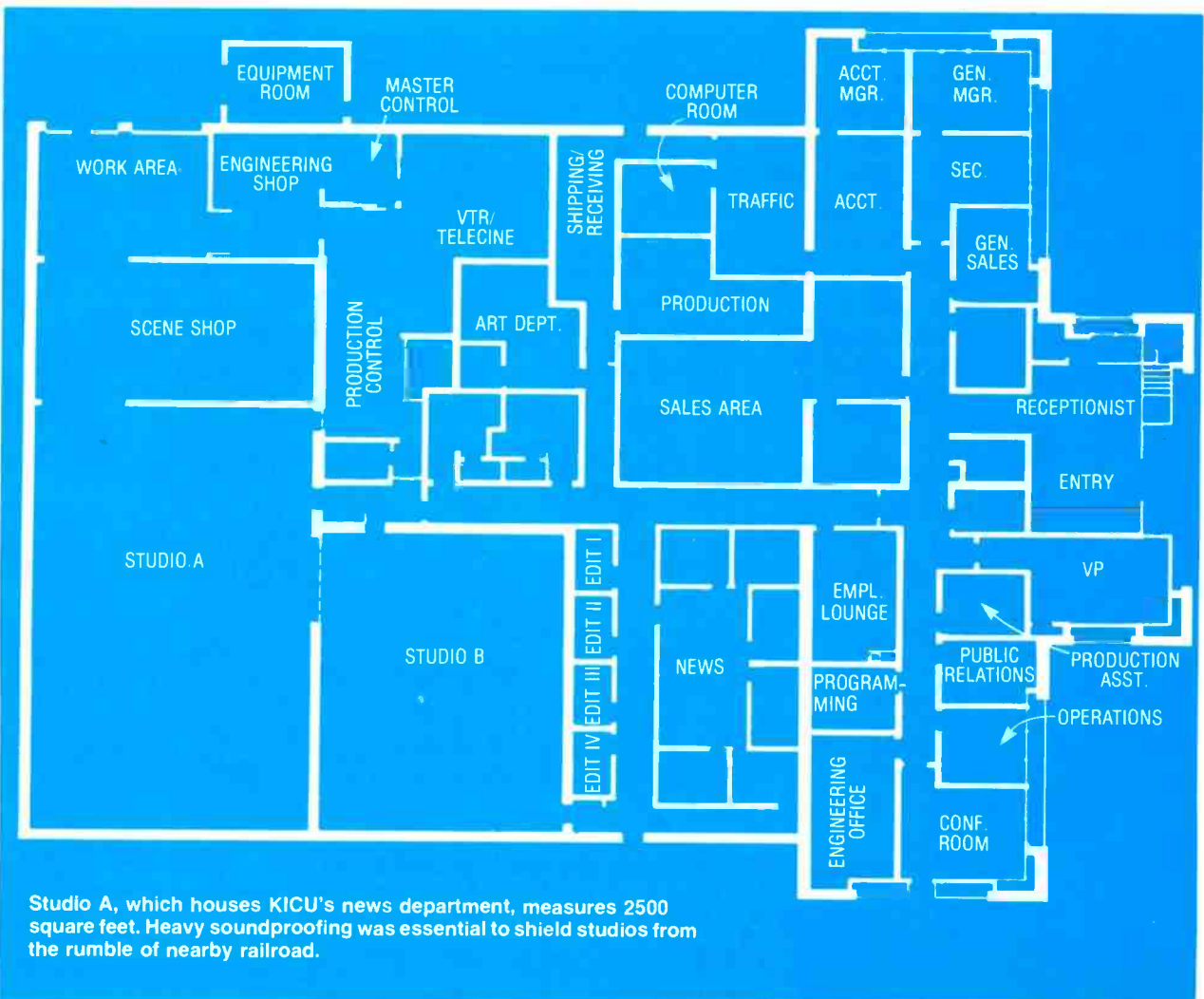
AN EFFECTIVELY EQUIPPED technical facility, designed to efficiently accommodate news, commercial, and public affairs production while anticipating future growth, were the primary considerations in the planning and construction of the new building now occupied by KICU-TV in San Jose, CA.

An independent UHF station serving the fourteenth largest city in the country, KICU-TV has experienced rapid growth, largely because of the ambitious programming and promotion implemented since the station was

purchased by Ralph C. Wilson Industries, Inc. two years ago. The development of a news department, where none had existed before, helped to push the audience level to over the one million mark (an increase of over 250,000 in two years), but also raised practical problems because of the limited space.

The original structure had been built more than 15 years ago to serve as a television station, but its 7500 square feet reflected very conservative estimates of possible future growth and could not adequately accommodate the broadcasting commitment made by the new management. Building a new facility with one 2500-square-foot studio to serve the needs of an expanding news department, and another 1500-square-foot studio to accommodate the increasing volume of commercial and public affairs production, was the answer.

After negotiating with various builders, a naturally wooded site which was both convenient to downtown San Jose and easily accessible for clients coming in on major freeways was selected. The major drawbacks of the site were the railroad tracks at the rear of the property, and the noise from unscheduled freight trains which passed over



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Help honor your fellow broadcasters by participating in our Best Station Award Contest. Twelve entries are divided into four categories: TV Stations, AM Stations, FM Stations and AM-FM Combinations. Read through the issue and decide which station in each category has, in your opinion, done the best job of using its resources to deliver the best in broadcast services to its audience. Then place checks in the boxes next to the stations you favor on this official ballot. Use this postage-paid card to vote. Ballot must reach us by January 31, 1983.

1982 BEST STATION AWARD BALLOT

Check only one box in each category

TELEVISION

- KICU (p. 40)
 KAUT (p. 44)
 KSDK (p. 50)

FM RADIO

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 WJYN (p. 76)

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AM/FM RADIO

- WEAN/WPJB (p.80)
 WJTN/WWSE (p.84)
 KIIZ/KIXS (p.88)

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FM RADIO

- WZZK (p. 66)
 WNUS (p. 71)
 WJYN (p. 76)

AM RADIO

- KRGV (p. 52)
 KHOW (p. 58)
 KFWB (p. 61)

AM/FM RADIO

- WEAN/WPJB (p.80)
 WJTN/WWSE (p.84)
 KIIZ/KIXS (p.88)

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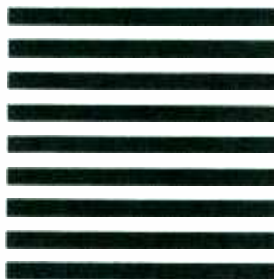
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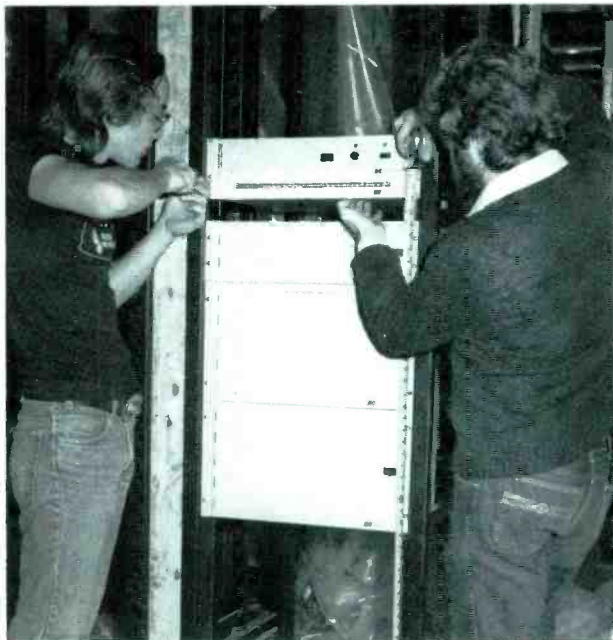


Increasing attention to TV audio is reflected in KICU's installation of an ADM 2400 console.

them. Consequently, we hired an acoustical consultant for guidance on soundproofing the building, and particularly on ways of reducing the noise interference through the studio wall facing the railroad tracks. The whole building was primarily constructed of tilt-up walls, which, except for the noise factor, would have been acceptable for the studios as well. After extensive discussion of the alternatives, it was decided that the studio walls facing the railroad tracks would consist of added interior stud walls with insulation for soundproofing. These double walls

provided us with approximately 65 dB of sound isolation, which brings the estimated 95 dB of a railroad whistle to under 30 dB—considered to be an acceptable level for background noise in a television station. In addition, sound-lock doors, weighing 1.5 tons each, were installed in the studio to provide additional sound isolation comparable to that provided by the walls.

Some new equipment was purchased to meet the technical needs of our ambitious production schedule, but the unique aspect of our station's success, both past and present, is what we are able to accomplish with less equipment and expenditure than most stations. For the relatively



Ron Schultz, air switcher, and Brian Chance, production manager (above), help with installation of the new CDL 990 master control switcher. Schultz, Chance and other staffers (right) unveil 990 control panel.



small capital investment of \$150,000, we purchased the three pieces of equipment which would prove most cost-effective and technically efficient for our needs.

These three pieces enabled us to do the great bulk of wiring necessary for the new building while the old building remained functional:

1. A 3M routing switcher, which allowed the technical area of the new building to be designed and cabled before videotape machines, film islands, and production equipment (including cameras) could be moved in units from the old to the new location;
2. A new CDL Model 990 master control switcher, which was installed before the move; and
3. An ADM Model 2400 audio console, which also allowed us to install new audio cable before we had to make the switch.

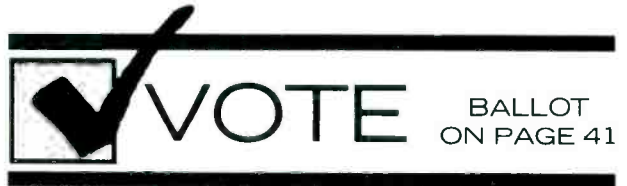
Since everything else was essentially plug-in, we were able to schedule our move with the least possible amount of downtime. In order to accomplish this, we scheduled our move to fit the practical equipment applications for keeping us on the air as usual.

We moved the news department in its entirety first, and started broadcasting news using the new studio like a sound stage; a mobile production truck was hired to microwave back to our old location.

Then we moved cameras and the production department, while continuing to produce news by microwaving the signal back and routing it through the original master control. The final major step was the move of master control, utilizing a standard off-the-air six-hour period on Sunday night. The entire move was scheduled over a three-week period.

The new 16,068-square-foot building, which doubles the area of the original station, also allows for future second-floor expansion of 4448 square feet.

Having room to utilize our three primary equipment purchases most effectively, without noise interference from passing trains, is the reward we have realized from having faced our unique problems of time, money and sound in a methodical fashion. We feel the resulting on-air quality of our programs reflects our careful attention to detail.



KAUT-TV

Oklahoma City, OK

ADI No.: 41

TV ENTRY

Submitted by Jerry Birdwell,
General Manager

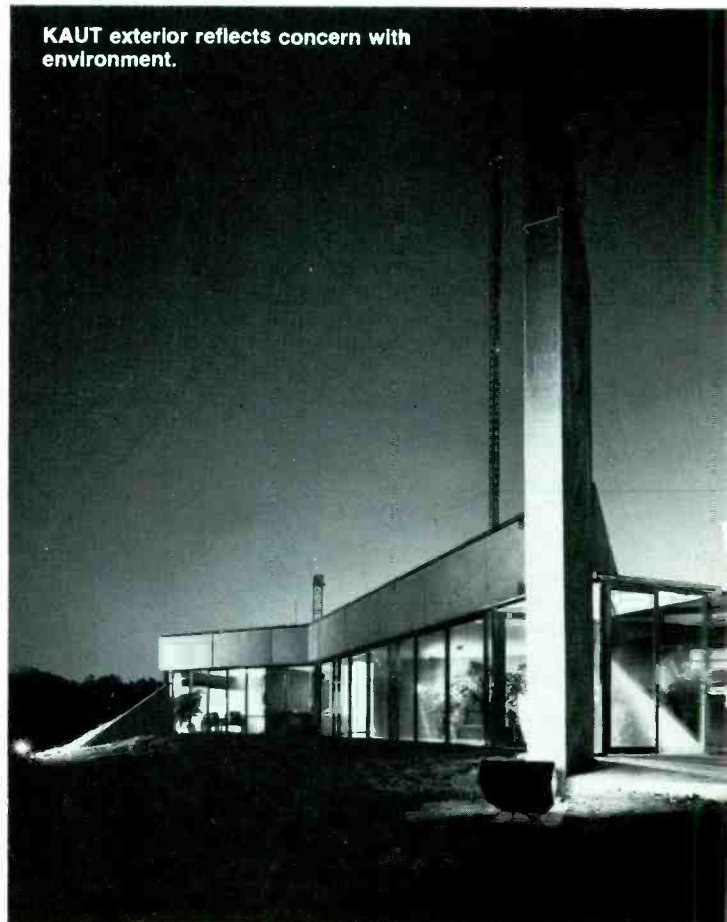
IN PLANNING ITS NEW \$1.6 million broadcast center in Oklahoma City, Golden West Broadcasters stipulated to its architects, designers, engineers, and suppliers that the final product would be a state-of-the-art television facility with maximum efficiency. It also had to be on the air within nine months of receiving an FCC CP.

As plans became reality, the public saw the emergence of television station KAUT, operating on UHF Channel 43, with 2000 kW of ERP for central Oklahoma. To others in the industry, however, it is better known as E2530, the call letters for a 10-meter earth station sending video signals to a satellite 24,000 miles up in space.

KAUT indeed has a dual personality. It is today a full-time independent commercial station, having recently dropped its nighttime subscription television service. But while the regular programming is going on, five one-inch video tape machines hum away a minimum of 70 hours a week sending separate pay television programming to a satellite for distribution to cities across the country.

During most hours of operation both the commercial operation and the pay television service originate side-by-

KAUT exterior reflects concern with environment.



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SONY
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side in the KAUT master control room. Master control equipment includes, in addition to the one-inch decks, RCA and Ampex two-inch VTRs, three Sony BVU-800 VCRs, and four JVC 3/4-inch machines. The station has emphasized one-inch videotape as its standard, backing up all STV network programming on 3/4-inch.

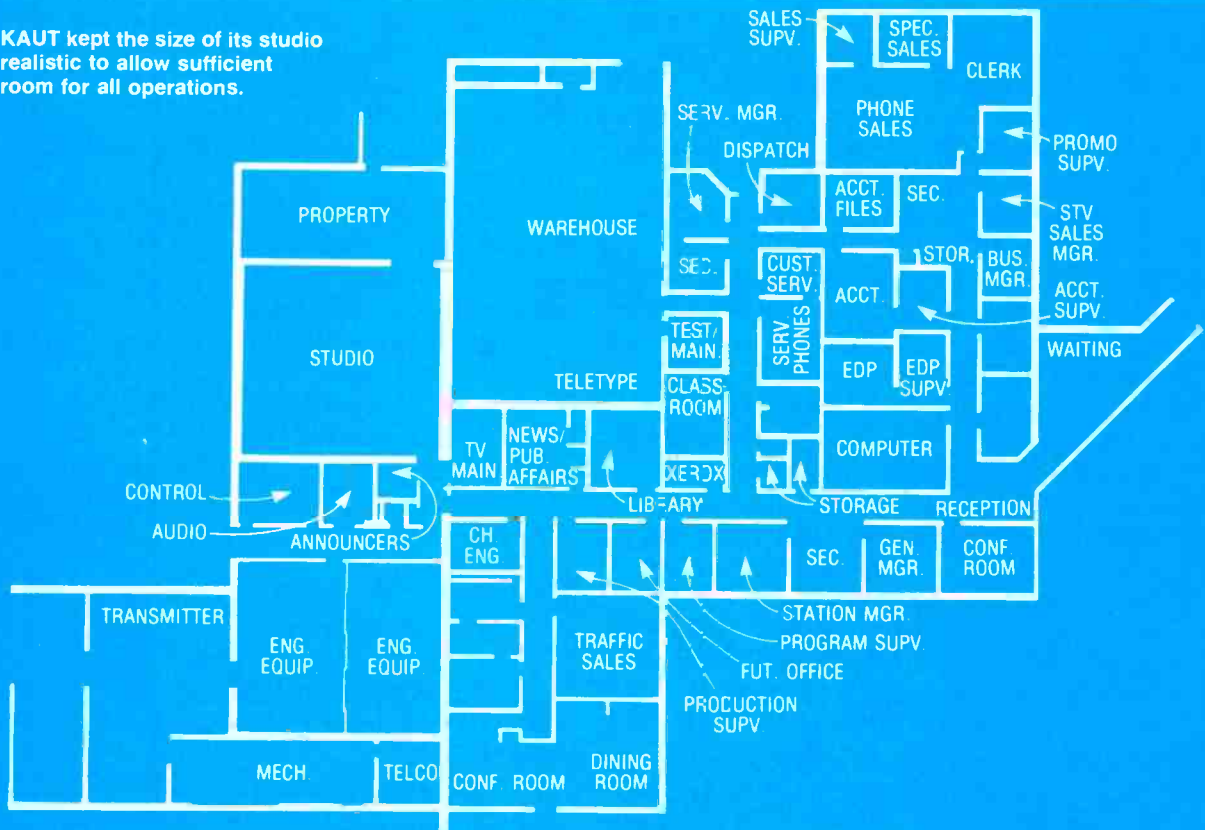
All commercial programming that originates on film is first transferred to tape for air playback. The master con-



KAUT's main production control room (left). Above, the view from master control into the engineering lab.



KAUT kept the size of its studio realistic to allow sufficient room for all operations.





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Just as important, the SM82 is ideal for assignments involving very long cable runs (up to one mile without equalization) typically encountered when covering sporting events, parades, and political rallies.

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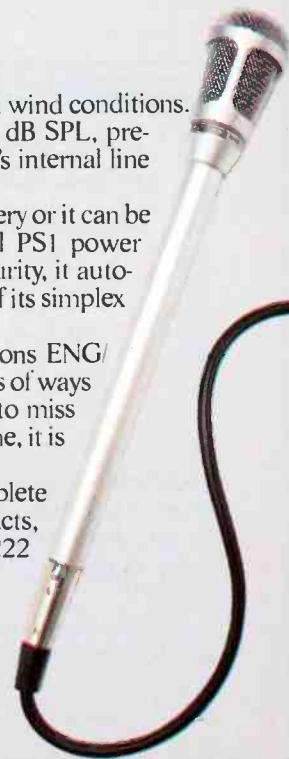
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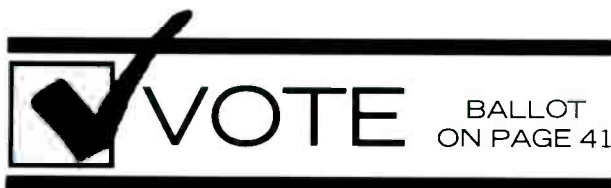
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trol film island consists of three RCA 16 mm projectors, and two slide chains.

Air switching is by means of an Ampex 4000 master control console, with an Ampex 4000-A production switcher in the studio control room. Electronic graphics are added to programs by means of a Chyron RGU-1 character generator or with a 3M D-2000 unit.

Both the Scientific-Atlanta uplink transmitter (WB 461 with dual MCL HPAs) and the Harris TV 110U air transmitters are remote controlled from master control. While the uplink transmitter is some 250 feet away from the main building, the Harris air transmitter is housed in a room adjacent to master control. It incorporates twin 55 kW visual and 11 kW aural transmitters.

Operating at a total of 110 kW power, the KAUT transmitter, at an estimated 35 percent efficiency in utilization of electrical energy, generates an excess of 215 kW of heat energy. KAUT recaptures a portion of this otherwise wasted heat to provide warmth for offices.

Recognizing the actual programming needs for KAUT, the studio is of minimum practical size. It is primarily designed for public affairs, news, and commercial production, where its 36x36 size is very manageable. Colortran supplied the studio lights and dimmer board.

The station operates with five live cameras. Three are RCA studio models, two are Ikegami HL-79A hand-helds for remote sports, general programming, and commercial production.

KAUT recognized the growing importance of audio

quality in television production, and equipped its audio production control with full stereo capability. An ADM 1600 16x4 production board is supported by a Peavey 12-channel stereo mixer which may also be used in remote location production. Three Technics two-track ATRs and an ITC cart deck are available for production.

For maximum flexibility in local production, KAUT operates three remote units. The largest is a four-camera Ford van with an ISI 902 special effects switcher. It carries two Ikegami HL-78s and two RCA TK-760s, and microwaves its signals with a M/A-Com transmitter to receivers/antennas located at the 1500-foot level on the station's 1596-foot tower. The other two remote units are for single-camera operation; one carries an RCA TK-76C and M/A-Com microwave gear and the other is record-only with an HL-78. All three trucks have Sony BVU-110 3/4-inch recorders.

Because of Oklahoma's frequent weather changes, KAUT operates its own weather radar system, with controls located both in master control and in the studio. The radar antenna is located on its own 75-foot tower immediately adjacent to the main building.

Reliability for uninterrupted operations is dependent on continuous power. KAUT is the only TV station in Oklahoma City with its own emergency generator which automatically switches on-line in the event of a commercial power failure. Within seven seconds of a failure, the 750 DVA generator returns power to all technical equipment, 50 percent of the air conditioning and basic studio lights.

All of management's strict design objectives were realized within a nine-month construction period, with absolutely minimal disruption of vital operations. Even more important, perhaps, is that the new building reflects continuity with the existing beauty of the landscape. Our new home is both energy-efficient and a source of inspiration for all of us who work here.

KSDK-TV

St. Louis, MO

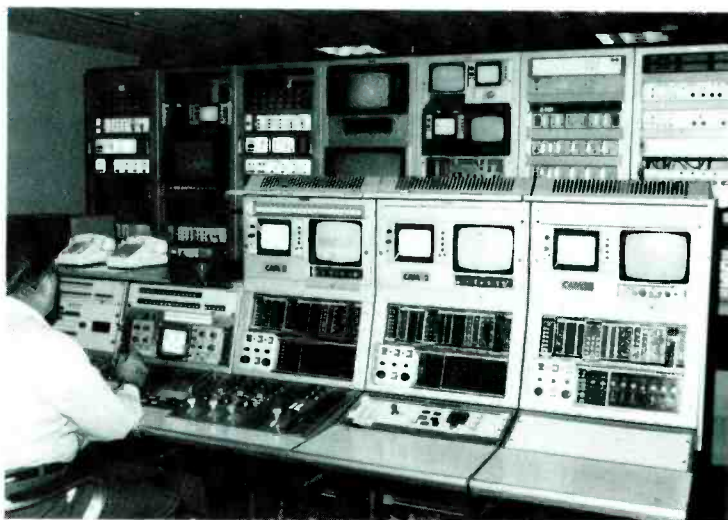
ADI NO.: 17

TV ENTRY

Submitted by Fred J. Steurer,
Chief Engineer

WHEN KSDK (formally KSD-TV) began to expand ENG operations between 1974 and 1979, space became precious. As the lack of space became a real problem, the owners, Pulitzer Broadcast Group, made a decision to acquire a new building while staying in downtown St. Louis.

KSDK entered into an agreement with a developer who constructed a three-story building for the station and a matching 20-story office building adjacent, with a small park, all on one city block. This combination was built on



KSDK engineering supervisor Ed Lowall checks setup and timing of seven studio cameras.

a main street, across from the Serra Sculpture and proposed Gateway Mall.

The management has historically directed an aggressive news operation. Even the bulk of production centers around news in some way. Therefore, the new building was designed with adequate facilities for gathering and producing KSDK's present news needs plus room for future news or other program expansions.

Since KSDK is highly engineering-oriented, the entire building and furniture layouts were developed by our corporate director of engineering. As chief engineer, I specified and laid out all the engineering equipment, including power on the operating floor.

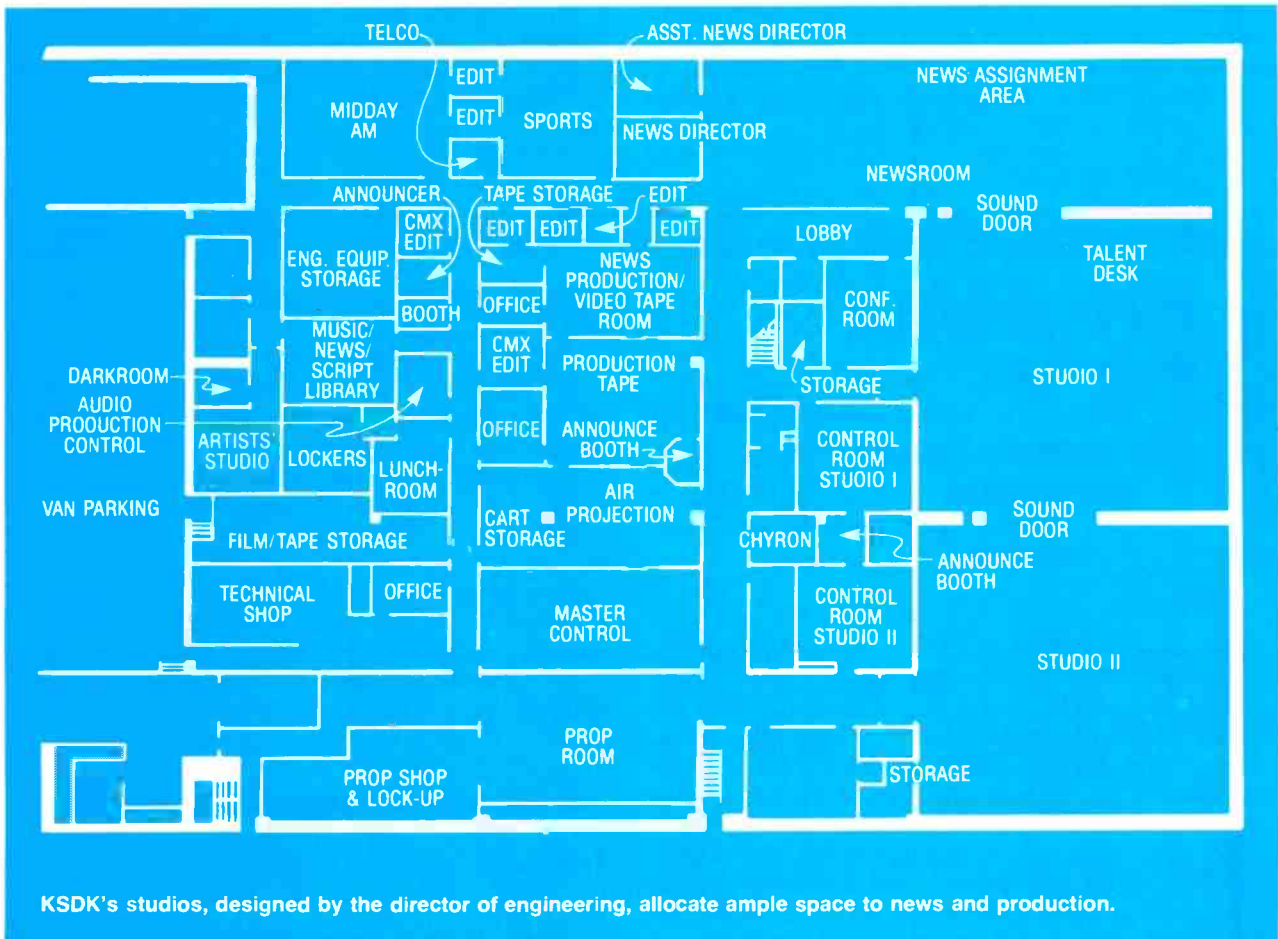
Some of our equipment purchases were: two Central Dynamics 32-input production switchers, a Vital master control switcher, an ISI post-production switcher, two Ward-Beck audio production consoles, a Ward-Beck intercom, Ward-Beck audio distribution, Lenco pulse distribution, Lenco video distribution, a Utah Scientific routing switcher, two additional Ampex one-inch tape machines, a Strand Century studio light dimmer with patch panel, all new monitors, all new racks, and all new furniture and equipment mountings. Many items, such as three of the seven studio cameras, film islands, studio B lighting, and tape machines, were reused from the old building.

The pulse and video timing centers around the Lenco system. Since both of our studio switchers are fed to the



Vital master control switcher being operated by Charles Vannoy.

master control switcher, it was necessary to time all sources to the studio switchers and delay those sources that also feed the master control switcher and post-production switcher by the delay of a studio switcher—a two-tier timing system. This means not only color timing, but horizontal timing as well. Each source, except the TBCs, is fed its appropriate pulses with a slave sync generator. Since all slave generators are in one location, cable lengths being of no importance, the timing of each source



KSDK's studios, designed by the director of engineering, allocate ample space to news and production.



A Ward-Beck console forms the basis of KSDK's extensive audio capability.

is adjusted at the slave generator, observing the RS-170A relationship on a Lenco videoscope. The video delays are set using the Lenco delay distribution amplifiers, again all in one location.

The audio distribution was laid out with one thing in mind—quality. There are no resistive splitters whatever in the system. The audio patch field is laid out so that each source, including 3/4-inch playback machines, may be monitored for level before the distribution amplifier by using the rack-mounted expanded scale VU meter. Then each amplifier is set for +8 dbm. As in video distribution, no cascading of amplifiers was allowed. An engineer can patch anything to anything without level differences.

Intercom quality was another prime consideration.

With the Ward-Beck matrix intercom, point-to-point communications can be carried on without disturbing the activity of the party lines. Integration of the two-way radios into the intercom made communications to field units available to many more than just newsroom personnel.

Signal acquisition is an area often neglected. Not so at KSDK. This duty is continuously manned during the day and evening so live shots and tape feeds from ENG units are easily handled; in addition, the audio recordings later integrated into news productions are immediately processed.

Liberal use was made of computer floor. All areas under Master Control, Air Projection, Production Tape, News Tape, Studio 1 Control Room, and Studio 2 Control Room have a dark brown carpet-covered computer floor. The Studio Control Rooms have two tiers of computer floor with the audio console raised to allow the audio person to see over the front row and into the studio.

Outlet boxes and empty conduits were placed in many areas for future needs. Cable hooks above the lift-out ceiling were placed in all corridors. A number of vertical wireways, flush-mounted in the walls, allow easy wire flow from the computer floor areas to above the ceiling. These are used for such things as ceiling-hung monitors and just plain getting from here to there.

A heated van parking area, with a radio-controlled garage door, was provided. Now work can be done on a van in any weather.

The broadcast facility was a result of many, many meetings where each department contributed to the development. In retrospect, virtually nothing in the plan would be changed if it had to be done again.

KRGV-AM

Weslaco, TX

METRO RANK: 90

AM RADIO ENTRY

Submitted by George Jenne,
General Manager,
Manship Family Radio

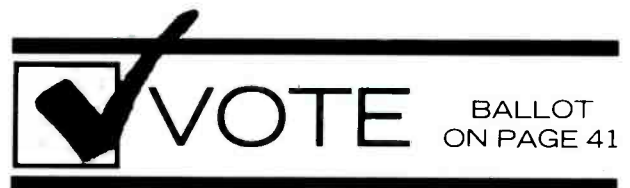
WHEN KRGV OUTGREW its space in the building shared with sister KRGV-TV, we seized the chance to build an entirely new plant as a way to help upgrade the service for higher economic performance. The rebuilding came along at about the same time as a realignment and sharpening of the Top 40 programming with the help of program consultant Lee Randall of KTSA, San Antonio.

The new plant and the fresh programming have worked together in lifting our business to several times its size of a few years ago. KRGV serves not only Weslaco but also McAllen, Harlingen, and Brownsville, an area with about

500,000 people. Power is 5 kW omnidirectional in daytime, directional at night.

We laid out the new 5000-square-foot building so there would be no cramped feeling in work spaces. Offices, shop, and so forth go around the perimeter; control room, newsrooms, and production room in the center. At the heart of main control is an Ampro console, 48-in, 12-out. Pushbuttons assign all sources to pots to minimize flip-switch errors. Production has the same console, and both are stereo.

To put the music on the air, we have six ITC cart machines in the control room, three on each side of the console. Further carrying out the "within close reach" aim, the two Russco turntables are close on the left; an ITC 850 reel-to-reel machine, patch panel, STL remote



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New building, with 5000 square feet of floor, looks compact but has ample room for the enlarged operation.

control and the EBS system on the right. Sennheiser mics are on booms, one at each end of the console.

Atop the left bank of cart machines is a timer wired to start when any of the six cart machines starts—this has proved to be invaluable. The carts also have a secondary cue tone in the last 30 seconds that turns on a red light to warn the operator. All carts and the reel-to-reel machines have remote start switches in a panel at the operator's right hand. Turntables are remoted right at the pot.

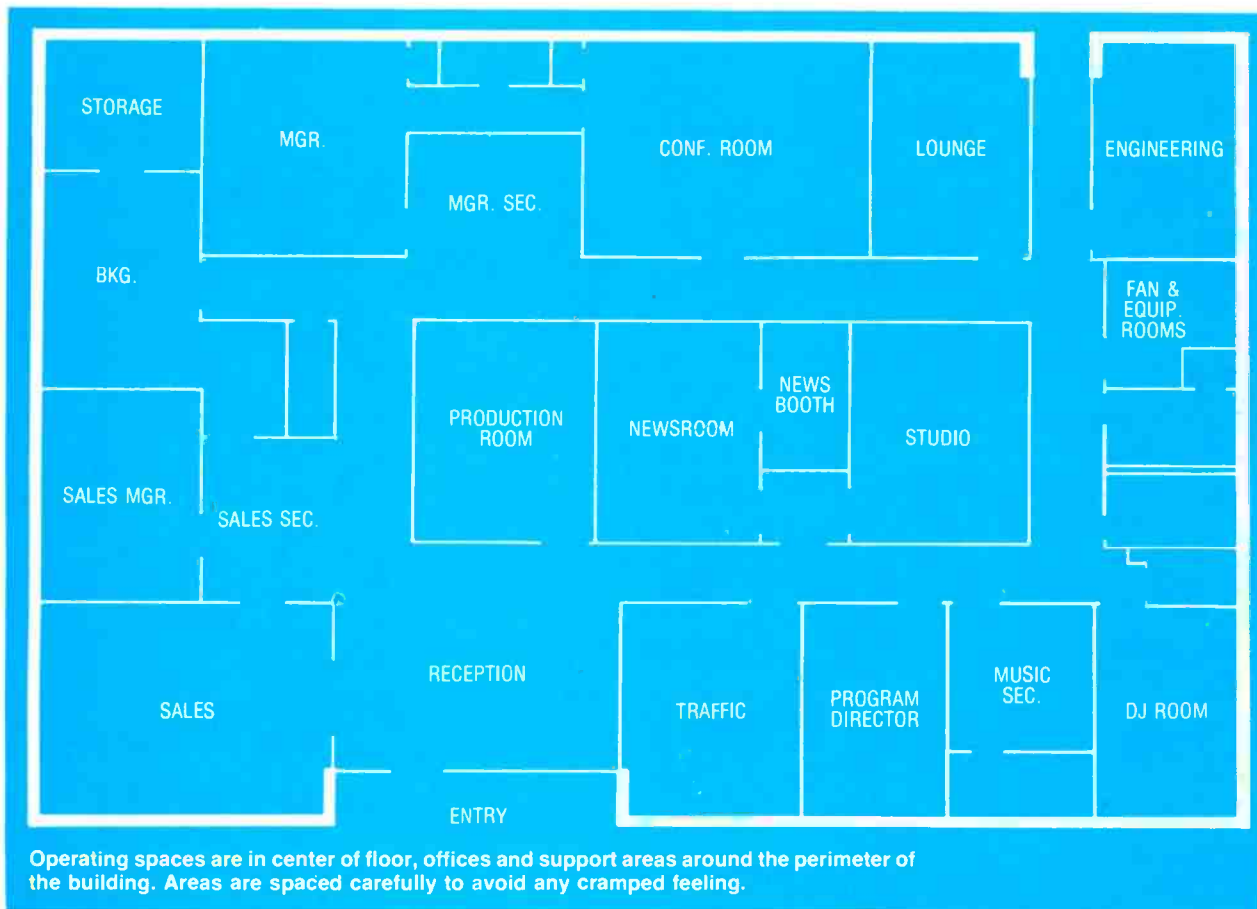
The newsroom is largely taken up by two work stations, designed by our engineering staff. Each has ITC series 850 tape machines, ITC cart machines, and a pushbutton panel giving access to a number of sources: ABC network, the news booth, air monitor, scanner, recording equipment, and telephone. One station has a small AM/FM receiver, and the other the new ABC pulsing equipment.

The adjoining news booth has an Ampro 24-in, 6-out mono console and an ITC triple-deck cart machine. All three carts can be started on the air with a remote button. There are three Sennheiser mics, one for the operator and two for guests on the weekly talk/phone-in program. The operator's mic is connected to a speaker phone, and both phone and mic share a pot, so the operator can converse with a caller "no hands."

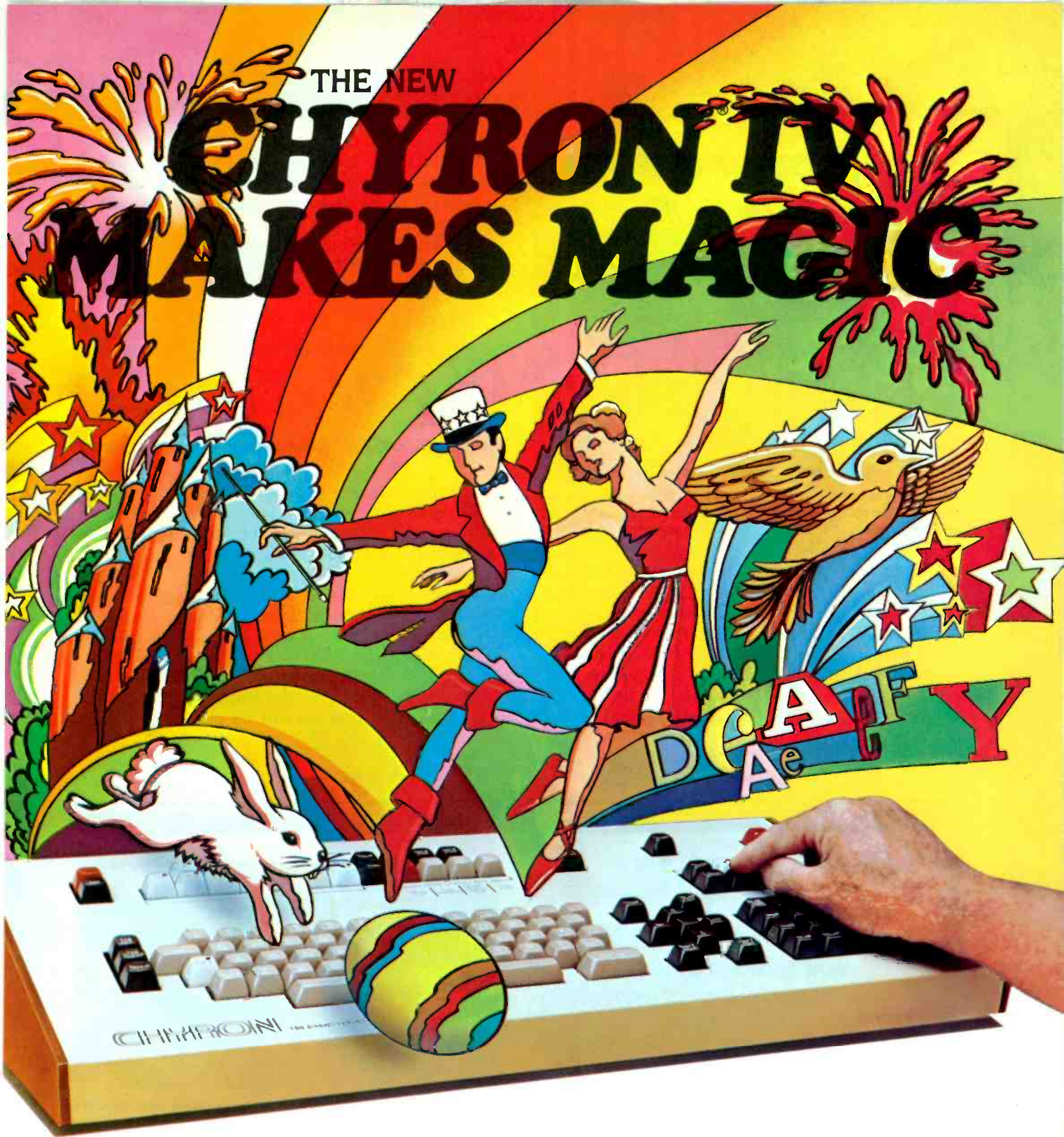
The console in the production room is an Ampro, identical to the one in the control room. The operator has close



Newsman goes on the air from the news booth, built around an Ampro console, using Sennheiser mic. Boom for one of additional mics, for conference guests, is at extreme right.



Operating spaces are in center of floor, offices and support areas around the perimeter of the building. Areas are spaced carefully to avoid any cramped feeling.



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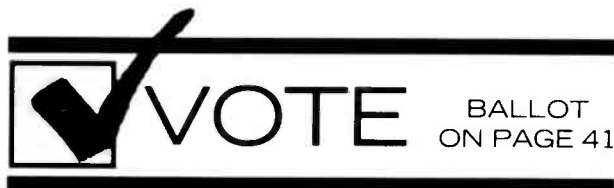
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Main control uses stand-up operation, with cart machines flanking console at each end, reel-to-reel machine at right, carts for music and spots in back of operator.

at hand three ITC Series 850 reel-to-reel machines, two ITC cart machines, one with delay capability, two Technics SP-15 turntables with Micro-Trak tonearms, a Sansui cassette deck, dbx 155 noise reduction system, and a UREI dual graphic equalizer. There are two timers, one operated manually, the other automatically when a cart starts. The two mics are Sennheiser. All the operating rooms are designed for standup operation. Any can go on the air instantly.

The rest of our equipment completes our plan to have the best efficiency and signal quality, as prerequisites to success in a highly competitive market. The transmitter is a Continental 5 kW, on a site in Mercedes, TX, 12 miles from the studios. We also have an RCA 5 kW transmitter as a standby. The STL is from Marti, and processing is with an Orban Optimod-AM 9000A.



To help with the news operation, which is of course one of the basics in our success, we have in the newsroom two Xtel printers, one for the AP, our source of national and international news, and one for the National Weather Service. In addition to NWS, we now have a private meteorologist who supplies us with an hourly bulletin by telephone which we can put directly on the air, covering conditions in our listening area. The news team also has the use of a Bearcat 210XL scanner, Realistic DX-100 receiver, Realistic DB base station and Time Cube.

We have found the new plant well adapted to our needs, and an excellent business tool for our medium-market area.

KHOW-AM

Denver, CO

METRO RANK: 21

AM RADIO ENTRY

Submitted by Sam Sherwood,
VP and GM,

and Ronald J. Kazda, Technical Director



In second production room, used for dubbing commercials and music, music director Leight Starnes puts music on tape.

WE STARTED PLANNING in mid-1980 to rebuild KHOW AM and FM, long highly visible in Denver with Adult Contemporary music, news, weather, sports, traffic, and so forth. Actual construction of new studios in a new building started in January 1981.

Then, in June 1981, we were told that KHOW-AM had been sold to Metromedia and KHOW-FM retained by Doubleday, with the two stations to occupy the same building, AM on the first two floors and FM above.

Remodel while building? The architects had to redesign all three floors! And our lease in the old building was up on August 1. We got an extension, but only for 15 days. We would be dealing with just one station, KHOW-AM, which would require a main control room, a master production room, a news on-air studio and a news edit room, plus the supporting areas. Offices would go on the second floor.

First we had to recalculate the electrical and mechanical systems, as all three floors had load changes. Most of the duct work was already in—much of it had to be redone. The phone system had to be scrapped and two separate systems designed.

We made the entire west wall of the engineering section a termination area, with all cabling coming in to punch blocks. Racks went along the wall to hold the equipment, two racks for all audio including the main control, main production, news production two, satellite receiving, and so on. Two more were for legal logging and University of Colorado sports network. Two more held RPU remote receivers and amplifiers for building sound.

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BEST STATION AWARD ENTRIES

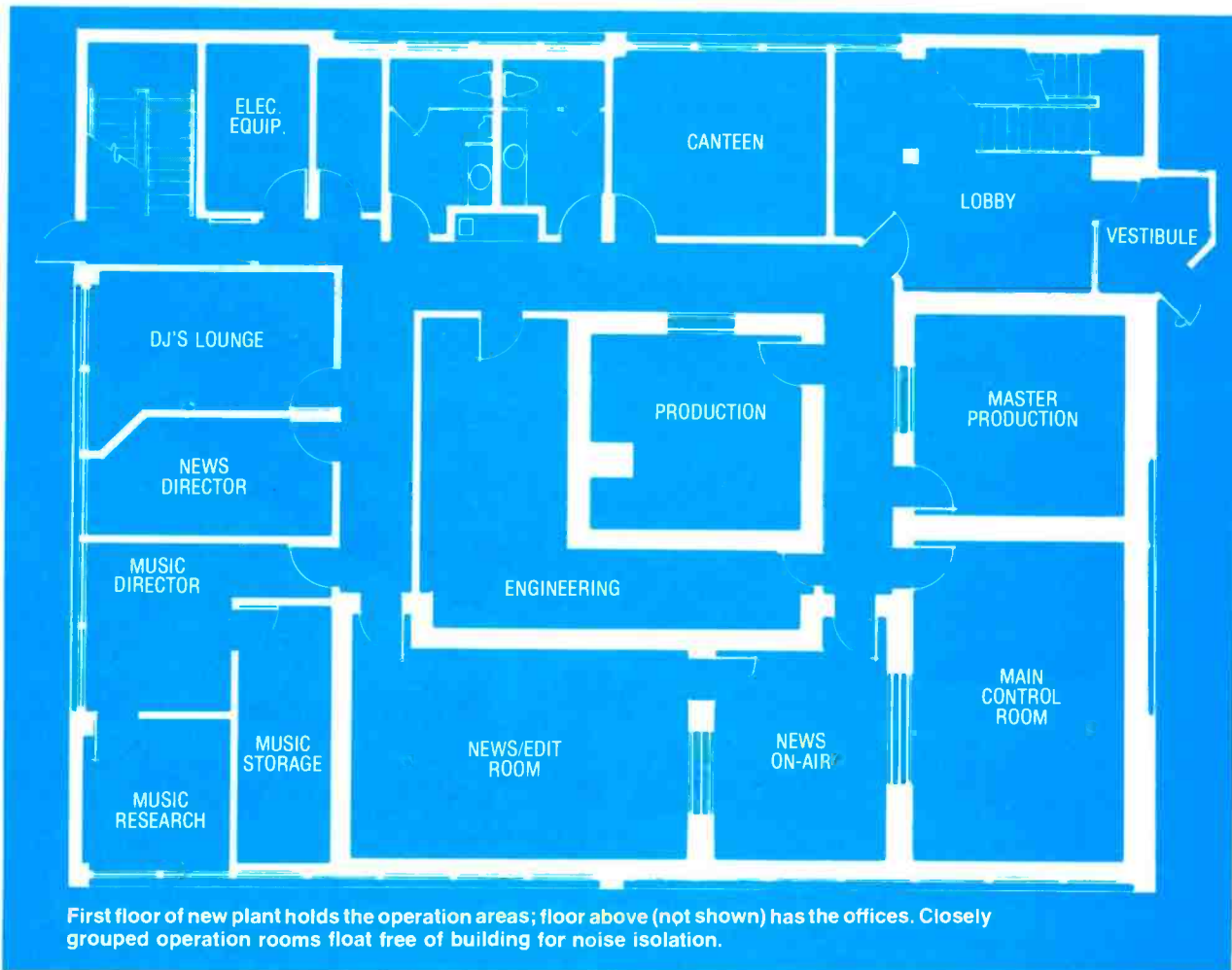
In main control, Tom Christner produces the morning drive-time show; the two personalities are in adjoining studio.

On-air position for morning and afternoon drive times has two slots for anchor persons, here occupied by news director Lou Herbert and sports director Tony La Monica.



Conduits of two-, four- and six-inch diameters went in to take cables from room to room, with ample space for expansion. All studios were wired for stereo: we will use the Harris AM stereo system, on-line about the first of 1983. To free us from telco unreliability, we installed a Moseley STL to reach our transmitter.

Each studio floats free of the main structure of the



First floor of new plant holds the operation areas; floor above (not shown) has the offices. Closely grouped operation rooms float free of building for noise isolation.

building. A four-by-six curb was laid around each studio on a concrete base. Then a floor pad of 3/4-inch plywood with 3/2 inches of concrete was laid, and jacked up to meet the top of the curb. A sound-isolating wall went around on the curb and another isolating wall separately on the concrete pad for excellent sound control.

All electrical wiring comes in through Flex and all conduit comes through the floor in sleeves, to eliminate any solid connection with other walls or floors.

Master control has an Auditronics "B" console, along with reel-to-reel, cart machines and turntables. A second on-air area, with three broadcast positions, is for our morning drive and afternoon drive programs, each with two on-air personalities. In each case a producer operates the board.

The news edit area has four edit stations, each with reel-to-reel, cartridge and cassette capability, a Cetec 2000 console, phone record/feed, and a typewriter. A news-person can sit down and do a story, cut the tape, and do the wrap, without moving from his seat.

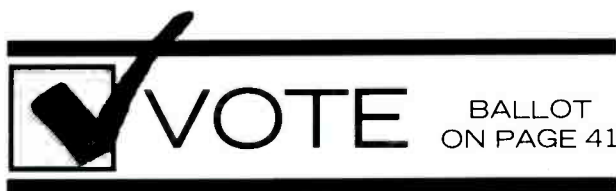
Next to the edit areas is the news on-air studio, with a McCurdy 8600 console, and room for the anchor and three more people, for interviews, and so forth. It also has full recording capabilities.

We have a live news van, with noon news originating in the field, and a "Sky Spy," a Cessna with G.E. two-way radio for regular traffic surveys. In master production, in addition to the recording equipment, we have an Eventide Harmonizer, UREI equalizer and Orban Model 111B re-

verb unit so production people can give material the snap and excitement of special effects. Our second production room is for dubbing music and incoming commercials, and for recording feature programs and incoming RKO feeds.

KHOW-AM is the flagship station feeding University of Colorado football and basketball games to a network of 17 stations. We use the Comrex SLX system to bring the live reports into the main production studio, where network commercials and features are edited in. As already noted, the programs are distributed to the network from the production room.

With close to a year of use, the plant has met all our main goals, thanks to the most careful planning and the quality of the equipment we bought. Important in that equipment, in addition to units already mentioned, have been the following: Ampex 440s for news editing; MCI 110s as moveable reel-to-reels; Technics 1500s as rack-mount reel-to-reels; Technics Mark IIs as turntables; ITC 99s for most cart operations; ATI distribution amplifiers; and the Symetrix CL 100 limiter.



KFWB-AM

Los Angeles, CA

METRO RANK: 2

AM RADIO ENTRY

Submitted by Richard A. Rudman,
Engineering Manager

FOR A NEW BUILDING for our all-news station, we found an ex-supermarket a quarter-mile from freeway ramps, with 10,000 square feet of floor area unobstructed by any load-bearing supports. The only major construction modifications we needed were a new cement floor and metal stud bracing going up to the high arched roof.

With new interior walls able to be exactly where we wanted them, we engaged acoustic consultants Robert Hansen Associates of New York. Room-within-a-room construction and Hansen-designed walls 13 inches thick between control rooms and outer spaces allowed us to put all the control rooms along one wall, with a recording studio plant on the other side. The sound isolation is so effective that if there is no sound on our side, we can just hear a very dim thud when the kick drum on the other side is heavily whacked. Higher frequencies are totally inaudible.



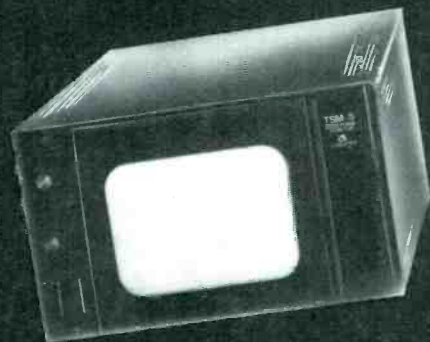
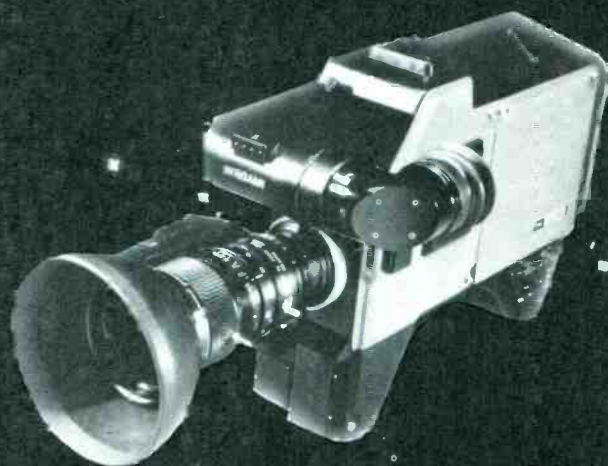
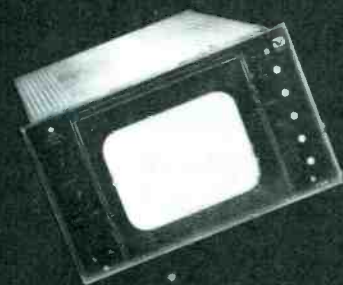
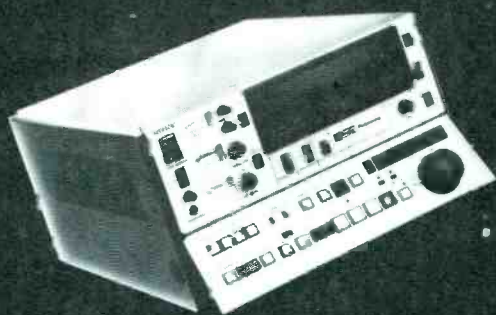
Engineer Michael Beatty operates Pacific Recorders console in master control. In back of him are modified Instacart, jack fields, other rack-mounted units.

We laid out a 40x50 foot newsroom as the center for a spacious and quiet workplace. The production rooms, control rooms, and other operating spaces are around the newsroom.

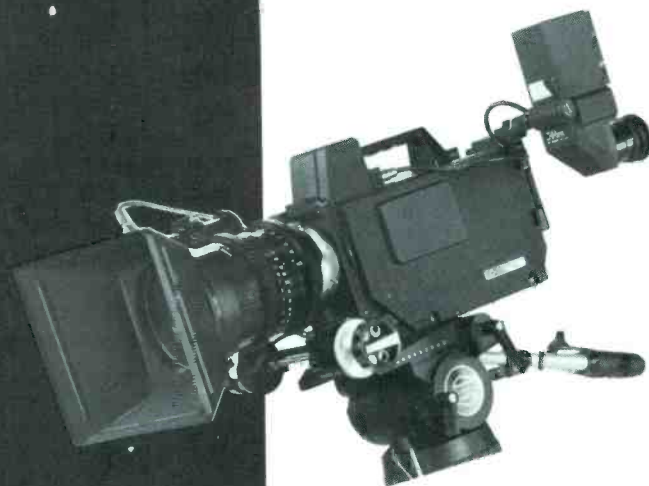
All studios are interwired using a telco punch-block system for interconnections. The cabling goes into a cat-walk running overhead.

THE NEW

OF VIDEO.



WORLD



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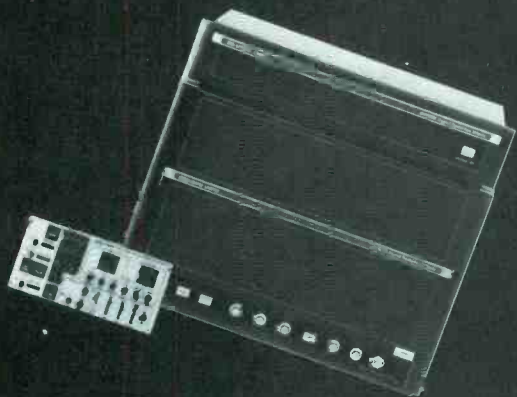
In the new world of video, equipment is more flexible, more versatile, more accurate than ever before, with capabilities far ahead of just a year ago.

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Products Shown:

Sony BVU-800 Broadcast Cassette VTR, Ikegami HL-79 ENG/EFP Camera, Videotek TSM-5 Wave Form Monitor, Videotek VSM-5 Vectorscope, Ikegami EC-35 Electronic Cinematography Camera, Quantel DPE 5000 Digital Effects System, Panasonic NV-8500 VHS Editing Recorder, Microtime T-120 Time Base Corrector.



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Circle 131 on Reader Service Card



Large newsroom has central desk with stations on each for two anchors, and with writer assigned to each pair between them. Each station has access to many inputs, including network news, telco, ENG crews, recordings.

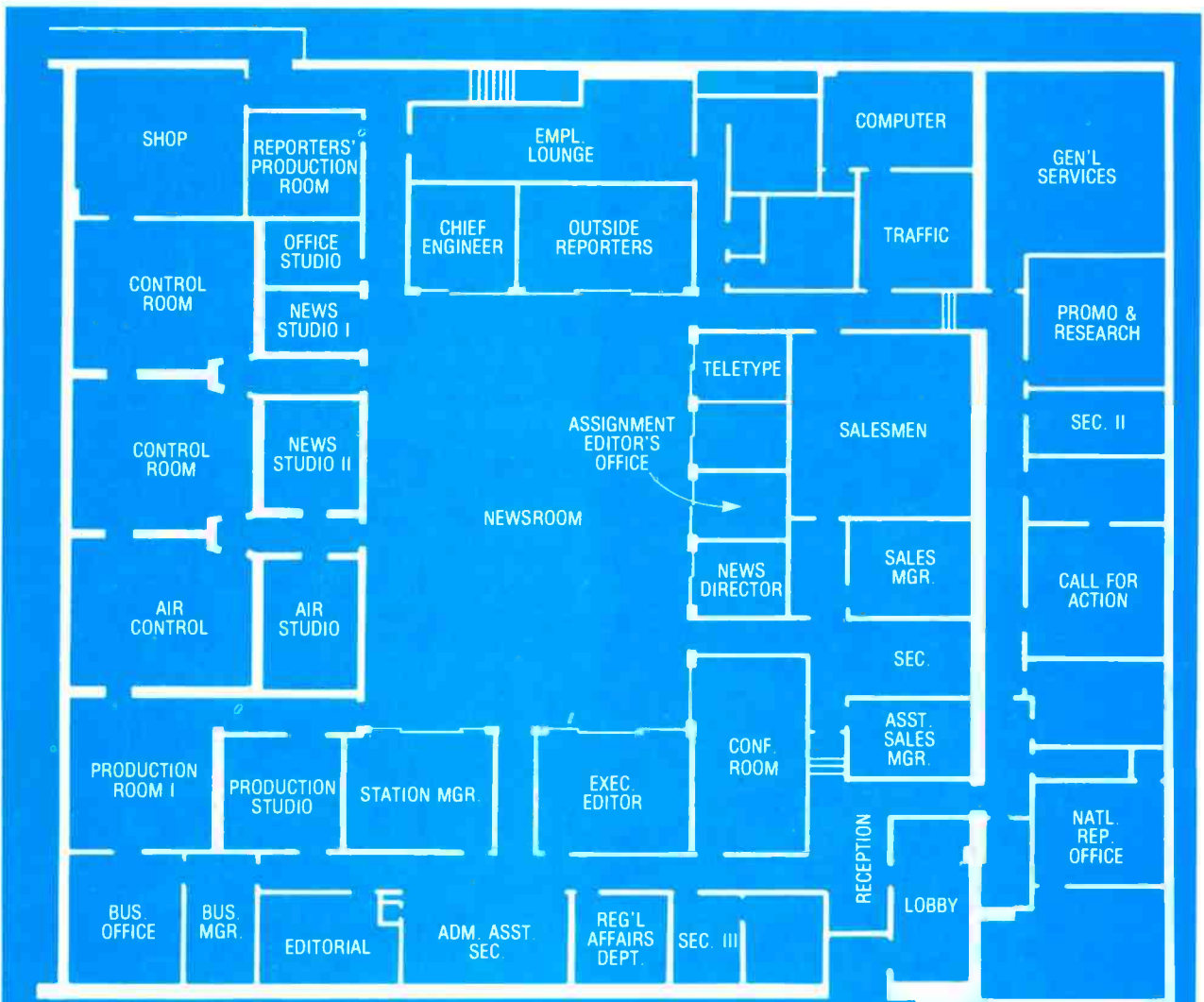
For the rack equipment supporting the control rooms we were able to use an innovative wiring plan with all the rooms along one wall. The cables run along the wall in back of the racks, and come up to punch blocks and jack fields on the wall at normal working height. The racks are

spaced out from the wall to make for easy and efficient wiring maintenance and change. We would not recommend this one-wall wiring if the wall is on a street, vulnerable to the unlikely but possible disaster of a truck coming through the wall.

The console designs were worked out by Pacific Recorders and Engineering in consultation with KFWB engineering staff. They supplied 20 inputs, four output buses in master control, on-air rooms, and four-track production studios. Consoles in the other two production rooms have 12 inputs, two output buses; the latter are used for dubbing commercials to carts, recording reporters coming in on our two-way remote pickups, and recording Group W and NBC news feeds.

The consoles, input switchers, and distribution system were installed by the KFWB engineering staff, using Pacific Recorders DAs to raise all signals to a standard +8 dBm. The DAs have very low output impedance and feed inputs of at least 10K ohms, making bridging or alteration easy, without termination losses.

The complete system has crosstalk and noise down 75 dB with a ± 8 dBm signal in adjacent bus, and distortion



Floor plan reflects the complex all-news operation, with the large central newsroom, for preparation of newscasts; several rooms for putting news on the air; space for large news staff; offices for news executives.

Listen through it. Not to it.



INTRODUCING OPTIMOD-AM MODEL 9100A

Orban's new second generation OPTIMOD-AM introduces a remarkable new sound to the AM band: a dramatically open, effortless, defined, *FM-like* sound combined with extremely competitive loudness; RMS levels as much as 3dB higher than those produced by our previous processor. Yet you listen to the music, not the processor!

The new 9100A combines the best ideas from our previous 9000A with some of those introduced in the popular OPTIMOD-FM 8100A. Performance is further extended with new developments in distortion-cancelled multiband clipping and receiver equalization. The bottom-line is a processor that develops its FM-like sound on *real world* auto, table, and portable radios. And a processor that solves broadcasters' real-world problems, including sloppy operator gain-riding, inconsistent source material, and transmitters that tilt, overshoot and ring.

The new 9100A is available in single-chassis stereo or stereo-convertible mono versions. Sum-and-difference stereo processing means highest mono loudness from any of the AM stereo systems. Integrated construction and high-precision parts assure accurate dynamic tracking of the sum-and-difference channels, guaranteeing separation of at least 20dB (50-10,000Hz)—with better than 30dB typical. Compare before you buy!

There's much more to the 9100A's exciting technical story than we can possibly tell here. See your Orban broadcast products dealer, or contact us directly for further details:

Orban Associates Inc., 645 Bryant St., San Francisco, CA 94107. Toll Free (800) 227-4498, In California (415) 957-1067. Telex: 17-1480, Cable: ORBANAUDIO

orban

ORBAN PROCESSING KEEPS YOU COMPETITIVE

from microphone input to output of 0.25 percent, 10 Hz to 20 kHz. We attribute these numbers to the careful grounding procedures and the quality of the equipment we bought.

We designed special switching for our mode of operation: the anchorperson turns the mic on and off, starts his own news carts, starts spots loaded in a modified IGM Instacart. The switching also allows talkups on network or live feeds from any source.

The console remote control extends to any console in any control room; any microphone can be fed to any channel.

We feed carts in recording through an Eventide digital delay system, which delays the signal about 650 ms to avoid upcuts or too loose recording; the reporter does not have to worry about mechanical smoothness.

We engaged J-engineering of Canoga Park, CA, to design backup power supplies for the consoles, using lead-acid gel batteries; a console will go right on if a power supply fails, without so much as a click or pop.

Our two new Harris MW-5A transmitters are housed in a new building, operated through a Moseley MRC-1 remote control. We can change transmitters in about 0.5 second by pushing a few buttons. Our fleet of ten mobile news collection vehicles is equipped with Motorola Micor two-way radio, extensively modified to get flat response 50 Hz to 5 kHz, with less than 2 percent distortion and 45 dB S/N ratio. We have much evidence that the studio quality of our remote feeds is a strong plus with our audience. The remote system also assures us of communications if commercial telco systems fail, a possibility in this earthquake-prone area.



Engineer John Morton works on interconnect system on wall running in back of operations area. All leads from racks come to jack fields on wall; all interconnections are made there at normal working height.

The extreme care we put into wiring every part of the plant has paid off in a total lack of channel failure in two and a half years, and extremely low noise and distortion in the transmitter plant. Some of the conclusions we draw: there is no such thing as too much planning; you must watch the contractors closely throughout construction; make the architect your close friend and ally; use your staff for installation whenever possible and it will pay off handsomely later; there is no such thing as too much checking of your planning.

WZZK-FM

Birmingham, AL

METRO RANK: 45

FM RADIO ENTRY

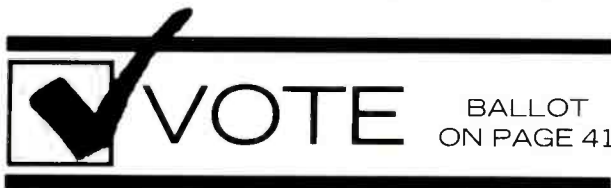
Submitted by Johnny Bridges,
Chief Engineer

WZZK WAS AN AUTOMATED country music station when it was purchased by Katz Broadcasting (then Park City Communications) in October 1980. Our new management team decided that, while the format was right for the Birmingham market, the way to become truly competitive was to build a better rapport with WZZK's audience—in other words, to go live. In addition to a massive talent search, the overhaul included a move to a prestigious highrise on top of Red Mountain and comprehensive new equipment purchases and installation.

For the new WZZK, engineering vice president John Marino created a station prototype that could be used elsewhere in the Katz chain as properties were upgraded and new stations added. The WZZK prototype has since been used with great success at our Worcester and Tulsa stations.

Marino started with Pacific Recorders BMX II series consoles and cabinetry for the virtually identical on-air and production studios. They were custom-built for speed and installed here in sections, and designed so the finished cabinets neither show seams nor attract dust. All studios are equipped with Pacific Recorders Tomcat cart machines, Electro-Voice RE-20 mics, and Shure SE-30 mic compressors; the two production studios also have MCI JH-110B reel-to-reel machines plus patchable LA-4 limiters, paragraphic equalizers, and Orban 111B stereo reverb. Studio A has an Eventide H910 Harmonizer available for special effects. Identical equipment and similar layouts in our studios provide maximum user and engineering familiarity.

We run our 10 Tomcats, three of which are record/play, at 7.5 ips in the matrix mode. They took some getting used to for the engineers since they are quite different internally from traditional cart units. However, we've learned to like them and to take advantage of their special



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SAM performs an air-day schedule in concert with your own station's traffic system, orchestrating all of your switchers, cart machines, telecines, VTR's, character generators. SAM even rehearses your programming plan before air time and talks to your operator about any missing items or timing errors. No more make-goods with SAM.

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Come to Vital and watch SAM in action. With SAM and SANDI (Vital's Serial Data Network), your station may never have to "play it again."



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Circle 133 on Reader Service Card



Music director Tony Kidd puts a disc on one of Studio A's Technics SP15 turntables.

All studios are also equipped with two pedestal-mounted Technics SP15 turntables. However, since very little programming is broadcast from disc, the two turntables in on-air Studio C are mounted below counter level with a fold-open cover to create more workspace.

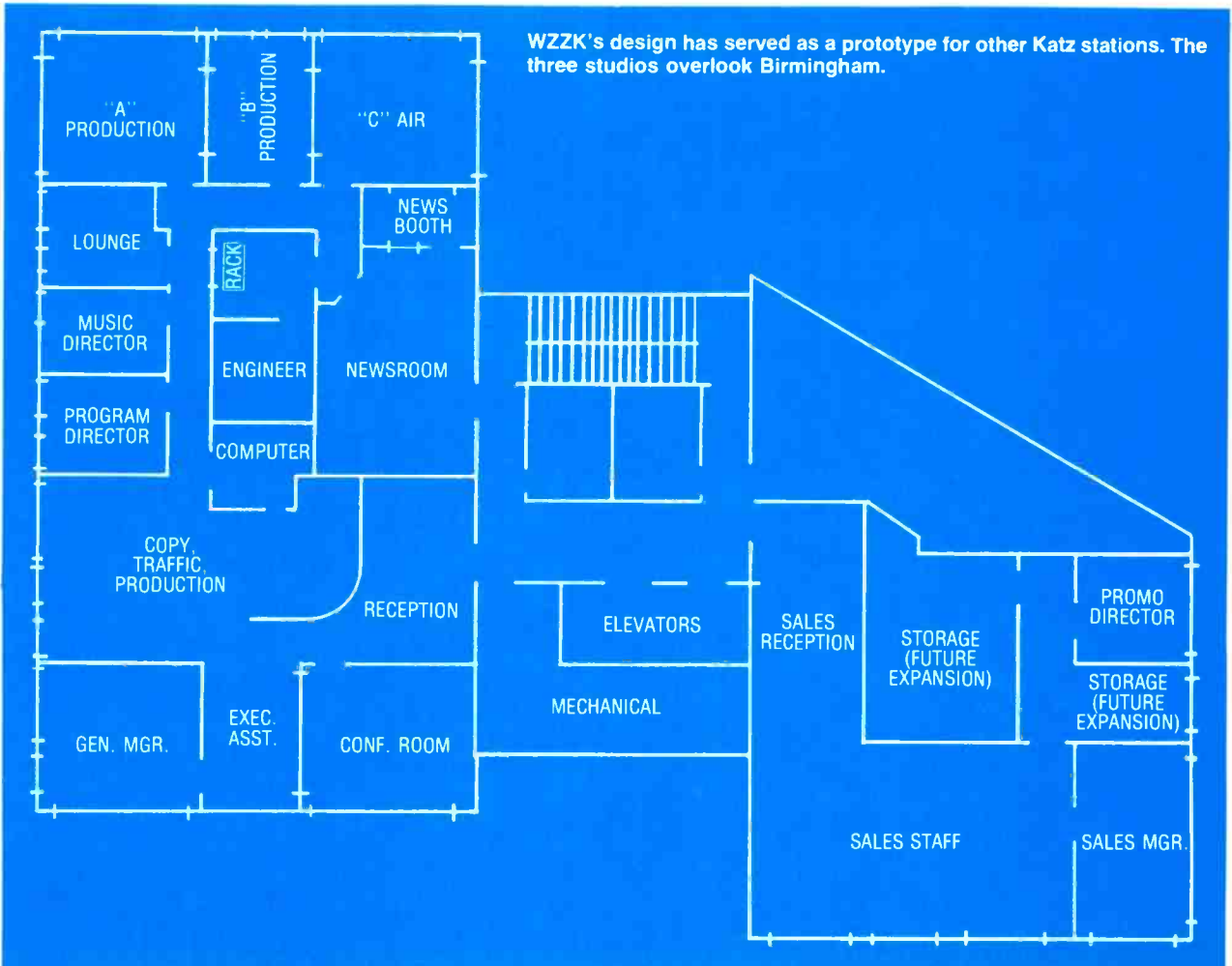
All studio signals are routed to engineering, where two six-foot racks contain our studio switchgear, audio processing, Moseley PCL/505-C STL equipment, telephone interface, necessary warning lamp switchgear and the station EBS package. Processing is straightforward with an Optimod 8100. Hot backup is provided for the processor and STL system. All studio feeds are normalled through engineering patchbays for flexibility. The air monitor is fed by our Belar modulation monitors or tuner. An additional tuner in on-air Studio C can feed the studio monitors.

WZZK's transmitter plant was upgraded with the installation of a Harris FM-25K, which will be paired with an identical mate and combiner to make a 50 kW plant. The old Collins 831G-1 transmitter was placed in backup service by the addition of a coaxial switch and dummy load. Plans are now underway to increase our antenna height and power in 1983.

Physically, WZZK's new offices are good to look at. There's plenty of glass in the studios—from Studio C you can see the news booth and what's going on in both Studi-

capabilities. For example, commercial and promotional carts are sequenced using secondary tones, but music carts are untuned. Thus, a spot break can run automatically into the first song out of the break, but the announcer selects segue points between songs.

WZZK's design has served as a prototype for other Katz stations. The three studios overlook Birmingham.



The telecine without tubes.

Digital CCD technology means better pictures.

Advanced technology in the new Bosch FDL 60 "U.S. Series" with PanScan and black stretch gives you tremendous advantages over conventional film scanners.

And the most important of these is superb picture quality with high resolution, excellent signal-to-noise ratio, and brilliant color rendition with negative or positive film.

CCDs make the difference

The use of solid-state CCDs—charge-coupled devices—completely

eliminates electro-optical problems inherent to pickup or scanning tubes.

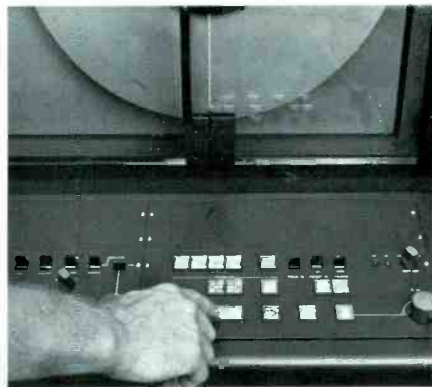
You don't have to worry about burn-in, afterglow, or field lag because there's no photoconductive or phosphor layer to cause these effects.

You can forget about shrinkage, flicker, vertical deflection, horizontal misregistration, and positioning errors of all kinds.

And never again will you be subjected to the expensive ordeal of tube changes.

New operational modes

Thanks to the FDL 60's capstan drive and digital signal processing, you can operate slow motion, fast motion, forward, reverse, and freeze frame—all in full broadcast quality. You can start and stop instantly, and with frame accuracy. You can search for scenes or frames either with variable programmable search or frame jogging, both with full format color pictures.



Convenient film deck controls include speed, mode, direction, format, framing, and focus. Adjacent decks control audio, video, and color correction.

Low operating costs

The solid-state devices used in the FDL 60, including the CCD sensors, need no maintenance. They have all the reliability and long operating life typical of semiconductors. So besides giving you a better picture, the FDL 60 saves you money on maintenance.

Operational flexibility

The FDL 60 gives you operational flexibility you'd expect only in a modern videotape recorder. You control it like a VTR, too. The servo deck with continuous capstan drive and microcomputer control ensures gentle film handling. And it's totally insensitive to perforation damage.

A keyboard that lets you enter time code cue points and a changeover switch give you disturbance-free transitions between two machines in parallel operation.

You can even integrate the FDL 60 into your VTR editing and film-to-tape transfer systems.

A quick-switch optical block lets you run either 35mm or 16mm film in combination with all the usual types of sound track.

Find out for yourself how high technology can mean better pictures. Call your local Fernseh office. Or get in touch with Fernseh Inc., P.O. Box 31816, Salt Lake City, Utah 84131, (801) 972-8000.

BOSCH



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Winner For
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The field-proven RTS Systems' TW INTERCOM effectively solves these problems to deliver outstanding sound quality in any teleproduction, broadcast or industrial application. It's a high-performance conference-line system that offers remarkable reliability, coupled with extensive capabilities.



A selection of 30 components make up virtually any custom configuration. It's everything you need and want in a system, but never thought you could get.

All of this performance translates into lower costs, smoother operations, and production schedules that are met, time and time again. The TW INTERCOM

SYSTEM, engineered by the company dedicated to providing responsive solutions to communication problems – RTS Systems. So stop complaining! Call or write Marie Hart today for more information.

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Circle 135 on Reader Service Card



Morning anchor Tim McGuire takes a feed in the news booth (left). Window looks into Studio C with production director Cliff Blake (below) during an air shift.



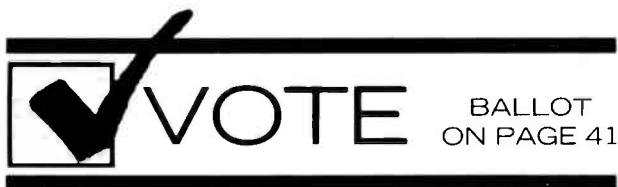
os A and B. In addition, all three studios have the terrific view of our city that was originally intended for our business office. After some reflection, the positions of the studios and the business office were reversed, and now, 24 hours a day, our air staff has its eyes on our city.

WZZK—and the other Katz stations—have had great success with two computer support systems. The first is a billing, accounting, and traffic package from Station Business Systems that provides our daily logs and attendant paperwork. The second is an Apple III with additional disk drive and letter-quality printer for everything from our mailing lists to music rotations.

WZZK had no news staff until its purchase in 1980. Today our news department provides live local coverage from 5:30 a.m. to 6:00 p.m., supported by a system of

two-way radios and a repeater. Our market varies in elevation from about 650 feet above sea level downtown to some 1100 feet on the three mountain ridges that traverse the city, so a repeater is needed to insure complete coverage.

All of these changes, tangible and intangible, are reflected in the success of "Birmingham's Stereo Country." It's very satisfying to get this dual return on our investment—a really beautiful place to work, and a new reputation to match. WZZK intends to keep those changes coming in the future. After all, there's always room for improvement!



WNUS-FM

Belpre, OH

METRO RANK: Below 155

FM RADIO ENTRY


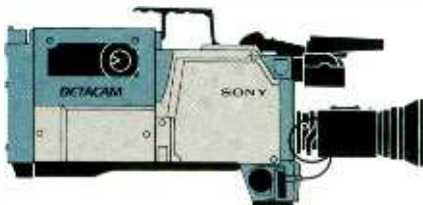
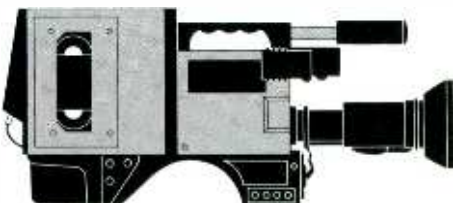
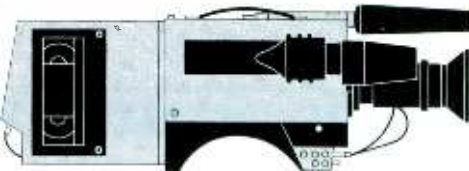
Submitted by John Patten,
President/General Manager

HOUSED IN THE FORMER home of an Ohio riverboat captain, WNUS gives visitors the feeling of a step back in time. We overlook the Ohio River, and the windows of

the main control room have a panoramic view of historic Blennerhasset Island.

Although we faced problems of design and engineering, the main building structure was very sound and offered many advantages over alternate studio sites. To begin with, the house offered a near-perfect STL shot to our transmitter, located some four miles to the north. The owners, all under the age of 30, did much of the work themselves to keep the project on budget. Fortunately, one of the owners was Alex Keddie, chief engineer for WIRE/WXTZ in Indianapolis, whose expertise and background proved invaluable throughout the project. The rest of the crew lent their strong backs to the effort.

VERY VITAL FOR PRUDENT

Cameras Drawn In Scale	Weight In Pounds*	Length In Inches†
One Tube 	17.8	14.9
Three Tube 	21.9	17.1
Three Tube 	24.7	17.5
Three Tube 	27.6	21.5

*Includes camera, lens, viewfinder, recorder, battery. †Lens excluded. **Camera, lens, battery, battery charger, recorder, playback unit.

Logic dictates that before you invest in a camera and ½" recorder system you should shop around. Carefully comparing such criteria as size, weight, image-making capability and price.

So we arranged a little shopping guide based on specifications from our competitors' 1982 brochures and our own. The results are quite revealing.

For news-gathering, the Sony Betacam™ one-tube with 400 resolution lines has striking advantages over the

alternatives. While for field production the Sony Betacam three-tube with 650 resolution lines and 58dB signal-to-noise is superior to them all.

Of course, both Betacams have still more advantages that have not been included in the chart.

Physical advantages like the removal of troublesome cables from the viewfinder, lens, mic to camera and camera to recorder.

Technical advantages like a recording format with both

Sony and U-matic are registered trademarks and Betacam is a trademark of the Sony Corp. Dolby is a registered trademark of Dolby Labs.

STATISTICS CAMERAMEN.

Power Consumption In Watts*	Signal To Noise Camera dB	Signal To Noise Recorder dB	Price**
22	54	Lum Chrom 48/50	\$38,500
31	58	Lum Chrom 48/50	\$51,500
27	58	Lum Chrom 47/48	\$62,000+
40	55	Lum Chrom 47/48	\$70,000+

timebase corrector, carrying case. Based on estimated suggested manufacturer's retail price. All figures based on Saticon Tubes.

a chrominance bandwidth and signal-to-noise performance greater than the competitions'; wideband chrominance components with no crosstalk or other artifacts; built-in Dolby® C noise reduction for high-quality audio; and most important, the playback unit has built-in TBC (an option on the competitions' units) providing full broadcast-quality output.

Betacam also offers major financial advantages beyond those shown. Namely, sparing you from having to

invest in a whole new editing suite. It interfaces perfectly with the Sony U-matic® and one-inch suites you use now.

Betacam was planned as the logical progression of the total Sony Broadcast system. To find out just how logical, contact your Sony representative in New York/New Jersey at (201) 368-5085; in Chicago at (312) 860-7800; in Los Angeles at (213) 841-8711; in Atlanta at (404) 451-7671; or in Dallas at (214) 659-3600.

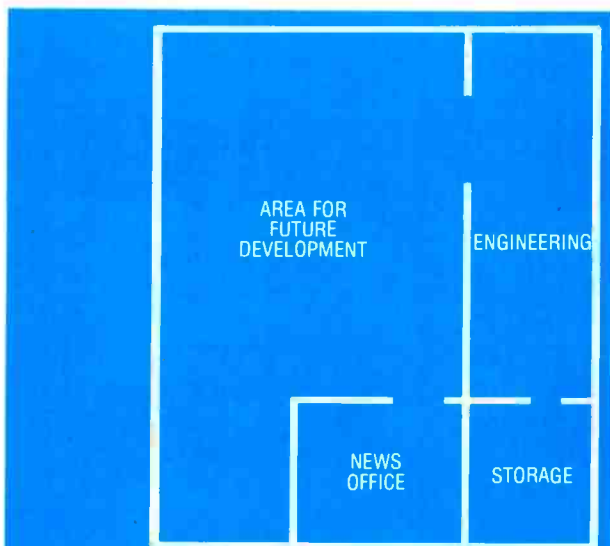
SONY
Broadcast

In truth, homes can be adapted very well into stations. Our first project was to install an air conditioning system in the attic, doing completely new duct work. The old bedrooms were ideal for studios, both in design and size. The heavy plaster walls with their lathe construction provided excellent soundproofing between studios, but did cause some internal acoustics problems. We solved these by installing carpet on the walls, which was practical and inexpensive as well as aesthetically pleasing. Our engineering section was housed in the basement directly below the studios, alleviating long wire runs and providing easy access from engineering to studios.

The staff was on hand about three weeks prior to our

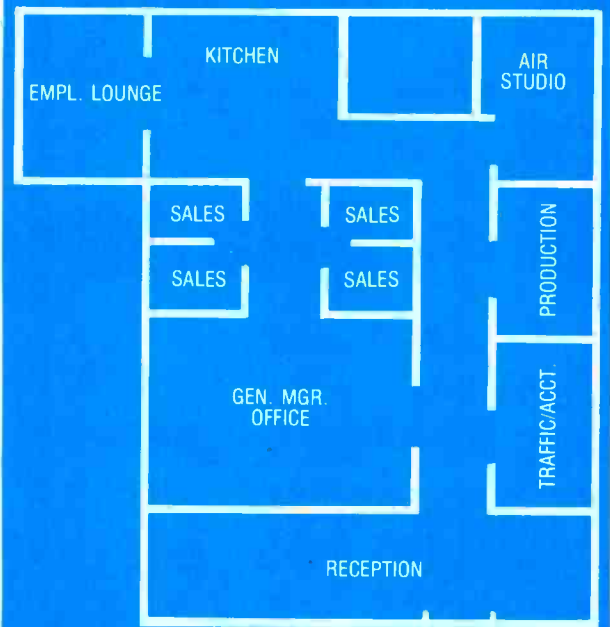
scheduled air date to help with the work. Their total involvement with the early stages of the facility is probably one reason why, over one year later, they are still around. We have managed to do away with the concept that longevity of employment at radio stations is nonexistent. Our Harris transmitter had already been delivered to our transmitter site, so the only thing left to do was prepare the studio site. When the studio equipment arrived, it was like an early Christmas.

The production studio at WNUS is unique in its simplicity. There are no patch panels, no complex switching arrangements, yet the setup allows neat, efficient production work. The key to this flexibility is the use of the Howe



LOWER LEVEL

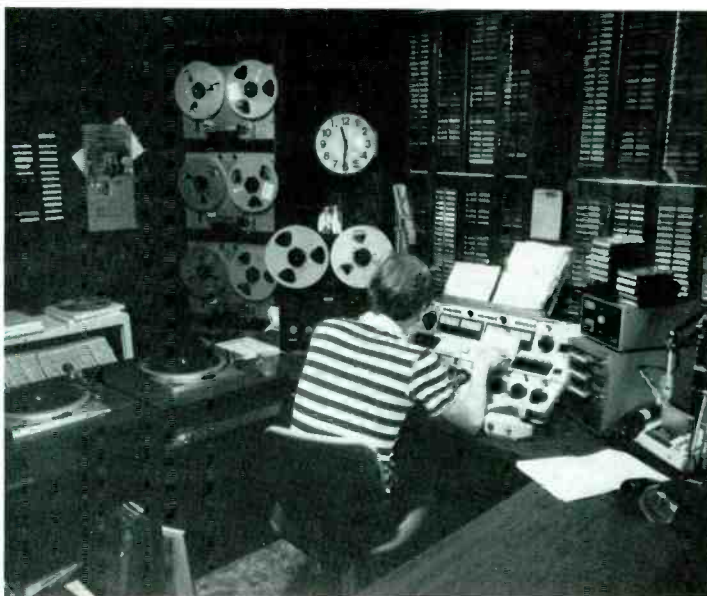
Originally built as a residence, the WNUS building has thick walls and plenty of room for growth.



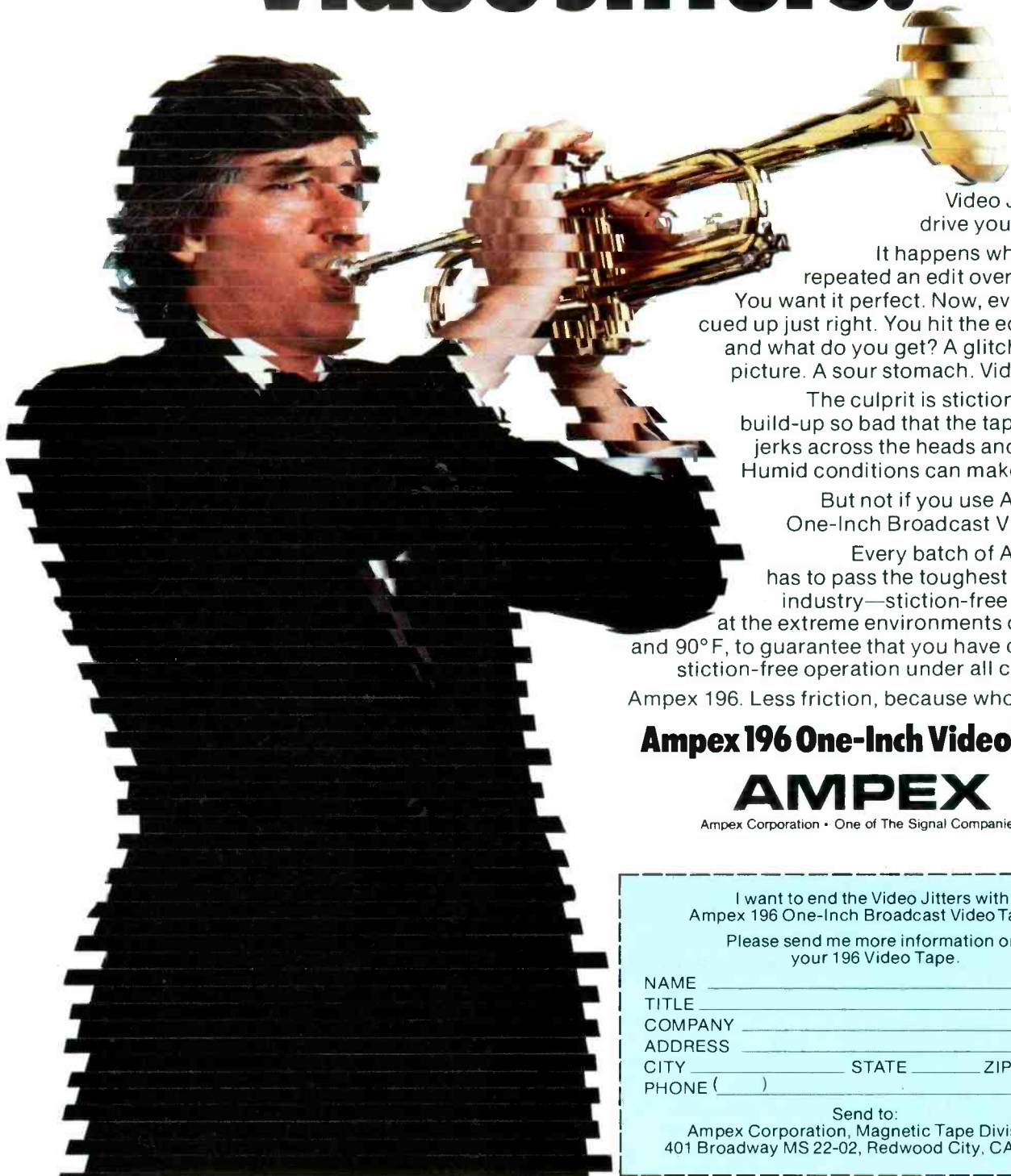
MAIN FLOOR



Production studio at WNUS (above) is built around a Howe Audio 7000 12-channel console. Otari MX-5050 decks are stereo sources. Station-built sequencer in main control room (below) allows talent to preprogram up to 10 events from the Otari reel-to-reel decks or ITC cart machine.



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California Microwave dish, at base of tower, picks up Mutual news broadcasts.

Audio 7000 12-channel multipurpose console, which has very flexible input switching arrangements. The Otari MX-5050 tape decks are available as stereo sources, and each channel is available independently at the console to allow multitrack production when required. This feature is also helpful in handling poorly phased tape dubs received from agencies and other stations. All cartridges used at WNUS are recorded in mono after modest audio processing is applied to the console output by a Valley People "Dynamite" audio processor, which has proved to be a versatile and reliable device. A UREI equalizer is available for special effects and correcting response in tapes from outside sources.

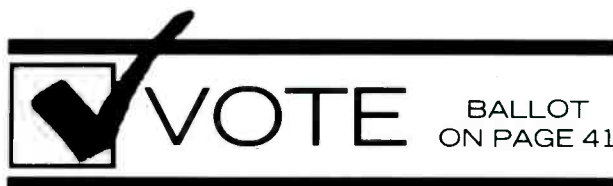
The main control room uses a somewhat unusual, yet simple, sequencer, custom constructed by Keddie. This sequencer allows the air personality to select up to 10 events in advance from the three reel-to-reel Otari

ARS-100 decks or the ITC 3C cart machine. Nearly all music transmitted by WNUS is reproduced from the three Otari decks. An additional MX-5050 is available for the delay broadcast of Mutual news, which is received by California Microwave satellite downlink, supplied to us by Mutual. Turntables are Technics SP15s.

A guest mic position is available in the control room for use by the morning newscaster or other in-studio guests. The main microphones, both in production and in the air studio, are Shure SM5Bs, which provide an exceptional pickup of the announcer's voice, dramatically suppressing popped p's and other vocal noises. These microphones, in conjunction with the audio processing provided by the Optimod 8100, give the station a very warm, personal sound.

The audio chain is completed by a carefully adjusted Optimod 8100, which has proved to be very valuable in our situation. The most severe problem faced by an FM station in this type of terrain (big hills and long, slender valleys) is multipath. The only method of coping with the fluttering effects in car stereos is to achieve maximum modulation density without destroying the dynamics of the program material. The 8100, with its highly adjustable processing scheme, has been a great help to us. We've been able to set up our audio to sound good on everybody's radio!

WNUS is proud of its facility and when the first ratings were taken, we ranked number three in this 10-station market . . . and we weren't even a year old!



WJYN-FM

Nashville, TN

METRO RANK: 40

FM RADIO ENTRY

Submitted by Richard Seaby,
Chief Engineer, and Fred Schulte,
Assistant Chief Engineer

WJYN-FM is a 100 kW Class C station that shares studio space with its sister station WLAC, a I-B, 50 kW AM facility. While the two stations have a common master control room, all the studios are fully isolated from each other. Each studio sits on its own concrete pad, which does not connect with any other flooring. The studios are separated by two five-inch insulated walls with a two-inch sand-filled air space between them. Studio windows are

triple-pane and isolated with cork, while the double-drop ceilings have extra insulation. All studio connections are made by punch blocks, and every connection is returned via floor conduit to the engineering office, where additional punch blocks permit any necessary studio interconnections.

WJYN's market had outgrown the original transmitter site, located on the top floor of a 400-foot office building in the downtown business district, where the hilly Tennessee terrain severely limited the station's coverage. Recognizing this, we built a new 1223-foot tower on a 824-foot mountainside just south of the city. The Stainless E7 guyed tower is designed to withstand two-inch radial ice with a windloading of 10 pounds per square foot. Due to the high cost of the venture, we invited another station to enter the project as an equal partner.

The building and tower were designed to provide adequate space for three major radio stations and several smaller stations. To save on the cost of antennas and lines, WJYN and its partner station agreed to duplex their sig-



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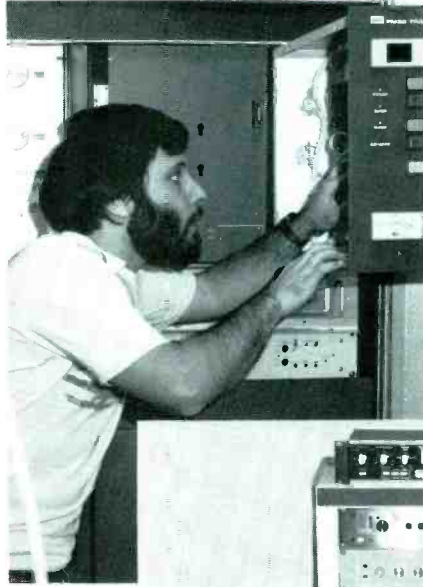
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Chief engineer Seaby adjusts the micro-processor unit of WJYN's new BE FM 30 transmitter.



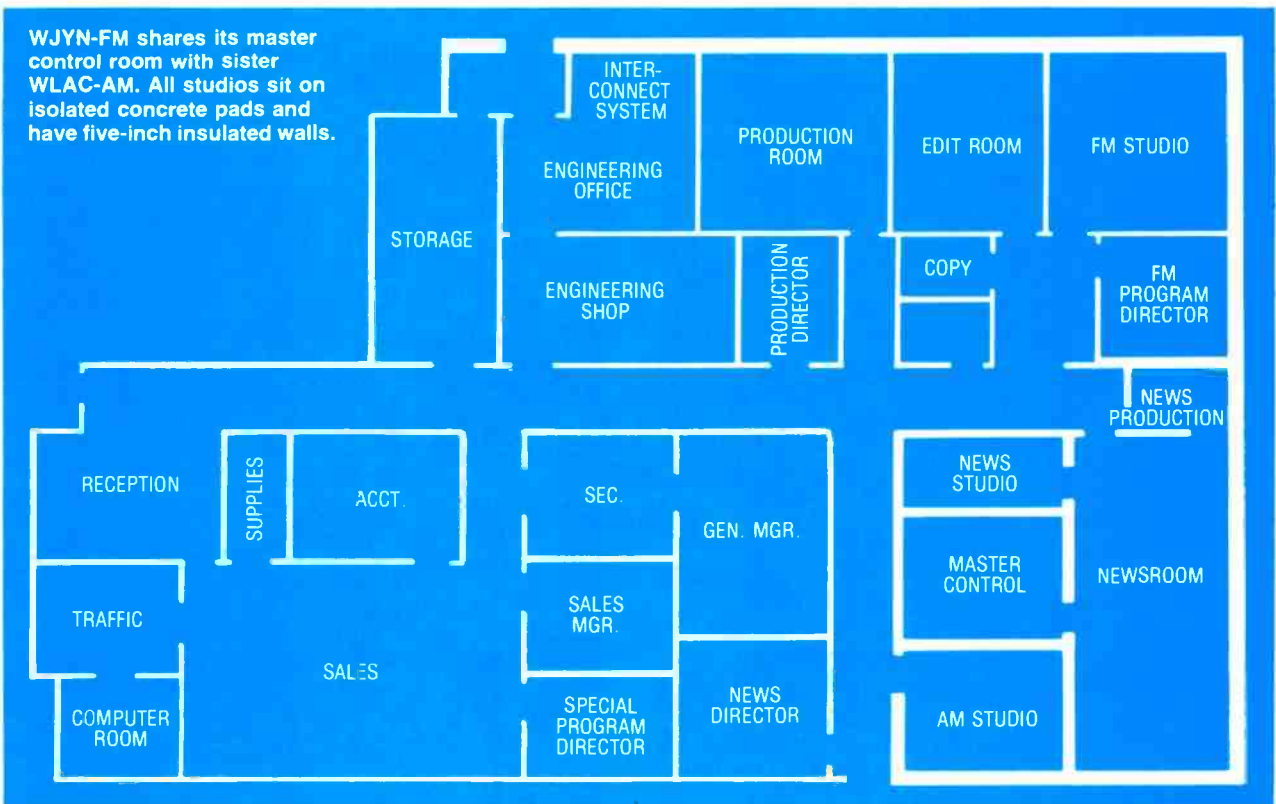
nals. The building's 14-foot high ceiling allowed enough space to hang the large diplexer and its cooling system, yet left space for future equipment should a third station desire to use the plant.

The main WJYN transmitter is a 30 kW Broadcast Electronics FM-30, chosen because of its one-tube design, automatic power adjustment, and microprocessor-based control system. The auxiliary transmitter is a 20 kW RCA BTF-20, updated with a Harris MX-15 exciter and stereo generator. The antenna is a Harris FMH8AC6 with beam tilt and null fill so that the signal will not overshoot the close-in areas. A separate four-bay Harris FMH4AC antenna and a 3.5-inch wellflex line are connected to the

In WJYN's production studio, an Ampex ATR-100 half-inch, four-track deck and an 18-channel Audiotronics console give operator Doug Remington complete freedom during mixdown.

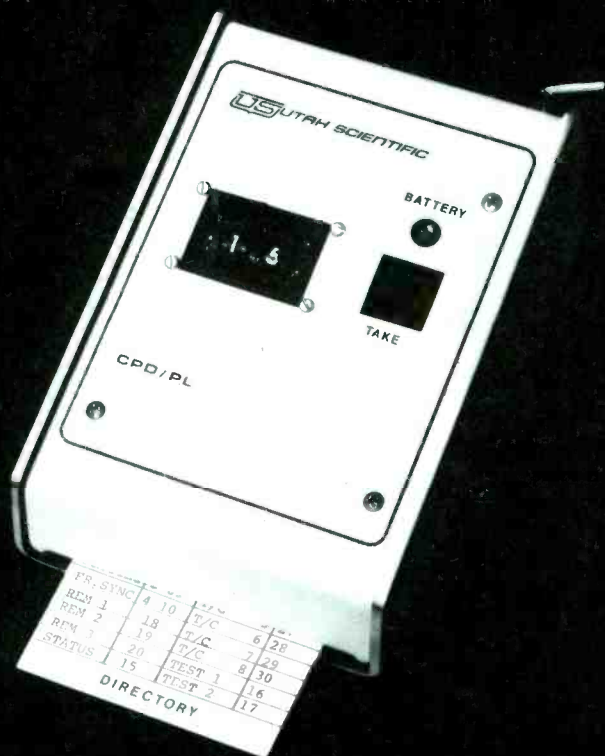


WJYN-FM shares its master control room with sister WLAC-AM. All studios sit on isolated concrete pads and have five-inch insulated walls.



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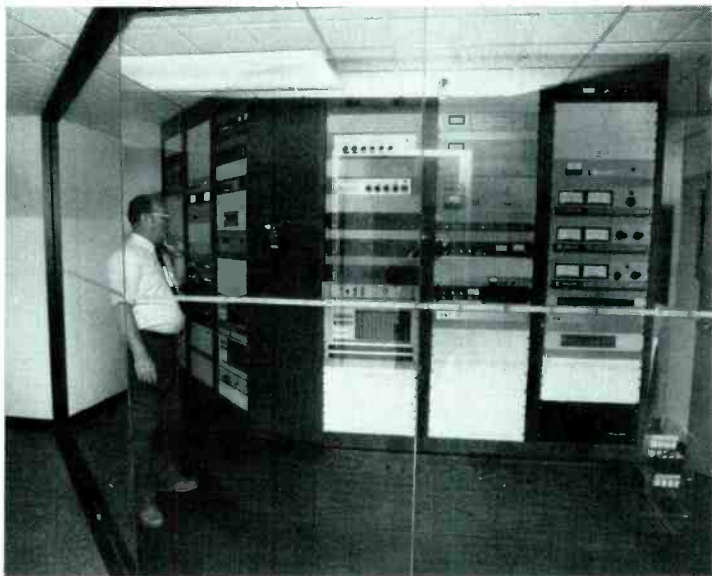
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CE Joe Drury at WEAN/WPJB engineering racks built by Ruslang to fit behind a glass wall.

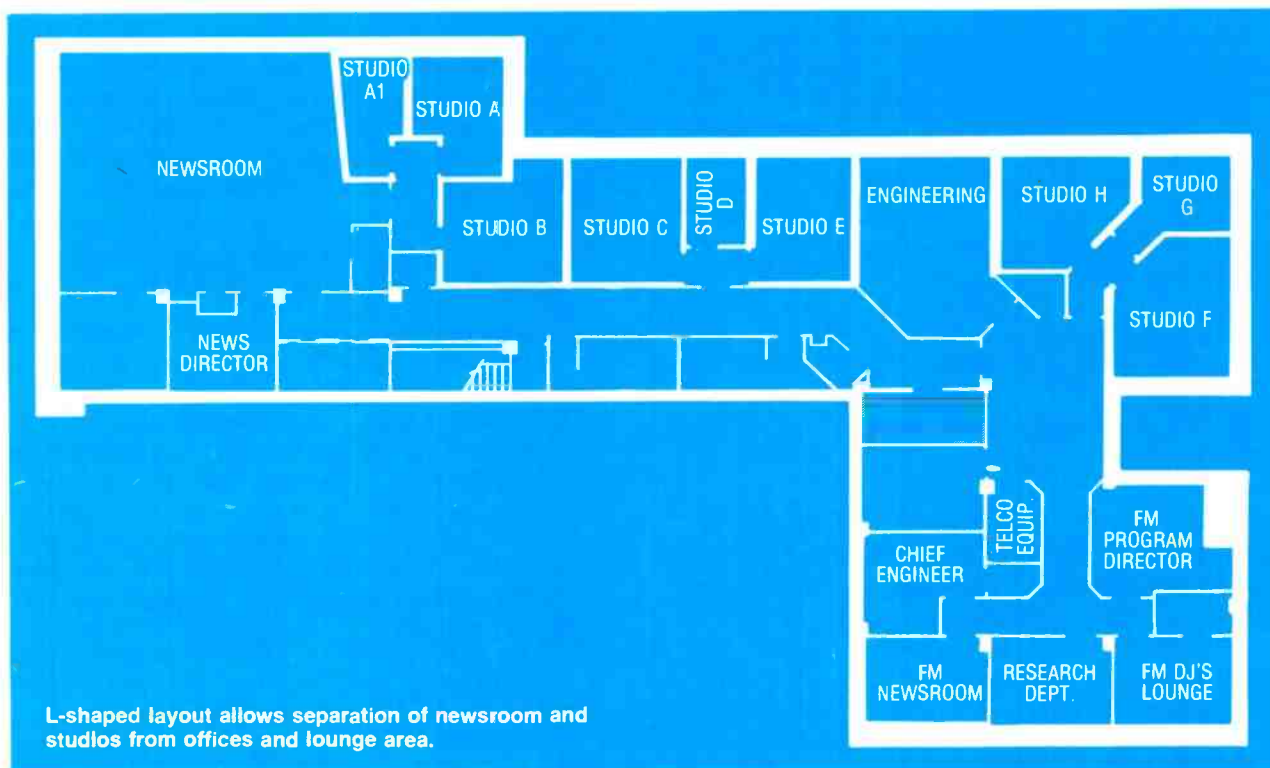
ing was finished, permitting installation of the wiring between studios and engineering at the early stages of construction.

The architect wanted to feature the equipment and designed engineering with a glass wall around the front so people getting off the elevator can look down the hallway and see the racks. The racks were designed and built by Ruslang to fit the angle behind the glass wall. In back of the racks is the engineering shop, with two workbenches and a storage unit also built by Ruslang, as is all the studio furniture.

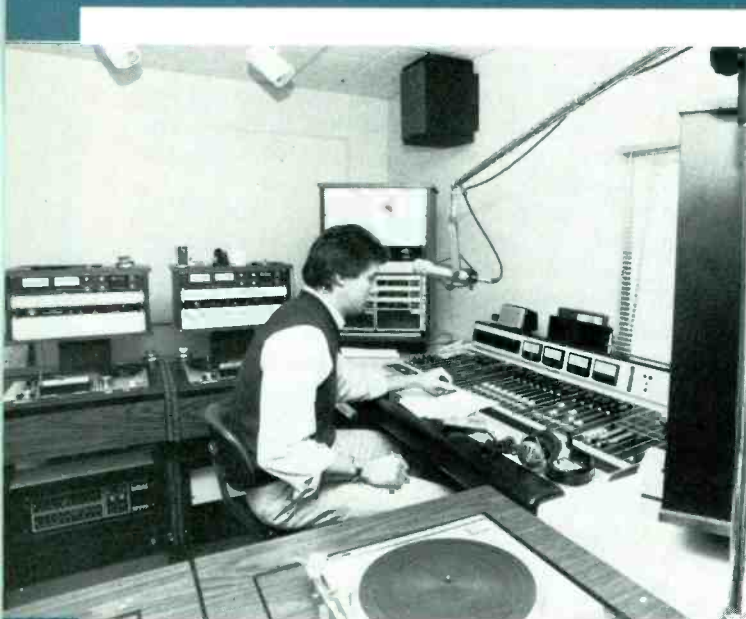
It was decided FM would move first since it would be the easiest to move and since the year-old FM board was going to be used for the new AM production studio. The old FM production board was going to be used for the AM talk show producer's board in the new place.

Three new Ward-Beck R-2000 consoles with built-in time/temperature remotes were purchased: one each for FM on air and production and one for AM on air. New Technics SP-10/MK2 turntables were bought for both AM and FM. One ITC Series 99 with ELSA was bought for FM production and six Series 99 playback units were added for FM on air. Additional ITC equipment was also purchased for AM and FM, including cart decks and splice finder/bulk erase units. Both the FM production tape decks use a dbx 140 connected to the inputs and outputs. This keeps noise at a minimum if dubbing back and forth is required. The final product is carted, using dbx.

Another priority was telephone talk show equipment. We had been using a Studer hybrid with great success at our old studios, so decided to stay with Studer for the new. We worked with Telco to have all the call in/call out lines go to punch blocks with bridging clips in engineering. Whatever lines we want to use for the talk show, we remove the clips and wire the lines to NC relays. The relay can then connect any line to the hybrid. Two or more lines can also be tied together for conferencing. In all we use eight lines. They can be activated from more than one studio, but to insure that only the studio on the air can activate the lines, there is a lockout system wired into the relays. Larus relays were used throughout. The lines have terminals that will accept 3M ST connectors, making wiring a push-on connection. Studio C is designated for talk show host and guests, and D for the producer/board operator. An Eventide Clockworks BDD-955 digital delay sys-



L-shaped layout allows separation of newsroom and studios from offices and lounge area.



The FM production room at WPJB features a Ward-Beck console, ITC tape machines, and Electro-Voice monitors.



FM jock John Dowd with Belar modulation monitors and Moseley remote units, seen to his right. The E-V RE20 microphones are used throughout the station.

tem is used for the talk shows, with the delay lamp output driving a solid-state relay which lights a delay light in each studio while the station is on delay. A Dictaphone slow-speed logger system records the WEAN off-air program 24 hours a day.

The news room is over 1000 square feet, equipped with five work stations, with each identical, having one ITC 770 reel-to-reel, one PD II cart R/P deck, one ESL IV splice finder/bulk eraser, one playback-only cart deck, and ESE reset timer and input/output switching and monitor system designed and built by the engineering staff. A Ramko remote selector switch for an ARA 1612 audio switcher/router is also included.

A Bald Mountain Lab step generator and digital decibel meter was used in the initial setup of the studios, and will be connected through a switching system so audio can be fed to any studio and the output of any studio can be fed to the dB meter for rapid studio checkout.

When we moved, we gave up direct line-of-site to our

FM transmitter, so we STL our signal to the Providence Journal Co. (owners of WEAN-WPJB), and from there to the FM transmitter site. Moseley PCL-606C units are used in a dual redundant system, with the Moseley remote control also on the ST. The Moseley PCL-505C system we replaced will be used for AM STL, since in moving we picked up line-of-site to our AM transmitter. A UNR-Rohn 30-foot tower was erected on the roof over engineering, making the coax run a maximum of 60 to 65 feet. Mounted on the tower are DB products antennas for a Marti RPU receiver, Motorola two-way repeater system, and Belar AM/FM antennas for Belar modulation monitors.

Management asked us to keep off-air time to a minimum and to build a quality station we can be proud of. The off-air time for each station was from midnight Sunday until 5:00 a.m. Monday. The two stations were moved three weeks apart. We believe WEAN and WPJB have the finest studios and equipment available anywhere.

WJTN-AM WWSE-FM

Jamestown, NY

NO METRO RANK NUMBER
AM/FM ENTRY

Submitted by Randall Stiefler,
Chief Engineer

WHEN WE BEGAN to upgrade WJTN, we decided to start at the studio and work our way area by area through the rest of the station. Therefore, a new AM studio and master control room were installed in 1980 with equipment

consisting of a McCurdy SS-8500 console, two ITC triple decks, and five Revox A 77s which were hooked up to a 25 Hz tone sensor for music playback.

Despite major changes in management, the energetic rebuilding program continued in 1981, with the next step being to replace our old telephone link with a new STL/TSL system. Our Marti STL-8 was used for STL and the Marti RPT-25 for the TSL. An Inovonics Map II audio processor was installed, with the AGC section installed at the studio and the limiter installed at the transmitter. After this was accomplished, WJTN's old auxiliary transmitter was removed from service and a new Harris MW1-A was installed, along with reguying the tower with new, non-conductive guy wires to make this truly a total reworking of the air chain.

WJTN also runs a very heavy remote schedule with an



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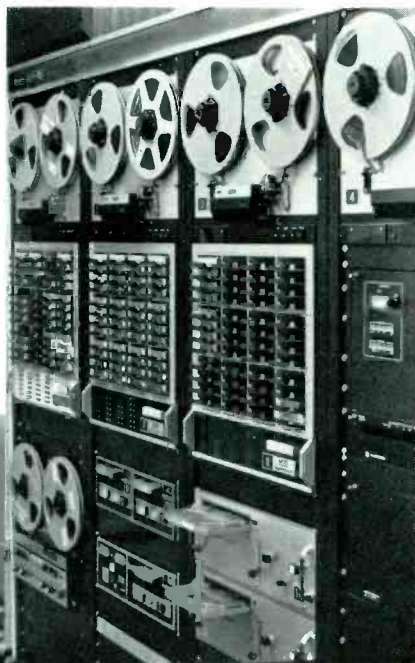


Record and tape
storage systems



Broadcast production
studio and on air consoles
and pedestals

average of anywhere between five and 15 remotes a week. Due to the heavy usage of equipment, we use four remote pickup transmitters operating on two separate frequencies. WJTN also purchased a new 1981 Chevrolet van, into which we put furniture built to our specifications by a local vendor. With this unit, it is possible to set up several remote broadcasts inside stores, gyms, football fields, or wherever we need to go, at the same time. Also a Marti RPT-2 transmitter was purchased for use as an unattended mobile repeater. To further facilitate the heavy remote schedule, a remote receiving rack was built where all RF signals, going in or out of the building, originate. In this rack we have installed our TSL/STL equipment along

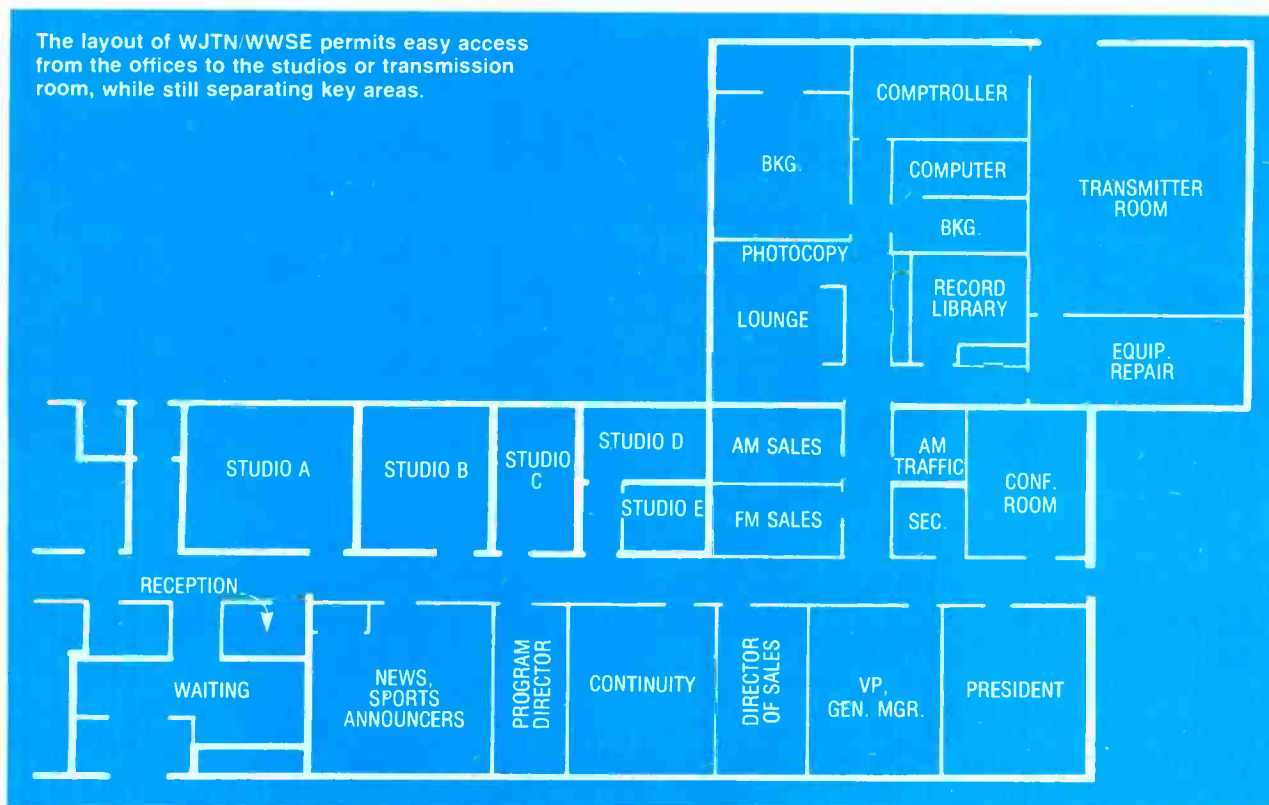


Harris 9002 automation features three IGM Instacarts, four Otari reel-to-reels, a Revox A77, and ITC and BE tape decks.



The WJTN-AM control room and master control position with easy visibility to metering. This studio features a McCurdy console, two ITC triple decks, Eventide time delay, two turntables, and five Revox A77s.

The layout of WJTN/WWSE permits easy access from the offices to the studios or transmission room, while still separating key areas.



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Studio C is normally used for production, but can be used on either AM or FM with such equipment as the BE console, Otari reel-to-reels, ITC cart decks and JVC cassette.

with our remote pickup receivers. The station also installed a UPI satellite receiver (manufactured by Harris) with which we are also receiving the RKO Radio Network through a Modulation Associates demodulator. This equipment, along with the spare FM exciter and spare FM modulation monitor, was then installed near the FM transmitter for easy tower access.

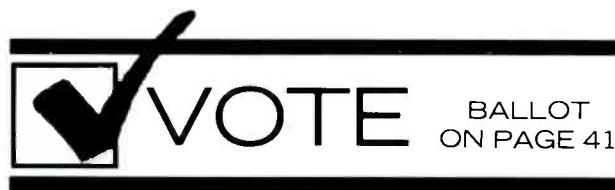
The studio and office buildings were then changed to afford separate space for AM and FM sales offices, secretaries, and the program director. In addition to this, the hallways by the two production studios were also moved. To fill up all these new rooms, and to finish updating the plant, several pieces of key equipment were purchased. A new Harris 9002 automation controller with two terminals and four Otari reproduce decks with new racks were bought for FM. These were installed with WWSE's ex-

isting equipment from the old automation system, including three Instacarts, two ITC cart reproduce decks, one ITC delay cart recorder for RKO delay broadcasts, two BE cart decks for time announce, and a Revox A 77 for instrumental fill.

In the same room with the new automation, new furniture was installed along with WWSE's UREI Mod I audio console, two ITC decks, two Technics turntables, an ITC cart recorder, and two Revox A 77s. In our main production studio, a new BE 350S stereo console was purchased along with two Otari Mark II reel-to-reel recorders and a JVC cassette recorder. In studio D, where production is dubbed to cart, an ITC 99 deck and an Otari reel-to-reel are used for encoding commercial carts.

Studio D also got a rack with three Revox A 77s for automatic network recordings using the clock in automation. In studio E, we reinstalled the old AM board which is a McCurdy, along with two A 77s, turntables, and three cart decks. Our newsroom consists of a McMartin console, an A 77, and an ITC record deck with rapid cue.

We have just finished installation of a new CBSI business automation system, which replaces our older PSI automation. This new system will increase our traffic and billing efficiency in the future.



KIIZ-AM KIXS-FM

Killeen, TX

METRO RANK: 160

AM/FM ENTRY

Submitted by Ken Carver,
Assistant Chief Engineer

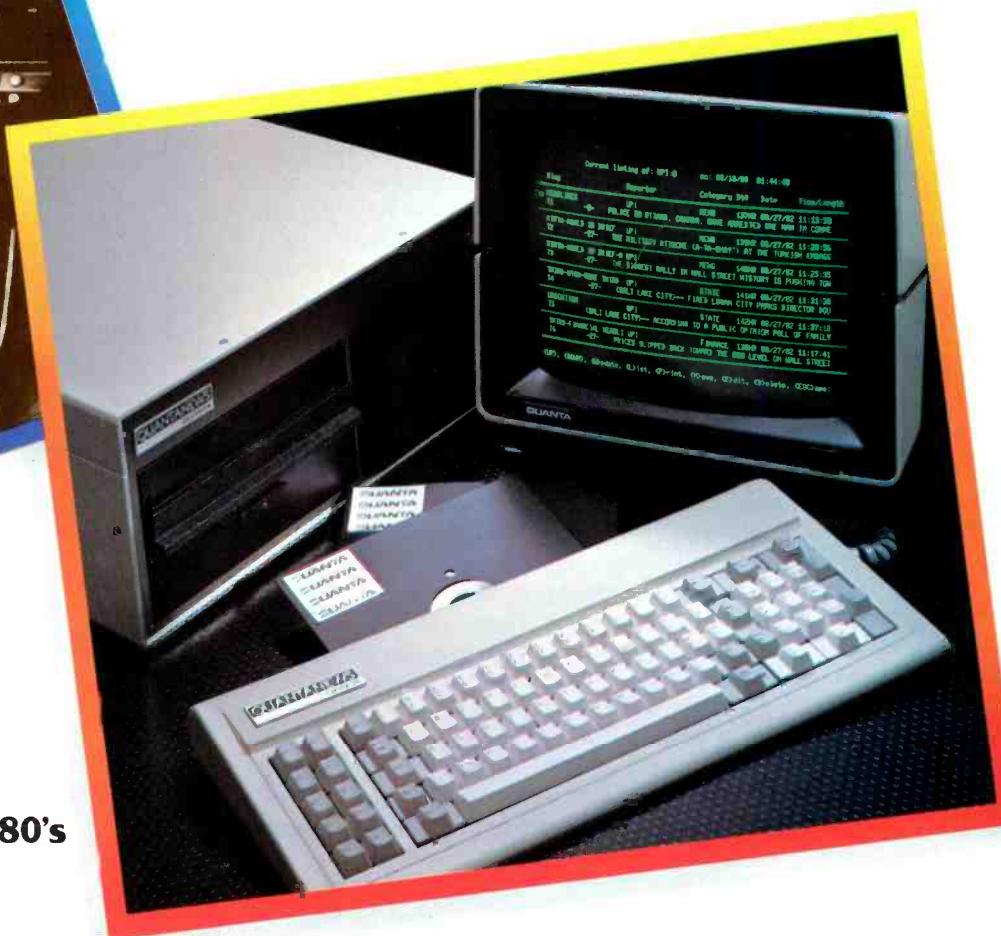
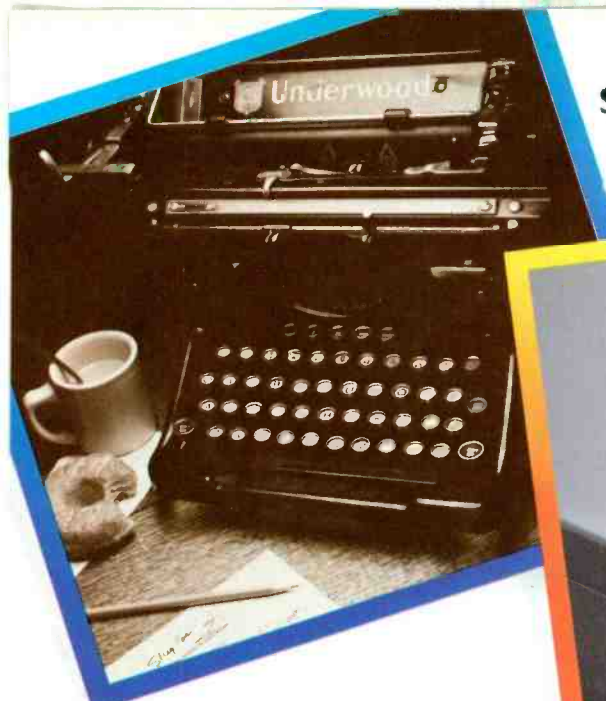
WHEN CITIMEDIA CORPORATION was formed and took control of KIIZ and KIXS in early 1981, it was evident that the stations had long before outgrown their facilities, and the facilities themselves had reached the end of their useful life. Although both stations were doing well, they were becoming increasingly difficult to maintain. There was no documentation on station wiring or equipment modifications. Technically, we were flying blind.

Due to the poor physical condition of the building, the idea of renovating it was quickly thrown out. After investigating several alternatives, a decision to move into an existing building was made. A suitable facility was located in October 1981, and work began.

The new home was previously occupied by an airline reservation service. The building was in a fairly high part of town, enhancing operation of a standby transmitter. This gave us a good STL path for the FM, and a good path for the AM if we should decide to change from telco to an STL in the future. The only changes the building required were the addition of two walls and a recording booth. We were able to lay the plant out such that all studios, continuity, and programming were on one side of the L-shaped arrangement, and all offices were on the other. The building was equipped with a separate HVAC system for each side, allowing us to cool the studios at night and on weekends without having to cool empty offices.

Fortunately, most of the studios had very good sound isolation before any treatment. The production room and FM control were treated with pile carpeting backed with a flame-retardant foam base. One wall was left untreated in each studio, because we felt that gave us a more realistic environment. Sound leakage was the greatest between the newsroom recording booth and AM control. Here we placed 1x2 studs on the wall with liquid nails, placed R-41 insulation between the studs, attached pegboard to the studs, and covered the whole thing with carpet. This way we achieved a high degree of sound isolation between studios at a lesser cost than commercial materials.

Standard for the 40's



News Standard for the 80's

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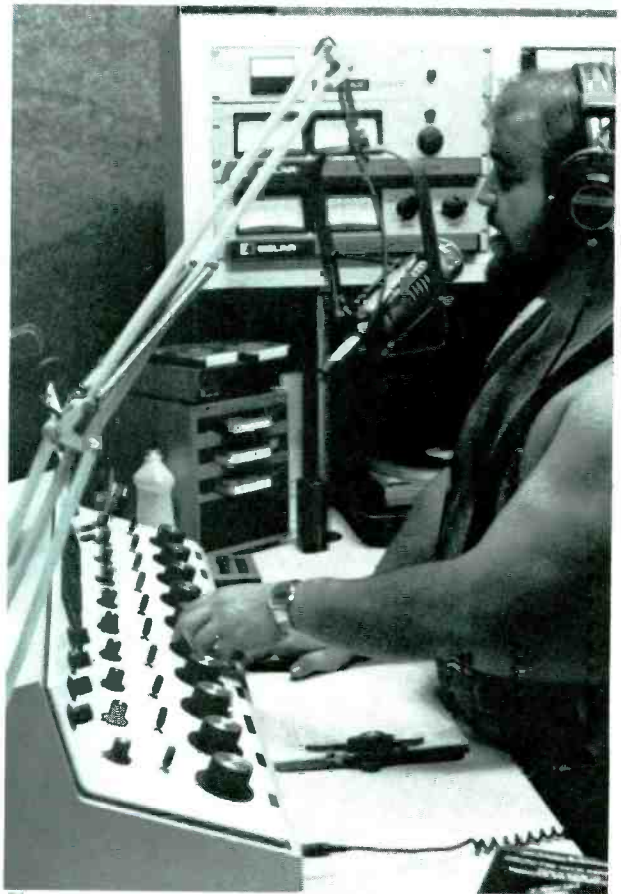
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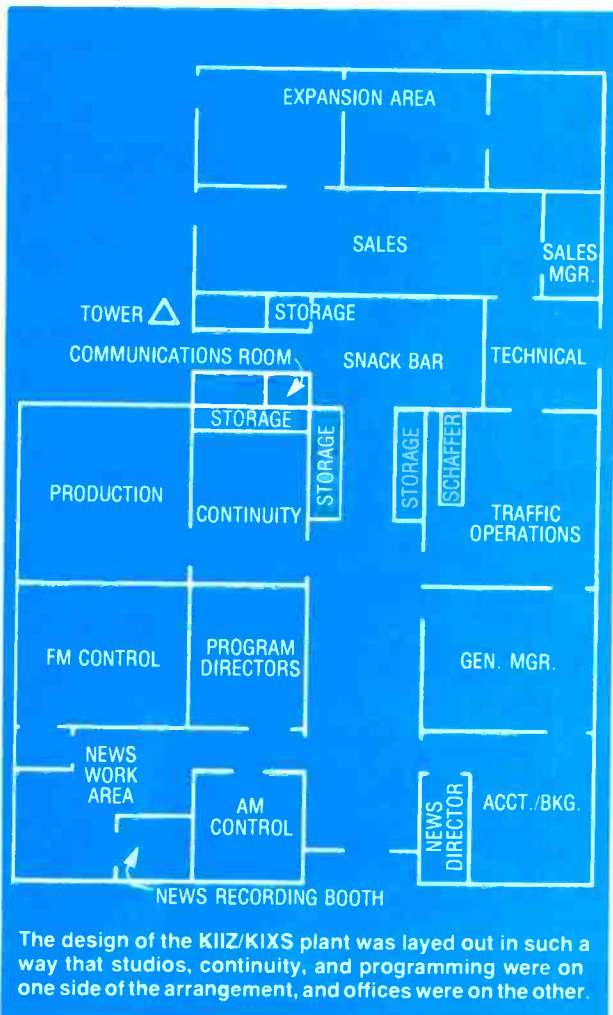
One problem we ran into in the new facility was a lack of crawl space in the ceiling over the studios. In order to run conduit over the ceiling we constructed an L-shaped acoustical tile frame at the wall/ceiling joint of each studio. Two sets of three-inch conduit were run for audio and control, and new ac circuits were pulled for each studio. The frame itself was made of acoustic ceiling tile, and acoustic caulk was used to seal the wall at the point of penetration of the conduit. A final conduit run was made from production to the communications room, which holds telephone equipment, STLs, remote pickup receivers, and two-way gear.

To save space, we incorporated a tie block system in the FM control room rather than delegate a separate room for the purpose. All sources which need to appear at all consoles are brought up on punch blocks, along with all console outputs. Console outputs are duplicated in the communications room, giving us the option of sending any studio to either transmitter. There is also provision at this point for connecting our remote van into the system and operating from that, should the need ever arise.

While studio construction was underway, Wear Radio Corporation of Temple, TX was erecting a 130-foot Rohn 25 tower for our two-way RPU, standby FM, and STL. Two weeks prior to the move we placed KIXS on a pair of 15 kHz telco lines and shut down our microwave, giving



Air personality Ed Fischer in KIXS-FM control room with Autogram console and overbridge containing Belar monitors.



The design of the KIIZ/KIXS plant was layed out in such a way that studios, continuity, and programming were on one side of the arrangement, and offices were on the other.



Schaffer 902 automation used for live assist on KIIZ-AM.



Newsroom isolation booth employing the LPB console and ITC cart deck.

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New equipment purchases included three Autogram IC-10 consoles, an LPB Monogram 5 console for news, Technics SP-15 turntables and M218 cassette decks, Electro-Voice Sentry 100 monitors, and a Marti RMC-15 remote control system for the AM.

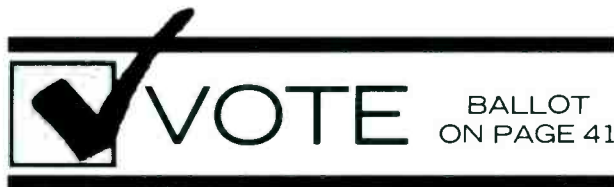
KIXS is processed with an Optimod 8000 into a McMartin BF-25K transmitter. It uses a Phelps-Dodge 11-bay antenna at 1300 feet HAAT. The transmitter site is

10 miles west of town, giving it a city grade signal over the total survey area.

KIIZ is processed with a Marti CLA-40 ahead of a 15 kHz telco line. At the transmitter site we use an Optimod 9000 into a McMartin BA-1K transmitter. We have recently upgraded the antenna system with the installation of a new tuning unit from Continental Electronics.

We are currently in the process of converting our office management and traffic over to a Chase Media broadcast computer system and our announcers are already working from computer-generated logs. Also planned is a video system for visual communication between studios; we did not install studio windows, since we felt a camera would leak far less sound.

KIIZ and KIXS have a tradition of market firsts. We were the first with rock and black formats in the area, first to undertake a major station renovation, first with a computerized traffic and business management, and first with a woman program director. We plan to continue to be the market leader for a long time to come.



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interpreting the FCC rules & regulations

LPTV Lottery Is In, Comparative Process Is Out

By Harry Cole
FCC Counsel

IN MARCH 1983 we can expect the adoption of a lottery system with which the Commission may decide comparative proceedings. After one false start, the Commission and Congress have agreed to a lottery procedure which they think will be workable, and the Commission has dutifully assigned a high priority to the adoption of that procedure. The following is a summary of the lottery proposal and what might be expected from it.

In order to understand the need for a lottery, you must first understand the comparative hearing process. The law now holds, and has held for a long time, that mutually exclusive broadcast applications are entitled to a full hearing before one can be granted and the other(s) denied. A "full hearing," however, involves an administrative law judge, witnesses, exhibits, pretrial discovery and lawyers, all of which tends to drag things out. This, of course, is not to mention the appeals process. The result is that it is not unusual for years to go by between the filing of competing applications and the ultimate granting of one of them.

This alone is frustrating enough. The primary example is low power television, where the Commission was swamped with some 6000 applications, most of which would normally require comparative hearings. The likely result was that it would take one or more years to begin to get those applications processed to the point of designation for hearing, after which the hearing itself would have to run its course.

Now one of the basic tenets of the deregulated age is that bureaucratic delay, particularly relative to applications for new stations, should be reduced to an absolute minimum. Since the comparative hearing process is quite clearly not consistent with this notion, some change was in order. While the Commission had, a year or two ago, toyed with the idea of using some kind of lottery to replace the comparative process, it had backed off from the idea in early 1981. In mid-1981, however, Congress, being sensitive to the complaints of those caught in the Commission's backlog, sought to prod the FCC into the lottery business with an amendment to the Communications Act requiring the Commission to formulate a lottery procedure,

even if it ultimately chose not to utilize that procedure. The Commission duly commenced a rulemaking proceeding to explore the concept of a lottery as described by Congress. As it turned out, Congress had thrown in a couple of wrinkles which, while understandable, tended to undermine the feasibility of the whole idea. First, the Congressional plan would have required the Commission to review the qualifications of *all* applications *before* any lottery and, second, it required that applicants in the lottery be handicapped in order to provide certain groups—including minorities, labor unions, and community organizations—an advantage in the lottery. The Commission, after mulling this over and considering comments from interested parties, decided last winter that it could not adopt the scheme designed by Congress.

The review process was reexamined, but this time Congress and the Commission cooperated in the effort. The result? A new lottery proposal engineered to eliminate the problems encountered with the 1981 version. The new proposal, contained in an amendment to the Communications Act, was signed into law in mid-September and, within two weeks, the Commission had begun a rulemaking proceeding aimed at adopting the proposal. Congress required that the Commission take action on some form of lottery within six months and, with the rulemaking moving full speed ahead, the FCC is likely to meet that timetable with ease.

How would the proposed lottery work? As we'll discuss below, it would *not* necessarily be applied to all broadcast proceedings, although it *will* be applicable at least to low power television applications, as well as certain nonbroadcast applications. Consistent with current processing procedures, the Commission would, upon the acceptance of one application, establish a cutoff date by which all applications mutually exclusive to the accepted application would have to be filed. Once that date had passed and all competing applications had been "cut off," the Commission would determine simply whether all of them met certain minimal acceptance standards. Those that met the standards would be eligible for the lottery.

Before the lottery selection could be accomplished, each application would be subject to "preferential weighting," or handicapping. Only two factors would be

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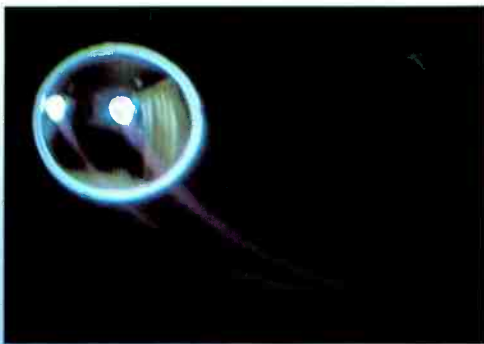
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Good. Plumbicon XQ1427.

Photograph of direct reflection of flood lamps, produced by camera with CTS circuitry. Note highlight memory with red trail.



Better. Saticon II BC4390.

Same subject and conditions as in photograph at left. Note reduced highlight memory without red trail.



RCA

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considered in the weighting process: first, whether the applicant (or those individuals who comprise the applicant) has more than a 50 percent interest in a medium (or media) of mass communications; and second, whether the applicant is a minority-controlled entity. The theories underlying these factors are straightforward. With respect to the former, the Commission has long held that it is preferable to increase the diversity of mass media ownership. Thus, if the choice is between two otherwise equally qualified applicants, only one of whom owns or controls other media, the applicant *without* such ownership should be preferred. The proposed weighting plan merely incorporates this approach by according applicants with no controlling interests in other media a 2 to 1 preference over applicants with such interests in four or more other media. Applicants with controlling interests in one, two or three mass media would receive a 1.5 to 1 preference over those with interests in four or more. And in no event would a "diversity" preference be granted to anyone controlling a mass medium operating in the applicant's proposal community of license. For the purposes of this process, a "mass medium" would include a daily newspaper, a broadcast station (including low power television stations), a multipoint distribution system, a direct broadcast satellite transponder, or a cable television system.

With respect to the second factor, the Commission has, since the late 1970s, taken active steps to increase the extent of minority ownership within the broadcast industry. The weighting system is just the latest such step. It pro-

vides that an applicant, majority owned by members of minority groups, is entitled to a 2 to 1 preference.

The handicapping would be accomplished in two stages. First, the diversity preferences would be assigned, and the overall probabilities adjusted so that there existed at least a 40 percent chance that one of the applicants receiving a diversity preference would win. Once these calculations were completed, the minority preferences would be factored in, and each applicant would be assigned a portion of the interval between 0.000 and 0.999, the size of the portion varying with the applicants' respective preference factors. For example, if three applicants have weighted probabilities of 25 percent, 25 percent and 50 percent, respectively, the first would be assigned the interval 0.000 to 0.249, the second the interval 0.250 to 0.499, and the third the interval 0.500 to 0.999. The Commission would then generate a three-digit random number, and the winner would be chosen.

That would not, however, be the end of the proceeding. Once a lottery winner was announced, all interested parties would be given the opportunity to file petitions to deny against the successful applicant. This would trigger a round of opposition and reply pleadings, and the Commission's staff would then sift through everything. If no "substantial and material questions" were raised against the winner, it would be awarded the permit. If, however, such questions were raised, the Commission would designate the application for hearing. If the hearing demonstrated that the winner was, indeed, qualified, it would

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get the permit. If the lottery winner *lost* the hearing, however, everything would go back to square one and a new lottery would be held among the remaining applicants (whose probabilities would be recomputed). The same post-lottery procedures would apply.

In view of the fairly substantial FCC involvement in the initial design of this proposal by Congress—Commission staffers consulted with Congressional staffers to assure a workable lottery scheme—it is almost a certainty that this plan, or one almost identical to it, will be adopted.

A couple of observations about the lottery proposal are in order. First, as attractive as a "lottery" may sound as an alternative to the present comparative hearing process, it is far from clear that much time will, indeed, be saved. The post-lottery petition to deny feature of the proposal virtually guarantees that paper will continue to flow, which in turn means that some delay is to be expected. Granted, the delay may still be less than is encountered now in the comparative hearing process, but it will nonetheless be a delay, and possibly a significant delay. After all, once a lottery winner is selected, it is pretty much a given that all the losing applicants will direct their guns at the winner, since their only hope of winning would at that point require the disqualification of the winner. And, of course, if any of those efforts prove successful, thus necessitating designation of the winner for hearing, the proceeding would be further delayed—again, probably not to the extent of a full comparative hearing, but nonetheless to a substantial degree. Thus, the lottery,

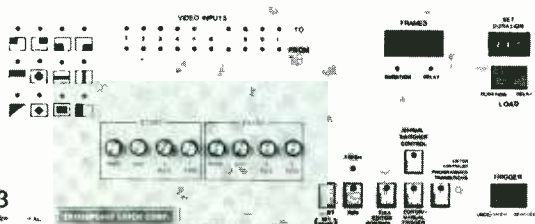
at least as proposed, will not be the delay-eradicating panacea some may be hoping for.

Second, the existence of a lottery provision may encourage some people who might not otherwise do so to file applications. After all, the lottery itself guarantees them a shot, and possibly a decent handicap as well. Already the Commission is being beset with an increasing application load, a phenomenon probably attributable, at least in part, to the dramatic reduction in the information demands imposed by the Commission's deregulated application forms. The lottery could exacerbate that, since not only would it be cheap and easy to put the application together, but it would also be cheap and easy to get the application on file and then await the lottery results before deciding whether to contest the matter vigorously. Now, it should be noted that, in the view of some observers, the Commission might not apply the lottery system to full-service broadcast applications (the lottery will without question be applied to low power television applications). If it is *not* applied to full-service situations, it may not tend to encourage speculative applicants. However, the Commission is not prohibited from applying the lottery to just about any comparative broadcast situation, and, if full-service applications continue to flow in and backlogs continue to increase, use of the lottery may seem ideal.

In any event, the lottery appears to be well on its way, for better or worse. If you have any questions concerning its impact on your particular situation, you should consult with your communications counsel. **BM/E**

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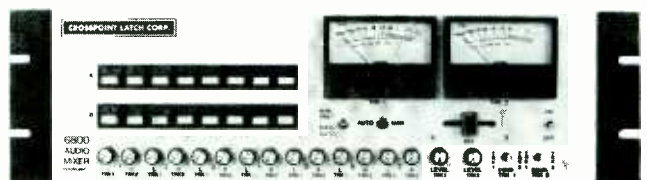
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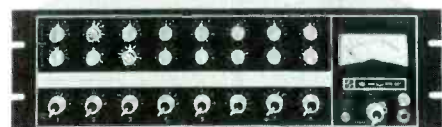
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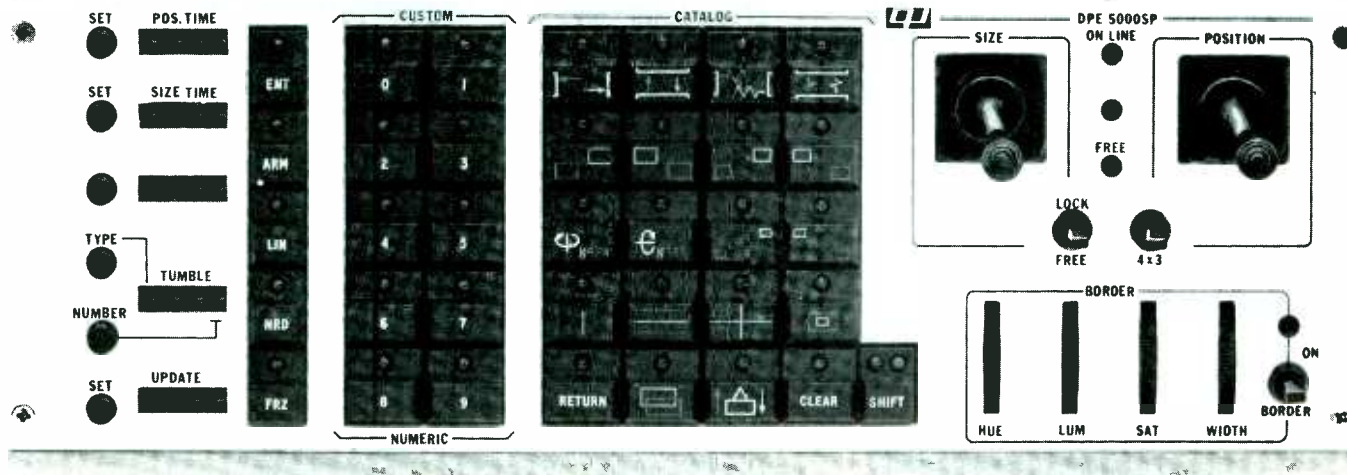
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Depreciating Equipment— New Or Used

By Mark E. Battersby
Financial Consultant

THE 1981 TAX REFORM legislation created a completely new system for writing off the cost of equipment used in your broadcasting operations. An integral part of that new system was fast depreciation methods that were scheduled to become even faster in 1984 and 1985. Unfortunately, the so-called "Tax Equity and Fiscal Responsibility Act of 1982" has repealed those scheduled increases—but don't cry over lost writeoffs just yet.

The Accelerated Cost Recovery System (ACRS), created in August of 1981, requires that most depreciable property be written off over certain specific lives using a specific depreciation method. This system replaced the old class life ADR Asset Depreciation Range system and governs the writeoff of both new and used equipment.

As most broadcasters are already aware, each type of property or equipment acquired for use in your operations is assigned to a specific category. Cars and light trucks, for instance, fall within the three-year property category and, accordingly, are assigned a three-year life for tax purposes. Most other equipment and fixtures are classified as five-year property while the 15-year property category is mainly composed of buildings.

Since, in most cases, these ACRS lives are appreciably shorter than the old "Guideline" lives, the property is written off faster, producing larger depreciation deductions on the annual income tax return. Fortunately, however, the benefits of ACRS don't stop there.

The Internal Revenue Service norm is now the 150 percent declining-balance method of depreciation, enabling everyone to write off their equipment or property over a shorter life, without regard for salvage value, at a rate 150 percent as fast as the straight-line writeoff.

Because our lawmakers felt that the ACRS writeoffs were sufficiently liberal, the 1981 tax law closed several loopholes that had formerly been used to legally increase the depreciation deduction. For example, in the past many broadcasters who owned their own buildings would depreciate the cost of the building over the 25 or 30 years demanded by our tax law—while, at the same time, writing off some of the building's components over the shorter life spans for such things as air conditioning systems, doors, electrical wiring, plumbing, driveways and parking lots, and so forth.

Last year's tax law "reform" flatly eliminated the depreciation of a building's components. Now both the building and its components enjoy a 15-year life for tax purposes.

Where a broadcaster makes what the tax law terms "a substantial improvement" to a building, it is treated as a separate building rather than as one or more components. In other words, the operation is permitted to use the regular ACRS deduction or, if they wish, they can elect the straight-line ACRS deduction for the improvement over the regular recovery period regardless of the ACRS method that is used for the rest of the building.

Further increasing the tax benefits resulting from acquiring equipment—but not land or buildings—was the 10 percent investment tax credit. For every \$10 spent on either used or new equipment or fixtures, you could reduce your annual tax bill by \$1.

The only ceiling on just how much investment tax credit could be claimed in any one year was set by the station's tax bill for the year or, if tax liability exceeded \$25,000, the tax credit applied against the first \$25,000 of tax liability plus 90 percent of tax liability exceeding \$25,000. Naturally, any unused credit could be carried back three years and forward 15 years.

Finally, a unique writeoff became available for the first time in 1982 that permits every station to choose an immediate deduction of up to \$5000 in equipment acquired during the tax year. Naturally, if a direct writeoff of \$5000 worth of equipment is decided upon, the same property cannot be depreciated. Nor can the investment tax credit be claimed.

A gain on the sale or other disposition of ACRS property is now taxed as ordinary income property to the extent of ACRS deductions claimed on the property. Thus, suppose John Doe acquires an asset on June 1, 1979 for \$10,000. For the years 1979 through 1981 he deducts a total of \$2500 for depreciation. If he sells the asset for \$9000, he will have ordinary, fully taxable income of \$1500 (\$9000 minus adjusted basis or book value of \$7500 [\$10,000 cost less \$2500 depreciation]). If he sells it for \$12,000, he will have ordinary income of \$2500 (depreciation deducted) and Section 1231 gain of \$2000 that could possibly be taxed at lower capital gain tax rates.

When it comes to the early disposition of that investment tax credit property, the tax for the year of disposal is increased by the amount of the credit that is recaptured.

TAX TIPS

The actual amount recaptured is a percentage of the original credit claimed, depending on how long the property is held before recapture is required.

For property within the three year class, the recapture percentage is 100 percent if recapture is required within the first full year after placement in service, 66 percent within the second full year, 33 percent within the third full year, and zero thereafter. The recapture percentage for all other classes of recovery property is 100 percent within the first full year after placement in service, 80 percent within the second full year, 60 percent within the third full year, 40 percent within the fourth full year, 20 percent within the fifth full year and zero thereafter.

That, at least, was how matters stood until the passage of the Tax Equity Bill of 1982. While the basics remain unchanged, certain developments under the new law are worth noting.

Probably the most noteworthy feature of the new tax law is that the law repeals future accelerated methods of depreciation. Under the 1981 law, ACRS was scheduled to rise from the 150 percent declining-balance method of depreciation (with a change to straight-line) to 175 percent declining balance (with a later change to sum-of-the-years-digits) for equipment acquired in 1985. A further increase based on 200 percent declining-balance depreciation was scheduled to apply after 1985. Now, the 150 percent declining balance method remains in effect—at least until the passage of the next tax law.

Of course not all of the new law's provisions are con-

cerned with taking away future benefits. Of more immediate importance, the new rules will require a basis reduction for tax credits claimed.

In the past the investment tax credit or any other tax credit could be claimed and the entire cost of the asset or equipment remained available for depreciation purposes. Beginning in 1983, however, the basis or book value of an asset must be reduced by 50 percent of the regular investment tax credit, energy credit, and so on. Thus, a \$10,000 asset that produces a \$1000 tax credit becomes a \$9500 asset for depreciation purposes.

In lieu of reducing an asset's basis, a broadcaster can choose to reduce his or her regular investment tax credit percentage by two points. Thus, the reduced credit is eight percent for recovery property other than three year category property and four percent for property in the three year category.

This option to take a reduced investment tax credit is intended to deal with situations in which a station would not be entitled to claim all of its regular tax credits because of the limitation on how much credit would offset tax liability. In other words, if the credit reduction election were not available, the broadcaster would have to reduce the basis of an asset, despite the fact that it might not receive any current tax benefit from the unused credit.

Also beginning next year, a station may use its investment tax credit to offset its first \$25,000 of taxable income plus 85 percent of the tax liability above \$25,000. The limit for 1982 permits the credit to offset the first \$25,000 of taxes plus 90 percent of tax liability.

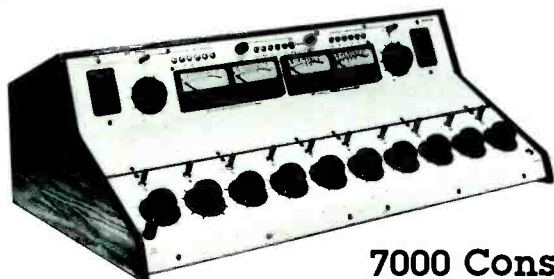
After January 1, 1983, if there is an early disposition requiring the recapture of investment tax credit for which there was a downward basis adjustment, the basis must be increased by 50 percent of the recapture amount. Since the upward adjustment in basis or book value is made immediately before the event resulting in recapture, there are no changes needed on tax returns for previous years.

When it comes to determining the amount of gain that is recaptured as ordinary, fully taxable income on a sale or disposition of depreciable property or equipment, the amount of the investment tax credit downward basis adjustment is treated as a deduction allowed for depreciation. Accordingly, the amount of that basis adjustment is treated as depreciation, subject to ordinary income recapture.

For those in the broadcasting industry whose tax pictures are so dismal that unused credit carryovers are foreseeable for many years to come, there is now a special deduction for unused tax credits. From now on, where an investment credit for which a downward basis adjustment was made does not result in a tax benefit because it remains unused at the end of the 15-year carryover period, a deduction is allowed to the station for 50 percent of the unused credit. The deduction would equal that portion of the investment credit downward basis adjustment attributable to the unused credit. This deduction is taken in the first tax year after the expiration of the credit carryover period.

Since 15 years is a long time for a business to stagger along, Congress also added a provision stating that if a taxpayer dies or ceases to exist before the expiration of the credit carryover period, the deduction is available in the year in which death or cessation occurs.

BM/E



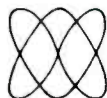
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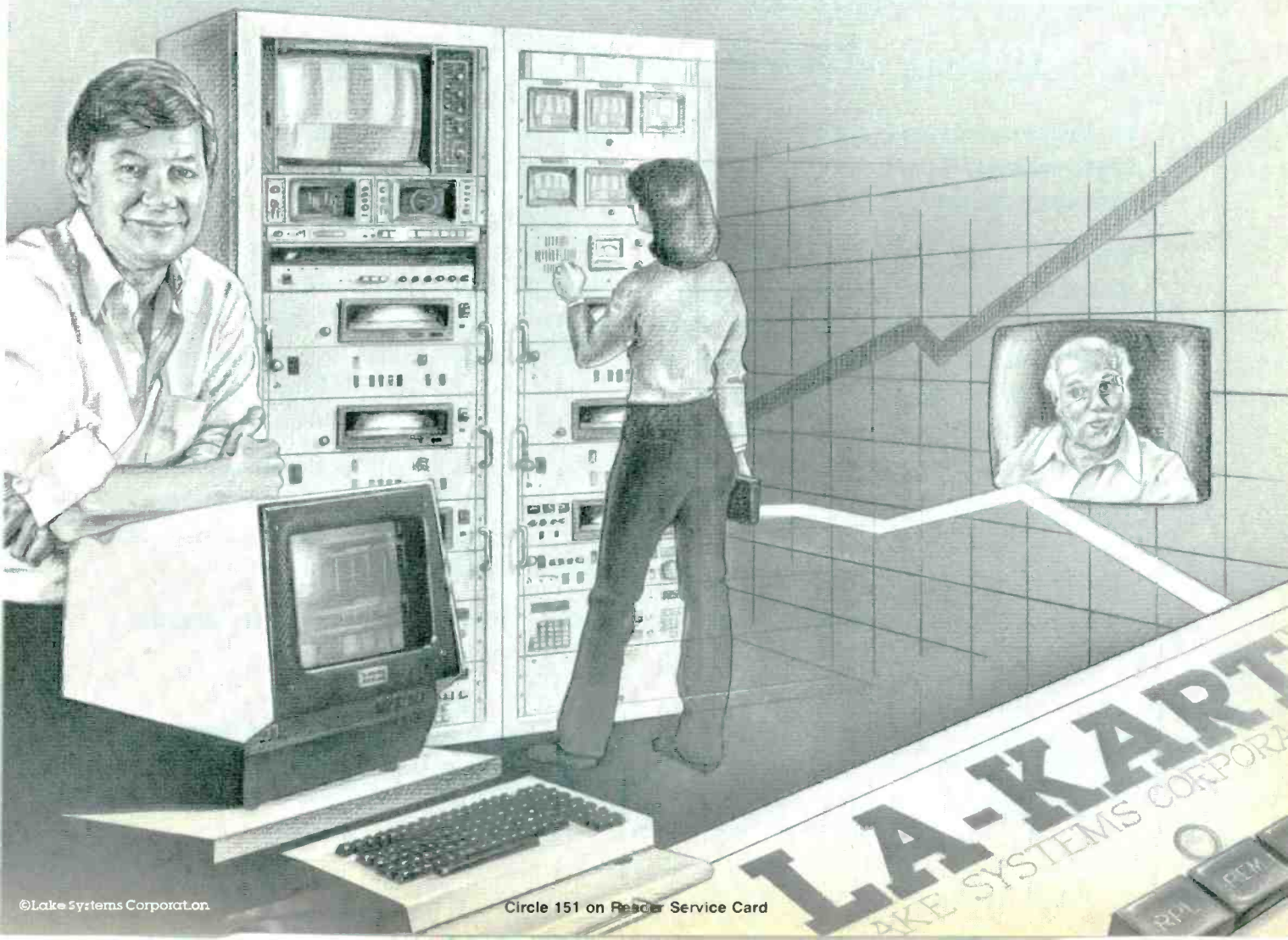
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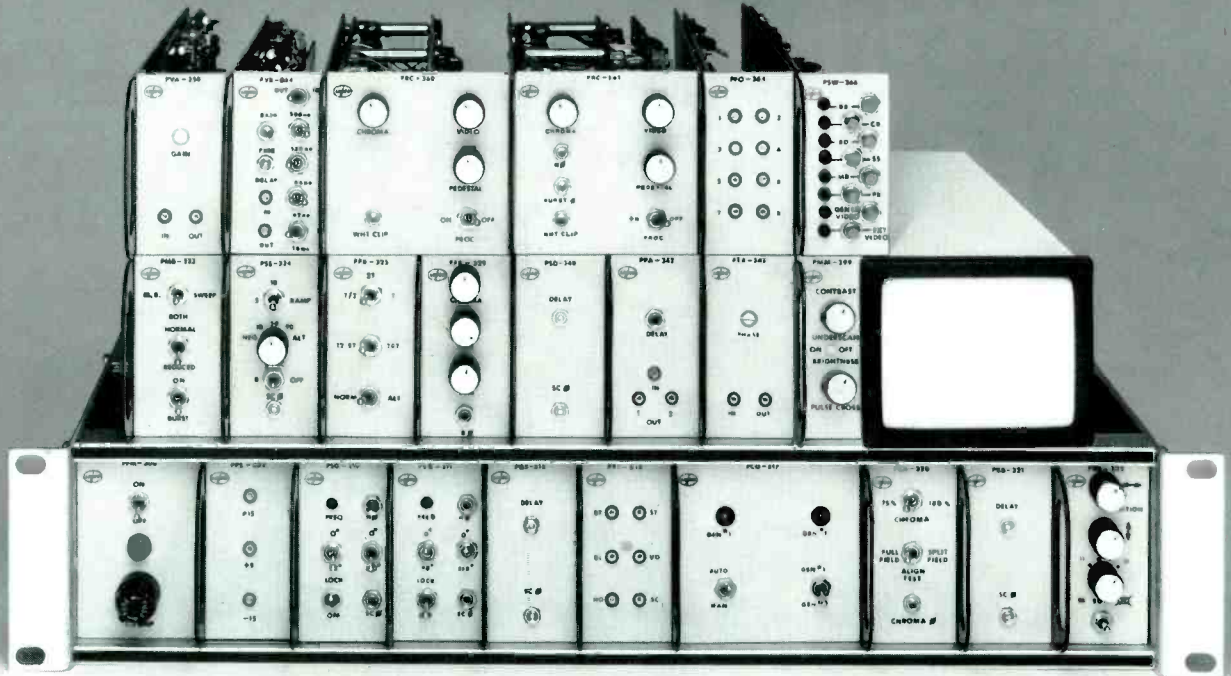
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The Professional's Choice

GREAT IDEA CONTEST

Here's a chance to share your own personal solutions to some of broadcasting's most vexing engineering needs . . .

Each month, *BM/E* presents two engineering problems and invites you to submit solutions complete with diagrams. *BM/E's* editors will read the entries and select the best for publication—giving readers an opportunity to vote for the idea they consider best by using the ballot area on the Reader Service Card.

We will pay \$10 for each entry printed. In addition, the solution in each month's competition receiving the most votes on our Reader Service Card will win \$50.00. So put on your thinking cap and submit an answer to either of the problems outlined below . . . and be sure to watch this section for the solutions.

**NEW, BIGGER PRIZE:
\$50.00 FOR
EACH CONTEST WINNER!**

Problem 14: ATR Remote Operation

In a small market station, the production room can often be brought up in the control room for on-air operation, and two reel-to-reel tape machines, one in production and one in control, can be remoted from either room for greater economy. Design a simple switching system to give signal distribution, cueing, and remote start and stop control in either position.

**Solutions to Problem 14
must be received by
January 14, 1982, and will be
printed in the March, 1983 issue**

Problem 15: Antenna Adjustment

Radio stations that change antenna pattern at sunset and sunrise must follow the strict time schedule laid down in the license, including seasonal adjustments. The change can be completely automated with a calendar/clock and a microcomputer. But many prefer simple remote button-pushing to operate the antenna relays. Develop a system to make operator attention as certain as possible, with the correct time displayed, advance warning, and an error signal if the change is ignored.

**Solutions to Problem 15
must be received by
February 14, 1983, and will be
printed in the April, 1983 issue**

CONTEST RULES

- 1. How to Enter:** Submit your ideas on how to solve the problems, together with any schematic diagrams, photographs, or other supporting material. Entries should be roughly 500 words long. Mail the entries to *BM/E's* Great Ideas Contest, 295 Madison Avenue, New York, NY 10017. Use the official entry form or a separate piece of paper with your name, station or facility, address, and telephone number.
- 2. Voting and Prizes:** *BM/E's* editors will read all entries and select some for publication; the decision of the editors is final. Those selected for publication will receive a \$10 honorarium. Each month, readers will have an opportunity to vote for the solution they consider the best by using the Reader Service Card. *BM/E* will announce the solution receiving the most votes and will award the winner of each month's competition a \$50.00 check.
- 3. Eligibility:** All station and production facility personnel are eligible to enter solutions based on equipment already built or on ideas of how the problem should be solved. Consultants are welcome to submit ideas if they indicate at which facility the idea is in use. Manufacturers of equipment are not eligible to enter. Those submitting solutions are urged to think through their ideas carefully to be certain ideas conform to FCC specs and are in line with manufacturers' warranty guidelines.

Mail Official Entry Form to:

BM/E's Great Ideas Contest

295 Madison Avenue, New York, NY 10017

Solution to Problem # _____

Your Name: _____

Title: _____

Station or Facility: _____

Address: _____

Telephone: (_____) _____

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

Signed _____

Date _____

Brilliant performer.

**NEW
WIRELESS**

Model 82 Wireless Condenser Hand-Held



The Model 82 condenser wireless microphone has been added to Cetec Vega's professional hand-held line. The Model 82 incorporates the popular Shure SM85 condenser element and attractive black windscreen to provide:

- Minimal handling noise, reduced mechanical vibration, and virtually no "boominess" (by means of controlled low-frequency rolloff).
- Clean reproduction of close-up vocals with moderate proximity effect.
- "Crispness" and presence with high-definition midrange.
- Clear, scintillating highs with crisp upper register.
- Cardioid pickup pattern for effective rejection of off-axis sounds.

All Cetec Vega hand-held wireless microphones (including the Model 80 with the Electro-Voice EV-671 dynamic element and the Model 81

with the Shure SM58 dynamic element) have an attractively contoured black case with internal antenna.

Used with Cetec Vega professional wireless receivers, the FM systems operate on any crystal-controlled frequency between 150 to 216 MHz, at a range up to 1000 feet or more. Transmit-to-receive frequency response is almost perfectly flat from 100 Hz to 12 kHz with gentle rolloffs to 40 Hz and 15 kHz. Total harmonic distortion is typically 1/2 percent. System dynamic range is 90 dB when "Dynex" (transmit compression and receive expansion) is incorporated, with a resulting low noise floor.

Cetec Vega hand-held wireless microphones are newly redesigned for 20 to 30 percent additional battery life, using a commonly available 9-volt alkaline battery (Duracell recommended). Microphone sensitivity is easily adjustable with an audio

gain control on the bottom, with an adjacent LED indicator to verify optimum setup. Power and audio on/off switches are also conveniently located on the bottom.

Write or call for further information and location of your nearest dealer: Cetec Vega, P.O. Box 5348, El Monte, CA 91731. (213) 442-0782
TWX: 910-587-3539

In Canada: A.C. Simmonds & Sons Ltd.

 **Cetec Vega**
Division of Cetec Corporation



GREAT IDEAS

SOLUTIONS to problem 12: Microphone Switching

In a typical combination control/interview room, the operator/interviewer needs fast control of four mics placed around the table and plugged into connectors on the front of the console. In some situations, the operator may want to open only one mic at a time. Several engineers sent in system designs for fast, easy switching of the mics without introducing switching noise into the on-air signal. Here are the finalists, as selected by BM/E's editors.

SOLUTION A

William Howe, Chief Engineer
WEIV-FM, Ithaca, NY

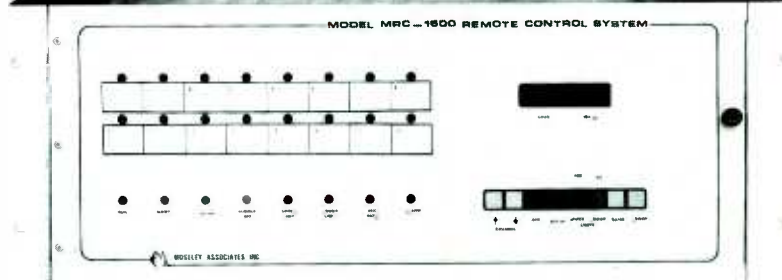
The power source for the circuit is a 5-volt positive regulator which takes the mixer 30-volt supply and provides a regulated 5-volt supply that is free from ripple and eliminates the problems of hum pickup on the mic level lines from a poorly shielded power transformer.

The circuit contains logic control and switching relay for four inputs, and I will describe the operation of only one, as the operation of all are identical and have no interaction with each other. The switch, S1, is a momentary-normally open pushbutton which provides a low on pin 6 of IC1A through the 1 micro-farad capacitor. IC1A operates as a bounceless switch that gives a clean pulse of approximately 0.1 seconds on pin 5 when pin 6 is momentarily pulled low by the discharging action of the capacitor being grounded. IC3A is a J-K flip flop set to operate as a toggle, that is, pins 10 & 11 will change state with each input pulse on pin 6. The Q output, pin 11, is connected to the base of the relay driver transistor, which is saturated when the base is low and cut off when the base is high. When the transistor is saturated, the relay, K1, pulls in, connecting the input to the output. The microphone is connected to

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Microprocessor sophistication and economical price unite in Moseley's newest Microprocessor Remote Control, the MRC-1600. A full 16 status channels, 16 telemetry channels, and 16 raise and 16 lower, relay-isolated command lines provide flexible, dependable and noiseless operation between the control and remote site. Plug-in modules adapt the MRC-1600 to any interconnection network, 2-wire or 4-wire telephone lines, subaudible, FM subcarrier, or a combination of these.

System setup and calibration are easy. In each channel, telemetry data may be calibrated in one of four modes; millivolt, power, indirect power and linear. Upper and lower telemetry

- SETUP DATA BACKED UP AUTOMATICALLY
- ALL TELEMETRY LIMITS MAY BE SET OR DISABLED INDEPENDENTLY

limits may be set or disabled independently. Status inputs may be muted for no alarm, or set to alarm on rising, falling, or rising and falling waveforms. They may display direct or inverted. Set up data entered at the remote terminal is automatically backed up at the control terminal which ensures that a temporary power down of either terminal does not mean loss of set up data.

In operation, telemetry data is checked against upper and lower limits. Visual and audible alarms are enabled upon any excursion beyond preset limits. ACKnowledging the alarm gives the operator all needed information to bring telemetry back within limits. The MRC-1600 maintains special channels that monitor A/D ratios and data link conditions. It also has full control Fail-Safe features and a Maintenance Override mode to lock out command signals to the remote unit, yet maintains status and telemetry updates.

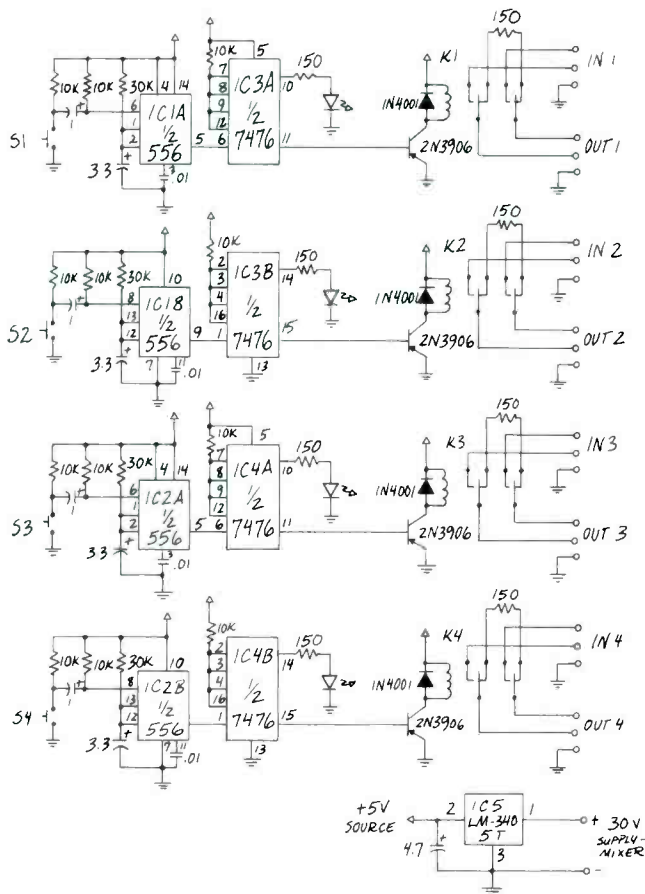
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Circle 154 on Reader Service Card

GREAT IDEAS



the input and the output feeds to the mixer input. When the relay is not activated the mixer input is terminated with the 150 ohm resistor. The switch will act as a push on/push off to turn the microphones on and off as desired. The LED will light when the relay is activated and will be off when the relay is off to give the indication of the status of that particular microphone for the operator. I used the DIP relay #273-213 from Radio Shack; however, the Magnecraft DIP reed relays will operate with virtually no mechanical relay noise. The amount of mechanical noise I experienced from the Radio Shack relays was not picked up on the microphones and the cost was about 1/3 of the Magnecraft relays.

SOLUTION B

Glenn Calderone,
Assistant Chief Engineer
KZH-31 ITFS, Long Beach, CA

This circuit switches four balanced low impedance microphones on or off by remote control. One CMOS analog chip passes the audio signals, while a digital CMOS chip and four diodes make up the logic part of the circuit.

Sound quality.

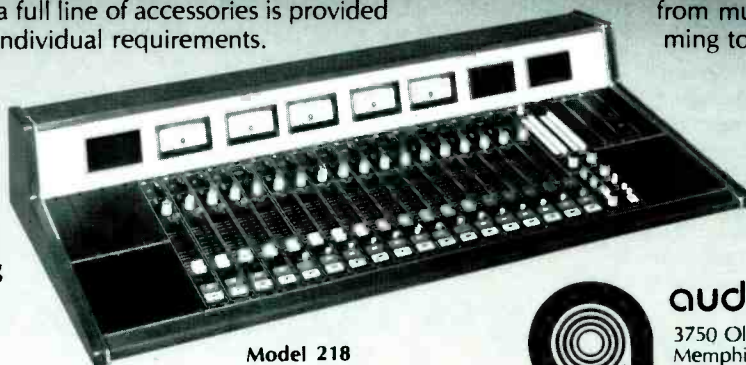
200 Series On-Air Broadcast Control Console

The Audiotronics 200 Series represents the culmination of latest technology applied for broadcast use. Standard features include Penney & Giles linear VCA controlling faders for reliability and precise tracking accuracy even on stereo channels, noiseless hall effect/CMOS on/off switching, local power regulation on every module to prevent mass failure, built-in Control Room Monitoring controls, a comprehensive logic system and headphone amplifier with local equalization. Available in 4 mainframe sizes for up to 24 mono or stereo inputs, a full line of accessories is provided for custom tailoring to individual requirements.

Voice Controller Accessory: A mono or stereo compressor/limiter/noise gate utilizing the VCA circuitry built into the 200 Series.

The 200 Series, the logical choice for on-air operations from music programming to newsrooms.

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Model 218



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SOLUTION A	SOLUTION B	

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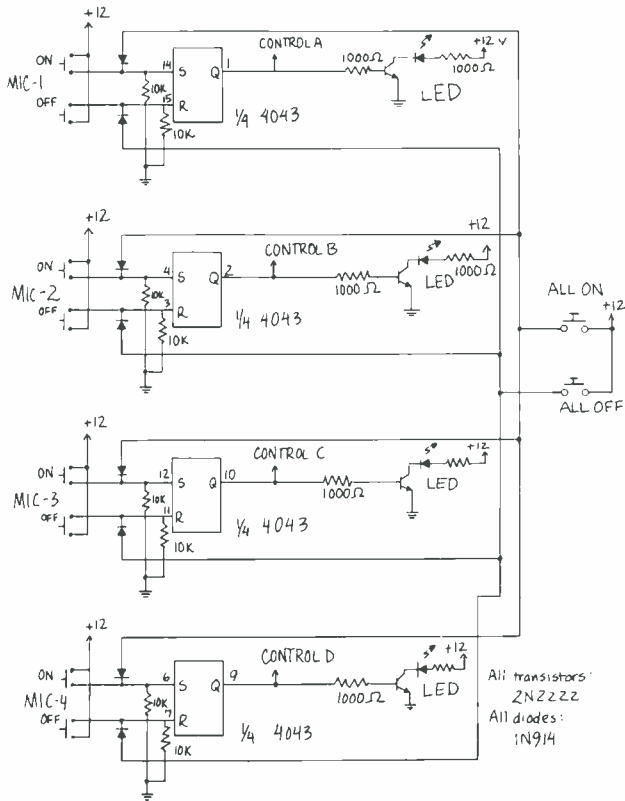


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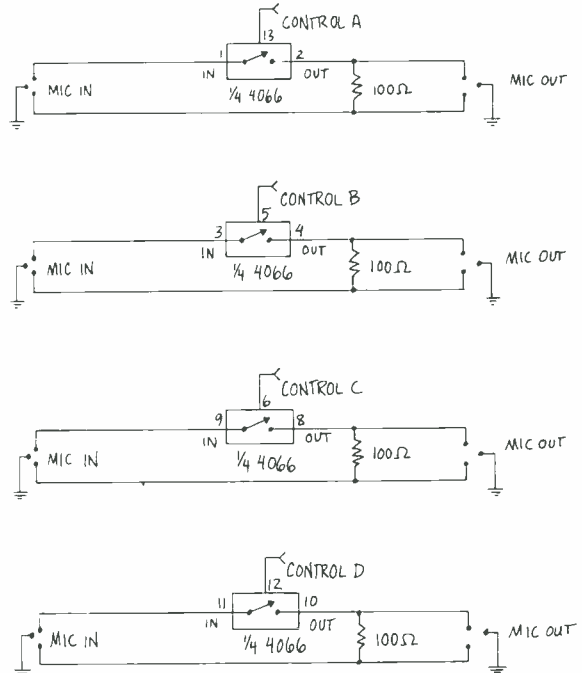
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CONTROL LOGIC



AUDIO PATH



The 4043 chip contains four R/S ("Set-Reset") flip-flops. The Q output latches high whenever the SET input is brought high. A high RESET latches the output low. The flip-flop's output feeds a FET analog switch and a Light Emitting Diode, to indicate when a microphone is on.

Each flip-flop can be latched on or off by its own momentary-contact pushbutton. When the operator needs all the microphones on in a hurry, a single pushbutton does the trick. The ALL-ON button sends current through the switching diodes to all flip-flops simultaneously, forcing them to the high state. ALL-OFF works the same way with a second button, turning them all off.

The mic-level audio is switched on or off by the SPST action of the 4066 CMOS switch. The 100 ohm resistor terminates the input when the mic is "off." It will work with balanced and unbalanced low and medium-Z microphones, as long as there is no D.C. on the lines.

Power for the system can be any well-filtered supply from 5 to 15 volts. Not counting the LEDs, the circuit draws less than 5 MA.

The first 9-bit frame synchronizer is still the best.



When we introduced the FS-16 in 1980, we expected our competitors would rush to copy it.

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Beyer M 260

Now there's another high-tech German condenser system.



Until recently, film and broadcast engineers thought only Sennheiser and Neumann made high-quality condenser microphone systems. Now the Beyer MCM Series offers the same German excellence in design and construction, the same kinds of accessories (windscreens, pistol grips, shock mounts) and facilities for 12V and 48V "phantom" powering.

And since the MCM Series studio condenser mic is part of a system which combines power modules and different mic capsules (long shotgun, short shotgun, unidirectional, omnidirectional and figure eight), you get more microphone potential for dollar output.

Like all Beyer microphones, the MCM Series is a truly professional instrument system suited to the widest range of applications in Broadcast/Film and Video post-production.

With lavalier mics, small is not enough.



Electret condenser lavalier mics like SONY's ECM-50 have proven useful for on-camera miking situations because of their reduced size. And while many of these mics offer good performance in a compact size, the Beyer MCE5 also provides extended frequency response (20 to 20,000 Hz) and durability in an even smaller format (diameter: 7 mm / length: 23 mm).

To optimize its compatibility with a variety of broadcast and film applications, the tiny black MCE5 is available in different configurations for powering interface and includes a system with accessories like windscreens, expansion mounts etc.

At Beyer Dynamic's ultra-modern manufacturing facility in West Germany, we hand-build virtually all of our microphones in the most evolved state of fine German engineering.

There's more than one way to bring out the warmth in an announcer's voice.



Broadcast engineers choose the E-V RE20 for many vocal announcing situations because of its wide frequency response (45-18,000 Hz)* and smooth sound. Beyer Dynamic's M 260 also provides the extended frequency response (50-18,000 Hz) and warmth required for critical vocal applications with one distinct advantage: its reduced size. Its compact and efficient ribbon element captures the warmth traditionally provided by this type of mic. And because it is considerably smaller than a mic with a large moving-coil diaphragm, the M 260 provides a natural, balanced sound image in a portable format that won't obscure copy or take up valuable space in the studio.

The Beyer M 260 has its own custom-designed ribbon element to optimize the mic's performance based on its Broadcast applications.

The Dynamic Decision

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*Extracted from competitive promotional literature or advertising.

*Documentation supporting specific comparative claims available upon request.

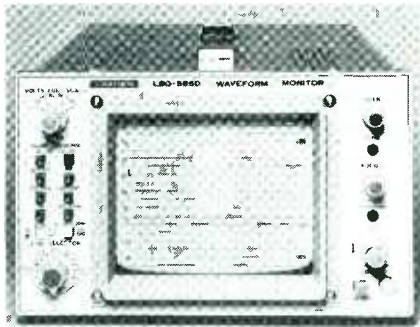
broadcast EQUIPMENT

Leader Introduces Waveform Monitor 250

Leader has introduced a new half-rack waveform monitor, the LBO-5860, to be used as a companion unit to the LVS-5850 vectorscope. The waveform monitor uses a line-selector function which displays VITS and VIRS signals by selecting lines 14 through 21 on first or second fields. The unit also has an output to blank the companion vectorscope during the active portion of the video signals, so that the VITS can also be displayed vectorially.

The LBO-5860 features RGB/YRGB capability and a 5.5-inch CRT with 7 kV of accelerating potential. Horizontal sweep speeds of 2 H (two-line), 1 μ s/div (expanded two-line), 2 V (two fields), and 2 V MAG (expanded two fields) are standard. The unit is equipped with one- and four-volt full-scale calibrated deflection factors. The monitor is also available in a PAL version.

Specifications are: 140 mm rectangular CRT, accelerating potential of 7 kV/2 kV, and an internal graticule with scale illumination. The vertical section



shows a frequency response of flat 25 Hz to 3.6 MHz \pm 2 percent and 3.6 MHz to 5 MHz + 2 to - 5 percent of response at 50 kHz. There are two input terminals, A or B switchable, on rear panel loop through, with input impedance rated at 1 V full scale for 15 kohm paralleled with 50 pF, 4 V full scale for 60 kohm paralleled with 50 pF. Video output is 1 V \pm 15 percent on rear panel at 1 V, added to input A or B full scale 1 V. Output impedance is 75 ohm.

The horizontal section shows figures of 2 V sweep, displays two fields of vertical interval, 2 V MAG sweep expanded two fields 20 times, and linearity of \pm 3 percent or less.

Videomedia Enhances Automation System 251

The Videomedia VMC-200 is a computerized version of its VMC-100 sequencing system. The new unit allows the broadcaster total random access of any group of commercials or program material from any of the different tapes loaded into the VTRs. The accessing method incorporates a system which allows for frame-accurate programming automation, omitting the necessity for tones or any timing reference on an audio channel. There are three standard versions of the system in modular form.

The master control system will control up to six source VTRs, film chains, or other source equipment. It can control the random access functions of each source as well as automating their playback times and positions. The VMC-200 consists of a modem, a terminal, dual eight-inch floppy disk drives, a real time clock, and printer

port. Each source or sequence of sources may be activated manually from the real time clock, or from a preceding sequence.

The system generates a report at the operator's request for confirmation of the day's run activity. Using the VMC-201 remote sequencing unit, the system will also preprogram, automatically, up to 99 remote locations. An entire day's programming can be accomplished over a standard telephone line, generating reports for all remote locations. All program material is switched during the vertical interval and provides two-channel audio-follow-video switching.

Compressor/Expander from Valley People 252

The Model 610 Dual Compressor Expander is the first in the company's new series of audio processing equipment. The 610 contains two independent channels, one for the compressor and one for the expander, both of which control the channel VCA. The channels may be operated independently or coupled for processing stereo.

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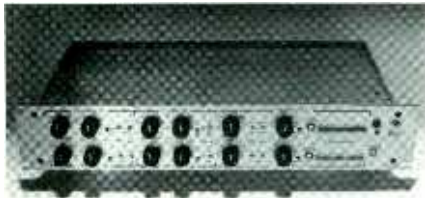
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BROADCAST EQUIPMENT



Each compressor section features continuously variable thresholds and compression ratios, with a coupling scheme that computes the amount of additional output gain required to maintain a constant nominal output level under varying combinations of threshold and ratio settings. The compressor function may be altered by means of a front panel switch to accept external audio for control, providing a voice-over effect.

Each of the two expander sections features selectable slopes of 1:2 or 1:20 and continuously variable thresholds. The inputs of each channel are balanced and capable of accepting +27 dBV maximum input level. Outputs are electronically balanced, with gain recovery compensation which eliminates the usual 6 dB level loss when driving unbalanced equipment. RF suppression is provided on both the inputs and out-

puts and the power supply has transient protection throughout. Specifications include less than 0.01 percent maximum IMD or 1 kHz THD, S/N of 95 dB (+4 dBV in and out), and a frequency response of 20 to 20,000 Hz, ± 0.25 dB.

Microwave Filter Removes Terrestrial Interference 253

Reception of only a single transponder signal by a satellite earth station is allowed by the Microwave Filter Model 4127 filter even when severe terrestrial interference is encountered. The combination bandpass filter and double notch filter assembly is inserted in either the coax line between the LNA and downconverter or, in severe interference, between the feedhorn and the LNA. A three-pole single-channel bandpass filter, cut to customer-specified frequency, and two microwave notches ± 10 MHz from the transponder center frequency, work together to exclude interfering terrestrial carriers in the 3700-4200 MHz band.

The 4127C has type N connectors and passes dc power while the 4127W has WR-229 waveguide flanges with no dc power passing required. Prices

are \$545.00 and \$520.00 respectively, with delivery in one week.

Ruslang Designs Switching Console 254

The new, modular audio/video switching console will accept any standard 19-inch electronic component. It is available in single and multiple bay designs, and can be positioned straight, at an angle, or in a semicircle. The expandable units are constructed in sections for ease of transportation. The standard high-pressure laminate materials feature a walnut grain finish with black trim; other wood grain finishes or solid colors are available.

Introduced at IBC

New Dolby Noise Reduction 255

Dolby introduced at the IBC a new A-type noise reduction unit weighing only 1.3 kg. It has independence from mains supplies and the input level has controls either for record-level setting before encoding or for rapid calibration in play, with accurate LED display for each channel. A stereo headphone monitor with level control independent from line-out level is also included.

Input circuitry is electronically balanced 6 kohm minimum impedance while the output circuitry contains single-ended outputs to drive any load impedance from 600 ohms upwards. Harmonic distortion is listed as maximum of 0.1 percent, 1 kHz to 20 kHz at +4 dBV. The overall frequency response is 20 Hz to 20 kHz ± 1 dB, encode-decode. The signal delay is constant with frequency, 18 μ s per channel, with overall encode/decode process 36 μ s.

Marconi Telecine Control System 256

The Prefix is a microprocessor-based system that enables all telecine controls to be preprogrammed. When the film is run, the stored data, which is locked to the film frame by frame, controls the telecine and automatically reproduces the predetermined settings. Aperture correction, cinemascope pans, audio

AM BROADCASTING - HIGH FIDELITY Are these terms mutually exclusive?

YES NO DON'T KNOW

Suprisingly, many broadcasters may not know that the correct answer to this question is no. Large sums of money are spent each year to purchase new transmitters, new studio equipment, new audio processing equipment and to modify antenna systems for improved AM sound. Unfortunately, until now, there has been no such thing as a professional quality AM monitor receiver. As a result, the perceived fidelity of an AM signal has been severely restricted by receiver performance.

Potomac has developed the SMR-11 Synthesized Monitor Receiver which will let you hear and measure the quality of your transmitted AM signal ... perhaps for the first time. Features include: Crystal Stability; 60 dB Signal to Noise Ratio; Audio Frequency Response ± 0.5 dB, 20 Hz to 8 kHz; Total Harmonic Distortion less than 0.2% (95% Modulation) at audio frequencies above 40 Hz ... please write for complete descriptive brochure.



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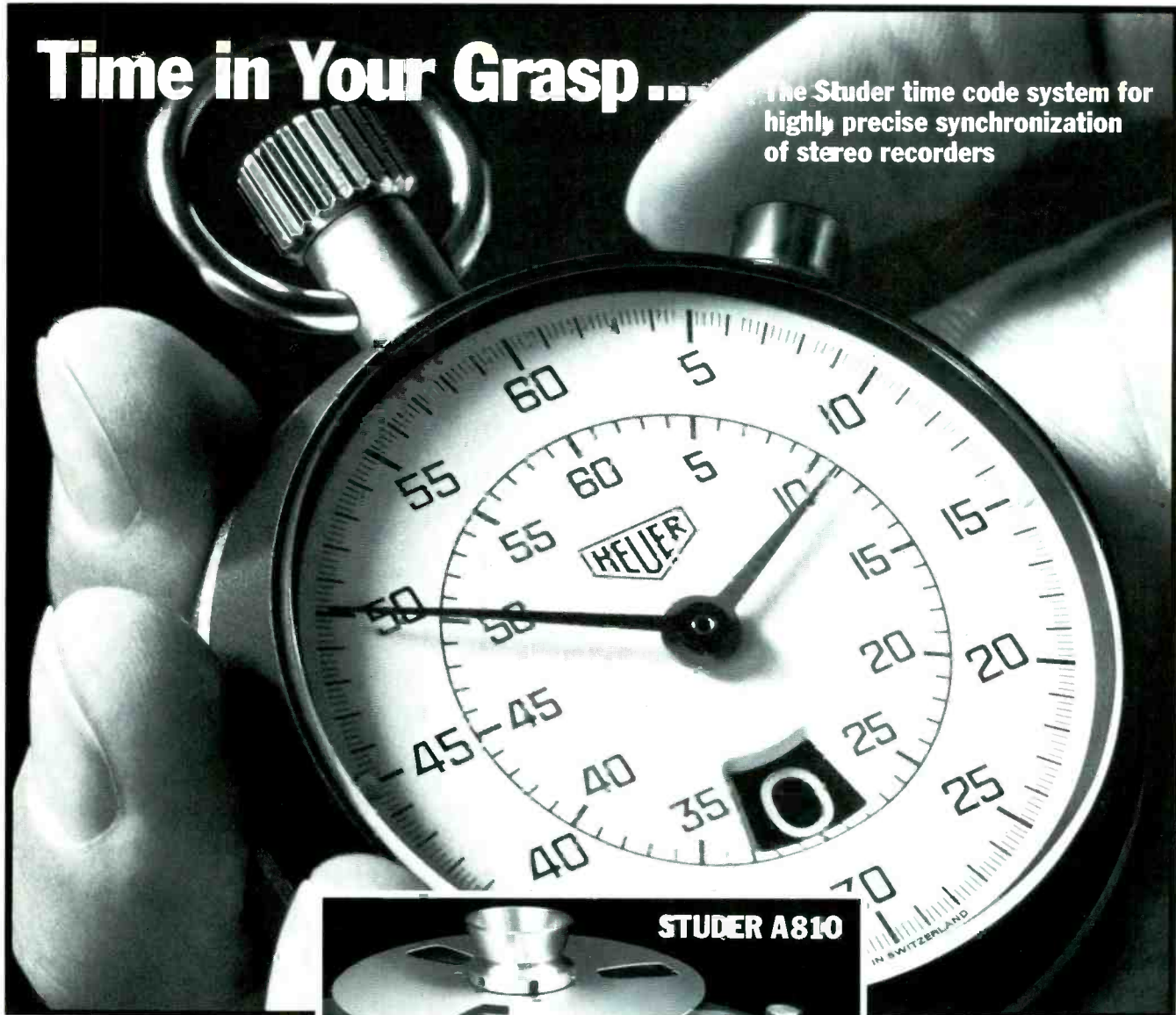
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Time in Your Grasp

The Studer time code system for highly precise synchronization of stereo recorders



The new Studer A810 points the way to the future; now even two-channel 1/4" stereo recorders may be perfectly synchronized. Precise SMPTE time code synchronization and maximum crosstalk rejection are attained by separating time code heads from audio heads, and by using a microprocessor-controlled delay. Studer has finally solved the problem of synchronizing stereo machines!

Until now SMPTE-code synchronizing of video-audio, film-audio, or audio-audio has been restricted to multi-channel machines. But such linkups pose no problem for Studer's A810 time code recorders. Designed for maxi-



imum system flexibility, the A810 has a fully digital control system for both the tape transport functions and audio electronic alignment. And, for the first time in the history of audio recording equipment, the A810 offers complete data exchange to peripheral equipment via serial interface. The bus-compatible A810 is ideally suited to complex automation tasks, and the A810's flexible modular concept allows simple, cost-effective changeover to specialized configurations.

We'll be glad to send you more information on the analog and digital capabilities of Studer's new A810 – the audio recorder with a grip on the future.

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EQUIPMENT

levels, and many other functions can also be preprogrammed.

The new unit also includes a frame search capability, allowing selected frames to be located automatically at high speed, and selected locations can be stored and the film organized into segments which can be rapidly accessed as required.

Prefix control is by keyboard at a remote position with the associated display presented on a picture monitor. Direct digital control system is used, combined with time code output, standard floppy disks for permanent data record, and an international standard remote control system.

RCA Shows Portable Automatic Camera 257

The TKP-47 is a lightweight color television camera designed as a portable adjunct to a system of TK-47 automatic studio cameras. The TKP-47 uses the same microprocessor-based technology as the TK-47 and is completely compatible. Both cameras use the same CPU, remote control units, and setup terminal. The single setup terminal can serve a combined system of up to 12 cameras.

The new camera uses 2/3-inch diode gun, lead oxide tubes combined into a system that weighs 17 pounds. The yokes, prism, and lenses are mounted to a single casting and the optics are sealed. Each of the new range of zoom lenses available for the small tube format will have a built-in diascope for automatic camera checks. The TKP-47 has no technical controls at the camera head. The camera heads in a system of TK-47 and TKP-47 cameras can be interchanged because camera preset settings may be stored in up to six memories in a camera processing unit.

Rank Cintel Telecine 258

Rank Cintel has introduced a low-cost digital telecine for the television broadcaster intended to complement the MK IIIC film transfer machine. The new multiplexed design offers the ability to have up to three dual-gauge 16/35 mm transports feeding into one electronics cubicle. The adoption of vertical spooling permits a smaller size cubicle, plus the film can run vertically through the scanning block, allowing dirt to fall clear.

The ADS 1 uses the infrared capabilities of the CCD to detect blemishes which are then concealed by frame store manipulation. This feature is offered as an option, while standard features are variable speed, automatic color correction, and a synchronizer for A/B film applications.

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Most people associate the coveted Emmy Award with television writers, producers, entertainers and musicians. However, since 1956, RCA engineers have been awarded seven Emmy's by the National Academy of Television Arts and Sciences for their contributions to picture perfect programming. The most recent Emmy was presented in recognition of the development of the TK-47 automatic color television camera.

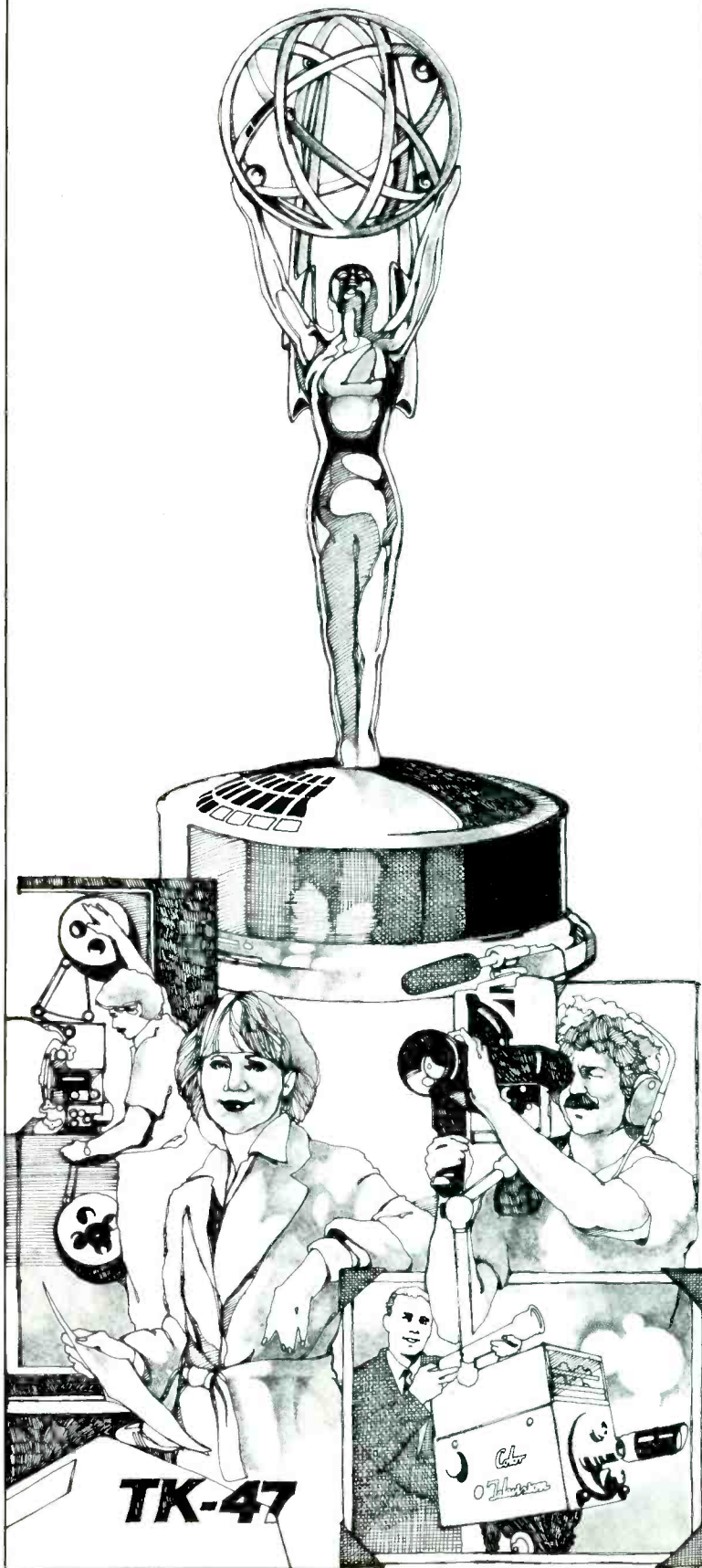
Virtually any picture you encounter on your home screen has been touched by RCA engineering. As America's largest supplier of commercial video equipment, we are involved in every step: studio cameras, portable cameras, video recorders, editing equipment, telecine equipment, transmitters, and broadcast antennas. As you read this, we are moving ahead with advanced development programs in digital video equipment and the creation of a completely solid state color television camera.

Our commitment is to continue to set the pace for the industry we pioneered. **If you are an engineer who is interested in furthering the development of advanced broadcast technology, we invite you to share this adventure with us.** For engineering career details, please write to: **RCA Broadcast Systems Division, Joy K. McCabe, Dept. PR-12, Front & Cooper Sts., Building 3-2, Camden, New Jersey 08102.**

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