OCTOBER 1983 $3.00

BM/E

BROADCAST MANAGEMENT/ENGINEERING

PROGRAMMING & PRODUCTION

NEW PRODUCTION AT WNEW-FM

LOCAL COMMERCIAL PRODUCTION

WHAT'S IN IT FOR YOU?

Also in this issue

New Series: Teleproduction Facilities

Digital Audio

SMPTE Preview

NRBA Preview

We've got it before you want it.

At ADM Technology we manufacture the most advanced audio consoles available. We incorporate new ideas and quality improvements into every console we build. You can be sure the ADM® console you order today will come through with the latest innovations in audio technology.

Our ADM 1600 Series II is a typical example. It is well equipped to handle a broad range of broadcast, production and post-production requirements and has a full measure of expandability.

Although it is a compact, basic console it is constantly updated to share the latest in technological advances with the larger ADM consoles.

Engineered to exacting standards and manufactured to the most rigid tolerances, all ADM's are backed by our exclusive 5-year warranty.

Let's talk consoles soon. Contact ADM Technology, Inc.–The Audio Company–1626 E. Big Beaver Road, Troy, MI 48084, Phone (313) 524-2100. TLX 23-1114.

ADM *The Audio Company*

WEST CENTRAL SALES
(817) 467-2990

WEST COAST SALES
(415) 945-0181

MAIN OFFICE AND EAST COAST SALES
(313) 524-2100

Small Surprise.

Now a color monitor with every feature you'd expect from BARCO joins our CM Production Series.

The respected BARCO CM Series is coming down in size. And our new small surprise, the CM 22, has the same features as the established 13" and 19" CM monitors, and more.

Put them in your remote vans. Use them in those tight spaces where the distance between viewer and monitor is limited, but the need is for the ultimate in color.

The CM 22 can operate on 110V or 220V mains and 12V local supplies and comes equipped with a fine pitch dot, black matrix in-line gun tube. The rack mount version makes it possible to install two 9" monitors in a single 19" rack. The switch mode power supply allows stable performance in areas where the main supply may vary under certain conditions.

Features found in the 9", 13", and 19" CM models include: pulse cross; pre-set contrast, hue, saturation, brightness; automatic degaussing; scan format switch; set up switch, front accessible RGB cut off and gain controls. Modular construction allows for quick and easy maintenance.

For more information on our small surprise, the CM 22, and the rest of the BARCO video monitor line, call Chris Golson at 201/882-0584.

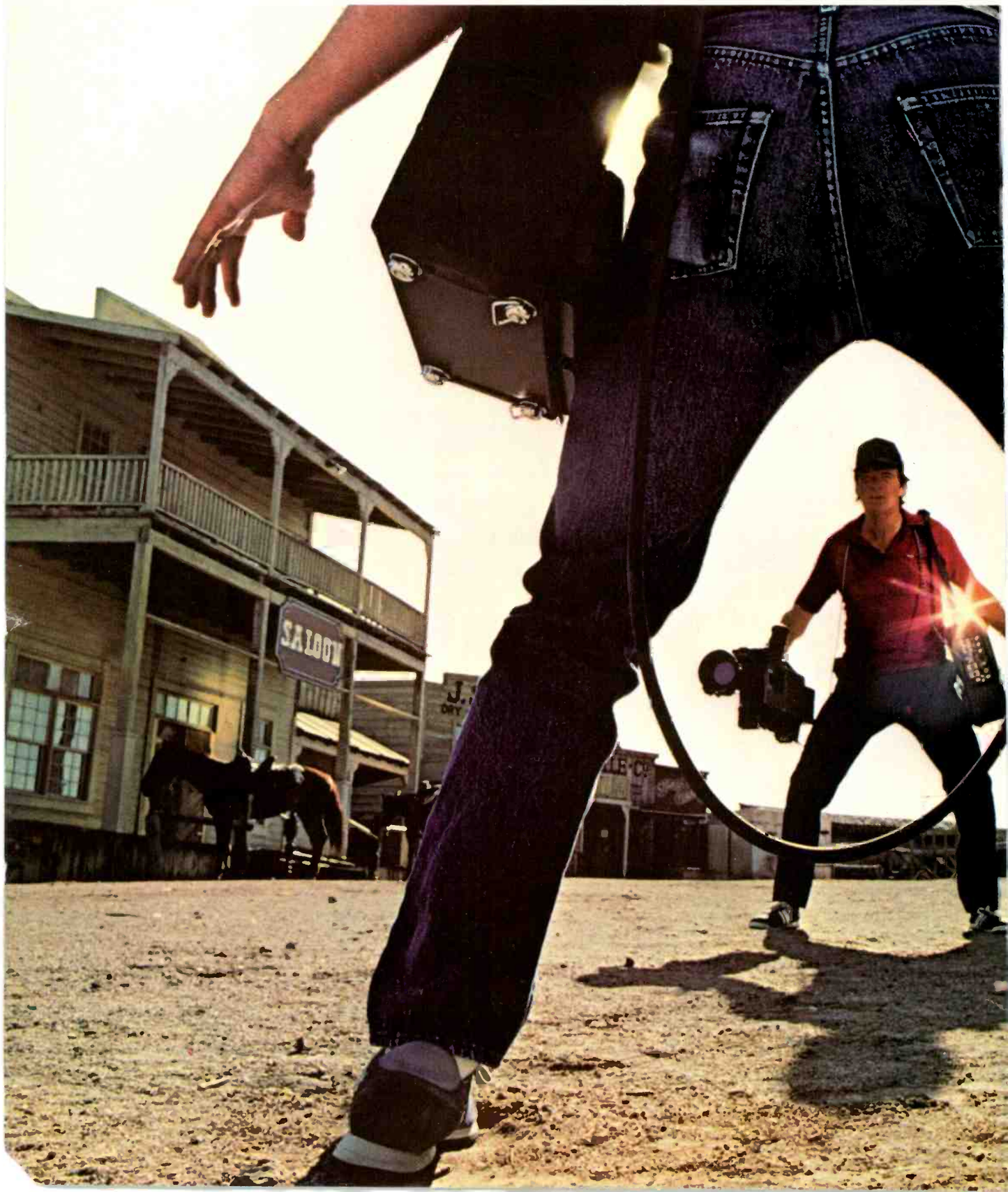
When your image is everything...turn to BARCO. Available in the U.S....only from ELECTOR.

ELECTOR USA, INC.

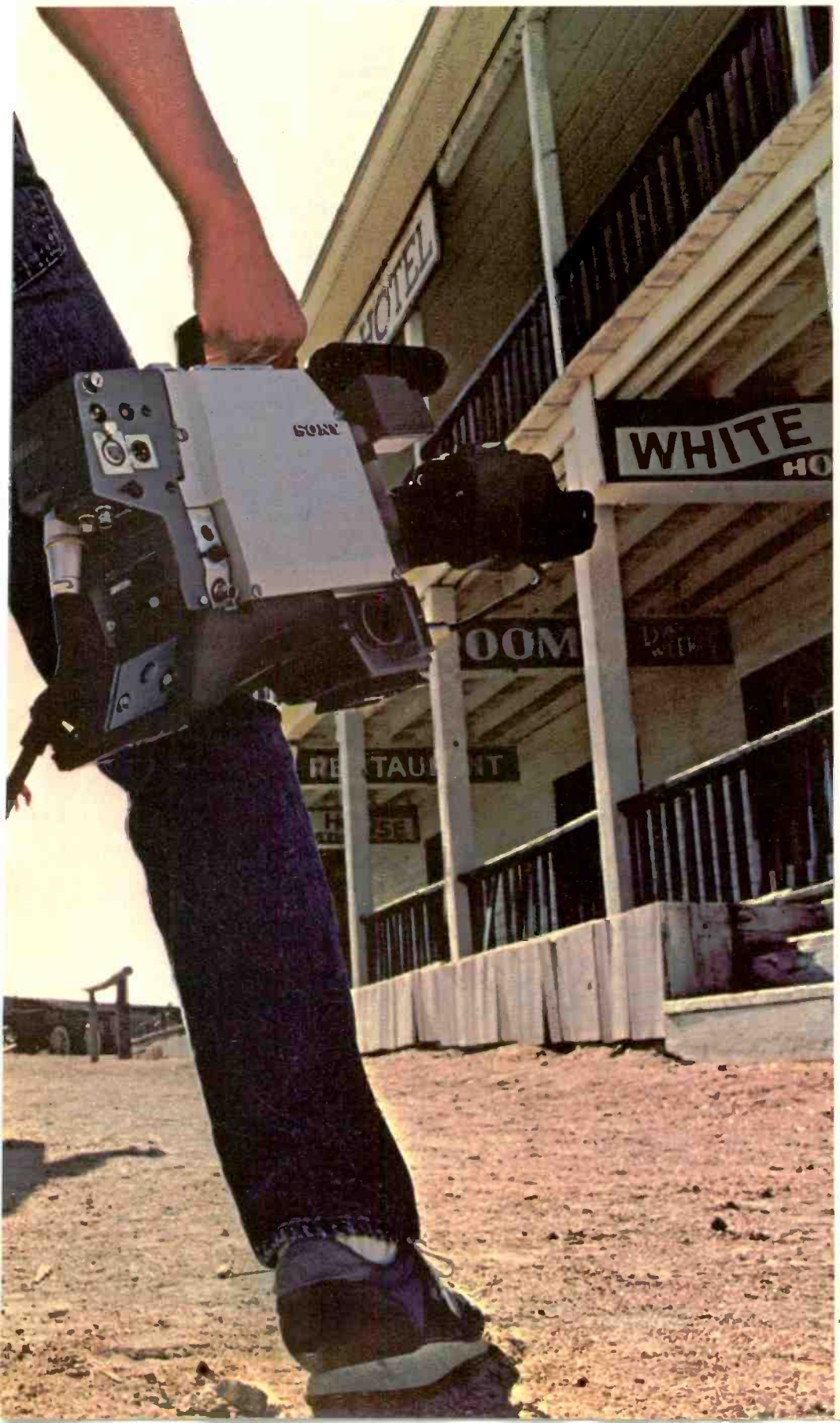
In The U.S., Elector USA, Inc., 5128 Calle del Sol, Santa Clara, CA 95050 Phone: 408/727-1506 30 Chapin Road, P.O Box 699, Pine Brook, NJ 07058 Phone: 201/882-0584 **In Canada,** Electro & Optical Systems, Ltd., 31 Progress Court, Scarborough, Ontario M16 3VS Phone: 416/439-9333

Circle 105 on Reader Service Card

25 SHOOT-OUTS.



NO LOSSES.



Every television station that has pitted the new Sony BVP-3 camera against the competition has arrived at a singular result.

In bright light and low light. In the field and lab. With vectorscopes, wave form monitors, noise meters and the ultimate arbitrator—the naked eye—Sony outshot them all.

The overwhelming factor: the BVP-3 contains the most revolutionary breakthrough in pickup tube technology in the history of broadcast. The exclusive, Sony developed ⅔″ mixed field Saticon™ tubes.

Sony, unlike many of its competitors, didn't stick with the heavy, bulky ⅔″ tube assemblies commonly used. Nor did they switch to inferior ½″ tubes. Instead, they stayed with the ⅔″ format, but radically reduced the size and weight and reinvented the electron optical system. Resulting in not just the best resolution, registration and signal-to-noise ratio, but the best balanced camera in the industry.

And it plugs into any recording format, including our superior ½″ Betacam™ system.

ARRANGE YOUR OWN SHOOT-OUT.

If you'd care to see how well this self-contained ENG camera shoots, a camera that has all the features you've been asking for, and at $20,000* easily packs the most bang for the buck, just name the time and place and we'll be there.

In N.Y./N.J. call (201) 368-5085; in the Northeast/Mid-Atlantic (201) 368-5112; in the Midwest (312) 773-6045; in the Southeast (404) 451-7671; in the Southwest (214) 659-3600; in the West (213) 841-8711.

SONY Broadcast

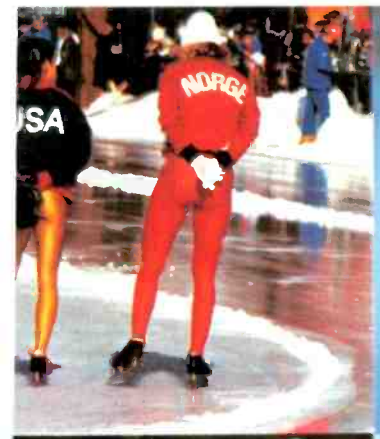
*U.S. list price.

BM/E
BROADCAST MANAGEMENT/ENGINEERING

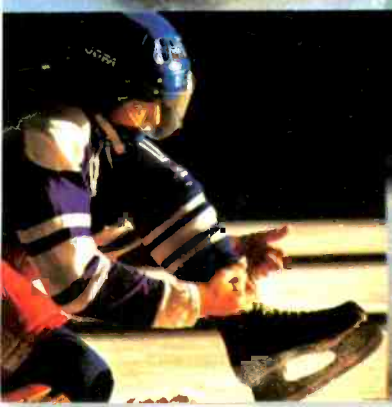
BROADBAND INFORMATION SERVICES, INC.
295 Madison Ave., New York, N.Y. 10017
212-685-5320, Telex: 64-4001
Publishers of:
BM/E—Broadcast Management/Engineering
BM/E's World Broadcast News

ABP BPA BM/E BROADCAST MANAGEMENT ENGINEERING (ISSN 0005-3201) is published monthly by Broadband Information Services Inc. All notices pertaining to undeliverable mail or subscriptions should be addressed to 295 Madison Ave., New York, NY 10017. BM/E is circulated without charge to those responsible for station operation and for specifying and authorizing the purchase of equipment used in broadcast facilities in the U.S. and Canada. These facilities include AM, FM and TV broadcast stations, CATV systems, ETV stations, networks and studios, audio and video recording studios, telecine facilities, consultants, etc. Subscription prices to others $24.00 one year, $36.00 two years. Foreign $36.00 one year, $60.00 two years. Air Mail rates on request.

Second class postage paid N.Y., N.Y. and additional mailing offices.



Exclusive Supplier of 1" and ¾" video tape to the XIVth Winter Olympic Games, Sarajevo 1984.



The Tape Behind the Olympics

Ampex video tape.
Winning quality worth broadcasting on 196 1" video tape and 197 ¾" videocassettes.

AMPEX

Ampex Corporation • One of The Signal Companies

Ampex Corporation, Magnetic Tape Division, 401 Broadway Redwood City, CA 94063, 415/367-3809

Circle 107 on Reader Service Card

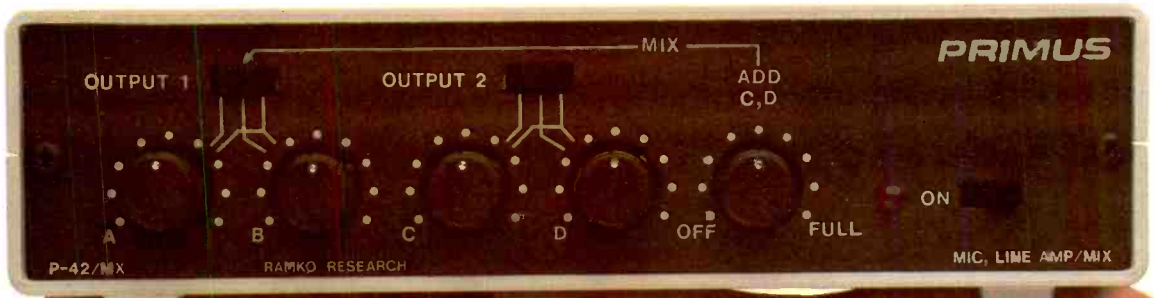
BM/E
BROADCAST MANAGEMENT/ENGINEERING
OCTOBER 1983 VOLUME 19/NUMBER 10

FEATURES

DEPARTMENTS

COMING IN
NOVEMBER:
PROBLEMS AT THE DIGITAL INTERFACE
SPECIAL REPORT: TEST & MEASUREMENT

INTRODUCING THE NEW PRIMUS™ AUDIO COMPONENTS



CERTIFIED PERFORMANCE

Powerful performance in the palm of your hand.

PRIMUS (Prēē-müs): an array of compact, performance-engineered audio electronics from Ramko Research.

The new PRIMUS components are unlike any professional audio equipment you've ever used. Never before has so much advanced performance been put into such compact and rugged packages. Rarely have you had available so many features and options to help get the job done. Never have you had a three-year warranty that's backed up by factory certified proof-of-performance.

PRIMUS is a comprehensive range of components that give you the flexibility to configure an audio sysem limited only by your imagination. Whether you choose from tabletop or rack mounting versions, there's hardly an audio job that can't be improved upon.

Here's a partial list of models currently available:

☐ Lab standard mono or stereo turntable preamplifiers.
☐ Dual and quad input, gain selectable microphone/line amplifier mixers.
☐ Audio distribution amps from three (3) stereo/six (6) mono up to eight (8) stereo/sixteen (16) mono outputs. All models feature individual recessed front panel adjustments or optional high resolution, conductive plastic potentiometers.
☐ Mic/Line equalizer amplifiers with balanced I/O and up to ±15 db of reciprocal equalization.
☐ Expandable audio console mixers with cueing, selectable EQ, metering phones and monitor.
☐ Voicegard™ combination limiter/compressor, noise gate with variable threshold and slope ratio; gain reduction metering.
☐ Signal processing VCA's with six (6) independently controlled channels. DC remote control with balanced outputs.
☐ R/P and playback, stereo and mono NAB cart machines.

Whichever combination of precision PRIMUS audio components you choose, you're guaranteed outstanding specifications. For example, our stereo turntable preamplifier measures:

Signal-to-noise Ratio: −93 dB (A weighted)
Total Harmonic Distortion: Below .0018%
Frequency Response: 10 Hz to 20 kHZ, ±.25 dB
Stereo Separation: −70 dB @ 1 kHz
Output Level: +25 dBm (10 Hz - 20 kHz)

The simplified and modular packaging of PRIMUS allows us to concentrate the quality where it belongs: in state-of-the-art circuitry. High slew-rate integrated circuits and extensive ground planes insure the highest RFI protection. All IC's plug into gold plated sockets. All models feature quick disconnect I/O connectors and require only 1¾ inch standard rack height.

We've taken another important step, too.

When you invest in PRIMUS, you receive a *Certified Performance Gold Card* that instantly puts you in touch with our Technical Assistance Department on a toll-free line. Just call in your registered serial number and you're in touch with the advice you need.

To put PRIMUS audio components to task on a free two-week trial, call toll free (800) 821-2545 or contact your nearest Ramko Research sales representative or distributor. Put the powerful performance of PRIMUS in the palm of your hand.

PRIMUS audio components are an array of compact, performance-engineered rack mounting or tabletop packages.

PRIMUS is a division of Ramko Research, Inc. 11355-A Folsom Blvd., Rancho Cordova, California 95670 (916) 635-3600

Circle 108 on Reader Service Card

If your HL-79 beats we'll

Harris Studio Division.

our TC-90S, give you the TC-90S!

Comparison. The real test. When you have to make a choice between two superb competitors, it usually comes down to a shoot out—a side-by-side objective comparison of those features and capabilities that mean the most to you. Harris has made a substantial investment in the TC-90S—because we knew that we could design and manufacture an American camera with features that would make it the new industry standard. We wouldn't make this offer unless we were sure we had succeeded.

FREE

So look over these TC-90S features and read our offer. Then, if you want a shoot-out, let us know.

We're ready.

The Facts

Colorimetry

Mixed-field LOC, half-inch diode gun tubes, and an advanced new beam splitter provide winning colorimetry and better registration than larger tubes.

Smart Package™

Exclusive microprocessor time code generation lets you record SMPTE and VITC time code *as you shoot*, so editing hassles disappear. Automatic encoder balance, auto registration, diagnostics and camera status (in English) keep your camera out of the shop and in the field where it belongs.

Automatics

Auto registration
Auto beam control
Auto encoder balance
Auto iris
Auto white balance
Auto black balance
Auto scan failure protection

Gain Tracking

The TC-90S maintains black level under all conditions to eliminate color shift, even with changes in gain.

Noise

Minimal apparent noise at +18 dB gain for superb low light level performance.

Weight

The TC-90S, with standard lens and battery, and including the viewfinder, weighs less than the HL-79, similarly equipped. No more "sagging shoulder" feeling, and your pictures will show it.

Profile

You can see to the right! Even when you're shooting, you have an unobstructed view to the right over the top of the camera.

Price

The TC-90S, with microprocessor, tubes, batteries and a 15:1 zoom lens—a top-of-the-line camera—is list priced under $30,000!

24 Hour Service

Call us. 24-hours-a-day, 7 days a week. Our telephones are constantly manned by service engineers, and we're ready when you need help.

The Challenge

The details of the shoot-out are simple: We must have on file the coupon below filled out by the cameraperson at your facility, and a letter signed by your chief engineer or general manager on your organization's letterhead, requesting the shoot-out and stating that you are in the market for a new ENG camera. Then, if your current model Ikegami HL-79 (or an HL-79 you secure for the shoot-out) meets all, and exceeds one or more, of the TC-90S features given above, we'll leave without our camera—it's all yours.

There's More

To those of you who believe that time is the true test of a product, we'll make another offer: Forget about filling out coupons and writing letters—call us today and order a TC-90S. Then use it in the field for 30 days. If it doesn't live up to our specifications, we'll refund your money.

Either way, the TC-90S is a winner. In a shoot-out, or on your shoulder.

OK Harris, prove it!

Mail to: Mark Gray, Director of Marketing, Harris Corporation, Studio Division P.O. Box 4290 Quincy, Illinois 62305

CAMERAPERSON

STATION OR COMPANY

ADDRESS

CITY STATE ZIP

TELEPHONE

Hurry, our incredible offer expires January 31, 1984. And good luck. Your HL-79's going to need it.

HARRIS

Circle 109 on Reader Service Card

EDITORIAL

Advice for the FCC

RESPONSES TO THE FCC's combined Notice of Proposed Rulemaking and Notice of Inquiry aimed at reviewing the need for many of its technical regulations has generated a worthwhile and sensible recommendation from the National Association of Broadcasters. Fearing that the Commission's deregulation fervor might go overboard on technical matters, the NAB suggested in its comments that the FCC form a joint government-industry advisory group to review and evaluate present technical regulations *before* a proposed rulemaking.

The idea is to hold off action until the advisory group has a chance to provide input. Considering the seriousness of this action and the overworked (swamped) FCC technical staff, the advisory group approach is sound. And there are numerous precedents. The Commission has formed technical advisory groups for issues relating to DBS and in preparation for WARC meetings, to name just two.

In the Notice of Proposed Rulemaking, the Commission would eliminate rules governing transmission system requirements for AM, FM and TV transmitters on the theory that the marketplace will control picture and sound quality. In the Notice of Inquiry, the FCC asked if technical regulations that are no longer necessary or are overly burdensome could be eliminated or modified.

The NAB's response said that the agency "must continue to play a major role in areas of technical regulation where the marketplace on its own cannot produce desired results such as interference-free and universally available broadcast communications."

Of major concern to the NAB and to the Association of Maximum Service Telecasters is that standards for quality, interoperability and interference control are intertwined. Unless these regulations are studied carefully, elimination in one area may have unexpected and harmful impact on another, thus weakening a communications system that took 50 years to build.

Here's how the AMST put it:

> The Commission should recognize that a technical rule often serves more than one of the regulatory goals of quality control, interoperatibility, interference control and spectrum use efficiency. Moreover, as technologies and industries evolve, the purposes served by a particular standard may change. Before concluding that a specific television broadcasting technical rule should be modified or rescinded, the Commission needs to give careful attention to the policies and purposes the rule actually serves and how modifying or deleting it could change the television broadcasting system.

The same statement holds true for radio.

There is little doubt by all concerned that the technical regulations need a thorough going over to weed out the obsolete. By the same token, technical regulations and technical standards play an important role in policing stations that willfully or carelessly operate outside the rules.

We support the NAB's recommendation for the government-industry advisory group to tackle the tedious job of reevaluating the regulations. It's a prudent approach that could help the FCC and the industry steer a safe course through the deregulation process. The next move is up to the Commission.

HOW WE BECAME THE FRONTRUNNER IN THE ROUTING SWITCHER BUSINESS.

While everyone else was making minor refinements, we went back to the drawing boards. We took the best that modern hybrid technology had to offer and designed it into our Series H Switching Systems.

The result is a new state-of-the-art in every respect. We offer the best performance specs available. Reliability is unquestioned. Maintenance is reduced. And expansion is easier than ever.

There's a 300% increase in crosspoints-per-rack-unit. So what used to fill an entire room can now fit inside a closet.

And The Series H is available in the configuration you need to make the system practical.

Best of all, we can offer these advantages at a price that's actually less than the price of conventional switching systems.

If you'd like us to prove how far out in front we are, call us toll-free at 1-800-328-1684. In Minnesota, call toll-free 1-800-792-1072. Outside the continental U.S., call International Operations collect at 1-612-736-2549.

We'll give you the best run for your money.

Professional Audio/Video Equipment

3M hears you...

Circle 110 on Reader Service Card

3M

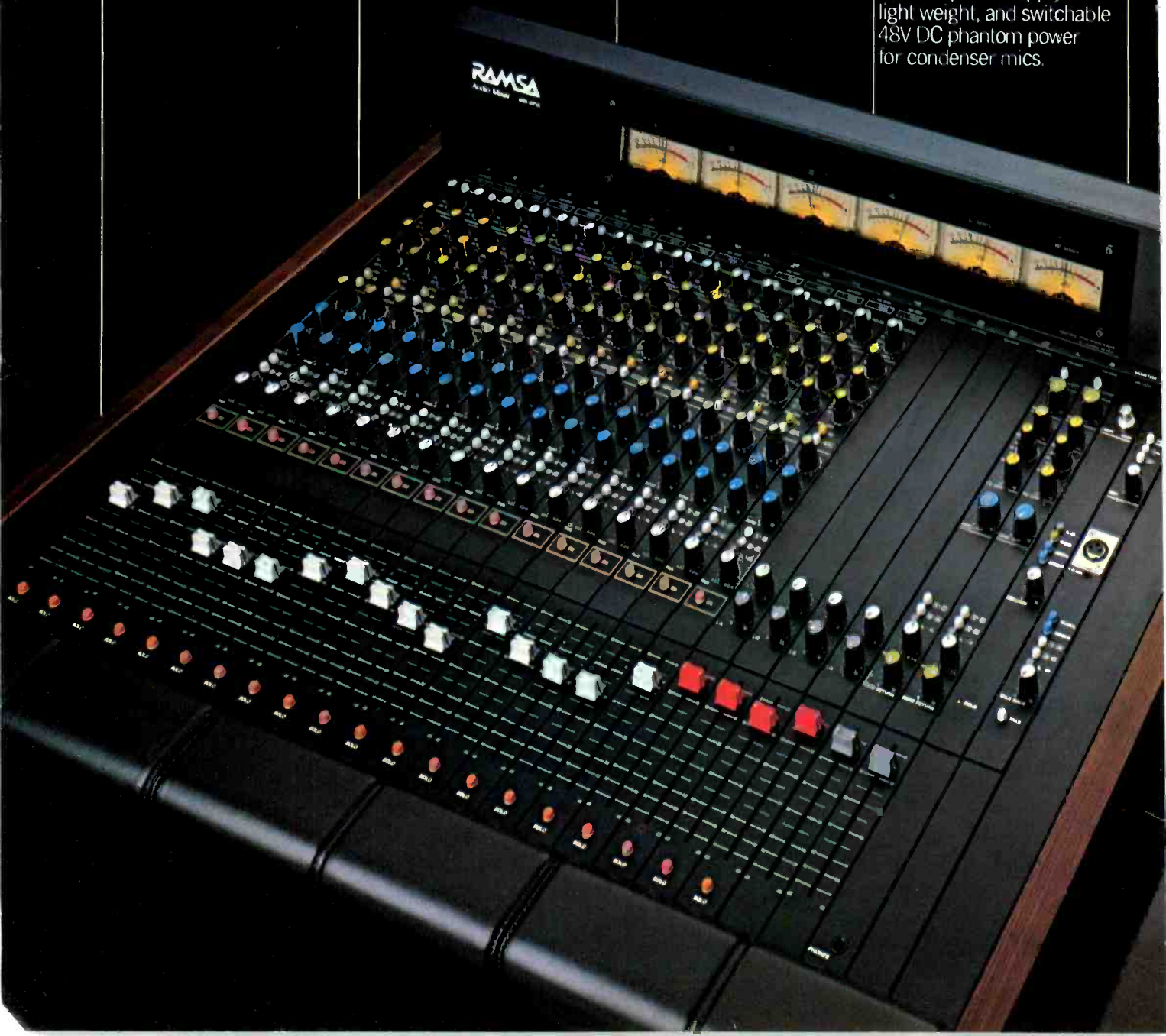
If you're ready to move up to a specialized mixer, you're ready for Ramsa.

The Sound Reinforcement Specialist: Ramsa WR-8716

When your sound says you're professional but your mixer doesn't. When you're wasting your subtlety and style on "make-do" boards. When you're creating compromises instead of clear-cut distinctions. Then you're ready for Ramsa— the mixers that are specialized so you won't have to compromise.

The WR-8716 is a fully modular sound reinforcement console with 16 input modules, 4 group modules, and 2 masters. It features 16 input pre-fader solo buttons, 4 group modules with pre-fader insertion patch points, and lockable post-fader solo buttons. There are 6 illuminated VU meters with peak LED's for easy outdoor reading and a separate stereo variable frequency EQ for monitor sends. Pan pot controls allow panning to the left or right masters while level controls permit 16 x 6 board operation. The left and right direct channel assign function lets you bypass the group modules for individual sources. Portable operation is a snap with easy access connectors.

And the WR-8716 features plastic conductive faders for greater reliability and smooth, low-noise operation; external power supply for light weight, and switchable 48V DC phantom power for condenser mics.



RAMSA

The Recording Specialist: Ramsa WR-8816

The WR-8816 recording console includes the same modular construction, input modules, power supplies, and faders as the WR-8716 plus many important recording advantages. Like direct outputs for 4, 8, or 16 track recording and peak-reading LED meters that let you monitor any 4 out of 24 signals with clear, quick response.

You'll command a variable frequency EQ section with 3 frequency settings for the high and low frequencies plus continuously variable midrange. Stereo echo send replaces the separate mono controls you'll find on competitive boards. And you get two independent stereo monitor controls—one for musician's headphones, one for control room monitors—a special feature for any mixer in this class. And there are other important features like low noise electronically balanced mic inputs with high-speed IC's, 16 switchable post-fader solo controls and XLR-type mic connectors.

Ramsa offers a full line of specialty mixers including the more compact WR-8210 recording mixer and WR-130 sound reinforcement mixer. So don't hold down your professional sound, call (201) 348-7470, because you're ready for Ramsa.

Panasonic
PROFESSIONAL AUDIO DIVISION

Circle 511 on Reader Service Card

TV Subcarrier Proposal Could Bring Stereo Sound

U.S. television could be offering stereo sound in just a few months if a recent FCC proposal to deregulate the TV aural baseband is approved. The proposal, which mirrors the FCC's recent deregulation of FM subcarriers (see *BM/E*, June 1983, p. 132), would permit both public and commercial TV stations to use their aural baseband subcarriers for almost any broadcast or nonbroadcast, commercial or noncommercial purpose not otherwise inconsistent with regulations. Permitted uses could range from stereo and/or dual-language broadcasting to paging and electronic mail.

The proposed deregulation could be especially important to noncommercial broadcasters faced with increasing financial difficulties as public funding sources wither. In extending the proposal to public television, the Commission cited a 1981 amendment to the Communication Act that authorized public broadcasters to supplement their incomes through profit-making ventures.

The Commission said it would deal with regulatory classification issues for TV subcarriers as it has for FM SCAs, regarding most as ancillary broadcast services. Services offered on either a common carrier or private carrier basis, however, would fall under the appropriate rules. TV SCA use would be considered a secondary privilege to be conferred upon the primary licensee.

Nets Lose Syndication, Win Financial Interest

The FCC's recent "tentative decision" eliminating its financial interest rule and easing the restrictions on network involvement in syndication will have a much more limited effect on the nets' bankrolls than they had hoped. The action—which awaits an additional 30 days of comments before possible adoption—still keeps CBS, ABC, and NBC from the most lucrative aspects of the syndication business.

On the financial interest end, the Commission said it felt the rule had failed in its intention to increase the diversity of network or first-run programming and had not served to encourage diversity of program supply and distribution. Therefore, it saw no reason to maintain the rule on its books.

In the case of syndication, however, the FCC found it necessary to retain some form of insurance against network warehousing of off-network series, a practice that could drive up prices for independent stations, which rely on such shows as a primary advertising draw.

The FCC therefore proposed to allow networks to acquire syndication rights to prime-time entertainment programs, but to require them to transfer those rights to an unaffiliated syndicator within six months after the network run ends. If the series runs on the network more than five years, rights would have to be transferred at the end of the fifth year. The rules do not apply to international syndication or to programming that runs outside of prime time.

A "sunset" clause in the proposal calls for the syndication rules to be deleted entirely seven years after the Commission's action.

Although FCC chairman Mark Fowler termed the action a "consensus," the commissioners were not completely agreed. One of them, James Quello, issued a separate statement that indicated deep reservations about the proposals. Quello dissented to "the characterization of this document as a tentative decision," saying the action did not "reflect a decision on my part, tentative or otherwise, that the Commission should adopt this particular proposal."

The proposal received mixed reviews from the networks, with NBC stating its disappointment up front,

PBS-Cable Connection Profits Both

Public television and cable may seem like strange bedfellows, but in Springfield, MA, the alliance is working to the benefit of all concerned. The local public television station, WGBY-TV, is swelling its coffers by renting facilities to local franchisee Continental Cablevision, and is earning additional money by producing nearly a third of Continental's local origination programming.

Cooperative effort: WGBY's staff tapes the studio portion of a cable arts show.

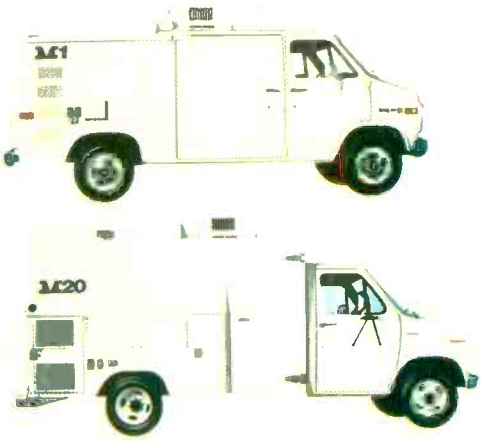
The $125,000 WGBY realized from the deal has allowed the station to hire additional programming staff despite a $60,000 drop in federal funding.

Planning for the PBS-cable connection started long before the franchise was awarded. Back in 1977, when WGBY moved into new downtown facilities, the renovations were made with cable in mind. The station's involvement and reputation led to the city cable advisory board specifying that potential cable operators work creatively with WGBY.

Continental's successful bid included a commitment of five percent of gross annual revenues to an Access Endowment Corporation to fund local programming—funds that may well find their way to the public television station, at least in part.

With the relationship now a year old, WGBY feels that the link with Cablevision has brought it more than profits. Says general manager Jerry Franklin, "We saw cable as a significant source of revenue which would allow us to keep our producers, but split their time. The hard-core truth of it is, that was the only way we could stay in the local programming business. And it has worked."

When the action's hard-hitting, Midwest and Panasonic Video Systems will put you there!



Panasonic Gives You The Performance And Reliability You Need. Midwest Gives Them To You Fast... And At A Super Price!

You can depend on Panasonic Industrial video equipment to give you the performance you want and to take the hard-hitting action of mobile unit installations. That's why so many mobile production companies choose them.

If you need a mobile unit that can take in all the action ... and take all the punishment on-location shots hand out ... you need to talk to Midwest about their complete line of Panasonic-equipped mobile units. Midwest maintains a solid inventory of the complete Panasonic Industrial video line. The new WV-777 Camera shown here is but one of a wide range of components from the Panasonic Video Systems Division.

Let Midwest put you there when the action's best, with dependable Panasonic equipment in an M1 or M20 mobile unit. For information on the complete line of products at Midwest, call toll-free today.

1-800-543-1584

MIDWEST CORPORATION

One Sperti Drive
Edgewood, KY 41017

Authorized Distributor
for Panasonic Products

Circle 112 on Reader Service Card

Cincinnati, OH 606-331-8990
Columbus, OH 614-476-2800
Dayton, OH 513-298-0421
Cleveland, OH 216-447-9745
Pittsburgh, PA 412-781-7707
Detroit, MI 313-689-9730
Indianapolis, IN 317-251-5750
Louisville, KY 502-491-2888
Lexington, KY 606-277-4994
Bristol, TN 615-968-2289
Nashville, TN 615-331-5791
Charleston, WV 304-722-2921
Virginia Beach, VA 804-464-6256
Washington, DC 301-577-4903
Charlotte, NC 704-399-6336
Atlanta, GA 404-875-3753
Miami, FL 305-592-5355
Tampa, FL 813-885-9308

calling the rules "severe restrictions on the ability of networks to participate in program syndication." CBS and ABC were more forgiving and sounded thankful for what they'd been given, at least publicly. Both, however, said they'd welcome full repeal.

AES Convention Opens With "D(igital) Day"

Once again, digital techniques will be central among audio engineers' interests at the seventy-fourth Audio Engineering Society Convention, meeting in New York October 8 through 12. The overriding theme of the event, which has been extended to five days, is "exploring the digital and analog domains of today and tomorrow." Opening day is designated AES D (for "digital") Day.

Eighty technical papers and 10 workshops on digital technology, including a seminar on the compact disc, will fill the opening Saturday of the convention. (The large number of technical papers necessitated the October 8 start, a day earlier than originally announced.) Saturday will also include a tutorial on digital basics, and special demonstrations of compact disc equipment will continue through Sunday.

A total of 191 exhibitors will show their latest wares at this year's convention, with special areas set aside for audio evaluation.

Papers of relevance to broadcasters will address such topics as studio design, psycho-acoustics, sound reinforcement, and test and measurement techniques. Workshops will examine time code and film/tape synchronization, microphone techniques for digital recording, tape recorder design and its effect on usage, and digital editing techniques.

FCC Clears Program Regulations Underbrush

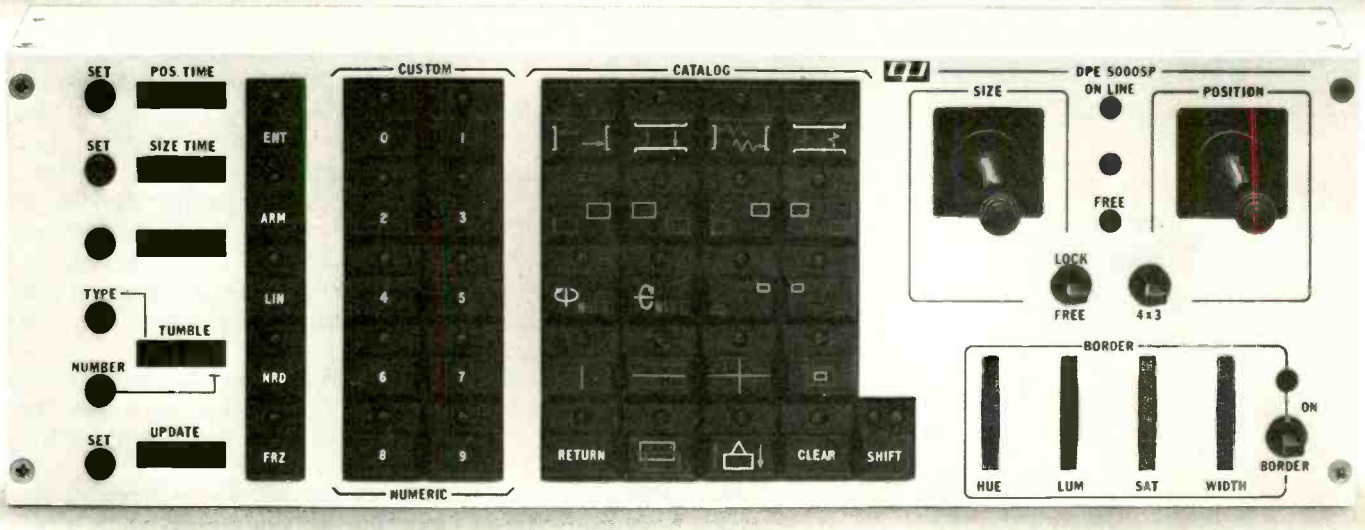
The FCC has sharpened its deregulatory machete again, slicing through what it calls the regulatory "underbrush" of rules affecting program content. The move follows the Commission's recent deletion of policies on ratings abuse and coverage maps.

The first reason for pruning regulatory deadwood, the Commission said, is to further its goal of reducing excessive regulation and giving the marketplace a freer hand. In addition, it said some of the deleted policies presented first Amendment concerns; some were too broad, some too restrictive, and some outdated.

The 10 policies that fell by the wayside concerned alcoholic beverage advertising; broadcasts of astrology material; foreign language programs; harassing and threatening phone calls resulting from station broadcasts; agreements between music format service companies and broadcasters; musical recordings and repetitious broadcasts; presentation restrictions on off-network programs and feature films; call-in polls on radio and television stations; private interest broadcasts by licensees to annoy and harass others; and sirens and other emergency sound effects in announcements.

Three other policies were proposed for deletion. They cover horse racing information broadcasts and SCA transmissions, and advertising of horse racing, off-track and parimutuel betting.

The Quantel DPE 5000/SP.



Now every broadcaster can afford digital effects.

The Quantel DPE 5000/SP makes digital effects affordable by every broadcaster. Every facility.

This exciting single- or multi-channel system gives you infinite compression. Zoom expansion. Variable picture positioning. Freeze and update. Variable border generation. Horizontal squeeze. Vertical squeeze. Even picture splits.

Not bad for a unit that's only 8¾ inches high. Perfectly sized for your studio—or mobile unit.

But you get more. Like pre-select of picture position, size, and transition rate. A choice of linear moves or camera-line Quantel-style moves. Noise reduction. And "Digiflip" tumble-flip.

And more yet! Forty moves instantly selectable at the touch of a button—30 pre-programmed and 10 of your own creation.

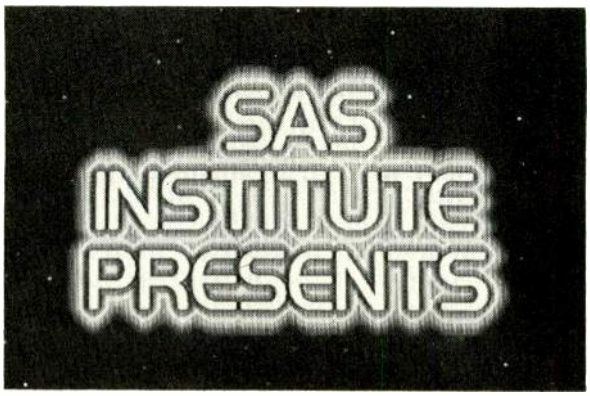
And now, with "Multilink," you can connect up to five SPs into a multi-channel system. Or use an SP to add a second channel to your DPE 5000. That's flexibility.

On top of all this you get Quantel's superior picture interpolation for the smoothest moves available.

"SP" stands for "special performance." Almost an understatement. Call your local MCI/Quantel office for details. Or get in touch with us directly at 415/856-6226. Micro Consultants, Inc., P.O. Box 50810, Palo Alto California 94303.

MCI/QUANTEL

The digital video people



Stations looking for unusual promotion visuals for TV might consider a package of time lapse photography footage being offered by Energy Productions of Hollywood. Energy will even custom-shoot a time-lapse view of a local scene if desired. Time lapse photography "bridges the gap between animation and live action," says Energy president and director Louis Schwartzberg.

Engineering Emmies for Four Manufacturers

Recognizing the importance of engineering in the production of TV programming, the New York chapter of the Academy of Television Arts and Sciences gave out several major Emmy awards for technical excellence at its annual banquet September 12 in New York City.

Awards were made in five categories. In Recorder/Camera Combinations, RCA won for Hawkeye. The Academy recognized RCA's "outstanding achievement in the development of an electronic hand-held recording camera . . . and the development of a system for newsgathering on videotape using a single integrated unit containing camera, recorder, and battery."

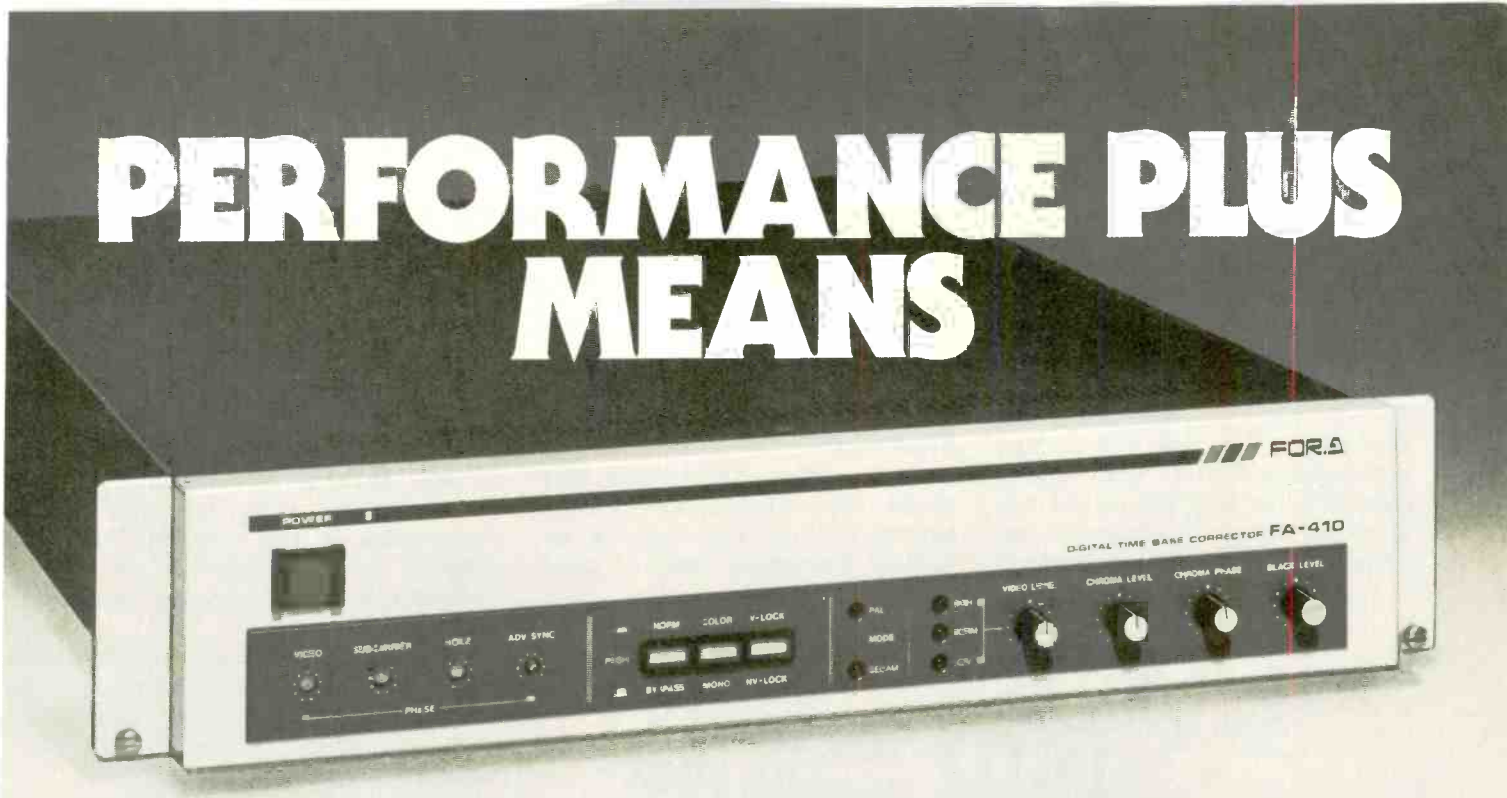
In the category of Real-Time Digital Effects, Ampex won an award for ADO—"the first transparent-quality, real-time digital effects system with off-axis rotation, true 3D perspective, and ultra-smooth motion which made multiple-pass operation possible without signal deterioration," in the Academy's words.

3M was also a big winner, receiving an award in the Audio and Video Magnetic Media category for "outstanding achievement in engineering pioneering for the development of the first industry-accepted videotape." In addition, Mel Sater of 3M, developer of the first tape formulations, won an award recognizing his "important contribution" to the development.

Since 1983 marks the tenth anniversary of Richard Shoup's work at the Xerox Advanced Research Center, Palo Alto, on designing a real-time computer graphics system (eventually leading to the formation of Shoup's Aurora Systems), the Academy presented awards for the development of an electronic graphic creative system to both Xerox and Shoup. The award cited Shoup "for his concept and development of the first electronic graphic creative system which has led to the importance of videographics in television today."

Finally, the Academy recognized the work of international societies such as the EBU, International Radio Consultative Committee of the ITU (CCIR), and SMPTE for their work on the establishment of an international standard for digital video recording in the studio.

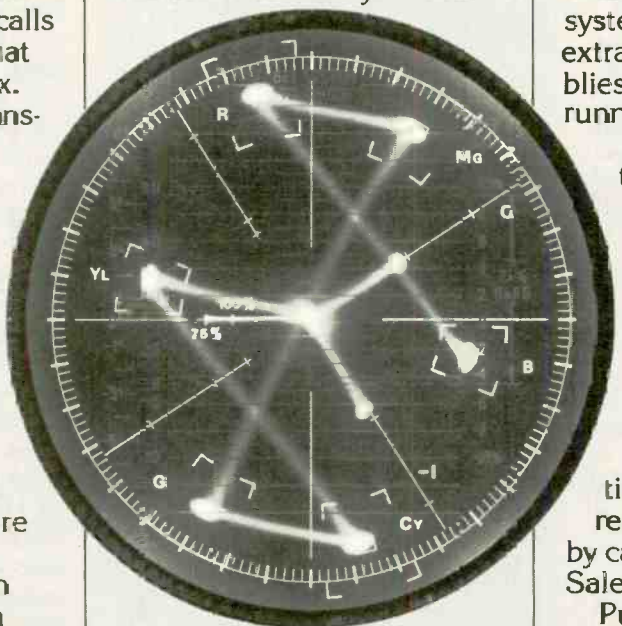
PERFORMANCE PLUS MEANS



FOR-A TECHNOLOGY!

This **DIGITAL TIME BASE CORRECTOR** is simply the best TBC available for the price thanks to FOR-A technology. No tweaking or calls to the factory. It works that well...right out of the box. It's performance is so transparent you'll probably ask, "Is it turned ON?"

Performance Plus! FOR-A uses advanced 8-bit signal component encoding to give you the highest dynamic range, lowest differential phase and gain, plus lowest distortion. But that's just for openers because FOR-A technology includes more than electronic design. Namely, everything from system design to human engineering. For example: The FA-410 level control functions occur before the A/D converter because video and black levels should be right BEFORE conversion to achieve the best signal to noise ratio for both chrominance and luminance. And when you need higher video, sync or burst output levels, the FA-410 provides for it with OUTPUT level controls conveniently located just behind the front panel door! That's what we mean by 'Performance Plus.'



Time base corrected signal input from SONY 820 VTR.

We've built uncommon stability into the FA-410 system design including an extra fan to keep PC assemblies and A/D converter chips running comfortably cool.

Put the FA-410 to the test – for transparency, stability, human engineering, resultant picture quality. And for price!

Who are you going to believe? Ads, (including this one) or your EYES.

Arrange a demonstration by your FOR-A Representative or Dealer now by calling the nearest FOR-A Sales Office.

Put FOR-A technology to the test. You'll be glad you did.

FOR-A®
INNOVATIONS IN VIDEO

FOR-A CORPORATION OF AMERICA
East Coast: 49 Lexington St., Newton, MA 02165 (617) 244-3223
West Coast: 1680 N. Vine St., Los Angeles, CA 90028 (213) 467-8412

Circle 116 on Reader Service Card

SEE US AT SMPTE BOOTH 730/631

Nets Shift to Satellites in Radio and Television

Two broadcasting networks have taken major steps in the industry's inexorable move to satellite transmission. The CBS Radio Network and RadioRadio moved to Satcom 1-R in mid-August as planned, although dual transmission via telephone land lines will continue through the end of this year. Gradual dismantling of land line service was scheduled to begin September 29, and by January 1, 1984, the networks will be available by satellite only.

CBS Radio senior vice president Richard M. Brescia called the switch "a very exciting moment for everyone who's been part of the historic conversion of our radio networks to satellite transmission." As affiliates install receiving dishes, Brescia says, they would "begin to benefit from the many advantages of digital transmission, especially distinctively enhanced sound quality."

Although full-scale satellite distribution remains in the future, NBC Television took a big step toward that goal as COMSAT General Corp. ordered Harris earth stations and maintenance services for NBC's planned Ku-Band communications network. In the first phase of the program, Harris will install 23 earth stations at network affiliates, plus two transmit/receive stations and a master station in New York City. The company will also supply NBC three transportable transmit/receive earth stations.

Early next year, following installation of the initial order, the system will be fully tested for several months. After testing is completed, Harris will start supplying and installing the 180 or so additional earth stations—and three more transportable units—needed to fully complete the system. The network hopes to distribute entirely by satellite by 1985.

New Cameras Send NEP Into the Computer Age

Staying competitive in mobile teleproduction means keeping up with the latest network requirements, and nobody is more aware of that dictum than the folks at Northeast Productions in Avoca, PA. NEP recently replaced all 11 cameras on its two 40-foot trailers, Supershooters II and III, with state-of-the-art Ikegami HL-357 computer cameras.

Chet Sawicki, NEP's vice president and director of engineering, explains that the company was far from dissatisfied with its previous roster of Hitachi SK-96s, now up for sale "in mint condition." But for the kinds of network sports production NEP has set its sights on—including the 1984 Olympics, where one of the trucks will be on duty—Sawicki says the networks are insisting on larger-format cameras that can handle larger lenses, such as the 40X Canon lenses with 2X extenders NEP has purchased.

The larger-format tubes of the HL-357s will also pay off in low light level work, according to Sawicki. The higher S/N values available with larger pickups can yield a better-looking final product, especially when post-production takes the image down several generations.

Sawicki also noted that network jobs now require computer-setup cameras

"I want the world. Consistent .05% corner registration and full auto-setup of up to 96 cameras on computer command."

HITACHI HEARD YOU.

AUTO SETUP

Don't want much, do you?

Dynamic registration not just at dead center but at all four corners. Plus 2-minute auto-setup of all those cameras.

You're asking for some smart camera system, networks of the world and top-drawer video production companies.

Well, Hitachi heard you, and has created an outright *genius*—the Hitachi SK-110 Camera System.

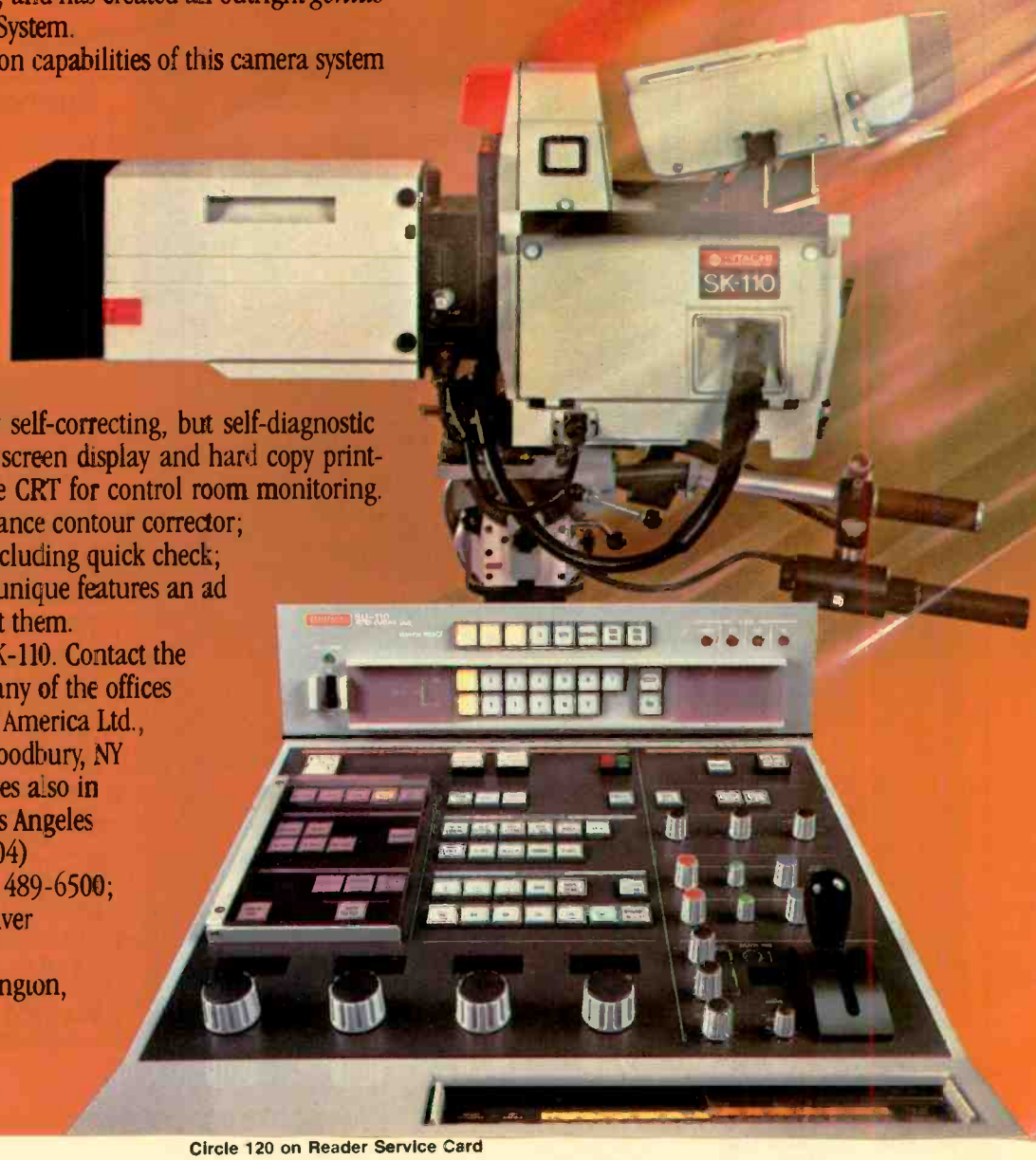
The computer registration capabilities of this camera system produce pictures of a clarity and resolution previously unheard of.

And you get auto-setup at the push of just one button, and zero reference, too, where the computer sets the green channel and compares blue and red to it with absolute precision.

The SK-110 is not only self-correcting, but self-diagnostic as well. It gives both video screen display and hard copy printout; can be hooked into the CRT for control room monitoring.

There's a high-performance contour corrector; 5 automatic setup modes including quick check; 5 data files; so many other unique features an ad can't begin to tell you about them.

The ultimate Hitachi SK-110. Contact the broadcast video division at any of the offices listed below. Hitachi Denshi America Ltd., 175 Crossways Park West, Woodbury, NY 11797 (516) 921-7200. Offices also in Chicago (312)344-4020; Los Angeles (213) 538-4880; Atlanta (404) 451-9453; Cincinnati (513) 489-6500; Dallas (214) 233-7623; Denver (303) 344-3156; Seattle, (206) 575-1690; and Washington, D.C. (301) 459-8262.



Circle 118 on Reader Service Card

Circle 120 on Reader Service Card

NEWS BRIEFS

The U.S. Department of Justice has approved the merger of **Showtime and The Movie Channel,** the pay cable services. The government has interfered in several previous proposed pay TV mergers, claiming possible antitrust law violations; it found the Showtime–Movie Channel plan acceptable because it involves only one film distributor, Warner Brothers . . . . The FCC has eliminated its annual **financial reporting requirements** for cable television systems. Similar requirements for broadcasters were lifted recently . . . . The latest Arbitron estimates show U.S. cable penetration at **35 percent of all homes** (29 million households) as of July 1983—a five percent gain over October 1982. The estimate is based on responses from 500,000 households, with weighted averaging applied to responses from four sweep periods between May 1982 and February 1983 . . . . Bonneville Satellite claimed a first with its July 20 direct, two-way interactive educational **videoconference between the U.S. and the U.S.S.R.** The one-hour program linked Gostel Radio, Moscow, with the University of California at San Diego.

The Radio Network Association reports that network radio posted a **24 percent billing increase** for the first six months of 1983, compared to the same period last year . . . . NRBA has launched a survey of **subcarrier use** by its members. Almost 5000 radio stations have been queried about their present and future SCA plans; results will be made public at this month's NRBA conference . . . . CNN Radio began its own **live radio newscasts** from its own studios August 1. Until that time, the service had simulcast the audio portion of CNN Headline News.

With increased capital from loans and joint ventures, UPI is looking forward to a **profitable 1984.** Aiding the turnaround is a large drop in operating expenses, resulting in part from UPI's switch to satellite distribution. The company recently appointed a new editor-in-chief, Maxwell McCrohon . . . . The National Federation of Community Broadcasters has endorsed the **NPR-CPB loan agreement** (*BM/E,* August 1983, p. 16) . . . . NPR has received a **$40,000 grant** from the Charles Stewart Mott Foundation. The money will be channeled into a series of environmental reports on the Great Lakes. The network's "Drive to Survive" fundraiser early in August netted $2.15 million . . . . Spanish International Communications Corp. and SIN, Inc., have filed a **civil antitrust suit** against the Spanish Radio Broadcasters of America and 28 of its officers and members. SICC and SIN claim that SRBA and the other defendants conspired to restrain and eliminate competition in Spanish-language radio and television broadcasting in the U.S.

NAB has filed a **petition for reconsideration** of the FCC's Docket 80-90 decision, saying that reclassification and downgrading of FM stations that do not meet minimum standards would "violate the principles of fundamental fairness and would be contrary to sound communications policy." The association has also asked the FCC to repeal its regional concentration of control rule, which prohibits ownership of three broadcast stations if any two are within 100 miles of the third and any two have primary service contour overlap.

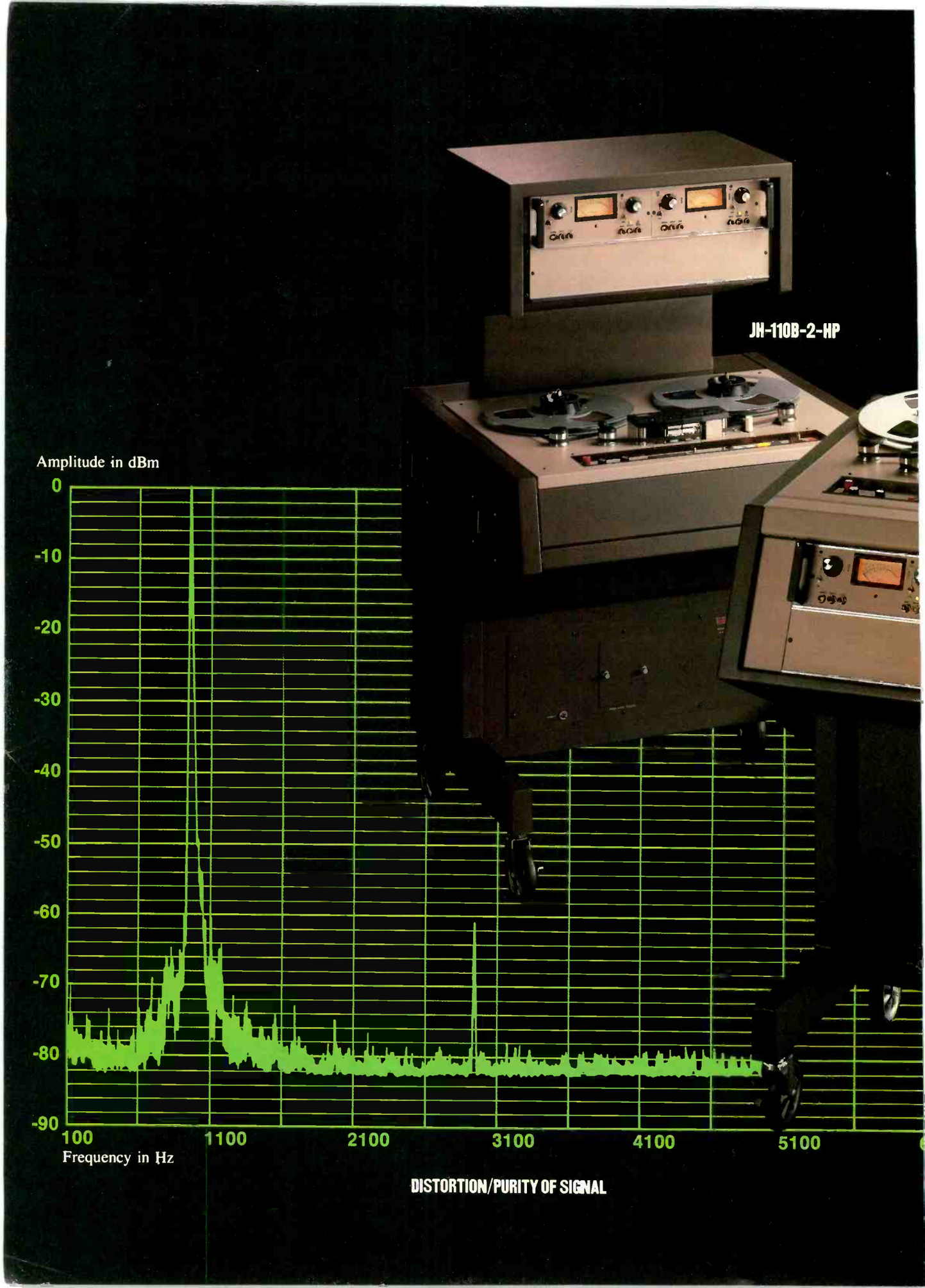
VIDEOTEK...THE MONITOR PEOPLE

Nobody offers more. 43 models of color monitors, receiver/monitors, and professional rackmounts; All CRT sizes from 5" through 26"; An option list designed to satisfy the diverse demands of broadcasters, production houses, and video users around the world; And an unequalled reputation for customer service built on 2-week Delivery and the fastest Response Time in the industry.

Videotek, Inc., 125 N. York Street, Pottstown, PA 19464, (215) 327-2292, TWX 710-653-0125, or 9625 N. 21st Drive, Phoenix, AZ 85021, (602) 997-7523, TWX 910-951-0621

Circle 122 on Reader Service Card

SMPTE BOOTH #743



DISTORTION/PURITY OF SIGNAL

DOES MCI REALLY OUTPERFORM THE REST?

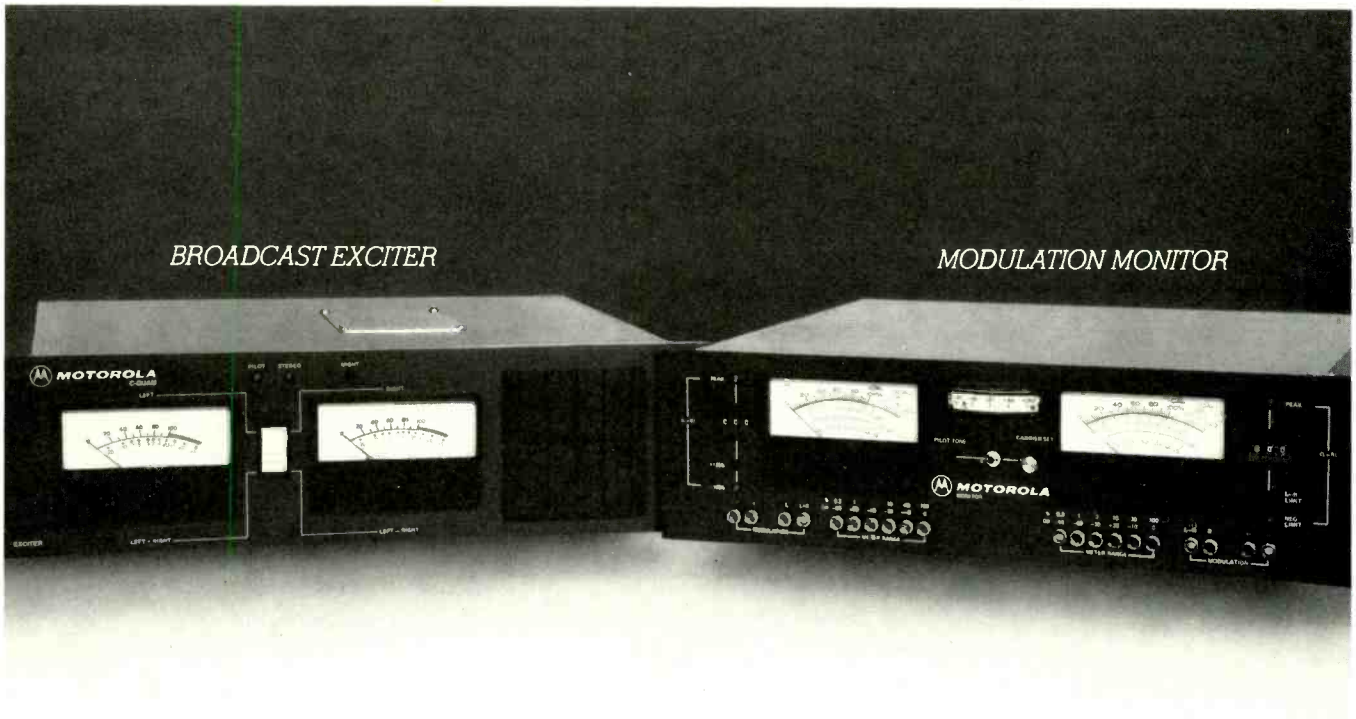
In a world filled with claims and counter claims for high performance audio products, sometimes it's hard to separate opinion from fact. That's why MCI has provided complete graphic proof of all important tape recorder/reproducer performance characteristics. Now available in a handy Engineering Notebook, these curves and their accompanying methodology form the standard by which all other tape recorders must be judged.

If performance matters in your broadcast or tele-production application, don't be fooled by "simple specmanship." And if you want to decide for yourself how the JH-110 Series measures up to comparable units, just ask Sony Broadcast to arrange for a demonstration.

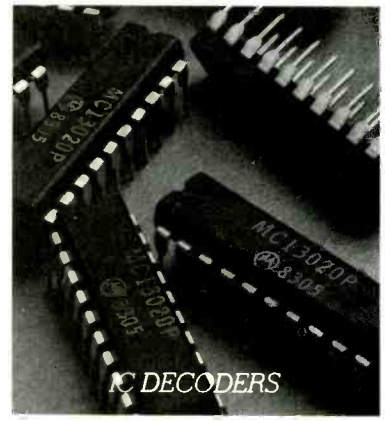
Does MCI really outperform the rest? We'll let you decide. For your free copy of the Engineering Notebook and more information about our demonstrator program, call Tony Dean, Eastern Regional Sales Manager, Audio Products, (305) 771-3997, or Holmes Ives, Western Regional Sales Manager, Audio Products, (213) 841-8711.

SONY
Broadcast

MOTOROLA AM STEREO



With monophonic distortion less than 0.25% at 85% modulation and stereophonic exciter to monitor typical separation of 35 dB, the Motorola C-QUAM® AM Stereo system is an impressive performer. The MC-13020 IC, with comparable levels of technical performance, is the perfect complement for decoding Motorola AM Stereo at the receiver. Broadcast exciters and monitors, receiver decoder ICs and receivers modified for AM Stereo are all available from Motorola. For price and specifications, call Dick Harasek at (312) 576-2879 or Chris Payne at (202) 862-1549.



MOTOROLA AM STEREO. THE WINNING SYSTEM.

MOTOROLA

Circle 124 on Reader Service Card

WNEW-FM Builds Audience With Progressive Production

By Eva J. Blinder
Senior Associate Editor

CARVING OUT a secure niche in the New York radio ratings monolith is no easy task, especially with intense competition constantly eroding many stations' gains. A unique music format is difficult to achieve, and with the playlists of AOR, CHR and Adult Contemporary stations overlapping so much, a station needs a distinct personality to set it apart from its competitors in listeners' minds.

"As FM and rock and roll grew up, we began to realize that to have an edge we had to pay attention to what happened between the records," says Earl Bailey, production director at WNEW-FM, Metromedia's New York AOR outlet. Bailey recalls that in its early days as an AOR station, WNEW-FM avoided a highly produced sound—felt to be a characteristic of AM Top 40 radio—in favor of an unproduced, "progressive" image.

"Now, the image of what's progressive has changed," Bailey relates. "To have a highly produced sound is not only entertaining and effective, it's also fun for us who work here."

For WNEW-FM, however, "highly produced" does not mean "sounding like a machine," as Bailey puts it. "Just because we preproduce some of our announcements doesn't mean we're any less spontaneous," he emphasizes. "It's just adding a sophisticated element to that spontaneity."

In Bailey's two years at the station, he has seen production increase from almost nothing to a regular part of station activity. The recent appointment of Charles Kendall as program director has given the production department an additional boost. Kendall, who comes to the station with a reputation for cheering up gloomy ratings, describes himself as "very much a hands-on programmer—I'm fiercely competitive." His immediate goal is to raise WNEW-FM's quarter-hour share from 2.1 (as of the spring 1983 book) to a 4 by spring 1984.

Production manager Earl Bailey in WNEW-FM's production studio. Operations room is seen through glass window.

Kendall's philosophy calls for liberal use of preproduced material, including station IDs and promos as well as in-house commercials. (According to Bailey, the station produces about 20 percent of the commercials that appear on its air at this time and hopes to increase that percentage.)

As Bailey describes it, the station's commercial production at the time of his arrival got no fancier than reading a commercial over a music bed onto cart. "Now, when we produce our own commercials, if the copy lends itself to it we'll punch it up," Bailey explains. Over the last two years, the station has purchased several sound effects libraries and is constantly upgrading its collection of production music. In addition, the talent has been trained in production and tape editing techniques, adding to the station's more produced sound.

"We have very little live copy on air now," Bailey states; he notes that preproducing commercials also insures the station against over-eloquent talent stretching out a 30-second spot into 45 seconds. All promos are preproduced as well.

Since Kendall's arrival, Bailey says, the station is not taking a new direction in production as much as multiplying its efforts. "Now we have a produced promo or ID at the top of every hour," he explains; previously the station used such preproduced material only every three or four hours. "The idea is to give the station more total personality and to tie all the individual personalities in with the station personality," he continues. "That's probably the hardest job a production director can have."

Although the production itself has become more elaborate, the production facility at WNEW-FM is simple. The station's one full-time production room houses two Scully reel-to-reel two-track ATRs, a McCurdy 10-input

stereo console, a pair of Technics turntables, ITC cart machines, an Orban 111B dual reverb unit, and a UREI 530 graphic equalizer. A multitrack recorder would be a convenience, Bailey concedes, but it's not a necessity for the kind of production WNEW-FM does. Expansion plans do exist for the production department, however; the station will almost certainly purchase an Eventide Harmonizer, and possibly a third Scully deck for the production studio. Kendall is sold on the idea of a Harmonizer, which he calls "a wonderful asset for a radio station," especially for its ability to speed up an over-long commercial without changing the pitch.

Expanding the limits

Working within its hardware limits, the station still manages some creative work with sound effects and editing. According to Bailey, the production department will create its own sound effects or special effects if a particular sound is not in the library. For promos and concert spots, Bailey's policy is to edit talk and music together so that the announcer is not talking over the lyrics—a practice he finds distracting. Creative editing was also used to create a musical "sounder" for the station's *Five at Five* oldies feature, with short sections of different songs cut together to form the opener.

Station-produced IDs are also used to customize the national programming broadcast over WNEW-FM, including NBC's Source network, Westwood One, London Wavelength's *BBC Rock Hour*, and Clayton Webster's *Rock Quiz* and *Retrorock*. Bailey says, "We treat each segment of the shows as a music set," running station IDs between the segments.

One other change that is coming under Kendall's leadership is a return to live remotes, which the station had backed off from a few years ago. "There's nothing like live radio," Bailey says. "No matter how highly produced a sound you have, you don't want to sound like a juke box."

The highly produced sound of WNEW-FM is not a highly processed sound, however. According to Kendall, "Too much processing destroys the quality of the music and leads to listener fatigue. We do have some compression because we have to be competitive, but we don't destroy the signal."

Kendall's experience with AOR goes back to the early '70s, when he worked at WVBF, Framingham, MA. There, he experimented with a format that was "not exactly progressive but not Top 40—we were an album-oriented station before our time." The format was even more unusual in that "we were one of the few white stations that played a lot of black music." In 1975, Kendall moved to Malrite's WMMS, Cleveland, which zoomed from a 1.2 share to a 9.6 in the year and half he was there. He repeated his success at several other stations before landing at Metromedia's WMMR, Philadelphia, in 1980. Kendall recalls that WMMR had good ratings but the wrong demographics; with his help, the station repositioned itself and tripled its revenues in three and a half years.

Jockeying for position

Positioning is very much the name of the game in ultra-competitive New

KDAY Los Angeles, CA	**WLS** Chicago, IL	**KYW** Philadelphia, PA	**KNBR** San Francisco, CA	**WWDC** Washington, D.C.
KABC Los Angeles, CA	**WNOE** New Orleans, LA	**WFIL** Philadelphia, PA	**WPTF** Raleigh, NC	**KUGN** Eugene, OR
KEEN San Jose, CA	**WCAO** Baltimore, MD	**KENR** Houston, TX	**WCOS** Columbus, SC	**KODE** Joplin, MO
KIBE San Francisco, CA	**WQXR** New York, NY	**KKBQ** Houston, TX	**WWL** New Orleans, LA	**WESC** Greenville, SC
KNEW Oakland, CA	**WPTF** Raleigh, NC	**KTIA** Ft. Worth, TX	**KRDS** Phoenix, AZ	**KAAM** Dallas, TX
WMAQ Chicago, IL	**WGAR** Cleveland, OH	**KTSA** San Antonio, TX	**WISN** Minneapolis, MN	**WKIX** Raleigh, NC
WPLO Atlanta, GA	**WSPD** Toledo, OH	**WISM** Madison, WI	**KRE** Berkeley, CA	**WAKY** Louisville, KY
WQXI Atlanta, GA	**KGW** Portland, OR	**KYA** San Francisco, CA	**WKAT** Miami Beach, FL	**KUBA** Yuba City, CA

KLAT Houston, TX

KSRO Sta. Rosa, CA

NAB '82 WORK PASS

WTSO MADISON, WI

WYOU TAMPA, FL

WCRJ JACKSONVILLE, FL

WFAU AUGUSTA, ME

WAJR MORGANTOWN, WV

WMG!

KOFI KALISPELL, MT

WISE ASHEVILLE, NC

The new Optimod-AM: Who needs it?

Simple: Any AM broadcaster who is fighting the increasing competition from FM, the new video services, and the high audio quality of consumer discs and cassettes. The second-generation Optimod-AM Model 9100A can deliver strikingly good sound quality at the output of *common, everyday AM radios*—sound quality which the average consumer is likely to prefer in the car because the AM signal doesn't suffer from the classic FM problems (like multipath bursts, signal dropouts, and "picket-fencing").

There are already hundreds of 9100A's on the air in every format. They are giving some of the top-rated majors their competitive audio edge—and giving small-market stations major-market sound quality. This sound is not only loud—it is also outstandingly clean, open, and free from the processing artifacts which say "We're only AM" to your audience.

These stations have already decided that they needed the Optimod-AM edge. . . in stereo or mono. They knew that they couldn't afford any less in a world where the rules have changed and where second class audio just doesn't cut it anymore.

Who needs Optimod-AM? Probably you. Your Orban Broadcast Products dealer can give you the technical details. Or write or call us.

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

orban

ORBAN PROCESSING KEEPS YOU COMPETITIVE

Circle 126 on Reader Service Card

York. One of Kendall's first moves has been to go after the 18–24 males he says have been "abandoned" by WPLJ-FM, which recently switched from its long-time AOR format to CHR. He is doing that by playing "a little harder-edged music now than a few months ago"—but without abandoning the 25–34 males that have been WNEW's mainstay.

The station's other main competitor is Doubleday's WAPP-FM, which, with a 2.8 share, has a distinct ratings edge. For this match, Kendall is pulling out one of his favorite weapons—the vulnerability study. By closely monitoring the competition for 24-to-48-hour periods, Kendall and his staff determine any programming weaknesses, such as fixed times for commercial breaks. "That way, we can start our commercials one or two minutes before they do," Kendall explains. "If listeners tune us out after a minute or so of commercials, they find commercials on the other station also—but their commercials have just started. By the time they tune back to us, we're playing music again."

One competitor Kendall is not particularly concerned about is MTV. He notes that MTV has a very narrow programming focus with no "historical reference"—i.e., older material. WNEW-FM is simulcasting NBC's *Friday Night Videos*, which Kendall describes as geared toward an older, broader audience and "quite commercial from a music standpoint." Clearly not afraid of innovation, Kendall is a self-described "music freak" who boasts, "I've been blessed with a good set of ears and I can read a hit."

Part of WNEW's production and effects library is housed on wall behind two Scully ATRs.

Kendall has already extended his research at WNEW-FM beyond the ratings game. Using a 900 telephone number to gauge listener response, he recently posed a question to the audience: By 1990, will rock and roll be a thing of the past, or will it continue strong? The answer was surely no surprise to Kendall or anyone else at WNEW: 93.5 percent said rock and roll is here to stay. The station is betting on that, and is relying on Kendall to get it a bigger piece of the rock.

How does the production department feel about the new direction? "I look forward to Charlie's leadership," Bailey says. "He's the first program director the station has had who's not only committed to a highly produced sound, but knows how to get it." **BM/E**

High Definition Audio

For the complete picture

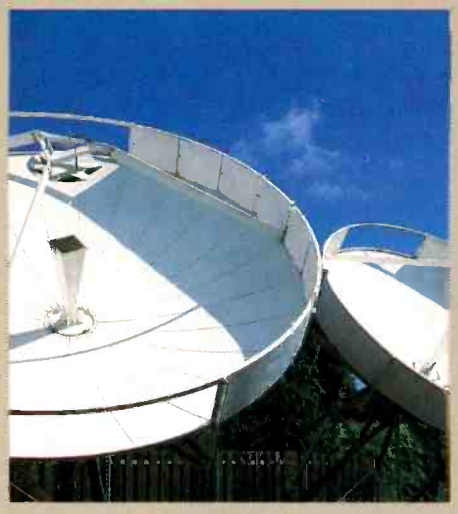
The new 300 Series Audio Production Console has been specifically designed to complement the latest audio and video technology. It's the only console in its class, offering mono or stereo inputs each available with or without equalization, output submastering, audio-follow-video capability, a comprehensive user-programmable logic system, and a wide range of accessories for custom tailoring to your specific requirements. Available now. Call us collect for further information.

auditronics, inc.

3750 Old Getwell Rd.
Memphis, TN 38118 USA
Tel: (901) 362-1350
Telex: 533356

Circle 128 on Reader Service Card

There's just one Answer for making hundreds of video measurements automatically.

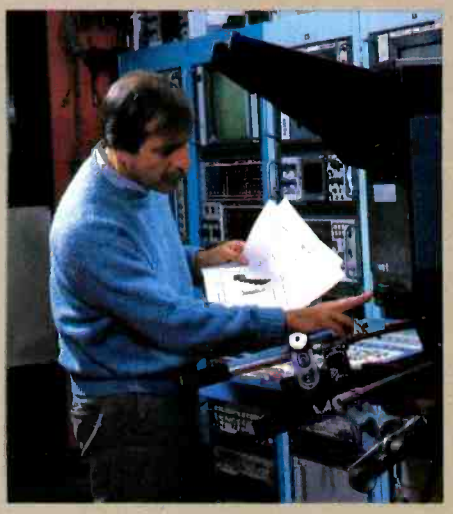


Signal verification

ANSWER is helping broadcasters, common carriers and cable operators maintain and improve signal quality in a variety of ways. The integrity of incoming feeds, off-air and off-cable signals can be checked and verified with state-of-the-art accuracy and speed. With ANSWER you know immediately if a signal is within acceptable or legal limits. Any problems that come up can be detected quickly, and with confidence, because ANSWER makes measurements with repeatability you can depend on.

Remote monitoring

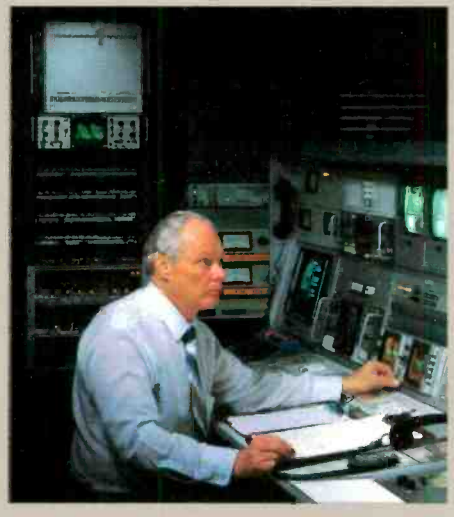
ANSWER is able to provide unattended monitoring of head ends, microwave links, satellite earth stations and distant transmitters. The need for dedicated station personnel at remote sites is minimized because ANSWER can be operated over voice-grade telephone lines. It can even be programmed to alert you automatically if measurement limits are exceeded. You save the time and expense involved in making unnecessary trips to distant stations.



Equipment testing

Equipment proofs, troubleshooting and maintenance are all ANSWER-easy. It provides quick, conclusive verification that new equipment is up to a manufacturer's specifications. And testing current equipment can be accomplished on a regular basis in much less time and with much less trouble than it takes to make the same measurements manually. Highly skilled personnel are freed for more productive activities, and the risk of interpretive errors is lessened considerably. You can have complete confidence in measurement results because of the repeatability you get with ANSWER over long periods of time.

WORKING HARD FOR
YOUR SIGNAL QUALITY



System testing and maintenance

ANSWER is the time-saving approach to systems evaluation. Major signal sources and critical points in each transmission path can be checked automatically. Testing an entire system takes much less time than it would to make the same measurements manually; personnel workloads and constraints of time need no longer be an obstacle. In addition, graphs and hard copies provide a permanent technical record that serves as an accurate basis for trend analysis and reference for future maintenance.

Manufacturing

Automated testing of production line output is a cost-effective way for video equipment manufacturers to ensure absolute product quality. ANSWER eliminates all chance of operator errors, at the same time that it increases productivity by making better use of personnel. Equally useful in research and development, ANSWER provides thoroughly accurate, repeatable test results, plus authoritative verification documentation to include with shipments.

ANSWER

Answer saves time, improves quality and lowers the cost of making video measurements by making them automatically. Attended or unattended. From a remote terminal or locally. With state-of-the-art accuracy. And comprehensive hard copy documentation. New NTSC and PAL software packages make ANSWER even more valuable. Flexible enough to meet the application demands of broadcasters, cable operators, common carriers and equipment manufacturers. Contact your nearest Tektronix Field Office for more information. Or call 1-800-547-1512 for literature. (In Oregon, 1-800-452-1877.)

Tektronix, Inc., P.O. Box 1700, Beaverton, OR 97075. Europe: Tektronix Europe B.V., European Headquarters, Postbox 827, 1180 AV Amstelveen, The Netherlands.

If you are a broadcaster circle 129

If you are a cable operator circle 130

If you are a common carrier circle 131

If you are a manufacturer circle 132

Tektronix
COMMITTED TO EXCELLENCE

Series 80

just imagine...SFX video power plus...

+ Dual Chroma Keyers + Dual Luminance Keyers
+ Dual Matte Key Generators + Dual Key Borders
+ Super wide, SuperSoft borders
+ CAP, Computer Assisted Production
+ FlexiKey...Central Dynamics' new, powerful Digital Video Effects at a fraction of the cost... manipulates titles, logos and images with spin, flip, rotation, zoom, compression or any combination of these effects.

All this power is surprisingly affordable...the Series 80's modular, proven design assures fast delivery and there is a model to meet any post-production and live programming requirement.

480. *Compact versatility*... 4 buses with the SFX Power+ system.

680. *Exceptional big studio performance*...6 buses with the SFX Power+ system and the new Series 80 Program Processor.

1080. *The ultimate switcher* for the most sophisticated productions...10 buses with 2 SFX Power+ systems and the new Series 80 Program Processor.

Call or write for complete details.

CENTRAL DYNAMICS

Central Dynamics, 401 Wynn Drive, Huntsville, AL 35805 (205) 837-5180
New York: (914) 592-5440, Chicago: (312) 991-4720, Los Angeles: (213) 766-8185
Montreal: 147 Hymus Blvd., H9R 1G1 (514) 697-0870, Toronto (416) 446-1543

Circle 133 on Reader Service Card

"Miss Universe" Comes Alive for CBS

By Tim Wetmore
Associate Editor

LIVE TELEVISION is a rarity these days. It takes a tremendous amount of time-consuming pre-production, a substantial capital investment, and considerable effort to find the proper crew. Even with this effort, there is no guarantee the program will come off well. That is why "The Miss Universe Pageant," which is broadcast annually on the CBS network, is such a rarity—a major live telecast produced on a very reasonable scale.

What it takes to produce a live show of the magnitude of the "Miss Universe Pageant" is a combination of production teams, TV stations, and modern equipment. This successful combination was achieved for the July 11 CBS broadcast of the pageant. The team members consisted of Koplar Communications of St. Louis, Glen-Warren Productions of Toronto, Miss Universe, Inc. of New York, and the CBS Network.

One of the Glen-Warren hand-held camera positions gets right into the action during a dance number.

Live TV needs preparation

According to Arthur White, production manager at "Miss Universe," "assembling all the different elements into a cohesive unit is one of the most important considerations in preparing for a live broadcast. That is why the process of putting together a live show like this is complicated by the dwindling supply of quality, live directors."

For the show to take place, demanding the intricate interrelationships of hundreds of people both behind and in front of the cameras, a careful succession of steps had to gradually evolve, with members of the team producing results at just the right time.

The process begins with Miss Universe, Inc. itself which schedules the time for the show. The telecast is sponsored by Proctor & Gamble, which supplies what amounts to an underwriting grant by purchasing the rights to the show from Miss Universe, Inc. The production crew and its expenses are covered under the agreement, and CBS has a guaranteed sponsor for the event.

This is a very healthy commitment for Proctor & Gamble, since the ratings over the years have been consistently high. CBS, which has always done the show, has not been reluctant to accept the package for broadcast, given these numbers.

After the financial arrangements have been nailed down, the second leg of the event begins: scheduling the shooting for the few moments of the program which are pre-produced. The location shots, which later appear in edited form between the live portions of the broadcast, are completed by a local crew at some of the area's main attractions and night spots.

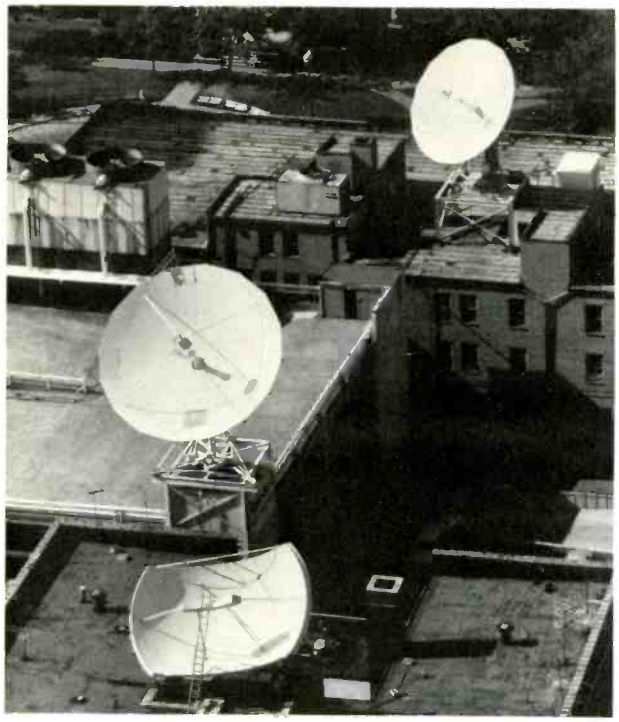
In this instance, the St. Louis Arch was a prominent thematic stage piece during the show, so considerable effort was expended on shots of the Arch, as well as Busch Gardens and some local clubs and restaurants.

The bathing suit competition was also shot beforehand and edited into the show by crews from Glen-Warren Productions, while a local crew from Channel 10 in Knoxville was sent out for the nighttime events and the tourist scenes.

While the director and producer, who are under contract to Miss Universe, Inc., were organizing these so-called "fun films," CBS was looking for a way to uplink the program. In St. Louis they found Koplar Communications, which maintains a computerized satellite facility with the capability of uplinking to all U.S. and Canadian satellites. With the feed relayed from Kiel Auditorium to Channel 11 in St. Louis via Koplar's portable microwave, it is then delivered to the Koplar Center for uplinking to a Comstar transponder through a nine-meter Harris dish. The transponder time and backup telco lines are handled by the traffic department at CBS in New York.

Mobile aids studio work

After the trafficking and leasing arrangements were made and the fun films shot, the next member of the team to take the baton was Glen-Warren Productions, a division of CFTO, Channel 9 in Toronto. Glen-Warren provided both the 44-foot trailer and the in-house team headed by Raymond Carnovale, VP engineering, and Angelo Caldana,



Above: The computerized satellite control center at Koplar keeps track of all satellite operations, scheduling, and technical features.

Left: Koplar Communication's satellite facilities feature a Harris 9 m uplink at the top of the photo and, center, a Harris 11 m dish for receiving. At bottom is a Simulsat 16 TVRO.

supervising engineer.

"We offer a variety of equipment with the truck, depending on the job," explains Caldana. "For the production in St. Louis, the audio demands were too sophisticated for a truck, so we built a studio in the auditorium." Not only was a room modified to make an instant audio studio, but it was cut in half to accommodate a separate videotape room as well, that part of the show being no less complex.

Ikegami studio camera providing complete stage shot to the truck parked outside the auditorium.

For the pageant, the truck contained five Ikegami HK-312E cameras and three HL-79Ds, both sets with triax. Lenses for the 312s were three 18X1 and two 25X1 Canons, with the 79s taking two Canon 13X1 lenses and one Angenieux 15X1. Camera positions were split up between a Titan crane, a sports dolly, and a Pee Wee crane, as well as several floor level positions. Other video equipment used for Miss Universe included a CDL 480 switcher,

TELEVISION PROGRAMMING

a Quantel DPE-5000SP single-channel special effects system, and three Sony BVH 1102A VTRs with slow motion controllers.

The audio provided by Glen-Warren was no less extensive, since the musical requirements for the show entail precise timing of a complex series of events—especially during the segments when the orchestra is supposed to be playing. This is because there is no orchestra. All of the music is prerecorded onto an ITC triple-deck cart and edited onto three ITC single-deck cart machines for playback at the right moment. The singers whose voices are heard on the show are also prerecorded and mixed over the music on the carts during the live segments of the pageant and the entertainers' appearances. The show's theme song is recorded onto, and played back from, an Ampex 440 four-track machine.

The playback and all other audio is controlled from the temporary studio located within the auditorium. The great sophistication of the other audio needs requires the presence of three 12-channel/two master Ward-Beck consoles and two Nagra recorders, one mono and one stereo. In the truck is another Ward-Beck console which is used, for the Miss Universe pageant, primarily as a distribution point through which the composite mix from the auditorium is directed. This, combined with the video from the adjoining temporary studio, is sent from the truck through the portable microwave to Kopler's uplink facility and then on to the public in over 50 countries.

The world is able to view a smoothly produced show with both high-quality audio and video supporting the live entertainment attractions of the pageant. What the world doesn't see is the careful preparation.

The efforts of this team to produce a live telecast, to produce what is, outside of sports, a rarity for modern television, were rewarded by the number-one spot on the overnight ratings. If ratings mean anything, the quality of the work was reaffirmed by week's end when the show had logged in with a number-two spot for the entire week. It is with this same formula that Miss Universe, Inc. also successfully broadcasts the Miss U.S.A. and Miss Teen U.S.A. pageants, both of which continue to testify to the viability of live broadcasting. **BM/E**

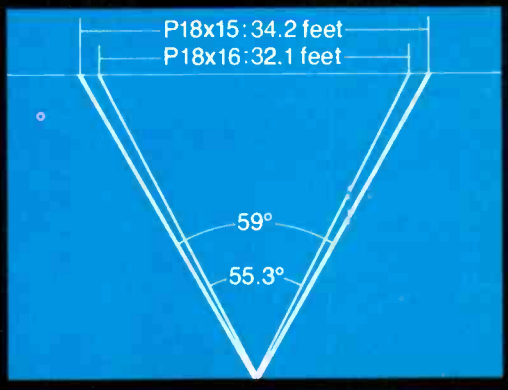
New Standards

The Widest Angle, The Highest Performance

Canon engineers have done it again, advancing the optical state-of-the-art so far forward that new standards must be considered.

The Canon P18 x 15 BIE offers the widest angle of any broadcast television zoom lens: 59° plus incredible edge-to-edge sharpness, fidelity and sensitivity throughout its 18X range.

Every one of these superb lenses will be supplied with both 1.5X and 2X built-in extenders and a pattern projector. Options include manual, semi-servo or full servo operation.



The Canon P18 x 15 is the most versatile studio lens ever made, setting new standards for years to come.

P18 x 15 BIE F2.1 for 30mm Cameras*
KEY SPECIFICATIONS

Focal length:	15-270mm
Max. Relative Aperture:	1:2.1 (15-218mm) 1:2.7 at 270mm
Angular Field of View:	59° x 45.8° at 15mm 3.6° x 2.7° at 270mm
Minimum Object Distance:	0.6 meter (2 feet)

*Also available: PV18 x 11 BIE F1.6 for 25mm Cameras

Canon Stucio Standards

P18 x 16 BIE

PV12 x 14 BIE

Canon®

Optics Division
Canon USA, Inc., Head Office: One Canon Plaza, Lake Success, N.Y. 11042 (516) 488-6700
Dallas Office: 2035 Royal Lane, Suite 290, Dallas, Texas 75229 (214) 620-2641 Chicago Office: 140 Industrial Drive, Elmhurst, Il. 60126 (312) 833-3070
West Coast Office: 123 Paularino Avenue East, Costa Mesa, Ca. 92626 (714) 979-6000
Canon Canada, Inc., 3245 American Drive, Mississauga, Ontario L4V1B8, Canada (416) 678-2730

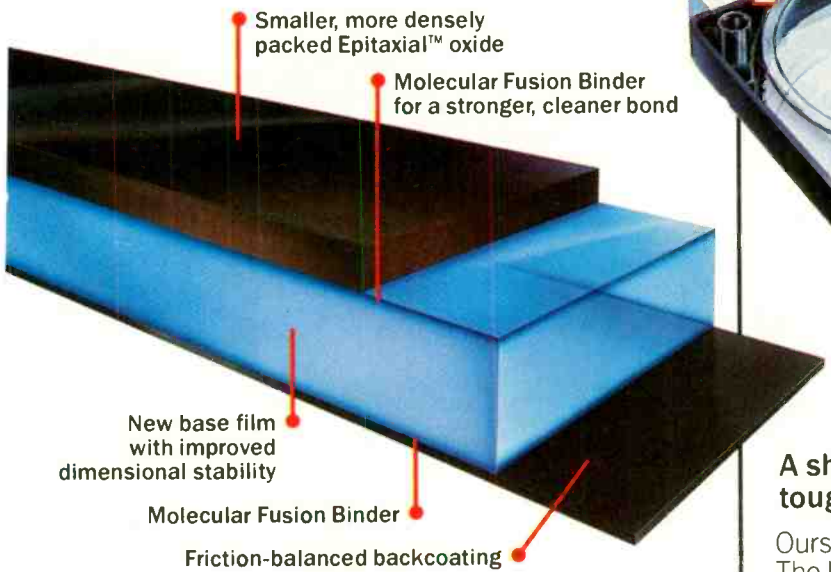
Circle 138 on Reader Service Card

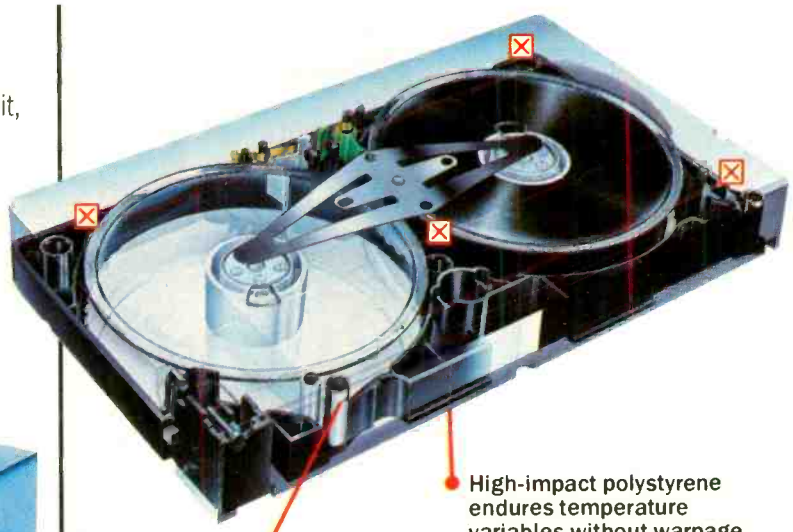
SEE US AT SMPTE BOOTH NUMBER 311


We couldn't improve the conditions you work under.
So we improved the tape you work with.
Introducing...
maxell
PROFESSIONAL INDUSTRIAL P/I
HGX PRO
For ENG Recording
Epitaxial
Videocassette VHS
T120

Introducing the world's first HGX Pro ½" Videocassette.

Introducing tape performance impervious to the whims of weather and the rigors of editing. Maxell has harnessed new tape technology and with it, given ENG dramatic improvements you can see, hear and retain. In the field or under freeze frame.





The Epitaxial™ contribution: higher video, brighter chroma.

Unique, uniform cobalt ferrite oxide particles, now even smaller (a mere 3 microns long), yield unprecedented packing density. Expect enhanced signal-to-noise ratios in audio and video. Better definition. Brighter chroma. And no significant signal loss despite endless editing replays.

Molecular Fusion Binder: longer life bonding for truer-to-life performance.

Gone are conventional adhesives that time and temperature tempt to the surface. In their place, self-curing resins fuse oxides to the base film. It's a bond immune to time and mechanical stress. Anticipate far fewer dropouts, less clogging and extended tape and head life.

New base, binder, backcoating. Better support for the signal.

No static. No noise. No dust. The molecular-fused backcoating provides a perfect balance between inside and outside surfaces. For controlled friction. Less mechanical and magnetic noise. And optimum running smoothness, even in high heat.

A shell made to the industry's toughest standards.

Ours. The transport is smooth, quiet and jam-proof. The housing immune to temperature extremes. The construction leaves nothing to chance.

From open reel tapes to a complete line of KCS/KCA U-Matics, audio and VHS/Beta cassettes, we're getting quality down to a science. And in your hands, our science turns to art.

HGX Pro ½" Videocassettes are available in Beta and VHS formats.

maxell®

Maxell Corporation of America
60 Oxford Drive, Moonachie, N.J. 07074 201-440-8020

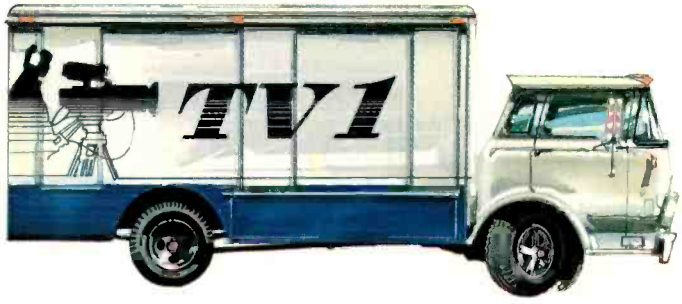
SEE US AT SMPTE, BOOTH 126

Circle 139 on Reader Service Card

MOBILE TELEVISION UNITS

32′ VEHICLE WITH 22′ BOX BODY
3 Hitachi SK91 SD3 with 14:1 lens and all the equipment required for studio and ENG use.

$327,000



22′ VEHICLE WITH 14′ CUBE BODY
3 Hitachi FP22 S/3 with 10:1 lens, microprocessor for automatic set-up and all the equipment required for studio and ENG use.

$203,000

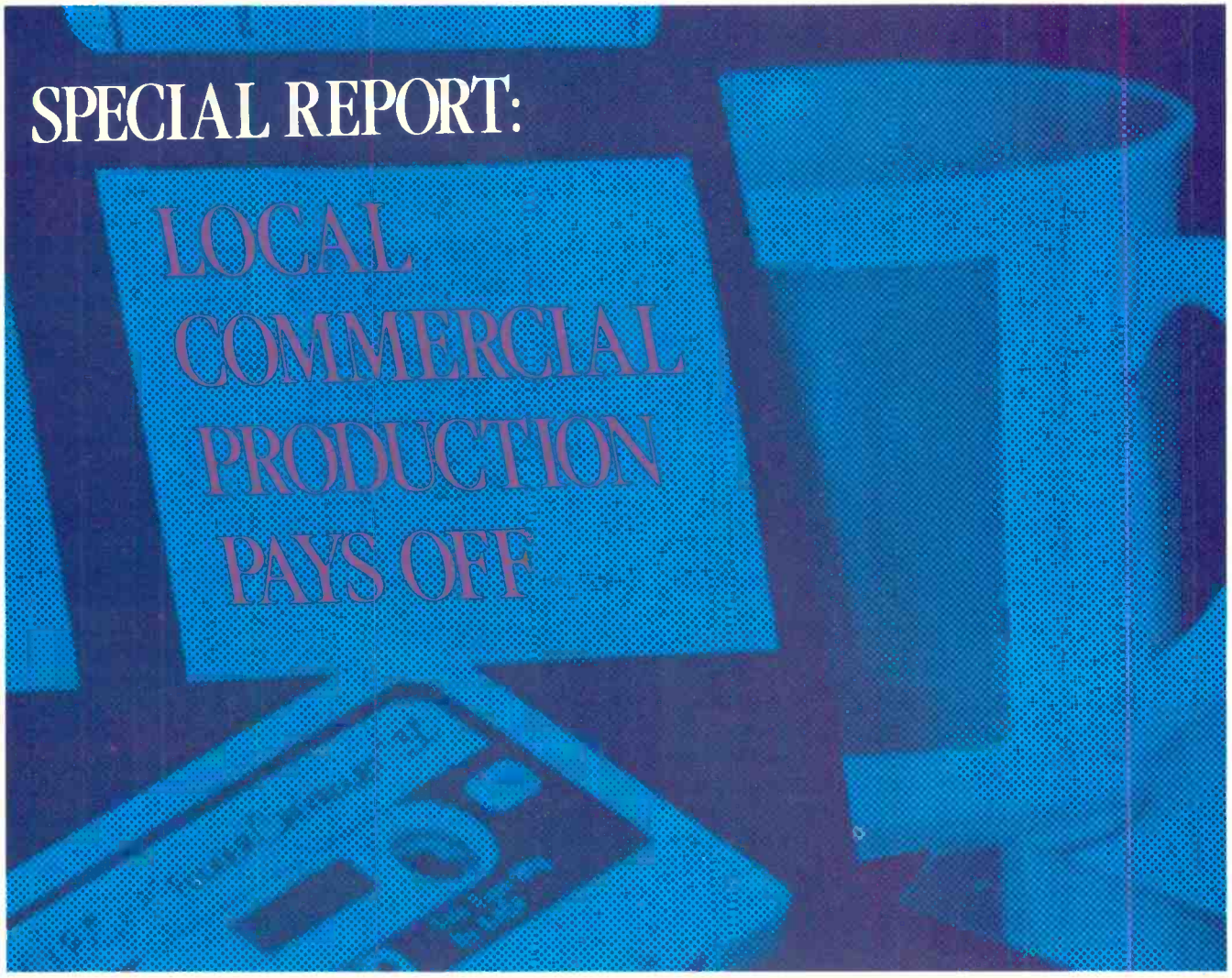
Both Vehicles Include:

- **3 O'Conner** Fluid Heads, tripods, spreaders and dollies
- **3 Christie** Reflex 20 batteries and 1 charger for speedy 20 minute charge
- **1 Grass Valley** Production Switcher 1600-AN
- **1 Lerro Character Generator System** with **Chyron VP1** and **Sony SMC 70 Microcomputer**
- **2 Sony** ¾"VTRs 5850/5800
- **1 Adda TBC**
- **1 Yamaha** 12 Input Audio Board
- Fully monitored—B&W and color, audio and video patching, on board power and air conditioning
- Prices include engineering, turnkey installation, manufacturers' warranty, delivery and training.

DESIGNED TO ACCOMMODATE 1" HITACHI VTRs - TRIAX ADAPTORS ALSO AVAILABLE

LERRO
ELECTRICAL CORPORATION
3125 N. Broad Street, Philadelphia, Pa. 19132

For more information, call Bob McTamney at (215) 223-8200



For profit-minded radio and television stations, a good commercial production operation is as essential as a good sales staff.

By Eva J. Blinder
Senior Associate Editor

WHAT CAN HAPPEN once a station's sales staff has convinced a formerly air-shy local business of the value of broadcast advertising? The logical next step, of course, is to produce a commercial that brings in customers. In the largest markets, production houses give broadcasters stiff competition for the production needs of advertisers and agencies, particularly since they are often linked to national campaigns. But in most markets, local advertisers—especially those new to the broadcast medium—turn to radio and television stations for audio and video image creation.

A local commercial production operation, therefore, is the logical backup to an active sales staff. For many stations, the nature of the market and competition keep commercial work strictly on the local level. Others, however, find that with excellent facilities and a top-flight staff, they can attract agency and regional work in addition to their own clients—with an attendant boost in station income.

Quality is key factor

One radio station that has taken full advantage of a new, high-tech facility is WAXY-FM, Ft. Lauderdale. WAXY's

WAXY's state-of-the-art studio, built around MCI 618 audio board, features multitrack recorders.

three-year-old building (described in *BM/E*'s March 1983 story, "Eight-Track ATRs Bring Recording Studio Quality to Radio," p. 213), with an MCI/Sony JH-110C eight-track recorder and 618 audio board, sets the station apart in its market, according to program director Rick Shaw.

"We're the only station in this market with that level of capability," Shaw boasts. The eight-track recorder halves the time needed to produce complex commercials, according to Shaw. The benefits extend beyond time savings, however. The advanced facility "gives us notoriety in the market," in the words of station production manager Don Bruce. He and Shaw agree that the quality of the commercials that leave WAXY's production studio is their best advertisement for the facility.

The step up from the old building's four-track capability to eight tracks "was like going from the bottom of the valley to the top of the mountain over the weekend," Shaw recalls. He continues, "At first we didn't realize how far we'd extended our capabilities, but over the last three years the word has spread . . . . Clients come to us now with their hard assignments and unique situations." The new facility "has more than paid for itself" since construction, Shaw says.

"The first thing a multitrack studio does for a broadcaster is to increase flexibility," according to Bruce. "The multitrack gives us the capability to fool with the sound." Almost as essential as the equipment, Bruce adds, is a good production library. WAXY has three: FirstCom's World's Best, William B. Tanner's music track library, and TM Productions' Master Plan library of music beds, generic jingles and sound effects. These are augmented by the BBC sound effects library. With the multitrack board and eight-track ATR, the station can record music in stereo on two tracks, then add the voice or voices on separate tracks, with any desired sound effects on additional tracks. That way, levels can be adjusted independently and mistakes corrected easily; copy changes can be dropped in with little problem.

The third element of WAXY's success as a commercial producer, according to Bruce, is its staff of creative and competent people. "Doing a totally professional job encourages the client to spend more time on the air," Bruce explains.

Using creativity

A professional job doesn't always mean multitrack recorders, however. WAVA-FM, Doubleday Broadcasting's AOR outlet in Arlington, VA, does a substantial amount of commercial production for its local clients with two new MCI JH-110B full-tracks and a bank of ITC 99B cart machines. As production director Jackson Whitt describes it, the station uses carts to blend in the music and bring in extra voices.

"First we record the particular sound from disc to cart, then we punch it up as we're doing the spot," Whitt explains. "We find that it blends better that way." Even so, the station has plans to move up to four-track within a year.

A wealth of production facilities in the Washington, DC area limits the amount of agency work a station can attract, and Whitt says the station's commercial work is "basically bread and butter." That hasn't stopped WAVA from building a quality production room, complete with a custom-built TechnaArts audio board, dbx 140 noise reduction system, Orban paragraphic equalizers, and Technics turntables.

Whitt sometimes augments the station's sound effects library by going out into the field to find a particular sound. For a recent arcade spot, for example, he recorded ambient sound at an arcade. A quality of believability is essential in spot production, Whitt says. The station also tries for a commercial sound that blends well with its format. "We try not to put on really offensive spots," Whitt explains. "We don't like shouting or screaming." If necessary, the station will try to recut a problem commercial to fit in better.

Fitting commercials to the format is a particular consideration at beautiful music or easy listening stations, where a break in the smooth flow of music can be especially jarring to the listener. KMEZ-AM and FM, Dallas easy listening outlets programmed by Churchill, do a relatively small amount of commercial production—but do it very carefully. Production director Ken Loomis says production houses in the busy Dallas market do most of the area's commercial work. The station produces perhaps five to 10 percent of the spots that show up on its own air in a sophisticated facility that "can do anything you'd want," in Loomis's words. The equipment includes an MCI JH-110B four-track ATR, two JH-110B two-tracks, and an MCI JH-618 18-input audio board with stereo and mono mix outputs and a built-in patch bay. Also in the production room are ITC cart machines, an ADR 760X compresser/expander, and Orban Parasound equalizer, and a Deltagraph equalizer.

Although the station owns a full special effects production library, listeners' tastes limit the use of effects,

World's most accommodating camera.

You'd expect the Ikegami HK-322 to make beautiful, crisp, color-true pictures. It does. You'd also expect it to offer the latest in computer set-up convenience with its third generation microprocessor control plus comprehensive operational automatics and 8 scene files and 8 lens files. It does that too. But what you might not expect. is just how incredibly flexible the HK-322 is.

Consider that you can specify 30mm or 25mm Plumbicons,* and for each size select standard, Anti Comet Tail or diode gun operation. The same holds true for cabling. You choose from triax, multicore or, if you'd like, specify an HK-322 version that's compatible with your existing TV 81 cable. You also have a choice of optional camera control configurations.

There are also some unique features such as trim files that compensate for differences between the internal pattern projector and the external scene caused by chromatic aberrations in the lens.

Finally, compare its performance to any other camera. An honest resolution of 800 lines at center, a practically noiseless S/N ratio of up to −58 dB and a virtually unmeasurable .05% registration error over the entire raster.

Best of all, the HK-322 is ready right now to fit into *your* idea of an ideal studio/field camera. Without compromise, but with plenty of accommodation.

Contact Ikegami. See for yourself.
Ikegami Electronics (USA) Inc.
37 Brook Avenue, Maywood,
NJ 07607

*T.M of N.V. Philips

Northeast: (201) 368-9171
Midwest: (219) 277-8240
West Coast: (213) 534-0050
Southwest: (713) 445-0100
Southeast: (813) 884-2046

Ikegami HK-322

Circle 144 on Reader Service Card

according to Loomis. "Easy listening people listen for different reasons than listeners to other formats," Loomis says. "Sometimes we have to work with clients to explain, but most are very receptive." Most of the problems come from national commercials produced outside the station.

Production director Jackson Whitt at work in WAVA-FM's studio. Audio board was custom-built by TechnaArts.

Audix board in one of WKEE's production rooms.

Multitrack advantages

Capitol Broadcasting's Huntington, WV station, WKEE-AM/FM, turns out "quite a bit of local stuff" in its two four-track production rooms, according to production director Dan Monjar. "On several occasions we've had television stations come to us to mix their audio," Monjar relates. "They don't have our facilities." A heritage from the days when the AM and FM sides were completely autonomous are two fully equipped production rooms, each with two two-track machines, a Studer A80, and a Revox B77. The AM room has a Scully 280-four track ATR and Audix AD-101 12-input mixer; the larger FM room has a Studer A80 four-track deck and 32-input Auditronics 110A-4 stereo board.

"Theoretically, anything you can do on a four-track you can do on two two-tracks," Monjar admits. "I can just do it in one-fifth the time." The speed and flexibility of multitrack recorders "are of paramount importance for radio stations," he believes.

The FM room is also fully equipped for special effects with a Fairchild spring reverb, UREI 527A graphic equalizer, Orban 621B stereo parametric EQ, Eventide Harmonizer, and DeltaLab DL-2 acoustic computer. Monjar praises the DeltaLab unit as extremely flexible, saying it can be used for anything from a simple delay line to digital reverb and can even produce mechanical-type voice effects similar to a Vocoder. The room's effects capabilities are rounded out by two Eventide Omnipresser compresser/expanders (Monjar uses the compression function to liven up rock concert spots) and a Carver C-9 sonic hologram generator that "pulls the audio out" for a more three-dimensional sound.

With such an impressive equipment roster, don't all the station-produced commercials have that "space-age" sound? Not so, says Monjar. "We use the effects equipment no more than 30 percent of the time," Monjar states. "People get tired of it." Having the equipment gives the production staff extra flexibility, but even more important is their sensitivity to listeners' tastes.

According to Monjar, the station's Adult Contemporary format (with the FM side approaching Contemporary Hit Radio) gives them a good deal of leeway in programming and producing commercials to appeal to the 25-54 demographic. "With this format and the way the station is presented, I can do a lot of different things, from hard rock concert spots to very laid-back ones. We can run practically any kind of commercial." One no-no is parodying "hillbilly" accents, which Monjar says some stations in the market, at the junction of West Virginia, Kentucky and Ohio, do: "We're high-class radio and we want to sound like it." Making fun of potential listeners is definitely out at WKEE.

The commercial operation is run by Monjar, who comes up with many of the concepts for spots, working with clients' guidelines but suggesting alternatives if he has a better idea. The schedule is busy, with an average of about 15 spots a day, but the station usually manages to finish most spots a day or two before air time to give the client a chance to approve them. "It puts the clients in the process, and they really appreciate it," says Monjar. Spots produced at WKEE are often dubbed off for other stations in the market, and the station also does some production for local agencies. Regional agency work hasn't materialized yet, but Monjar says WKEE is ready to handle it.

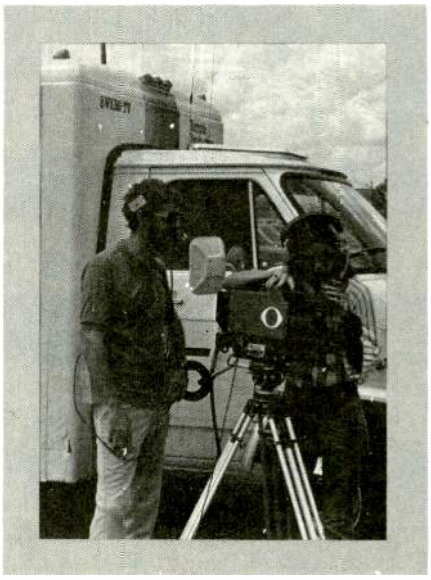
TV spots: going Mobile

Television commercial production operations are set apart from those at radio stations not only by the medium, but by the amount of field production involved. One station that has made a big investment in field-produced commercials is WKRG-TV, Mobile, AL. The station's production manager, Ed Whatley, claims that WKRG does over 85 percent of all local commercial production in its market. "We caused the

other stations to just abandon it," he says.

WKRG's "secret" is a state-of-the-art facility and extensive, dedicated mobile capability. Two years ago the station spent about $1 million to construct a production vehicle exclusively for commercial work. The truck, with a body by Wolf Coach, carries Sony one-inch VTRs and switcher and two Ikegami HL-79 cameras. Most commercial work is single-camera, but the two-camera capability lets the truck handle other kinds of production assignments on a limited basis. The truck carries everything necessary for a commercial shoot, including lighting and audio gear.

Whatley estimates that about half WKRG's commercial work is done on location. "Using one-inch tape gives us a competitive advantage," he says. "You might as well start off with the best possible." During a single five-day week last summer, Whatley says, the truck travelled to Lafayette, LA, and shot 94 store commercials. "That city has three stations," relates Whatley, "but they couldn't shoot it on one-inch."



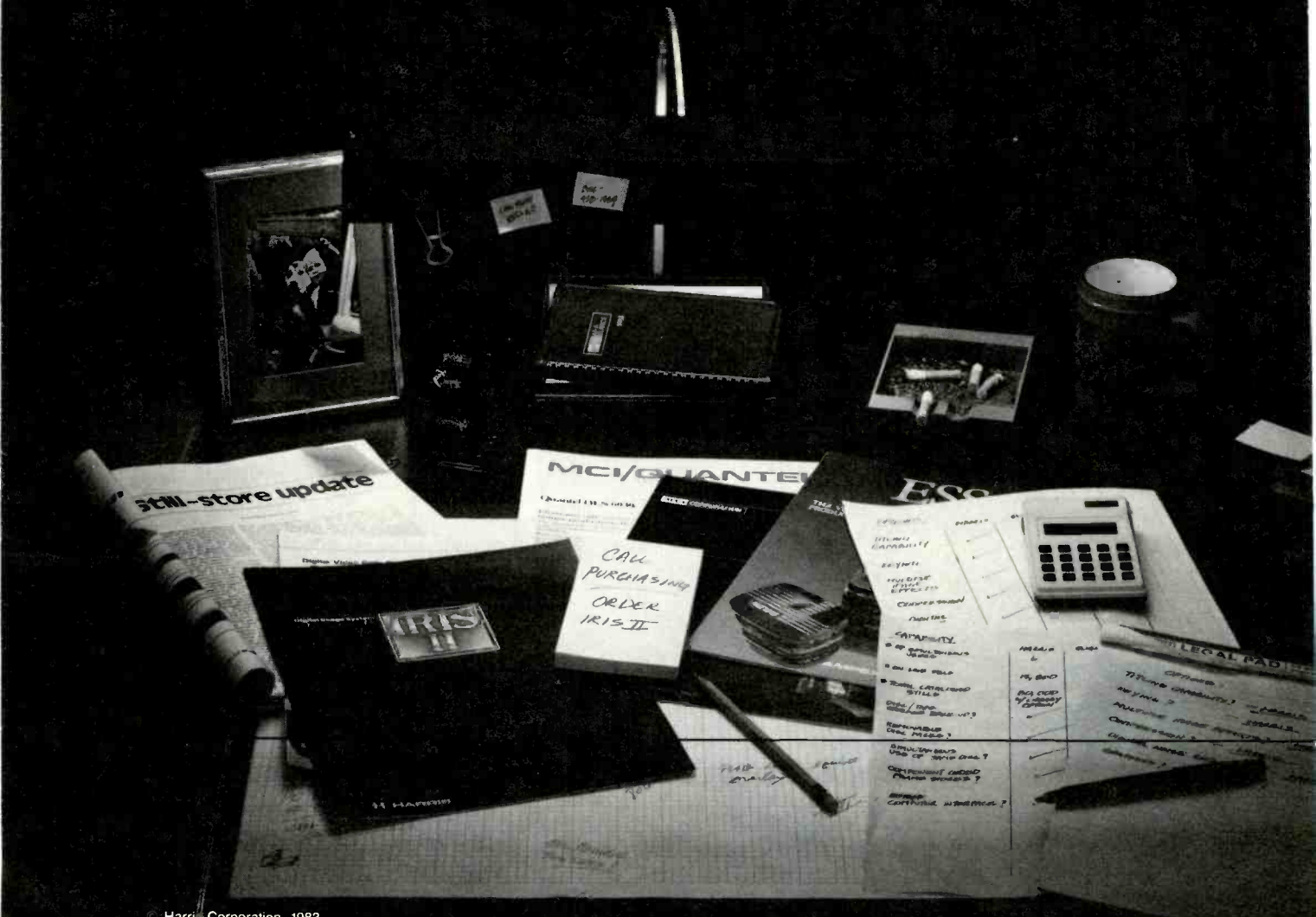
Ed Whatley, production manager, and Susan McGahagin, assistant director, shoot on location with WKRG-TV's remote production truck.

According to Whatley, about 90 percent of commercial work at WKRG comes through agencies. "We're competing production-wise with New Orleans, Jacksonville, Atlanta and Tampa," Whatley states. "We get a lot of overrun production out of New Orleans because their rates are higher than ours." Particularly restrictive union situations in New Orleans make production there expensive, Whatley says; WKRG doesn't deal with a union, so its rates stay lower.

Being ahead of the crowd technologically is nothing new to WKRG. The Mobile area was slow to switch to videotape, Whatley recalls, but WKRG was the first in the market to abandon film. The operation now is entirely on tape.

Field production is not the only area where WKRG leads the pack, however. The station has two production/control areas, including one just-constructed room that houses a Grass Valley Group 300/Mk II digital video effects production system and a Vital switcher. Whatley says WKRG was one of the

Adda, Ampex, Harris, and Quantel all make excellent Still Stores. But more and more the choice is Harris.



1 Harris' new IRIS Composition Station (ICS) solves your video production problems with these exclusive features:

Compression and Positioning
2X expansion
Variable size
Infinite border and background color
Soft border capability
H & V inversion
Cut-and-paste
Removable memory modules
Single joystick control

Adda doesn't. Ampex doesn't. Quantel doesn't.

The ICS is complex enough to complement an artist's imagination, yet simple enough for use in the hectic pace of on-air production. And it's based on Harris' new *four frame* synchronizer, the 650.

Here's why.

2 Harris' IRIS II offers you simultaneous access by up to six users, without costly networking of separate systems.

Adda doesn't. Ampex doesn't. Quantel doesn't. Now when you want to expand, you can—cost effectively. Your system can grow just by adding inexpensive user stations.

3 IRIS II lets you title stills from each user station.

IRIS II gives you character generation with multiple fonts. It lets you title stills directly from *each* user station without tying up expensive character generation equipment.

4 IRIS II solves your still sorting and locating problems with an integral library.

In fact, IRIS II offers the most powerful search routines of *any* still store. Its library is also accessible by each user station, and has a capacity of over 80,000 stills.

5 Problems with identifying stills are eliminated.

You can get complete information on *all* the stills in your list, with full description, date, sequence, and I.D. information.

You also have the power you need to manipulate list order through addition, deletion and change of position. And, you can also link and loop your lists.

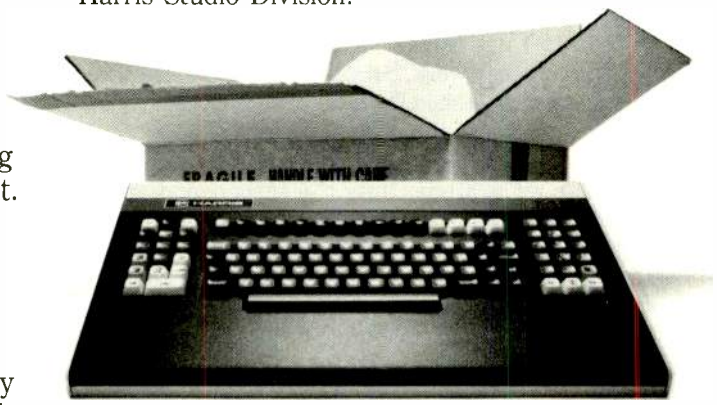
6 IRIS II gives you the storage flexibility you need for future planning.

IRIS II interfaces with the largest variety of storage drives of any still store. Several types of fixed and removable drives give you the capability of over 17,000 on-line stills. No other still store offers this flexibility. Period.

We think you get the idea. *We build the most powerful, and the most flexible, still store there is.* Whatever your business, if your problem is storing and manipulating video images, the best choice is the Harris IRIS II.

For more information about this superior solution to your video problems, call Steve Smith at (408) 737-2100, or write Harris Corporation, Harris Video Systems, 1255 E. Arques Ave., Sunnyvale, CA 94086. Telex: 4992172

Harris Studio Division.

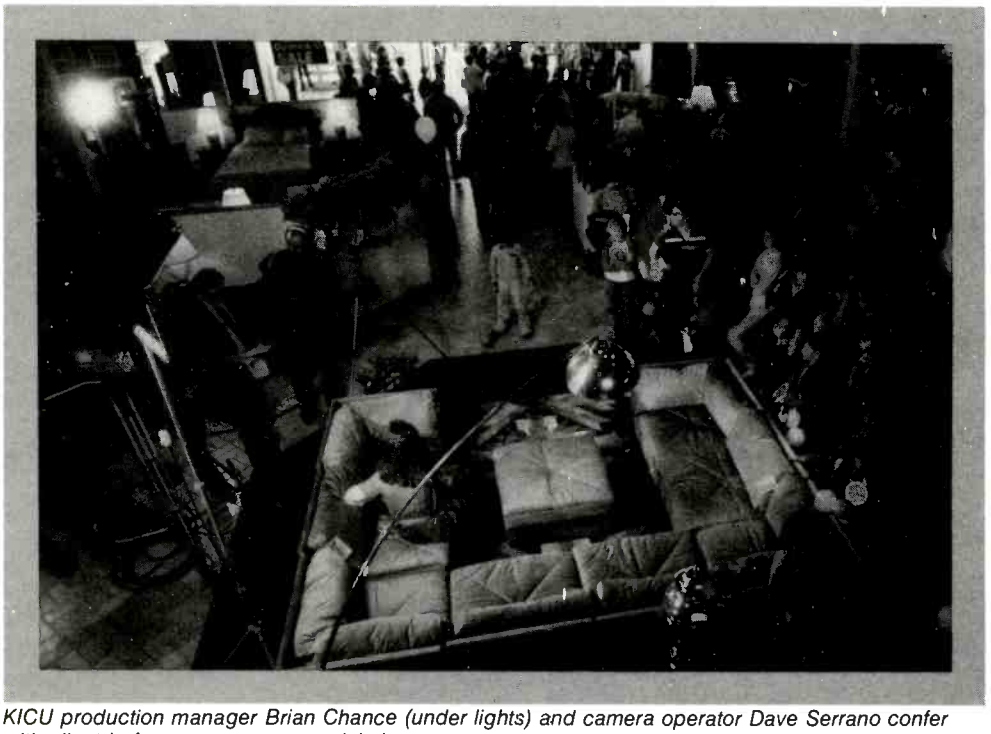


HARRIS

Circle 103 on Reader Service Card

first stations in the country to get an Ultimatte, which greatly improved the station's chromakeying ability.

Digital effects are regularly used for commercial work by the WKRG production staff. "We use effects on the switcher that the switcher wasn't designed to do," Whatley says, adding, "The capability of a switcher is far beyond what they sell it for." For example, the operators at WKRG have found ways to distort perspective on squeezed frames of video in such a way that "it looks like an ADO thing—not the same, but close." Whatley continues, "We have some TDs who watch a lot of stuff that comes off the satellite and the network and try to duplicate it. As long as you've got people like that, it'll fly. I want people to have a good time while they're working eight to five."



KICU production manager Brian Chance (under lights) and camera operator Dave Serrano confer with client before remote commercial shoot.

Serving clients creatively

Stations in smaller markets may have less competition from production houses, but their need to serve their clients is just as great. A good example of a creative commercial production operation is that of WCSH-TV, Portland, ME, which does some agency work, but gets most of its production schedule from local advertisers who deal directly with the station.

"It seems like we're always busy," says Mike Marshall, WCSH's production manager. About 60 percent of the station's commercial production is location work—enough to keep two field crews busy every day, either shooting or editing. The crews tape with RCA TK-76 cameras and Sony BVU-110 portable U-Matic recorders. (A Sony BVP-250 is the backup camera.) Both the field crews and the station's sizeable sales staff have plenty of ground to cover, with the station's signal reaching into neighboring New Hampshire. The station also has two copy writers "who are kept quite busy," according to Marshall. "It's part of the total service we offer. If you just sell time, it puts the burden on the clients," many of whom can't afford an agency and wouldn't be on television without creative assistance from the station.

WCSH further encourages camera-shy businesses by creating advertising opportunities that are especially appealing to them. Last year for Portland's three hundred fiftieth anniversary, the station produced a series of 50-second "historical moments" spots about the city, then sold 10-second sponsorships to local businesses, with tags produced on location. A similar project for the town of Lewiston-Auburn, complete with newspaper ads, netted more advertisers from that town.

The production studio at WCSH is shared with the news department, but separate production control and master control rooms allow the staff to work independently. The studio equipment includes a GVG 1600 switcher and Chyron character generator, along with an RCA audio board and RCA TK-44 cameras with Q-TV teleprompters. Recording is on RCA quad machines with editing capabilities, although field material is edited on Sony BVU-800s with a McMartin audio board before dubbing to quad for air. Marshall says the switcher's effects capability has greatly enhanced the station's commercial product. "Gone are the days when we used to do four slides a commercial," he says. "Now we're doing 10."

A creative staff augments the capabilities of the equipment. A recent spot for a local computer dealer illustrated the client's theme of "getting the computer down to size" by showing a giant computer on the right side of the screen and a small person on the left. The computer shrank as the person grew, and the spot ended with the person sitting down at the computer. The effect was accomplished with two cameras, one on the computer and one on the actor, with a simultaneous timed zoom. It took the crew many zooms to get the effect just right, Marshall says, but the final result was fine.

An interesting wrinkle on field commercial production is found at KICU-TV, a UHF independent in San Jose, CA. The station offers advertisers the opportunity to go live for special occasions such as openings or local events—bringing back the "golden days" of television with the bonus of on-the-spot remotes. For example, a local furniture store recently reopened in a new location. It kept the new address a secret while airing promotions on KICU, then went live from its new location for its opening days. The technique allowed the business to generate more fanfare and excitement than an ordinary, preproduced commercial would have offered. KICU has also


ONE OF THE FEW EFFECTS YOU CAN'T DO ON THE EXPANDED E-FLEX SYSTEM.
YET. We're working on it, though.
In the meantime, almost anything else you can think of is possible. Because we've just expanded the E-FLEX DVE* system with a new Perspective/Rotation accessory. So now, you can rotate images through all three axes. Add depth through perspective. Combine those effects with basic E-FLEX effects including split, compression, mosaic, Multi-move, and trajectory. And store it all on NEC's bubble memory cartridges.
We can't resist noting that our new capabilities make E-FLEX the virtual equivalent of systems costing far more. But more importantly, they make E-FLEX an instrument of almost limitless possibilities. One that takes only a few hours to master—and perhaps a lifetime to fully explore.
What's more, the E-FLEX system is modular. So you can buy it all at once, or start small and add later. And as we develop more capabilities, you'll be able to plug them right in.
To find out what E-FLEX can do now, call NEC at 1-800-323-6656.
By the time you call, we may have perfected the effect in the picture.
NEC
IMAGINE WHAT WE'LL DO NEXT
NEC America, Inc., Broadcast Equipment Division
130 Martin Lane, Elk Grove Village, IL 60007. In Illinois: 312-640-3792
Circle 141 on Reader Service Card

In control room at WCSH-TV, production manager Mike Marshall and director Debbie Sample work at GVG 1600 switcher.

KVIE's post-production system is built around CMX's Edge controller (center). CDL switcher is to left of Edge and Chyron RGU-2 is seen in foreground.

done live "vignettes" from the Gilroy Garlic Festival for local sponsors and has done live commercials from auto dealers, furniture stores, and groceries.

Jim Evers, the station's operations manager, says that field work is produced with a JVC KY-2000 camera and recorded—except, of course, the live spots—on a Sony BVU-110 U-Matic deck. The station then dubs to one-inch for post-production.

The bulk of commercial work is done in the field, but KICU's year-old facility also hosts its share of production. The new building has a studio just for commercial production, with new Ampex one-inch VTRs acquired at the beginning of 1983. The station is still in the process of acquiring equipment for the production room: at press time it was looking for a switcher (probably CDL or GVG) and planning eventually to buy some form of digital effects and a video editor (right now all editing is done machine-to-machine on the Ampex decks).

"If a client has a special need for digital effects, we may take it to another facility in the Bay area," Evers explains. "But for the most part, we don't use a lot of effects." Perhaps the station's most important "acquisition" so far was the hiring of a creative services director to direct ad spots. "We believe there definitely is a marked increase in local sales" since hiring the creative director, says Evers. "Having someone really well versed in the creative side frees up the account executives to visit clients and sell."

Noncommercial commercials

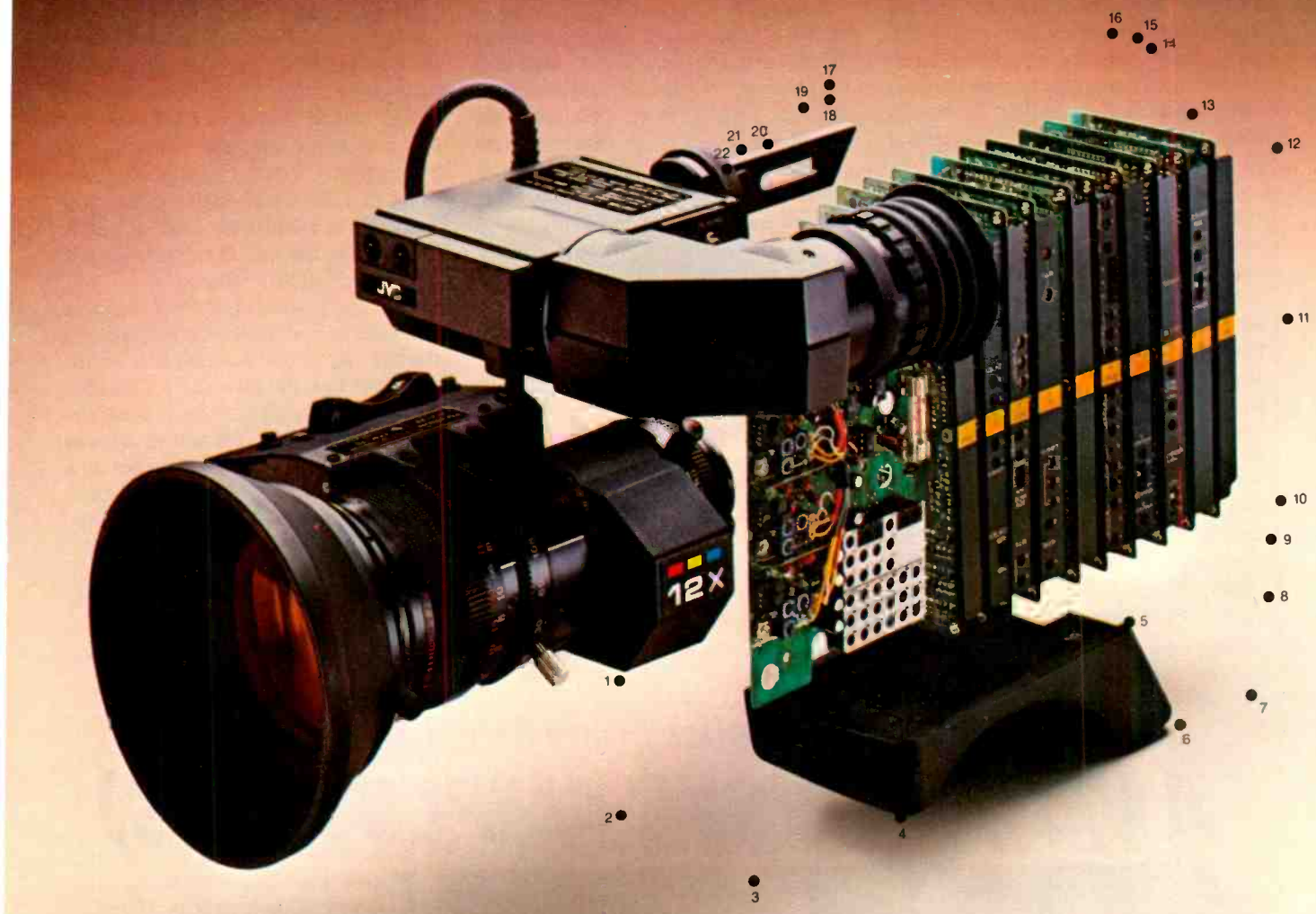
While the idea of a noncommercial station producing commercials may seem contradictory on the surface, it makes perfect sense to Garth Harrington, head of creative services for PBS affiliate KVIE, Sacramento, CA. "Like any other station, we compete for viewers," Harrington explains. "We need good equipment to produce our television signal, and we have to be constantly upgrading our equipment, which takes money. PBS can't afford to generate the same amount of local programming as commercial stations, but we need to originate local programming. That equipment tends to lie about when it's not being used. We want to use it to make money." Like other public stations these days, KVIE sees its sources of public funds dwindling and has its eyes out for alternative revenue sources. In addition to local, regional, and national ads, the station uses its sophisticated production equipment to produce industrial and training films for corporate and independent producers.

Harrington calls KVIE's production equipment "very comparable to any medium-market television station." For location work, the station uses a pair of Ikegami HL-79 cameras, one with a Sony BVU-110 and one with an Ampex VPR-20 one-inch field recorder. Back at the station, an off-line edit booth has two Sony VO-5850s for cuts-only editing with audio playback.

More complex post-production is possible in KVIE's CMX booth, equipped with an Edge editor and three Ampex VPR-2Bs. "We've managed to utilize the general-purpose interfaces on the Edge to control an ATR and the auto transition on our CDL switcher, so we can punch up switcher effects and have the computer on the editor actuate them," says Harrington. The Edge, of course, is capable of dissolves on its own, but with the switcher interface "we have 90 to 95 percent of a 340 for three-quarters the price," according to Harrington. The station also saved money by purchasing a Chyron RGU-2 rather than a more expensive graphics generator.

"We haven't taken the Cadillac route," Harrington admits, "but we

JVC INTRODUCES KY-310U
THE 4th GENERATION



Lock inside JVC's new KY-310U and you'll see what makes it the camera you've been asking for, all contained in a compact nine-pound package.

JVC has followed the advice of thousands of users of its immensely successful KY-series of 3-tube professional color cameras to design a fourth generation with high-resolution prism optics, ultra-sensitive Saticon* tubes, 57 dB S/N ratio, and 600 lines resolution.

JVC's expertise in miniaturization has loaded the double-sided circuit boards with such features as auto-shift registration, auto-white and auto-black balance, automatic black level, automatic beam control, matrix masking, auto-iris and pickup tube protection.

KY-310U has everything you've wanted in one value-packed camera. Write today for complete details.

JVC COMPANY OF AMERICA
Professional Video Div., Dept. BME 10/83
41 Slater Drive, Elmwood Park, NJ 07407
JVC CANADA, INC., Scarborough, Ont.

For faster action, call toll-free:

1-800-JVC-5825

JVC®

JVC COMPANY OF AMERICA
Professional Video Division

*Trademark of Hitachi Denshi, Ltd.

Someday others will build 3-tube color cameras like JVC.

Not yet!

Circle 146 on Reader Service Card

certainly have a very nicely outfitted Oldsmobile, and it gets us there at the same speed with almost the same comfort and the same efficiency." More equipment purchases are scheduled, particularly some form of digital video effects, but Harrington has reservations about spending top dollar for equipment if something less expensive will do almost the same job.

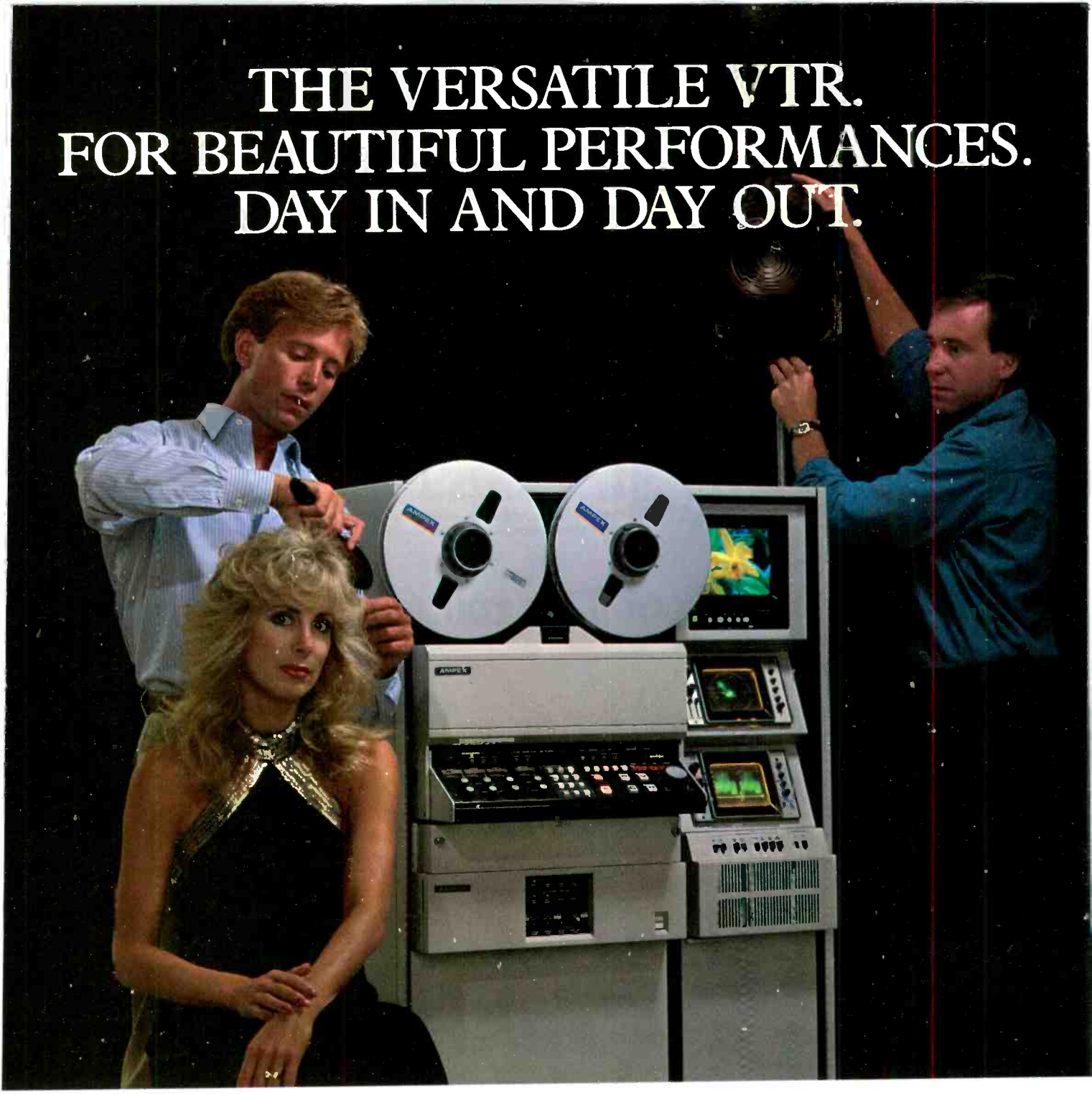
"Everybody is limited," he points out. "I, for one, think the equipment revolution is growing at a rate 51.5 times faster than people are generating money to buy these toys." Actually, the station has found some benefits in having a studio well-equipped with slightly less than top-of-the-line equipment. "Many clients are looking for less expensive fees," Harrington notes. "Some Los Angeles clients come up here to get away from Los Angeles prices." Some clients, he adds, will do the bulk of their commercial work at KVIE, then go to an expensive facility to add the digital effects they need. "High rates send people to us," he remarks. "They can do 90 percent of it here, then finish it up somewhere else at $350 an hour."

Another benefit of KVIE's studio is that it is less heavily committed than those of area commercial stations, which must do more of their own production. Having more time available for clients saves them time. A local commercial station that purchased a digital effects unit wasn't able to offer enough time to meet the demands of commercial clients; other stations in the market are now thinking of adding effects capability.

For production itself, however, the studio is seldom used. "You can do so much more in the field," Harrington claims. Certain lighting situations that are problematic in the studio become simple outside—and the variety of scenic locations near Sacramento makes outside work especially attractive. "In California we're really lucky," Harrington glows. "If you don't like one setting you can drive 20 minutes and find another." Sacramento, he notes, is an hour and a half from San Francisco, two hours from Lake Tahoe, and just five miles from the San Joaquin valley. The station uses its 18-foot van for commercial work, but is considering acquiring something a little larger, "but smaller than a 40-foot truck, which is very expensive and tricky to move around," according to Harrington. "You can now do the same thing in a 26- or 27-foot van that you had to do in a 40-footer 10 years ago." Once again, the station wants to get the broadest capability possible.

Clients, competition, and budgets can change drastically from market to market and station to station. Two ingredients link the diverse broadcasters that make a success of local commercial work, however: the best equipment the budget will allow—maintained by a well-trained and dedicated technical staff—and a healthy dose of creativity, both on the artistic and technical ends. Mixed in the proper proportions, they constitute a recipe for commercial profits. **BM/E**

THE VERSATILE VTR. FOR BEAUTIFUL PERFORMANCES. DAY IN AND DAY OUT.



THE DEPENDABLE VPR-80.

Our fashionable VPR-80 one-inch Type C VTR offers you seven stylish choices —including a slim-and-trim standalone and three sophisticated studio console models.

The VPR-80 has Automatic Scan Tracking (AST™) as a standard feature. When paired with its companion TBC-80 digital time base corrector, the VPR-80 delivers smooth slow-motion playback from stop to 1.5X play speed. Other highly attractive performance features include: a built-in frame-accurate editor providing keypad entry and trim of edit points, precise tape handling from spots through two-hour reels, and comprehensive diagnostic systems down to the component level.

VPR-80. It's the multi-faceted beauty that fits in fashionably anywhere. From the people who started it all. For more details, contact your local Ampex AVSD sales office.

AMPEX

Ampex Corporation · One of The Signal Companies

Atlanta 404/451-7112 • Chicago 312/593-6000
Dallas 214/960-1162 • Los Angeles
213/240-5000 • New York/New Jersey
201/825-9600 • San Francisco 408/255-4800
Washington, D.C. 301/530-8800

Circle 148 on Reader Service Card

With low key lighting, differential lag can be a problem. Amperex Plumbicon tubes with built in bias light increase the speed of response of the layer, and lag is virtually eliminated.

Comet tailing and loss of detail in highlights are minimized by using the Amperex patented Diode Gun or anti-comet tail (ACT) tube. Both solve this problem by providing high beam current to stabilize highlights.

High audio levels can produce the annoying problem of microphonics. Amperex attacked this at its source, and all Amperex Plumbicon tubes have a unique mesh designed to prevent the build-up of mesh vibrations—not just to dampen them.

Six of TV's toughest shots and how

The problem of image retention. By reexamining layer physics and semiconductor properties Amperex developed a new extended red layer. Now you can include brilliant reds in your scene without concern for image retention.

Low output capacitance Amperex Plumbicon tubes help maintain high signal to noise performance. This helps prevent loss of detail and increased video noise in low light areas of high contrast scenes.

Because of special photoconductive layers for each color and an optimized electron optics design, the Amperex Plumbicon provides the highest resolution for each image format. This resolution is measurably higher than earlier tubes.

Amperex Plumbicon® camera tubes handle them.

Ordinary pick up tubes can handle ordinary TV shots. But when you have to contend with low light levels and bright highlights... the glare of reds and the blare of trumpets... you need the extended performance of Amperex Plumbicon camera tubes.

Amperex invented and refined the pick up tube technology that makes it possible to handle the 6 toughest shots in TV. Since the original Plumbicon cameras were introduced, your business has become more competitive, more demanding. Camera designs have become more complex. That's why we continued to invest in improving the performance of the Plumbicon. That's why we offer today's range of extended performance Plumbicon tubes.

Today, virtually every TV camera system — domestic or imported — is designed to use the Plumbicon tube. And that makes the handling of the toughest shots in TV very easy. Simply specify Amperex Plumbicon pick up tubes.

For more information call or write Amperex Electronic Corporation, Slatersville Division, Slatersville, Rhode Island 02876. (401) 762-3800. Made in Rhode Island, U.S.A. Delivered to you in twenty-four hours or less.

Amperex®

WE MAKE IT HAPPEN

A NORTH AMERICAN PHILIPS COMPANY

Circle 156 on Reader Service Card

How to Build a Better Compact Professional Recorder

Follow this step-by-step guide to build your own rugged, reliable, high-performance professional recorder.

1. For your design team, hire the same engineers responsible for world's premier multi-track recorder, the STUDER A800.
2. Employ meticulous Swiss and German craftsmen for all fabrication and assembly.
3. Use solid aluminum alloy die-castings for transport chassis and headblock.
4. Use the finest Swiss and German machine tools for milling, drilling, and tapping.
5. Use only professional-grade mechanical and electronic components.
6. Make your own audio heads to ensure the highest quality.
7. Apply gold plating to audio switching contacts.
8. Include the following standard features: Balanced and floating +4 inputs and outputs • Calibrate/uncalibrate switches • Self-sync • Tape dump • Edit mode • Full logic transport control • Servo controlled capstan motor • Front panel input and output mode switching • Universal power supply • Rack mount.
9. Provide the following options: Rugged, steel-legged console • Transport case • Monitor panel • Remote control • Varispeed control • Balanced mike inputs.
10. Support your finished product with a worldwide parts and service network.

If you can do all of this for under $2100—by all means go ahead! (Even Dr. Willi Studer would be proud of you.) But first, we suggest you consult with your Revox Professional Products dealer. He'll provide you with a ready-built PR99...so you can concentrate on building your reputation as an audio professional.*

STUDER REVOX

Studer Revox America, Inc. • 1425 Elm Hill Pike • Nashville, TN 37210 • (615) 254-5651

*Manufacturer's suggested list price $2095.00. Contact dealer for further pricing information.

Circle 149 on Reader Service Card

Management/Engineering Debate

DIGITAL AUDIO: When will it deliver?

Digital audio is being widely promoted as the technology of the future. But when will its impact really be felt by the local station? A panel of leading engineering and management experts square off on one of broadcasting's hottest subjects.

By Tim Wetmore
Associate Editor

SINCE THE EARLIEST days of audio, advances in technology have not often been well received in broadcasting, or any part of the audio industry. Starting with transmission methods, through live recording techniques in the 1940s, and including the 78 versus 33⅓ RPM debate, audio professionals have had to struggle to reconcile economic considerations with the natural impulse to make technological inroads into the future. That tradition continues today with the no less heated discussion over the combined fates of broadcasting and digital audio.

Digital audio is, according to its many supporters, on the proper course, even ahead of schedule: as prices rapidly drop, equipment is being acquired and innovations are flowing into the main digital stream. The skeptics are less sure of these assertions and have many questions. Then, of course, there are those still waiting to decide whether or not digital is really worth its chips.

Is the digital world coming? Has digital technology lived up to its promise? What are the technological forces at work? These questions, to which there are no universally accepted answers, have been posed many times and in different forms, and what they lead up to is whether or not the influential decision-makers in broadcasting think the all-digital broadcast plant is possible, or even desirable.

Looking at this possibility, the broadcaster has many factors to take into account. Economics, of course, is a prime concern to anyone in business. Another primary consideration is the ability to produce a quality product with which the company can associate itself in the public's mind. A third consideration is the acceptance of very sophisticated technology by the general public (the transmitted signal is received in the home on excellent tuners), placing demands on those who produce the product they consume. In fact, many home stereos boast specifications which exceed those of transmitted signals.

Talmage Ball, KSL-AM/TV

How, then, are those influential in the radio industry dealing with the pressure of this technology? Talmage Ball, the chief engineer at KSL-AM/TV in Salt Lake City, who designed the advanced audio facilities at the station, explains the reasoning behind the big investment made by KSL to design and build the studios. "Our station is planning for a major revolution in both audio and video, and we designed our new studios to reflect that philosophy and to prepare for the coming of digital technology."

An example of the extent to which design considerations were made to accommodate ongoing changes in technology is the six-foot space left around studio and control rooms. This was done so engineers could get in and accomplish wholesale changes in the wiring and rack setups for the tape and control rooms, changes which KSL expects to see as the industry moves closer to fulfilling the promise of digital audio.

Not only the design of the studio but the purchase of new equipment was completed with an eye toward the specifications required for handling digital signals. "We bought our new consoles because they have a S/N ratio in excess of 90 dB—equal to digital. All of the processing is, of course, digital, and our audio monitors were purchased because we felt they handled the requirements as well as any other. Yet, so far, we have not seen any digital ATRs that are worth the expense. We feel that a good analog machine with noise reduction and recording at 30 and even sometimes 15 ips can get very close to the digital sound, close enough so that the extra expense is not reasonable, at least right now. We are always watching for developments in this area, however, and are just waiting for a cost-effective digital ATR."

The KSL philosophy, backed up by a solid financial investment, clearly indicates that the station is prepared to go to the all-digital plant, and is indeed committed to it with its purchases and design ideas. The KSL example also illustrates how digital is impacting on other areas of technology, such as analog ATR design, and how it is influencing management's buying decisions in terms of equipment that will handle higher-quality signals.

"Our studios were conceived totally with the coming of the digital age in mind."

"They haven't shown me yet the distinct advantages of an all-digital system."

Richard Rudman, KFWB-AM

Even in the face of such optimism, and given the current legal and administrative atmosphere surrounding broadcasting, especially as it pertains to standards recommendations, an industry-wide debate about the quality of the new digital systems as opposed to high-quality analog systems is brewing. Thus, the current viability of digital technology in practical applications is meeting with a wide variety of different responses, especially the questions of whether or not the all-digital plant is coming; if so, when; and if not, why not?

Richard Rudman, engineering manager of KFWB-AM, on the board of directors of the SBCE and chairman of the National Frequency Coordinating Committee, says of the promise of digital audio: "The timetable on the question is not yet complete. So far, the practice has not borne out the theory that using digital equipment is the best way to produce audio. Right now, the best use of digital is in the network's satellite transmission systems and maybe the use of laser disks in various ways."

Rudman further states the technology has not gone far enough, and that with current analog techniques the audio industry can exceed current transmission specifications. His opinion reflects that commonly expressed by the pragmatic observer who realizes that the broadcast industry is one that is economy-driven, that is, as Rudman expresses it, "Why spend money on something new if what I already have works well and makes me money?"

In addition, the production characteristics of radio broadcasting must be taken into consideration. At all-talk or all-news stations, which are among the top-rated stations in every major market, the cost of digital technology has not proven to be worthwhile. The existing analog systems do the job quite well, considering that many of the differences between analog and digital involve perception that is at the edge or beyond the ability of human recognition, especially in talk or news. Rudman sees the only advantage to digital, in this financially important news/talk format, coming in the future, if mass storage and manipulation of information help to avoid the vast amount of tape cutting now necessary. But that is in the future, and its value will have to be determined at the time it becomes available.

Another claim by those skeptical of the value of digital is the current need for a great deal of specialized test instrumentation to keep an entire digital plant running, along with personnel with specialized training.

Rudman restates the position: "They haven't shown me yet the distinct advantages of an all-digital system when analog is making rapid advances and costs so much less than digital. Nor have they shown me the need for it when analog performs quite well."

The common denominator among those who support staying with an already valuable and completely implemented analog system is money. Since the radio business discovered that it is not recession-proof, many managers and engineers are realizing that if you want to stay alive, you have to pay attention to financial considerations. What this ultimately means is staying with the good equipment you have, and when you upgrade, getting the most cost-effective product available (usually the cheapest analog equipment that meets the station's demands). No matter which side you take on the value of a given system's reliability, quality control, and maintenance requirements, price will be the determining factor.

For management, the criteria for the existence of the station as a viable business interest is whether or not it can get a decent signal on the air, and whether or not it can accomplish the task with an economic broadcast chain, providing the station with a reasonable return on the investment.

This perspective leads to questions concerning the inevitability of the digital plant. Says Rudman, "Until a respected company in the broadcast business is willing to display, at the NAB or elsewhere, an all-digital chain, and can do it at the same cost as an analog chain, I don't see an all-digital station as a viable economic solution."

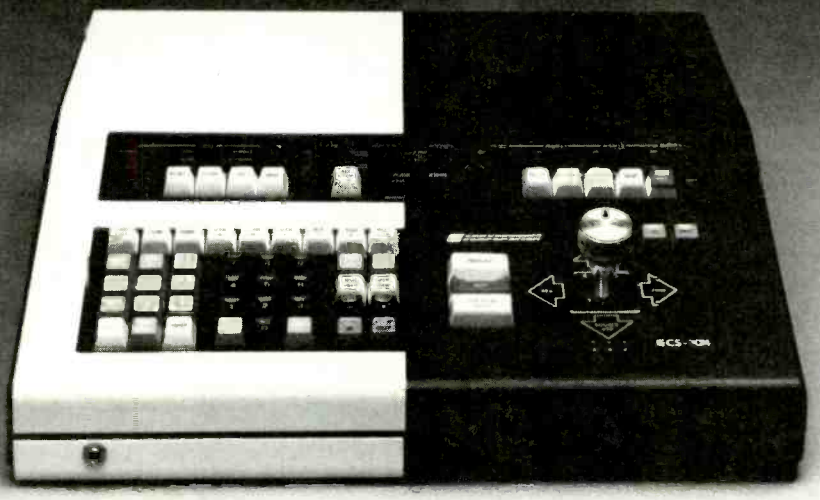
"Digital is fulfilling its promise and people who say it isn't are sadly misinformed."

Thomas Stockham, AES

Clearly the incentive for any investment derives from a predominantly businesslike viewpoint. A station has to stay in business. Because of the greater relative expense of digital, at least for now, most network buyers feel the acquisition of digital equipment won't help them bring in any more dollars because of its better sound. This is quite different from the music business, where a high-quality distinctive sound is the stock in trade, and where it pays to invest in the superior equipment which helps to realize a better return because of a better and more distinctive sound.

But if cost is the real factor, why aren't broadcasters who can't afford the large sums required for digital ATRs not buying $2000 converter systems for VCRs (which specifications and over-

ELEVEN THOUSAND DOLLARS TURNS A 103 INTO A 104



Upgradeability has been the promise of the 100 Series controllers ever since they were introduced in 1978. You took us at our word, buying over 2500 systems — more than any other editing manufacturer. Now our word is as good as gold. For $11,000 we will take back any functioning 103 (also 101 or 102) no matter how old, and give you a brand new 104. This extraordinary offer gives you the chance to have 800 lines of edit memory, Smart-Start synchronization, Comments and Advanced List Management at prices 40-50% below normal. Add it up, then call your local Convergence dealer or sales office. Offer ends January 1, 1984.

CONVERGENCE CORPORATION

1641 McGaw, Irvine, CA 92714, (714) 549-3146
250 W. 57th Street, Fisk Building, Suite 815, New York City, NY 10019, (212) 765-1333
3575 Cahuenga Blvd., West, Los Angeles, CA 90068, (213) 506-POST

Your best editing investment just paid off again

Circle 102 on Reader Service Card

all sound, according to many, are superior to comparably priced analog)?

One who supports the idea of this inexpensive entry into digital sound, and who refutes the claims that advanced analog systems have similiar specs, is Thomas Stockham, president of the Audio Engineering Society. "They are in no way comparable," asserts Stockham, "and contrary to what some claim, the difference is audible. Take, for example, modulation noise: a terrible problem in analog, but in digital there is none. The same is true with harmonic distortion and audio printthrough: bad in analog, none in digital. Wow and flutter are a big problem in the analog world, but totally unmeasurable in digital."

According to Stockham, there are other time base problems with analog recording technology that do not plague digital, and these are at the very least subliminally transferred to the listener, if not outright obvious.

Stockham, however, is not reluctant to mention the difficulties with digital systems. He recognizes that, beyond the problem of its novelty, it is hard to transfer from one form to another, given the question of lack of standardization. Also—the only serious problem from his point of view—editing in the digital domain is currently inefficient and costly.

The premise of Stockham and other advocates of the very real and present usefulness of digital audio systems is that as the novelty wears off, as the prices come down with improved manufacturing methods in a still infant industry, and as more digital product becomes available, the excuses for avoiding digital will be no more.

Stockham certainly understands the business restrictions that come into play. He allows that a complete changeover from analog to digital is not appropriate in terms of business, but that an evolutionary, and not a revolutionary, change is already at hand. As Stockham notes, "Even in the case of CDs, the title catalog grows every day, the players are relatively cheap, so why not program CDs?"

"In spite of this, I still think digital will find its way into all aspects of the audio industry because it's just plain better to produce audio digitally. Six years ago, I couldn't get a record company to put a digital recorder in a studio. Now you can get a CD in almost any city in the U.S. People have the courage—why aren't they doing it? Are they afraid? Digital is fulfilling its promise and people who say it isn't are sadly misinformed."

Eric Small, audio consultant

Another supporter of producing audio with digital technology, especially in terms of storage and manipulation of the audio signal, is Eric Small, a well-known broadcast audio consultant. His perspective on the debate is that "digital is already delivering on its promise.


For those who think they've heard it all...
Neve's full line of broadcast audio consoles
If you've heard it all, chances are you use or own a Neve.
If you *think* you've heard it all, we'd like to take you beyond your sound barrier with one of Neve's full line of audio consoles and post-production systems.
We think you should hear for yourself what so many audio engineers and broadcast facility personnel already know: For superior technical performance, reliability, logic circuitry (that can interface with switchers, mic muting, loudspeaker muting, etc.), exceptional value, maintenance-ease and a pure, natural sound, there's nothing that comes close to Neve.
Of course, since many broadcasters already know about Neve's quality, they've chosen to invest in a Neve.
Networks and independent stations invest in Neve to ensure that their audience hears the finest sound available.
Post-production facilities invest in Neve to ensure that their clients receive the finest product available and to keep clients coming back, while attracting new business with the Neve name.
Neve designs a full line of audio consoles and probably has a system to fit your specific needs.
So unless you've heard it all, isn't it time to aspire to Neve?
For further information, call us, or write.
Aspire to Neve
RUPERT NEVE INCORPORATED: Berkshire Industrial Park, Bethel, Connecticut 06801 (203) 744-6230 Telex 969638 • 7535 Sunset Blvd., Hollywood, California 90046 (213) 874-8124 Telex 194942 • RUPERT NEVE OF CANADA, LTD. represented by: Manta Electronics Group, 204 King St. East, Toronto, Ontario M5A 1J7 Canada (416) 868-0513 Telex 06-986766 • Stanotechnique, 2585 Bates, Suite 304, Montreal, P.Q. H3S 1A9 Canada (514) 739-3368 Telex 055-62171
NEVE ELECTRONICS INTERNATIONAL, LTD: Cambridge House, Melbourn, Royston, Hertfordshire, SG8 6AU England Phone (0763) 60776
RUPERT NEVE GmbH, 6100 Darmstadt Bismarckstrasse 114, West Germany Phone (06151) 81764.
Circle 104 on Reader Service Card

audio is more cautious than that of strongly supportive advocates. "I don't think that digital will completely replace analog as that [analog] technology also improves, such as right now some analog circuitry is coming out that very nearly approaches digital in specs and is relatively cheap. This is a trend that may continue. Another problem is the sampling rate, and it seems that will remain a problem. I don't see digital reel-to-reel being important for a very long time because of the problems with the tape itself and with the difficulties in editing that now exist. Analog is more than adequate for present radio use."

In Klein's estimation, the major leap of digital technology is currently in satellite delivery of programs. It freed the networks from land lines and provided better quality in the process. Also, digital transmission is becoming almost a commonplace as more and more stations and networks purchase digital processing equipment. Echoing that often-heard sentiment from radio management and from the cautious network engineer, "The only problem that remains is that its admitted superiority does not justify its cost."

All radical predictions and reservations aside, this crucial question, the subjective weighing of digital quality with digital cost, remains at the very center of the disagreement. A subject-by-subject examination of the advantages and drawbacks of digital yields some interesting results.

Digital transmission by satellite seems already to be an accepted form of broadcasting. Heading back through the broadcast chain, much of the processing is digital and seems to be receiving little resistance. In audio production, CDs appear to be accepted by some as a better means of playing music, and is rejected by others as still too expensive, too unreliable, and lacking a useful and sizeable catalog of titles. The digital console, including automation, seems to be increasing its share of the market with each passing NAB convention. Speakers, of course, must remain analog as long as the human ear does. Meeting with the most resistance is the digital ATR. The proponents of the digital system claim it is better and that the cost is justified, while its opponents say it's too expensive and very difficult to edit on or to transfer between systems.

In the history of broadcasting's engineering debates, the digital question will take its place alongside those of the past. Whether or not it will be resolved soon remains to be seen. Strong arguments are being made that digital audio is on the proper course, just as the skeptics regard the technology as lacking economic viability, and some even question its technical superiority while pointing to the improvement and continued market superiority of analog.

The disagreement, of course, will continue until, one day in the future, one of the technologies is accepted as an everyday fact. Until that time, a positive word from Thomas Stockham: "Digital audio is the new standard of excellence, something for people to shoot for in their professional endeavor. Even if stations don't choose to spend their money on digital equipment, they will look to it as the standard of quality for improving analog systems." **BM/E**

LEXICON HAS "THE LEADING EDGE" IN DIGITAL AUDIO PROCESSING

Alphanumeric Controller (LARC) for Lexicon 224X Reverb/Effects System

NEW

- 48-character alphanumeric display guides and prompts users and unleashes the full power of the "X".
- Off-line cassette tape storage for 36 user-created reverberation and special effects programs. Saves your creative work.
- Extensive diagnostics for on-line use and off-line storage offers an unequalled confidence factor.

Audio Delay Synchronizer Model 1300

NEW

- Intelligent interface provides direct and flexible communication with a growing number of digital video synchronizers and processing devices by sensing their video delay characteristics.
- Assures accurately synchronized audio and video; eliminates lip sync problems.
- Superb audio characteristics; full bandwidth, 16-bit, stereo performance with ultralow noise and distortion.
- Price-performance breakthrough.

Super Prime Time Model 97

- Provides a wide range of high-quality, custom-tailored, programmable, audio enhancements and effects (no operator hassle).
- 32 storage registers and off-line storage on audio cassette allow high-quality audio effects processing to be preplanned and retrieved at the push of a button.
- In production or on the air *Super Prime Time* puts tremendous audio effects processing power at your finger tips.

Model 200 Digital Reverb

NEW

- Quickly and easily creates realistic acoustic environments for live broadcast, production and postproduction. The ambience of concert halls, acoustic chambers, or plates available with a button push.
- Brings Lexicon world-famous reverb sound to all markets in a cost-effective design.
- Streamlined panel and storage registers make the Model 200 a snap to use.
- Unequalled for matching the desired acoustic ambience to the scene for voice-overs and sound effects or for creating reverb enhancements for production and live entertainment.

See these products at SMPTE

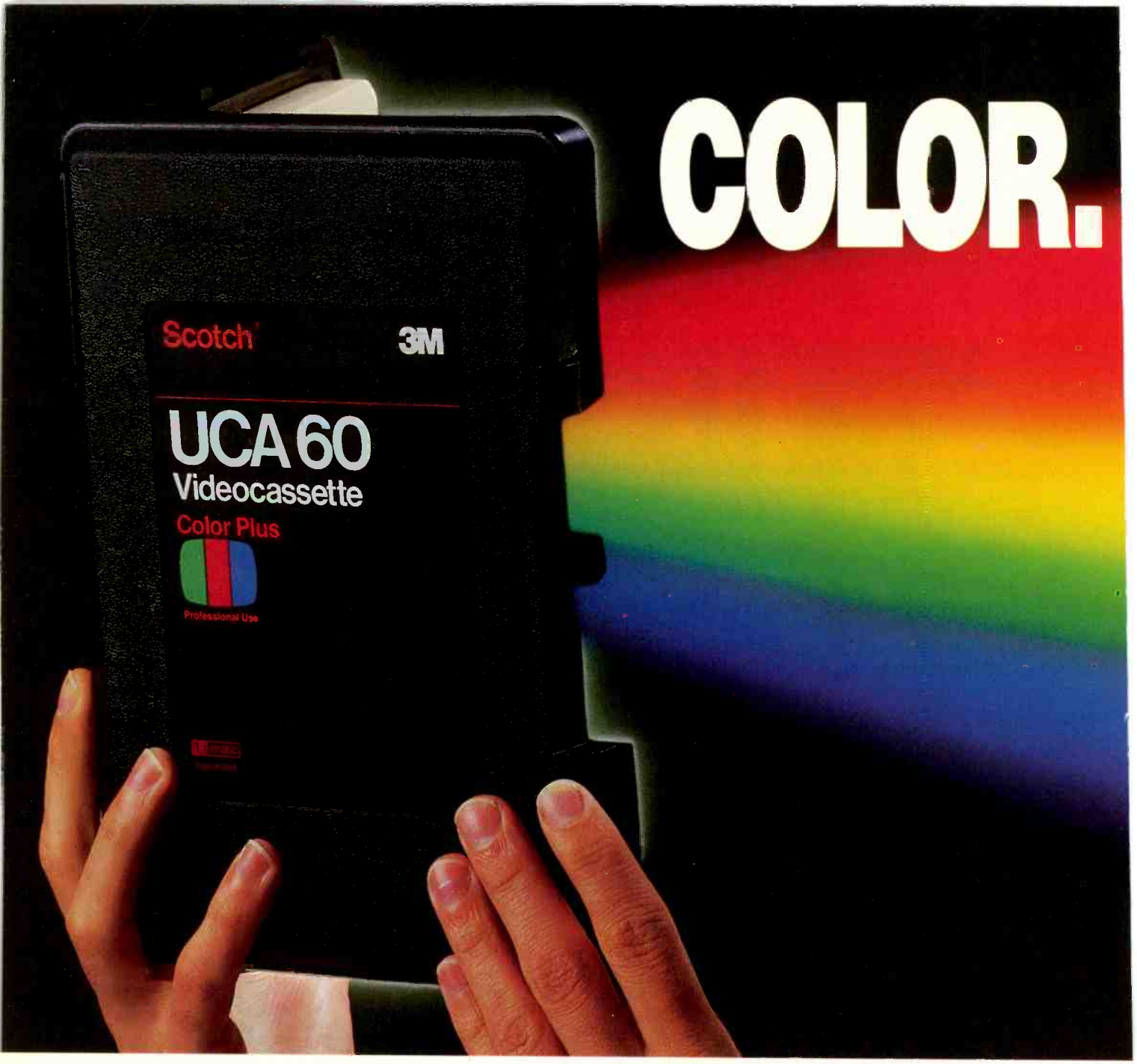
SMPTE BOOTH #623

lexicon

Lexicon, Inc., 60 Turner Street, Waltham, MA 02154 • (617) 891-6790/TELEX 923468

Export: Gotham Export Corporation, New York, NY 10014

Circle 155 on Reader Service Card

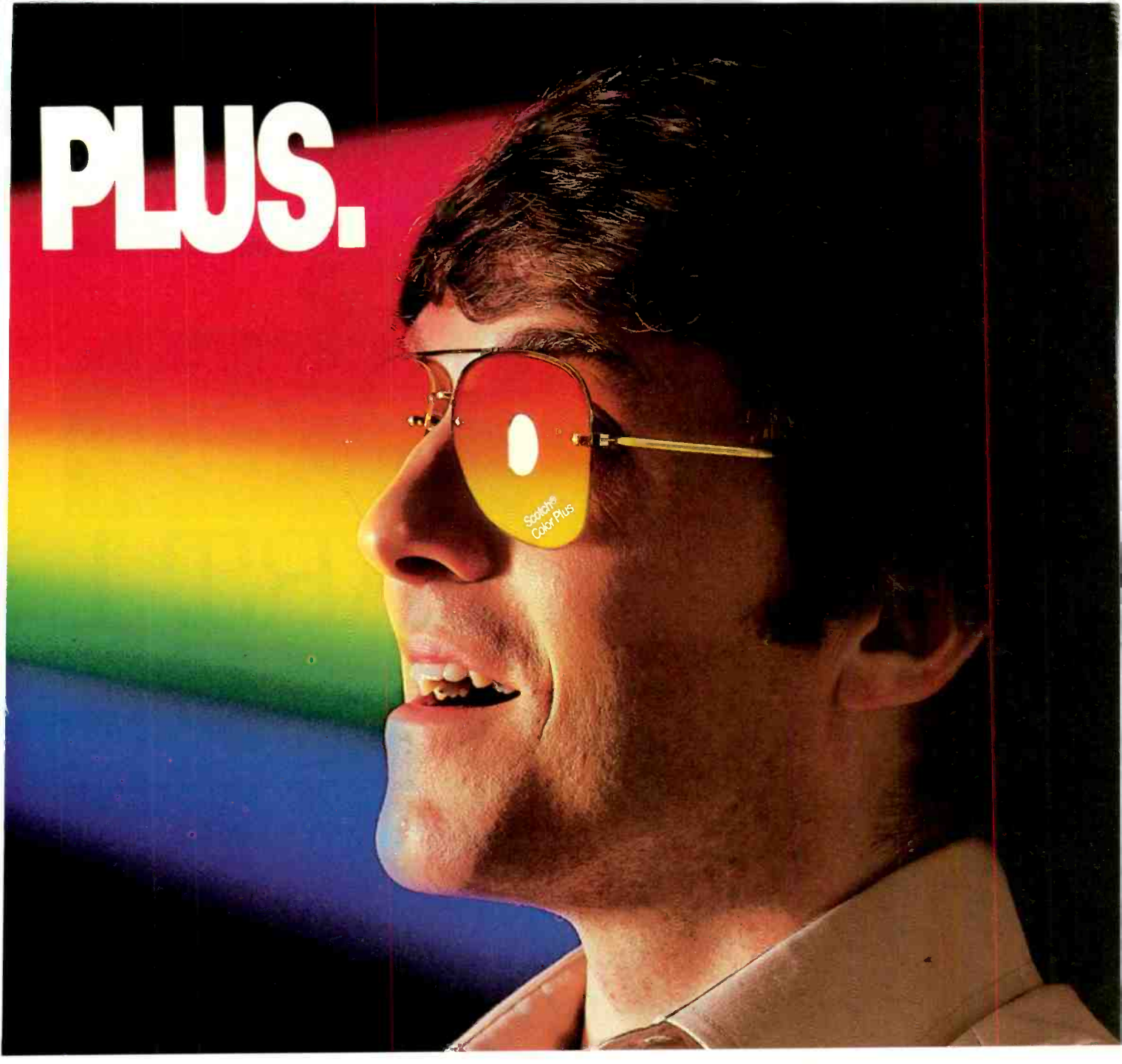


The difference between standard videocassettes and Scotch® Color Plus ¾" Videocassettes will be obvious to you right from the start.

Scotch Color Plus delivers exactly what its name implies. Bright, brilliant color for your ¾" mastering or editing needs.

Behind this dramatic color improvement is our unique Scotch Color Plus oxide that exceeds industry standards for color and video signal-to-noise. So you get a crisp, colorful picture, with significantly fewer dropouts.

But brilliant color is only part of the story. The special magnetic formulation



designed for the new generation of U-matic recorders reduces headwear to the lowest in the industry.

Most important of all, every Color Plus Videocassette is consistently made under the highest quality standards, which has made 3M the leading manufacturer of professional use video tape.

For more information about Color Plus ¾" Videocassettes, call 1-800-328-1684 (1-800-792-1072 in Minnesota). We'll send you details on the ¾" tape that lives up to its name.

Magnetic Audio/Video Product Division/3M.

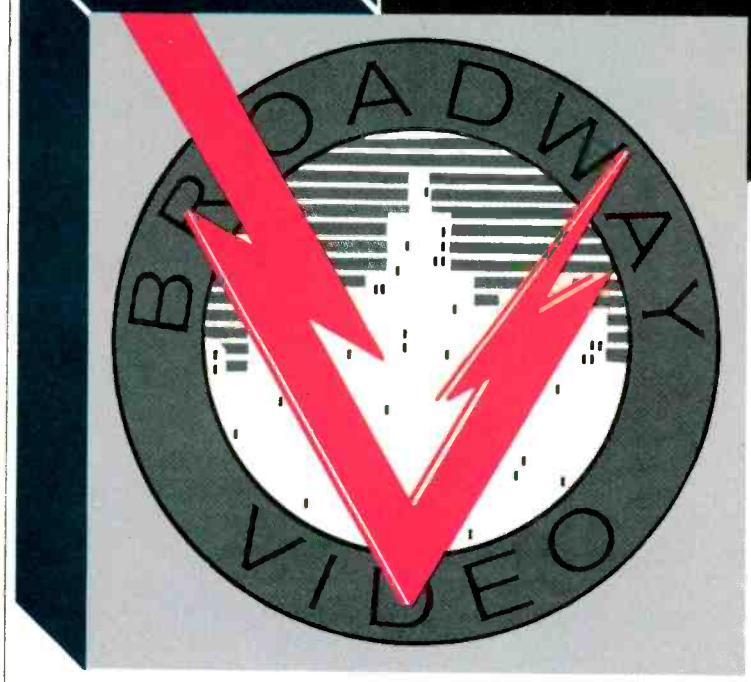
SCOTCH COLOR PLUS 3/4" VIDEOCASSETTES.

3M hears you...

3M

new series

production facility report PART 1



This report on Broadway Video is the first in a series of articles profiling leading teleproduction facilities actively working on broadcast and major cable accounts. Through interviews with the management, engineering, and production team at each facility, the profiles are intended as models of the best our industry has to offer in both TV station and production facility operations. Ed.

At this modern New York City teleproduction facility, the emphasis is on state-of-the-art equipment... and how to maximize its potential.

By Robert Rivlin
Editor

BROADWAY VIDEO is "hot." In the case of a teleproduction facility, this is measured by the almost constant stream of clients through Broadway's three on-line and one off-line editing suites in the Brill Building just north of New York City's Times Square.

But the "hot" label is also due to a state of mind among those at Broadway—that they are leading the industry (both other production/post-production houses and most station/network operations) when it comes to the innovative use of innovative equipment. Broadway uses VITC time code almost exclusively in both on- and off-line editing. Broadway got the very first MCI/Quantel Mirage system delivered in the U.S. (see *BM/E*, June, p. 186), adding it to a vast repertory of other graphics systems, including an MCI/Quantel Paint Box (the still frame/animation software package introduced at last NAB will be added shortly), and the Thomson-CSF Vidifont Graphics V with digitizing pad and animation software with which Broadway does most of its titling. And Broadway can tie all these systems together, if necessary, bringing a huge repertory of effects to bear on an image—as it did recently when creating an effects package for ABC's Olympics coverage.

The equipment in turn attracts some of the best engineering and production talent New York has to offer. For these people, whether actually working on a job at Broadway or looking for an assignment, Broadway is a meeting place where people can come together and just visit for a while in a creative environment in which ideas can flow freely. Broadway itself, of course, is the real beneficiary of all the sharing.

"We want to be like a film studio for the video community," says Mike Werner, VP of engineering, research and development, *and* special projects. Part of the film studio-like approach involves "vertical integration," so that the facility offers a complete range of services from pre-production, production, and post-production to arranging distribution deals.

"Vertical integration means you can get things done generally faster and hopefully better," according to Werner. "It's a tired buzz-word for many industries, but it's a fairly new application for the video production and post-production business."

Besides offering a complete range of services, vertical integration also

means for Werner that the facility is large enough and varied enough so it can attract and hold onto talent, and accommodate itself to the needs of a large group of producers and directors who bring their work to Broadway whenever they can.

Broadway Video was founded around four years ago. President Lorne Michaels, who had the contract to produce and edit a series of prime time specials for NBC, *The Best of Saturday Night Live*, and editor Randy Cohen decided it would be more advantageous to take the editing out-of-house. With Cohen established as VP and GM, they brought Werner in from Phoenix (where he had been working in the record and radio business), and set up the company as a post-production facility.

The original editing suite, for which Werner was architect and engineer, had "very limited requirements." It was constructed "almost overnight" by Arnold Ferolito and his staff at A.F. Associates. Equipment consisted of a Sony BVE-5000 editor and BVH-1100 and 1100A one-inch VTRs.

As business grew, a second editing suite was added a year later. And, 15 months after that, Edit Room 3 was constructed, a virtual duplicate of the first two, but with BVH-2000 VTRs and extensive stereo audio post-production capabilities (more later).

Broadway Video Edit, as the post-production facility is officially called, now employs between 40 and 60, depending on how many jobs are in-house. Among these are eight full-time engineers and technical personnel and five full-time editors who are more or less permanently teamed with five playback operators.

Production arm founded

As the post-production facility grew, so did the various other parts of the Broadway operation. Today there are three other business units besides the post-production facility: Broadway Productions; Broadway Home Video, which markets software for the home entertainment market; and Broadway Pictures, which is engaged in the development of motion picture properties. Dan Sullivan is the corporate VP who oversees the four allied companies.

Although the post-production services form the lion's share of the business now, Broadway's production services unit is becoming increasingly important, especially as the concept of vertical integration develops. Cohen is currently on the road as a director of technical operations for the Simon & Garfunkel tour where a bank of Eidophor video projectors is being used as part of the stage set, fed by live video cameras on stage. A lot of concert material is also being recorded and will later be edited into a musical special—a job which Broadway Video Edit will naturally be up for.

Prior to the S&G concerts, Werner was the technical supervisor on a major shoot for Showtime at the Odeon Theater—again a musical special starring Randy Newman, Linda Ronstadt, and Ry Cooder. Just prior to that, Broadway provided production services for a Neil Young concert in Berlin that was shot for HBO.

Most of the people using Broadway's production services these days are the large pay-cable companies such as HBO and Showtime, although networks are becoming increasingly important customers, as they have been in post-production all along. Broadway has also been working on some of its own material, and has produced a series of tapes, *The Authors*, in which famous authors are interviewed in their homes. (Four tapes are in the can already, including a talk with Isaac B. Singer shot in Florida.)

Besides the ability to accomplish an entire production under a single roof, one of the advantages Broadway offers producers is New York City itself—what Werner chauvinistically describes as "the world's greatest back lot." As part of its expansion plans, Broadway will also shortly add a fair-sized insert stage to its facility, complete with dressing rooms, makeup areas, production offices, and so forth.

More often than the studio shoot, however, Broadway Productions is involved in field production. Since it does not own production equipment, Werner rents from companies in the New York and Boston areas. The same is true for teleproduction vehicles. "We have had good success with a couple of the local large mobile units here," observes Werner. "My job in production is basically to insure that everything is technically right . . . that the equipment is acceptable . . . that it's well-maintained and that it's in technical alignment." Werner does an extensive check between the rental equipment and Broadway's post-production equipment for interchangeability—to head off all those problems that can come up later such as time code, track straightness, audio recording levels, and so on.

"I think the most important thing is the general appearance of the vehicle," says Werner, "whether it appears to be

Edit Room 3 at Broadway Video. Interfaced through the BVE-5000 editor are a CD-480-10 switcher with CAP, the Mirage 3D effects system, a Thomson-CSF Vidifont Graphics V, and a Soundcraft audio board.

well-maintained, whether it's clean, whether the equipment that they have is properly kept. It's obvious as soon as you walk into a truck or a studio whether or not they do a good job keeping their stuff up. I've seen a lot of trucks that look like they've had a bomb dropped on them, and they've got perfectly legitimate excuses such as they have been out doing sports remotes and have had all kinds of crews running in and out. But being that it is such a hard task to keep a truck together, the better they're kept the more respect I have for them."

After this initial impression, Werner evaluates what type and how much equipment the truck carries. Then comes a technical checkout to make sure it all works properly—making sure the switcher is balanced and the audio board isn't humming and has the appropriate equalization. Then comes the detailed checkout in which the signals are actually measured and the system aligned to technical specs.

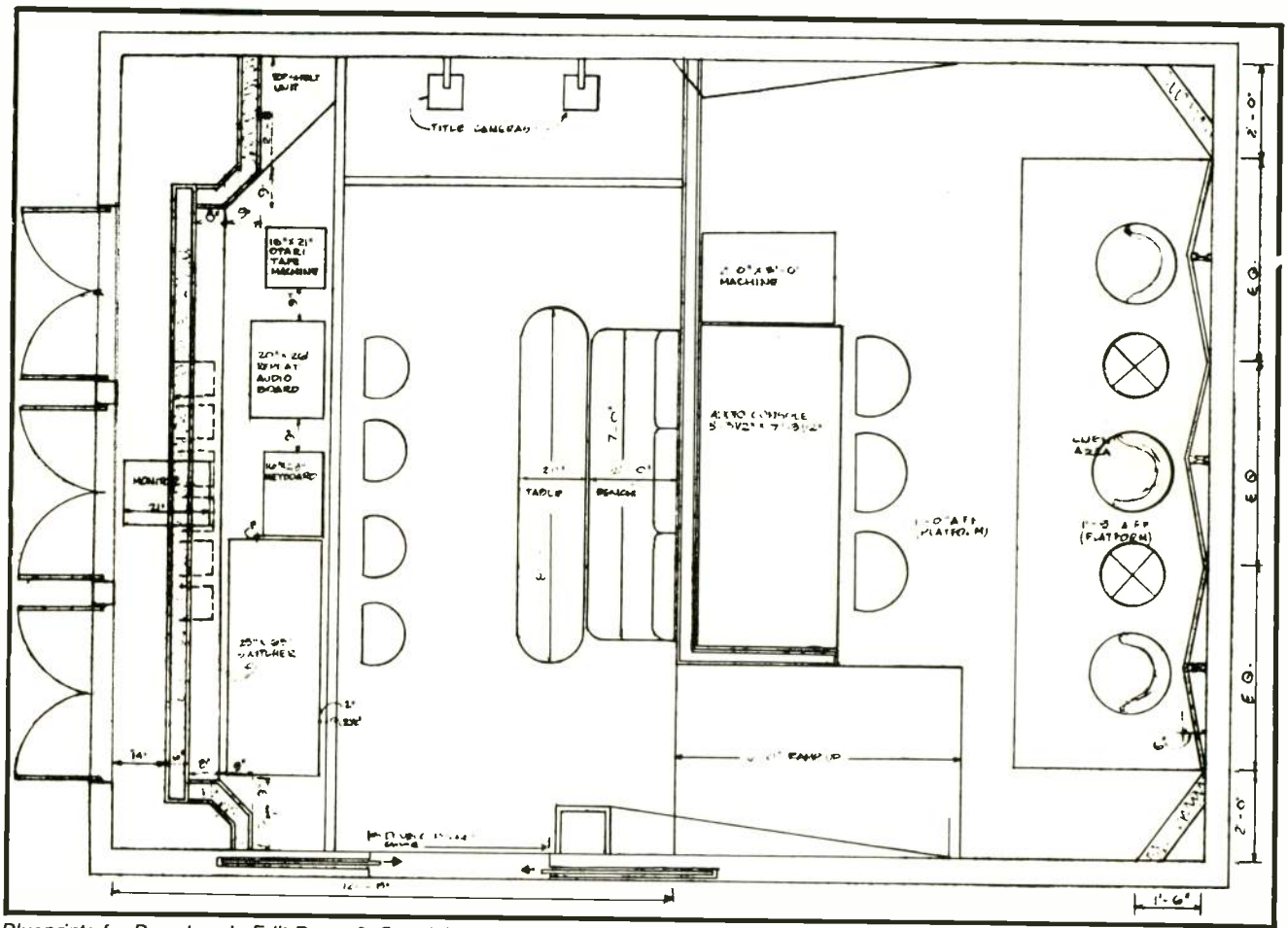
"Invisible" post-production

Despite the recent activity in production, it is post-production, however, which is the key to Broadway's success. Werner's idea in the three on-line and one off-line rooms "was to have the post-production side remain as low-tech to the end user as possible. I didn't want to make it so homey that we would run around putting doilies on everything, but I did want to keep it pretty transparent to the client as to what was going on and where all the hardware was. I really wanted their attention to be able to be focused on the product and the interaction with the editor himself."

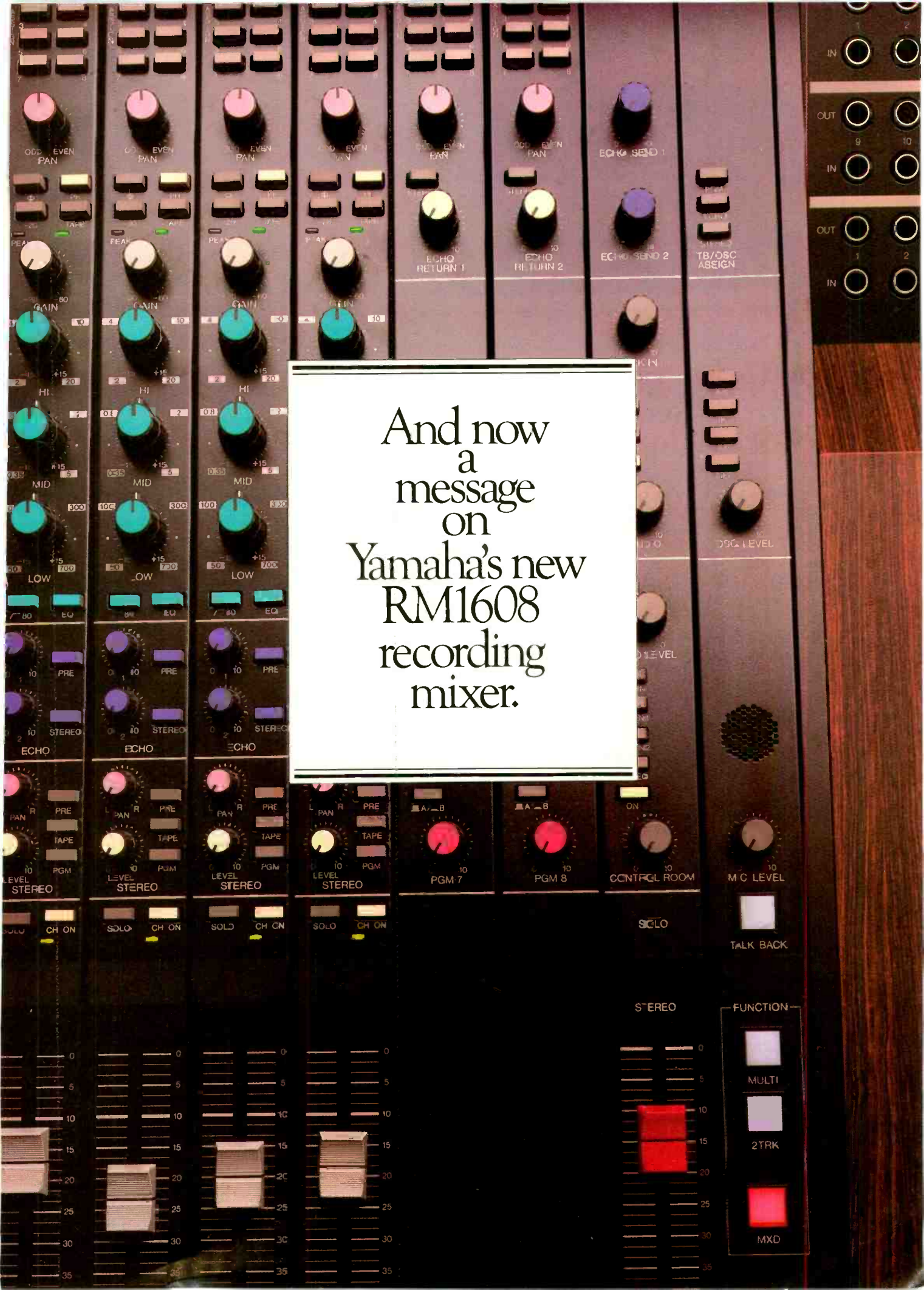
Of course, it is almost impossible to hide the switchers (CDL 480-8 in Edit Rooms 1 and 2, and a 480-10 in ER 3, all with CAP automation) and the editors (three Sony BVE-5000s). But all the tape transports, including four Sony BVH VTRs for each room, plus an Otari multitrack ATR, are housed together in a central master control area that services all three edit rooms but keeps the equipment out of sight.

The four-VTR complement is generally dedicated to the particular room, but can be repatched if necessary. "With VTRs and similar equipment," observes Werner, "we try to have a lot of redundancy for every room, because they're subject to failure no matter what brand they are. The idea is to not hold the client up with that kind of problem, and by having four VTRs assigned to every room we have much better odds of not having anything disrupt the session."

A somewhat different philosophy prevails when it comes to Broadway's extensive repertory of digital effects and graphics devices—what Werner describes as "the country's largest used car lot of digital video equipment." These include the MCI/Quantel Paint Box and Mirage, a DPE-5000SP single-channel effects system, a DPE-



Blueprints for Broadway's Edit Room 3. Special attention was paid to acoustical properties, and the room is the first video suite to be certified LEDE (Live End/Dead End) by SYNAUDCON.


And now
a
message
on
Yamaha's new
RM1608
recording
mixer.

RM1608

SPECIFICATIONS

TOTAL HARMONIC DISTORTION (T.H.D.)
Less than 0.1% at +4dB *output, 20Hz to 20kHz (all Faders and controls at nominal)

HUM & NOISE (20Hz to 20kHz) Rs = 150 ohms
(INPUT GAIN "–60")

–128dB	Equivalent Input Noise (E.I.N.)
–95dB	residual output noise: all Faders down.
–80dB	(84dB S/N) PGM Master volume control at maximum and all CH PGM assign switches off.
–64dB	(68dB S/N) PGM Master volume control at maximum and one CH Fader at nominal level.
–73dB	(77dB S/N) STEREO Master Fader at maximum and all CH STEREO level controls at minimum level.
–64dB	(68dB S/N) STEREO Master Fader at maximum and one CH STEREO level control at nominal level.
–80dB	(70dB S/N) ECHO SEND volume at maximum and all CH ECHO volumes at minimum level.
–75dB	(65dB S/N) ECHO SEND volume at maximum and one CH ECHO volume at nominal level.

CROSSTALK
–70db at 1kHz: adjacent Input.
–70db at 1kHz: Input to Output.

MAXIMUM VOLTAGE GAIN (INPUT GAIN "–60")

PGM	74dB: MIC IN to PGM OUT.
	24dB: TAPE IN to PGM OUT.
	34dB: ECHO RETURN to PGM OUT.
	14dB: PGM SUB IN to PGM OUT.
STEREO	74dB: MIC IN to STEREO OUT.
	24dB: TAPE IN to STEREO OUT.
	34dB: ECHO RETURN to STEREO OUT.
ECHO	70dB: MIC IN to ECHO SEND.
C/R	74dB: MIC IN to C/R OUT.
	24dB: 2 TRK IN to C/R OUT.
STUDIO	74dB: MIC IN to STUDIO OUT.
	24dB: 2 TRK IN to STUDIO OUT.

CHANNEL EQUALIZATION
± 15 dB maximum
HIGH: from 2k to 20kHz PEAKING. MID: from 0.35k to 5kHz PEAKING. LOW: from 50 to 700 Hz PEAKING.

HIGH PASS FILTER –12dB/octave cut off below 80Hz.

OSCILLATOR Switchable sine wave 100Hz, 1kHz, 10Hz

PHANTOM POWER 48V DC is applied to XLR type connector's 2 pin and 3 pin for powering condenser microphone.

DIMENSION (W x H x D) 37-1/2" x 11" x 30-1/4" (953 mm x 279.6 mm x 769 mm)

Hum and Noise are measured with a –6dB/octave filter at 12.47kHz; equivalent to a 20 kHz filter with infinite dB/octave attenuation
*0dB is referenced to 0.775V RMS.
• Sensitivity is the lowest level that will produce an output of –10dB (245mV), or the nominal output level when the unit is set to maximum gain.
• All specifications subject to change without notice.

The specs speak for themselves. But they can't tell you how natural, logical and easy the RM1608 is to work. All the controls and switches are logically arranged to help you get the job done quickly and accurately.

And in the tradition of Yamaha's sound reinforcement mixers, the RM1608 sets new standards of reliability as well as ease of operation. For complete information, write: Yamaha International Corporation, P.O. Box 6600, Buena Park, CA 90622. In Canada, Yamaha Canada Music Ltd., 135 Milner Ave., Scarborough, Ont. M1S 3R1.

YAMAHA

5000Plus multichannel system, a single-channel but full-blown Ampex ADO, the Vidifont Graphics V, and CDL switchers, and innumerable framestores and synchronizers. With the larger systems—the ADO, Mirage DPEs, and Graphics V—rather than having the machine dedicated to a particular edit room, control is shared among the rooms by a system Werner himself invented. The control head for each of these machines is mounted on a cart which can be wheeled into any of the rooms and simply plugged into the serial port provided for it. Back in the master control area, the wires from the various edit rooms are fed together into a single data switching network so that an operator, by turning a single three-position switch, automatically connects the device—including all the control cables and key signals—with the appropriate edit room.

"Instead of going around patching and moving cables," Werner explains, "we have it all nicely bundled and neat in one place. And it's fast. Even the nontechnical operational personnel can get in there and do a changeover without having to go find a maintenance engineer." Another advantage is that if a client suddenly discovers that some extra piece of equipment is needed but was not scheduled, it can be placed in the editing suite with an absolute minimum of fanfare and fuss.

Software interfaces

As for the interconnection of various pieces of production and post-production equipment within the plant, Werner is like many engineers today wrestling with the interface problem. For the moment, he uses the fairly common General Purpose Interface Bus (GPIB) approach in which the BVE editor acts as the central controller. When the editor hits a predetermined time code number, an electrical spike is generated in the editor's output port and travels to a peripheral device such as a production switcher, which is then activated by relay closure. In the slightly more complex version of this scheme which Werner has evolved, a pulse path extender is used to interface several different peripheral devices to the editor at once, using a 10-key touchtone-like pad to assign peripherals to the editor by means of assignment codes.

Still, the GPIB can only affect a single relay closure at a time; a complex switcher or effects sequence must therefore be set up on the switcher or effects device's automation programmer and the automation program then activated when the GPIB signal is sent.

The problem with this solution, for Werner as well as for most in the business, is that the effects in the edit cannot be easily modified later on, as is the case with the edit decisions themselves. For although the activation of the GPIB pulse is stored as an event, the specific settings on the switcher or effects device are not. And clients want to be able to come in a month or two after a program has been cut, take out a piece of paper, and say they want effect 123—a tumble effect on the DPE extending back into infinity—lengthened by 37 frames.

The answer, of course, is the development of a standard interface for various pieces of equipment in the digital studio—something which SMPTE committees are hard at work defining.

Werner has already begun work on a

system that will allow the interface of all his various pieces of equipment. "We have several possibilities," he notes. "Either we can use a control computer to translate between all the devices and have it talk everybody's language, or we can try to modify the software that is already in the various devices so it will interface with other people's systems. At this point, though, it's all very proprietary and it's a very difficult task to get the manufacturer to give you any inkling as to what's going on in there. That's a situation that's going to have to change in post-production, because the systems are getting to the point where they're so expensive that anything that's held proprietary as far as software is concerned becomes a liability. The manufacturers are just now wrestling with the problem—'should we give the customer access to the software . . . what are the legal ramifications?' It's making the job of truly having boxes talk with each other very difficult. We'll interface more and more if we can get the manufacturers to cooperate. I think they want to—I think they're just a little scared of it.

"Now there are people around who think that the switcher should be the central controller—the device that's got all the 'smarts.' And there are others who think the effects generator should have all the smarts. And so it's a problem of establishing who's going to be the control master, and who's going to be the slaves. The problem is that the editing system has come to be the central pivotal point in any control scheme, because almost every event that happens in an edit has to be indexed to time code and an editor is the only system that manipulates dynamically based on those numbers. An effects generator doesn't care what the time code says and doesn't rely on it for anything in its control scheme."

Broadway's Chief Engineer Martin Zofcin adjusts VTRs in master control area, completely invisible to clients.

Four Sony BVH-2000 VTRs are assigned to Edit Room 3 and can be patched together with additional decks if required.

Meanwhile, until the standards are defined, Werner is working with a New York City computer house, which is writing a communications program that should solve many of the interface problems. Known as "Savant," it is under development by Robert London and Associates.

"What I have in mind," says Werner, "is utilizing all of the technology which broadcasters and teleproduction people have at their fingertips to create incredibly powerful systems. If you take a system like the Paint Box with its animation program to create an image, then feed it to a device like the Mirage for manipulation, then use VTRs and the switcher's re-entry and keying for layering effects, you have a tremendously powerful system, of which 70 percent is already in place in the production facility. All we need is the 'magic little black box' that will enable us to hook it all together."

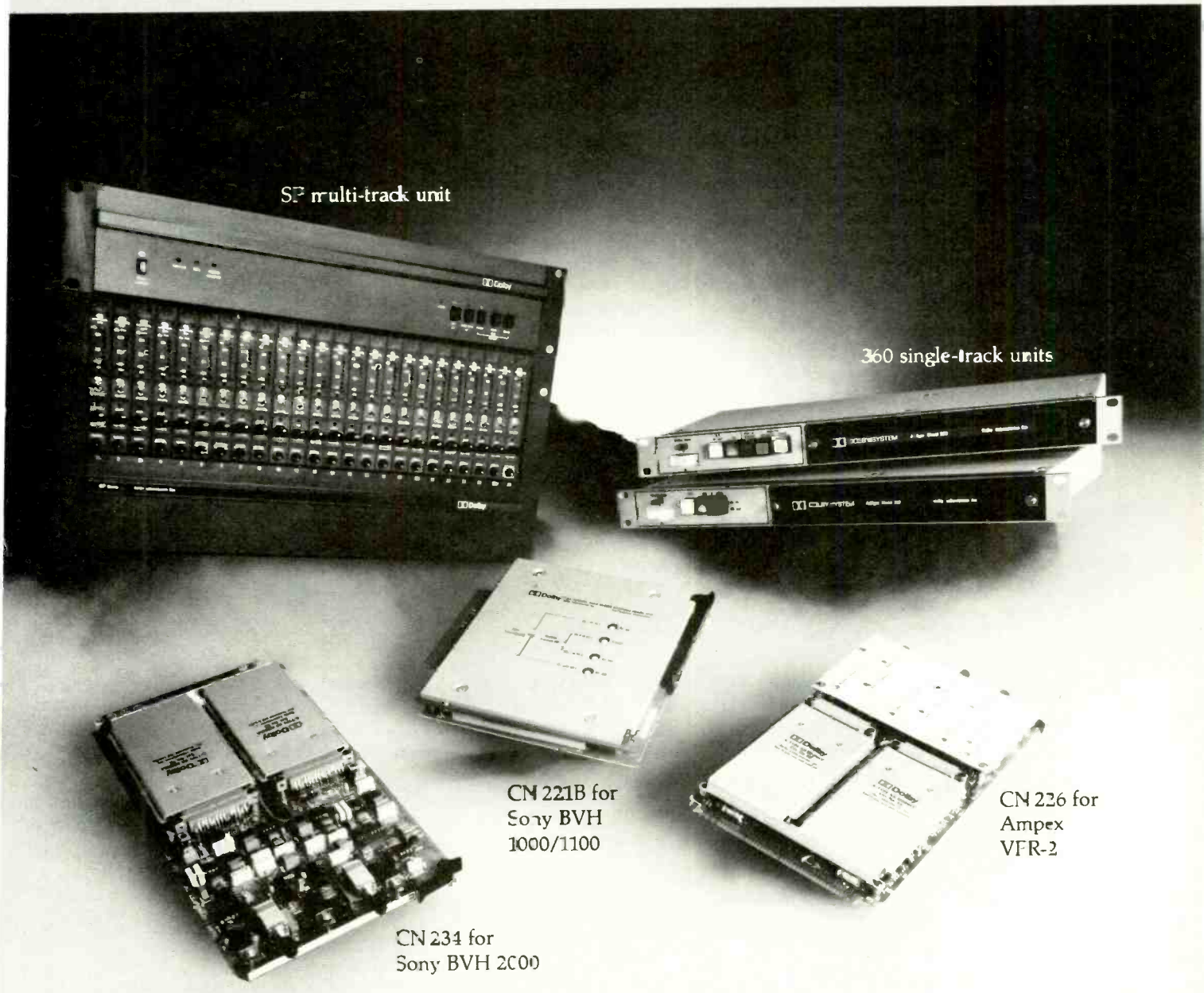
In regard to the Mirage, Broadway has employed the services of a programmer to define some new basic shapes for the Mirage system, including the "black hole"—a whirling, funnel-shaped cone which absorbs the raster into itself, then explodes outwards with a new image. By working with the advanced graphics programming of Mirage in the basic shape definition mode, the facility can always provide the client with something brand-new and never seen before. The whole field of computer graphics, in fact, is of special interest to Werner for just this reason.

"Of course," says Werner, "with any computer graphics application you've got to look at what's going to work in the broadcast environment. And that means carefully distinguishing between image synthesis and image manipulation. What the Mirage does, and I think it's astounding, is to apply the mathematics of image synthesis to the function of manipulation, meaning that I can make the whole video roster into a super-toroid mathematically defined shape. Or do a B-spline with it, or bi-cubic patches. There's nobody's image processor that will do that in real time. It's not a true image synthesizer, in the sense that it won't create ray tracing images—the kind of work that computer-generated movies do where each frame of the sequence has to be calculated by a complex series of mathematical algorithms. But what the Mirage does in real time is truly astounding."

Stereo audio capability

Werner's concern with the future trends of technology extends to audio,

DOLBY®
NOISE REDUCTION
FOR THE 1980'S



Dolby noise reduction is keeping pace with today's demand for high-quality sound — everywhere. With the introduction of such products as plug-in modules for VTRs and the SP multi-track unit, it is easier than ever before to protect *all* your irreplaceable audio tracks from hiss, hum, and print-through. From broadcasting to music recording, from video sweetening to motion picture dubbing, Dolby A-type NR reliably continues to fulfill its original promise: effective noise reduction combined with complete signal integrity.

Dolby Laboratories Inc., 731 Sansome St., San Francisco, CA 94111, Telephone 415-392-0300. Telex 34409. 346 Clapham Road London SW9, Telephone 01-720-1111, Telex 919109.

Dolby®

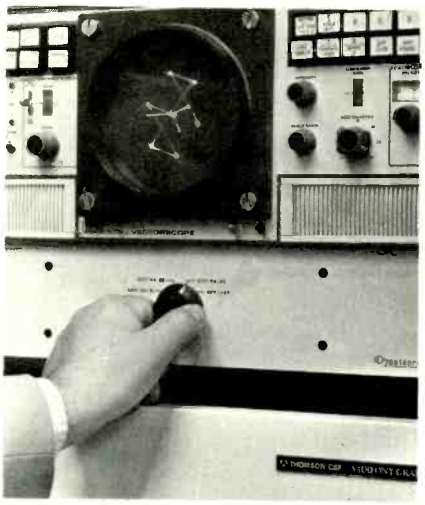
too. In fact, Broadway Video was one of the country's first post-production facilities to install extensive post-production stereo audio capability—in Edit Room 3. This is also the first edit room in New York City built to live end/dead end monitoring specifications yielding an absolutely flat monitoring environment. That room, like the other two, has a large Sound Workshop console (Broadway played a highly active role in the development of the console line several years ago), interfaced into the editing system so it can be controlled, like the video switchers and effects systems, by the BVE.

Says Werner of ER 3, "audio is very important to me, and we've always built our rooms using recording studio quality audio equipment. We knew stereo audio for TV was coming and we were involved with trying to push that technology forward. And so, when I was designing the new edit suite, I decided that I might as well go ahead and put in the stereo capability so it could serve as an impetus for everyone else to get serious."

The commitment to quality audio at Broadway extends to the smallest detail. "We have Dolby across the board since Dolby was available in VTRs," notes Werner. Dolby boards are installed internally in the BVH-1100As, but are outboarded on the newer BVH-2000s, since Broadway got some of the first 2000 units delivered, before the Dolby internal boards had been developed.

Broadway also has some very special special effects equipment, including a Synclavier 2 digital synthesizer. One of its features is Sample, a digital sampling system which can take music or sound effects, read them into the system and encode them, then literally pick them apart to analyze and manipulate characteristics such as attack and decay, sustain, fundamental and harmonic frequencies, and so forth. The results are recorded digitally as the equivalent of a 16-track ATR on a hard disk drive, which can be programmed to run in sync with video. At a sampling rate of 25 kHz (software available), 15 minutes of audio can be recorded.

Broadway also has an Otari MTR-90 24-track ATR, plus an Ursa Major Space Station, Eventide Harmonizer, and various other audio production devices. "Plus some damn knowledgeable people to back it up," notes Werner. "I think producers are really getting very savvy when it comes to sound. Obviously if it comes down to a choice between picture or sound, they



The changeover switch developed by Broadway that allows instant distribution of control and key signals from one edit room to another.

If your equipment could speak, it would say just one thing.

TDK®

In your business, looks and reliability are everything. TDK gives you both. With a complete line of video cassettes and floppy disks that are truly reliable performers.

TDK's latest Super Avilyn ¾" U-Matics provide optimum chrominance and luminance signals, plus crisp, clear performance. They give you first generation-like quality every time you record. And they come in all standard lengths—both packaged and duplicator.

When it comes to VHS format, TDK's PT cassettes are exceptional. They make accurate masters and dupes. And they're available in all standard lengths.

TDK's Extra High Grade VHS and Beta cassettes are even more advanced. They incorporate some of the most notable features ever found on video tape for broadcast use. As a result, you'll get the finest picture imaginable on ½-inch tape, with sound to match.

If you're involved in sophisticated post-production work, TDK's complete line of 8" and 5¼" floppy disks will generate more excitement when it comes to computer graphics and special effects.

In addition, TDK also makes a high-quality line of audio tapes. They deliver incredible sound reproduction for all your applications—especially mastering and dubbing.

Once you try TDK, you'll know why we're the eyes and ears of the pro-industrial market. So if you're ready to fill in the missing qualities of your present tapes or disks, just fill in the coupon below.

Please send me information on the following TDK products:

- ☐ ¾" U-Matics
- ☐ Floppy Disks
- ☐ ½" PT Video Cassettes
- ☐ Audio Tapes
- ☐ Extra High Grade Video Cassettes
- ☐ Please have a sales representative contact me.

Name_____ Title_____

Company_____

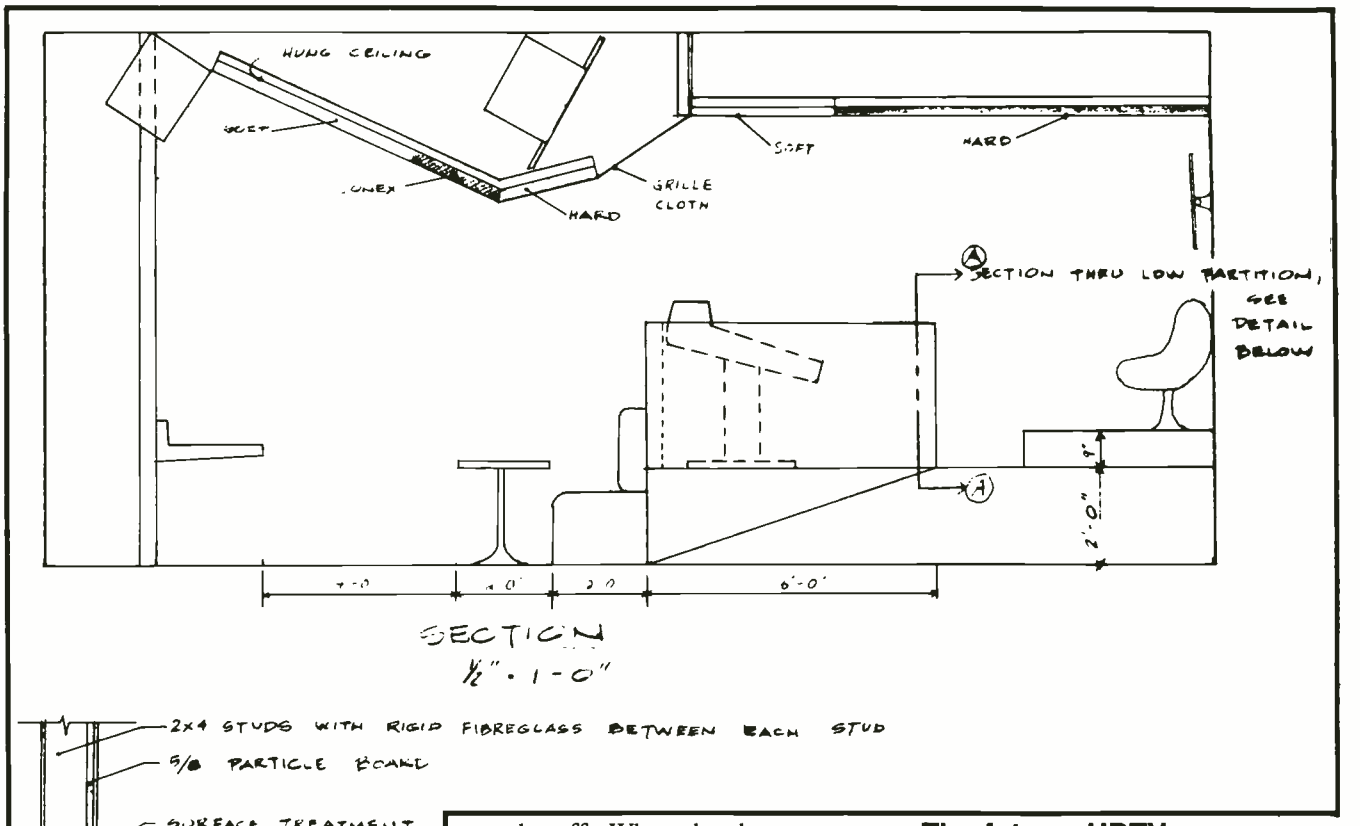
Address_____

City_____ State_____ Zip_____

Phone ( )_____

TDK Electronics Corp., Pro-Industrial Marketing Dept.
12 Harbor Park Drive, Port Washington, N.Y. 11050 **KJ3**

Circle 161 on Reader Service Card



will make a few concessions when it comes to the audio. But the concessions they make are getting to be fewer and fewer."

The future of audio, for Werner as for many in the industry, lies in stereo audio for TV. It depends only, of course, on the establishment of standards —which may be as close as three months off. When that happens, according to Werner, "the ball will be in the producers' court, because the hardware is already in place and a lot of people in the industry already know how to work in stereo. A lot of producers have audio people on the production end to insure that stereo information is recorded —even though it needs to be sweetened or remixed later, but it's there. Now it's up to the producers to come up with some original material for it. Music is the most obvious application. But it's going to get interesting when someone on a soap opera can walk from the left to the right side of a set and the audio follows."

The future: HDTV

With Broadway's emphasis on state-of-the-art thinking, it is not surprising to find that Werner is excited about the possibility of HDTV, even though it will mean a costly equipment transition —a transition similar to what happened when one-inch tape came along. Werner is an active member of the ATSC (Advanced Television Standards Committee), which is seeking to define HDTV and enhanced NTSC standards. "HDTV is going to do some big things," claims Werner. "I think it's a foregone conclusion that we will have it." Unlike many in the industry, however, Werner does not see HDTV coming into either broadcast or cable services. Rather, he feels, "I think that the first place where we'll probably see it is DBS. It's not outlandish to think that it might be distributed terrestrially on an MDS system much like some of the major cable companies distribute their signals in metropolitan areas. I think that you may be able to squeeze a couple of HDTV channels up into that range, and do it locally. I'd like to see it happen."

In other new developments, Werner is equally optimistic. "We're moving into exciting times," he concludes. "And Broadway Video is helping to define the shape of the future." **BM/E**

Have you called your switcher lately?

The new Bosch TVS/TAS-2000 video/audio distribution switcher is so advanced you can call it on the phone. And it can talk back to you.

If you're the station manager or chief engineer, you can control all your station's feeds directly from your desk—without affecting the program on-air. You don't even need a control panel. Just a touch-tone phone.

And if it makes you feel more comfortable, the TVS/TAS-2000 will confirm—verbally—what you've done.

Have it your way

Touch-tone control is just one of the sophisticated control options available with the TVS/TAS-2000 to let you fit your needs precisely.

And we know something about your needs because we've been a leading manufacturer of distribution switchers for years with our TVS/TAS-1000 and RKX models.

You can choose from standard control panels with leverwheel and button per crosspoint. Or customized panels for single bus to full matrix control. Or completely automated systems.

Our new 1400 and 1500 series control panels can handle multi-level breakaway—seven levels is standard.

Since the TVS/TAS-2000 is part of a family, you can add most of these control options to existing Bosch-Fernseh TVS/TAS-1000 and RKX switchers.

Outstanding specs.

As you'd expect in a state-of-the-art system, specifications are outstanding. Crosstalk is better than 60dB for video and 85dB for audio under worst conditions. Harmonic distortion is .02%. Impedance, 150 ohms.

We check our specs with the industry's most precise automatic test system, testing all possible signal paths for each measurement. And we record all test data, with a copy to you and one for us.

Features for now.
And into the future.

The TVS/TAS-2000 has standard and optional features you need today. And will need tomorrow. Such as redundant control card capability. Coax party line or RS-422 control. SMPTE RS-422 computer control. Vertical interval switching. Internal refresh memory. Local and remote alarms. Clamped video inputs. And many more.

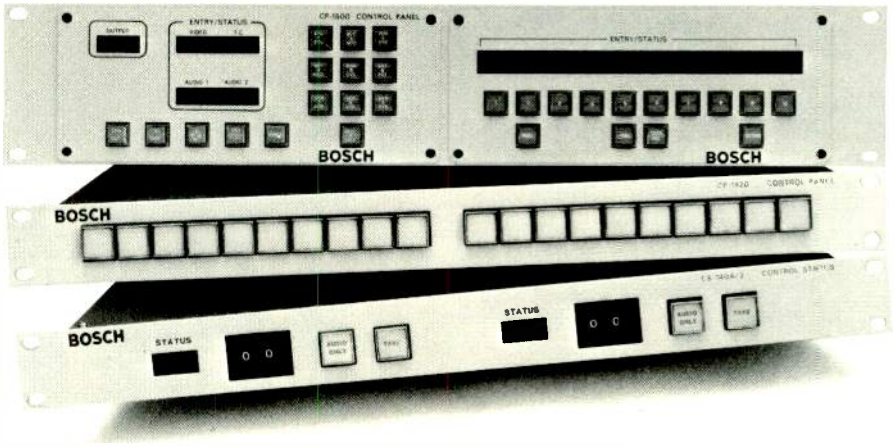
Its compact 10 x 10 arrangement gives you a bigger matrix in an 8¾ inch card cage—60 x 10 audio and video or 130 x 10 audio or video.

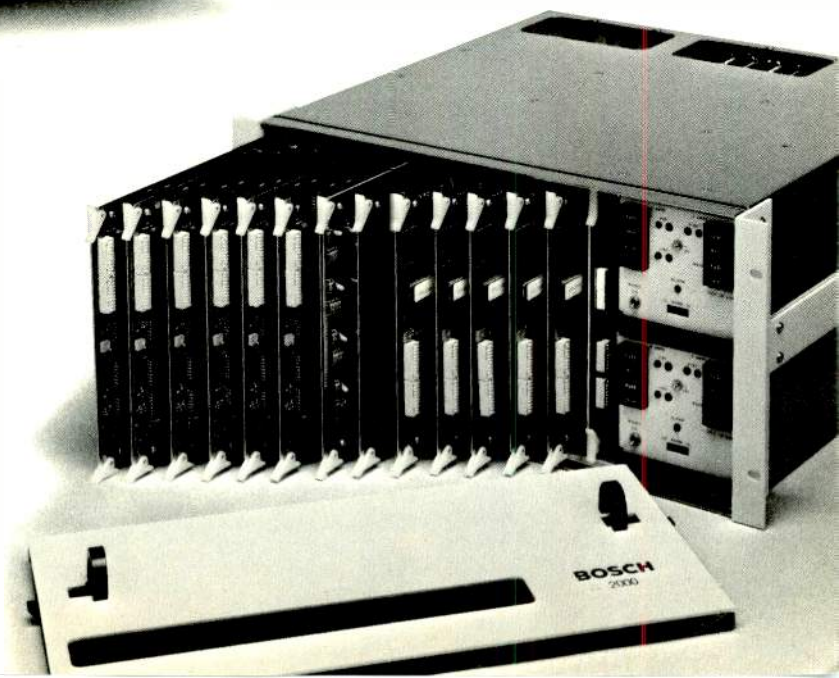
You can expand in the field without rewire to virtually any size matrix you may ultimately need.

Call your local Bosch-Fernseh office for details on the new TVS/TAS-2000 and other members of the Bosch switcher family. Or write Fernseh Inc., P.O. Box 31816, Salt Lake City, Utah 84131, (801) 972-8000.

We won't give you any backtalk.

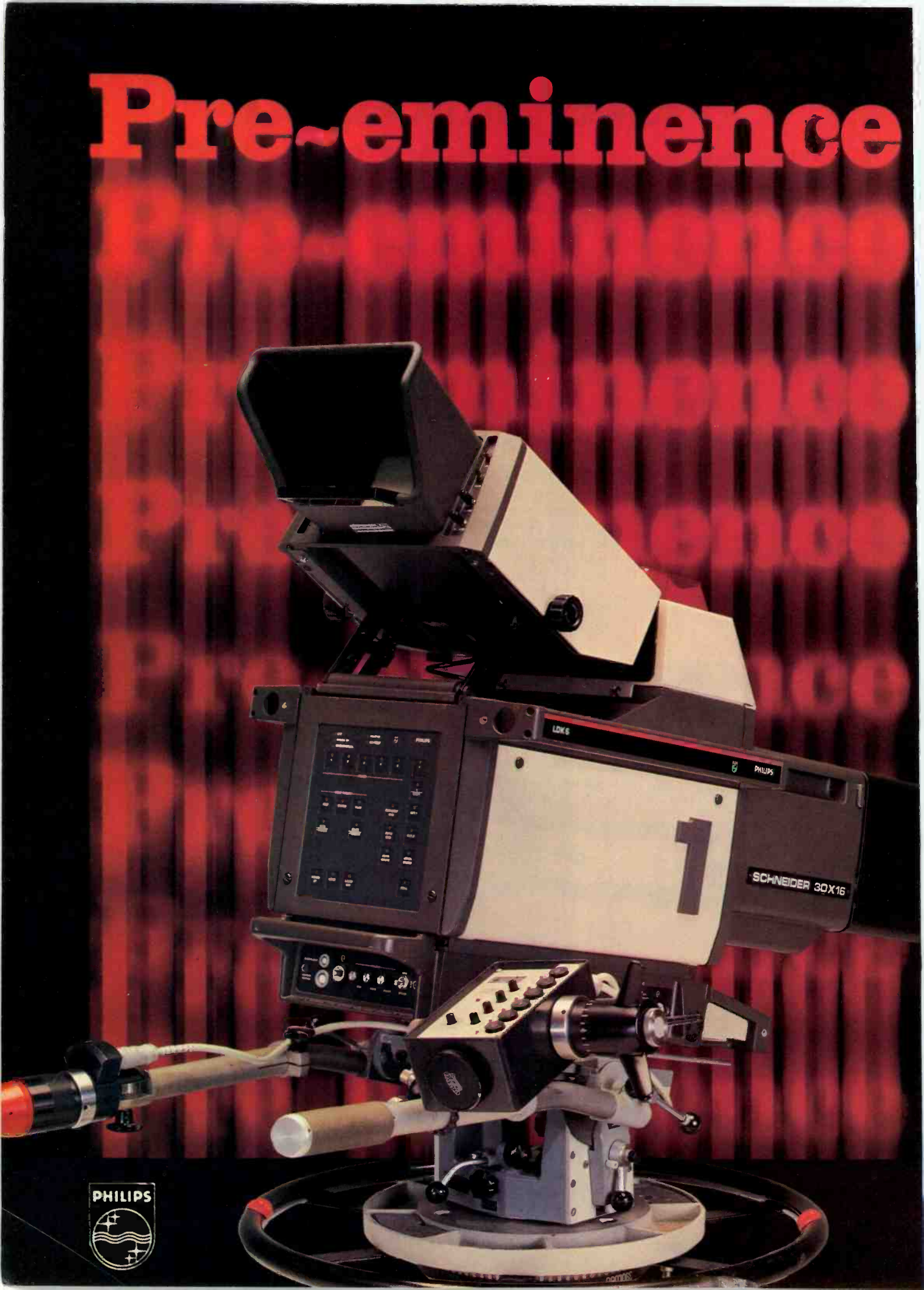
BOSCH





Circle 163 on Reader Service Card

Pre~eminence



PHILIPS

Philips LDK 6

A giant leap forward in concept and design. So far ahead of its time that it will stay state-of-the-art for years to come due to its software-based system. The LDK6. The computer-controlled studio and field camera from Philips.

With the brilliant picture quality assured by optimized digital scan correction. With the distributed intelligence of four microprocessors. With production memories of your day-to-day set-ups giving unrivalled operational flexibility and creative freedom. With triax reliability and economy. With multi-level diagnostics. And with minimum cost of ownership.

Reader enquiry no. 150

...and the perfect portable partner

The LDK614 is the perfect portable partner. This rugged yet lightweight triax or multi-core RGB camera is equally at home in the studio or mobile unit. It operates independently or via the standard LDK6 control units for compatible colorimetry, performance and versatility.

Reader enquiry no. 151

A world of experience

Monitors of quality & economy

High stability, quality, reliability – at a very reasonable price. These are the reasons for the international success of the Philips LDH6200 14" color monitors.

These rugged yet stylish monitors have a high specification and many operational features only found on more expensive units. And monitor to monitor matching is excellent.

Reader enquiry no. 152

Transmitters a story of success

Pye TVT is famous for its UHF television transmitters. Thousands in many countries of the world perform to perfection every hour of every day of the week. State-of-the-art development – such as cost-saving beam control klystrons – ensures that the family covers the requirements for reliable and efficient medium and high power transmission.

Reader enquiry no. 153

Television systems

Philips Television Systems Inc. supply complete customized systems for the studio or mobile unit. Designed to the highest engineering standards. Complementary to the quality of all Philips broadcast products.

Reader enquiry no. 154

For further information use the reader reply nos or send the coupon to:

PHILIPS TELEVISION SYSTEMS, INC.

900 Corporate Drive, PO Box 618, Mahwah, New Jersey 07430, USA
Tel: 201–529–1550 Telex: 37–62558
Canada. Electro & Optical Systems Ltd., 31 Progress Court,
Scarborough, Ontario, Canada M1G 3V5 Tel: (416) 439–9333 Telex: 065–25431

Please send me further information on

	Inquiry no.
☐ LDK6 cameras	150
☐ LDK614 cameras	151
☐ LDH6200 Color monitors	152
☐ UHF Television transmitters	153
☐ Television systems	154

Name
Organisation
Address

BME 1 10 83

PHILIPS

Now there's even more to look into

TM14-9RH

TM20-9RH

Ikegami's new Broadcast Color Monitors

Ikegami has just made it impossible for any quality-minded high resolution color monitor user not to consider looking into an Ikegami monitor.

They call it the 9-Series, two new monitors (13V and 19V) with standard features that include a High Resolution Shadow Mask CRT with a Self-Converging In-Line Gun; American Standard Matched Phosphors; a Comb Filter to preserve luminance resolution; pulse cross and R-Y/B-Y outputs. We think you'll call it just what you've been looking for.

Along with its streamlined design and easily serviced modules, Ikegami's new monitors follow in a tradition of excellence. Each offers high stability, exceptional performance and proven reliability.

Together with Ikegami's Delta-Gun Series, the 9-Series provides yet another reason to look into the monitors that more and more video users are spending their time looking into.

Isn't it time you looked into Ikegami monitors?

Ikegami

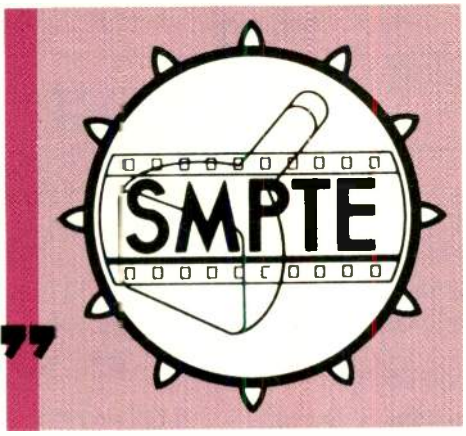
9-Series monitors

Ikegami is the supplier of Color Monitors to ABC for its coverage of the 1984 Winter and Summer Games.

Ikegami Electronics (USA) Inc., 37 Brook Avenue, Maywood, NJ 07607: (201) 368-9171 • Northeast: (201) 368-9171
West Coast: (213) 534-0050 • Southwest: (713) 445-0100 • Southeast: (813) 884-2046 • Canada: (201) 368-9179

Circle 164 on Reader Service Card

SMPTE CONFERENCE REDEFINES ROLE AS "FALL NAB"



It has taken 125 SMPTE technical conferences and equipment exhibits to do it; but there can be little doubt that the 125th show, October 30 through November 4 at the Los Angeles Convention Center, will once and for all establish the SMPTE conference as second only to the NAB show itself in terms of its importance to the broadcast industry. For while maintaining its role as the prime technical society for the motion picture industry, SMPTE and its standards-setting activities have become critical to broadcasting and production as well, both video and now, to a greater extent than ever, to audio.

Part of the news being made by SMPTE is that the equipment exhibit will, for the first time, be held in a convention center rather than a hotel, enabling manufacturers to spread out and mount the kinds of exhibits familiar to NAB attendees. More than 150 companies (see the breakdown of Audio and Video Equipment Exhibitors below) will occupy some 70,000 square feet of space. The exhibit will be open for four days, with the following schedule:

Monday, Oct. 31	**2:00 pm–8:00 pm**
Tuesday, Nov. 1	**10:00 am–6:00 pm**
Wednesday, Nov. 2	**10:00 am–6:00 pm**
Thursday, Nov. 3	**10:00 am–4:00 pm**

As for the technical conference, the theme this year is "Future Sights and Sounds," and though the program is not completely firmed up yet, the conference topics clearly reflect the active role which SMPTE is playing in the audio and video industries: recording systems; display equipment; new audio technology; HDTV; designing video installations; small-format video recording; tape-to-film transfers; Olympic video systems; microprocessor control systems; post-production practices. Many of these topics, of course, are keyed into the activities of various SMPTE committees considering such topics as analog and digital studio interface standards, quarter-inch recording, HDTV, and so on.

Many will also recognize these themes from continuing *BM/E* coverage of major technological trends—such as the special reports on post-production in the November 1982 and February 1983 issues, the report on the Olympics in the April 1983 issue, the special series of articles on Facilities Design and Engineering which have been running since May 1982, the story on digital video recorders and the all-digital studio in March 1983, and so forth. A complete report by *BM/E* on the SMPTE show will appear in the January 1984 issue.

AUDIO AND VIDEO EQUIPMENT EXHIBITORS AT SMPTE, 1983

Abekas Video **1001**
VSP-42 "video slide projector" electronic still store.

Adams-Smith **839, 841**
System 2600 time code and control products, including VITC systems.

ADC **1519, 1520**
Magnetic Controls
Prewired audio and video jackfields, including Patch-man system, plus connectors, plugs, etc.

ADDA **138**
ESPC still store and graphics system with new library control; VIP digital effect system; AC20A dual-channel TBC; VW-2 frame sync/TBC.

ADM Technology **438, 440, 442**
Audio consoles and components.

A.F. Associates **639**
B3410 Marconi telecine; AVS 6000 standards converter; MR-2 Marconi Type C VTR; mobile teleproduction vehicle construction services.

Agfa **908, 910**
KCS and KCA videocassettes in standard lengths and bulk packs.

Alan Gordon Enterprises **1011**
Distributor of lighting, power, and support equipment.

Alpha Audio **1513**
Sonex soundproofing material.

Amperex **431**
Plumbicon pickup tubes ranging from 80XQ half-inch to XQ1410 30 mm and including XQ3500 high-resolution model.

Ampex **130**
VPR Type C VTRs; ARC M-format recorder/camera; AVC production switchers; ESS still stores; ACE editing systems; ADO digital effects; time base correctors; full line of video and audio tape, including 196 one-inch tape and 197 videocassettes.

Amtel **1502**
SMPTE time code products, including ECM VITC/longitudinal readers and generators.

Angenieux **732, 734**
Zoom lenses.

Anton/Bauer **911, 919**
Snap-On batteries and full line of camera, VTR, and lighting power supplies; Lifesaver charging system; Black Beauty portable lighting head; Micro Control portable 1.5-lb. CCU; silver battery system.

Anvil Cases **752**
Custom and standard transit and shipping cases and rackmounts.

Apert-Herzog **1508**
Model H TBC/frame sync; Model A frame sync; 1x24 video DA; TDAC D/A; VBB-1 hybrid video line driver.

Asaca/Shibasoku **615, 714**
HR color monitors; audio and video T&M instruments; multi-image view-

Partial list of exhibitors as supplied by SMPTE, 7/15/83.

ing system for editing displaying 16 frames from each of three sources plus edit preview.

Audico 727
Videocassette and audio cassette and cart loaders, rewinders, wipers, splicers, and labels.

Audio & Design 1117, 1119
Audio signal processing, including compressors, limiters, filters, equalizers, de-essers, mic preamps, and special effects.

Audio Kinetics 331
Q-Lock 3 time-code-based audio synchronizer/editor; multitrack dubbers.

Audio Magic 940
WORDFIT digital audio processing system for audio/video synchronization.

Aurora Systems 425
Aurora/100 digital art/paint system with two-plane animation and color table lookup pseudo-animation.

Belden Comunications 539, 638
Lee filters for color correction, special effects, and diffusion; HMI lighting.

Beston Electronics, Inc. (BEI) 1111
Character generators; Marquee graphics system; DataNews newsroom computer/prompting system; McInnis-Skinner Newscan newsroom computer and Weathergraphics weather reporting/graphics system.

Bill Daniels Co. 153
Catalog of broadcast equipment.

Birns & Sawyer 541-543
Distributor of lighting and support equipment.

Bosch 600-604, 501-505
FGS graphic systems; CCD telecine with grain reducer; Quartercam quarter-inch recorder/camera; ENG/EFP cameras; studio production equipment; routing switchers.

Canare Cable 452
Wire and cable, including new 750 Ohm coax.

Canon 311
Zoom lenses featuring new ultra-wide-angle studio lens.

Centro Corp. 223, 235, 322, 324
Mobile vehicle construction services.

Century Precision Optics 500, 502, 504
Lenses, including new Century periscope relay system (Snorkel); Tri-Tronics stop-motion video recorder.

Cetec Vega 250
Wireless mic and intercom systems with new built-in noise reduction for 105 dB dynamic range.

Christie Electric 1505
Reflex-20 20-minute "burping" battery charger system; MaxErase bulk degausser.

Chyron 439
Chyron IV graphics system with Multimode Graphics Module; VP-1 low-cost character generator; new VP-2 standalone low-cost character generator.

Cinema Products 247, 249, 251, 346, 348, 350
Stereophonic, wide-screen, and 3D TV systems; Steadicam and other camera support equipment; HMI lighting and Bubbelite; EC-35; Co-Ax digital remote CCU; full line of cine cameras.

Cinemills 103
Distributor of lighting equipment, including Lee filters, Daymax high-intensity bulbs, and HMI lights.

Cine 60 1410, 1411
Lighting and power equipment, including rechargeable nicad belts, packs, and snap-on batteries, sun guns, universal maintaining charger, and car charger.

Cipher Digital 823
Time code products, including VITC products and longitudinal-to-VITC converter.

Clear-Com 550
Intercom and IFB system, including single/multichannel, portable/rack/custom-mounted units. Also wireless intercom systems.

CMX 400
3400+, 3400, and The Edge editing systems.

Coherent Communications 555-557
Distributor of time code systems, MX-80 portable production mixer; Artech wireless mics, and subminiature mics.

Colortran 926, 827
Full line of lighting products, including fixtures and automated dimming systems.

Comprehensive Video 547
Computer software for video production automation. New portable audio mixer. Comprehensive production music and efx library; distributor of full line of lighting, power, and support equipment.

Control Video 300-302
Lightfinger video editing system with touch-screen control.

Convergence Corp. 222, 224, 226
Editing systems ranging from ECS-90 cuts-only to multisource ECS Editors, including ECS-200.

Cool Light 532, 534
Portable and studio cool-operating fixtures.

Corporate Comm. Consultants 1115, 1214
Computer-controlled telecine and dub color correctors.

Crosspoint Latch 838-840
Production switchers, editor interfaces, audio mixers, computer-controlled switchers, including new three M/E 24-input 6139CH and new eight-input 6116 component switcher.

Datatron 947
Vanguard and ST-3 video editing systems; SMPTE time code systems.

Datum 1102
Video data encoders and decoders; SID systems; digital clocks and timers, character generators.

Deselec 650-652
Computerized setup and timing systems; digital synchronizer.

Desisti America 1003-1005
HMI and quartz lighting systems.

Digital Video Systems 931
Satellite transmission systems, including MAC; digital TBCs, framestores, and synchronizers.

Digivision 1000A
NTSC-to-high-resolution digital converter.

Digitrol, Inc. 1007

Dolby 155-157
Complete line of audio noise reduction equipment.

Dubner 301-303
CBG-2 graphics system with character generator, animation, digital painting.

Eastman Kodak 409
Datakode magnetic coating for post-production; telecine analysis film; full line of motion picture film stocks.

Echolab 356
SE/3 special effects generator/switcher with RS232 and 423 editors.

EECO 355-357
SMPTE time code systems; IVES video editing system.

EEV 202-204
Complete line of Leddicon and Vidicon pickup tubes; CCD cameras and chips.

Elector 824-826
Barco monitors; other monitors, including high-resolution, utility, and portable; tuners and demodulators; chroma display phase adjustor for monitor alignment.

ESE **700**
Digital clocks, timers, time code systems.

Film/Video Equipment **254**
Distributor of lighting and power equipment.

For-A Corp. **631, 730**
FA-410 digital TBC; CCS-4200 color corrector; FVW-300 " video writer"; VTW "video typewriters"; CI-10 framestore; TKY-4600 title keyer; TCR-3500 time code reader/generator.

Fortel **607-609, 706-708**
Y-688 dub multiprocessor; Digibloc digital signal processing system; synchronizers; heterodyne and direct TBCs; audio synchronizers; color corrector.

Frezzolini **114-116**
On-Cam half-inch recorder/camera package; full line of batteries for cameras, VTRs, lighting; rechargers; lighting kits.

Fujinon **128**
TV camera lenses for half- through 1.5-inch format cameras.

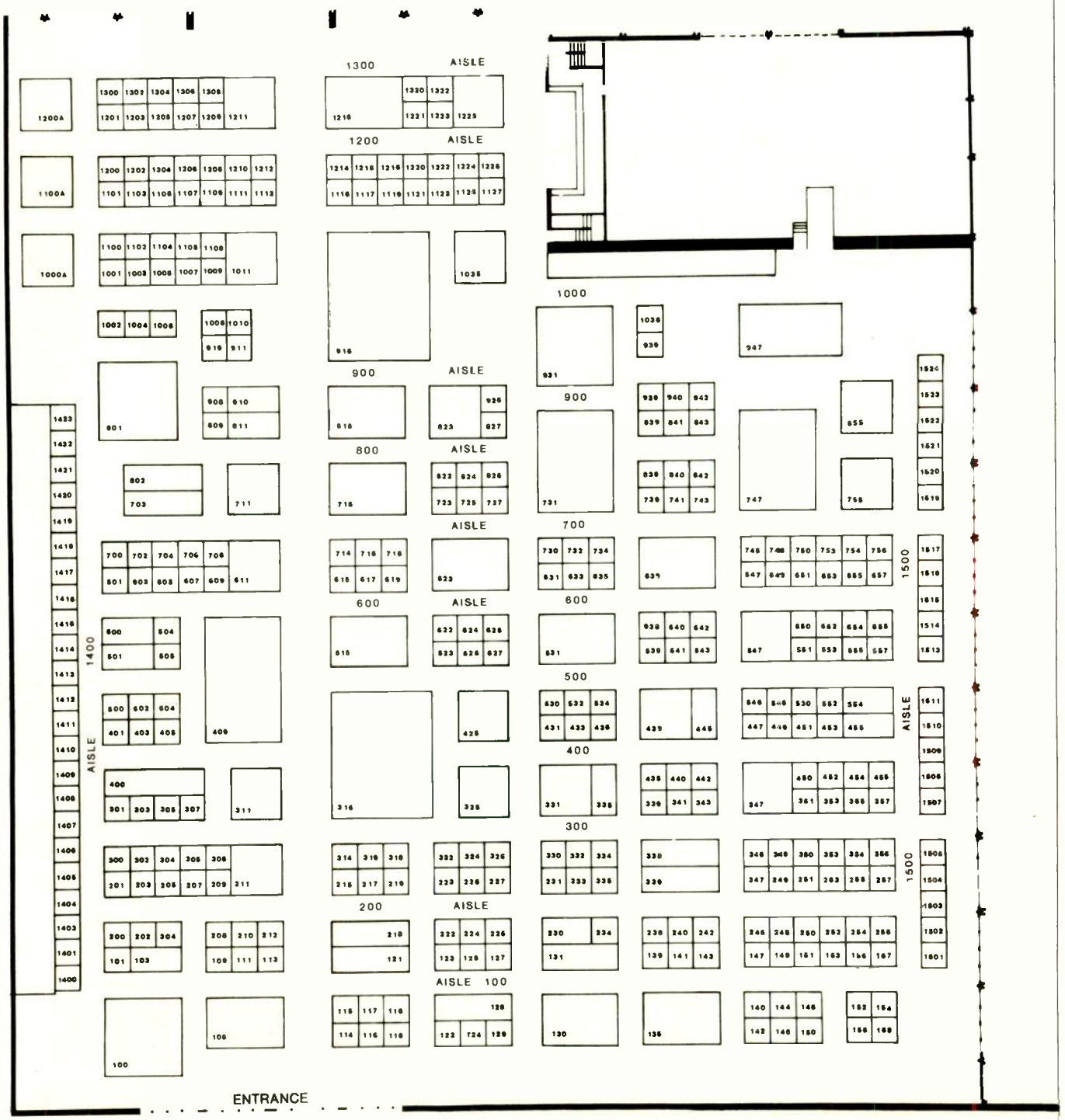
Fuji Photo Film **123, 125, 127**
Complete line of half-, ¾-, one-, and two-inch videotape and cassettes.

GE, Lighting Group **306-308**
Lamps for TV production.

G&M Power **450**

Grass Valley Group **231, 233, 235, 330, 332, 334**
300/Mk II production system; 1680 production switcher; Horizon routing switcher; Wavelink fiber optic transmission system; 3250 sync generators; 10X utility switcher.

Gray Engineering **739-741**
Complete time code systems, including longitudinal and VITC units; safe area generators; video-assisted film editing products.



1983 SMPTE CONFERENCE

The Grip Co. 253, 352
HMI lighting; camera support equipment.

Grumman Aerospace 755
Sync Proc digital proc amp; Star Comm modular computerized studio machine control system; Rainbow Sound system for stereo TV audio.

GTE, Sylvania Lighting 633, 635
Quartz and HID lamps.

Harris 731
Iris still store with built-in character generator; and new graphics compose station with two framestores; TC-90 ENG/EFP camera; new cost-effective digital TBC; frame synchronizers, error correctors; complete line of production microwave systems.

Harrison Systems 131
TV-3 and TV-4 stereo production and post-production consoles; ES edit suite console; on-air consoles; automation systems.

HEDCO 156
Full line of routing switchers from 8x1 to 24x2 AFV systems; Transpath 100x100 distribution system with new self-powered 1x6 DA packages.

Karl Heitz 1401
Gitzo tripods, camera supports fluid heads, etc.

Hitachi Denshi 915
Cameras and VTRs, including new high-end VTR designed for production applications.

Hotronic 843
Digital TBC/frame sync with freeze field/frame capability.

Ikegami 747
Full line of cameras, including new HL-79E. Featuring HDTV system, line of broadcast monitors, M-format recorder/cameras, and ENG microwave systems.

Image Video 230
MC switchers, routing switchers, border generators, machine assignment/control system.

Industrial Sciences (ISI) 234
Production switchers, MC switchers and DAs, including APE automation system and Model 903 microprocessor-controlled switcher.

JVC 108
Single- and three-tube cameras; half- and ¾-inch VCRs; color monitors; videocassette editing systems.

Kliegl Bros. 546, 547
Performer III and Entrance lighting boards; K96 digital dimming system.

Kobold 552-554
Studio lighting equipment, including HMIs.

Lake Systems 325
LaKart microprocessor-based videocassette station automation system.

Leitch Video 443
Video sync and timing instruments including SCH meters, video equalizers, H timing monitors, etc.

Lenco 238-240
Terminal equipment and video monitors, including Videoscope for SCH phase, video and pulse distribution, system timing, etc.

Lexicon 623
Audio processing equipment, including Model 1200 time compressor, digital reverb devices, audio special effects equipment, and Model 1300 audio delay synchronizer/corrector.

Libin & Assoc. 1511
Distributor of Sanyo equipment.

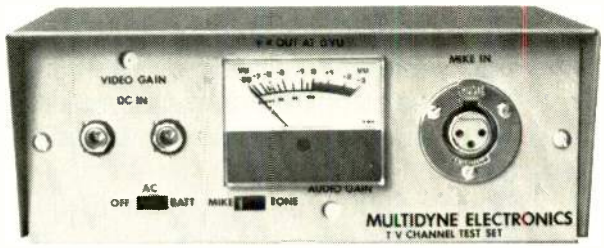
Camera Mart and Multidyne.

For High Performance Video Test Equipment.

Multidyne. It's the name for quality, portable test and production support equipment. Innovative, sophisticated, reliable, it is now considered the standard of performance in the field and studio, and is in use in major broadcast and cable TV stations, and post production facilities.

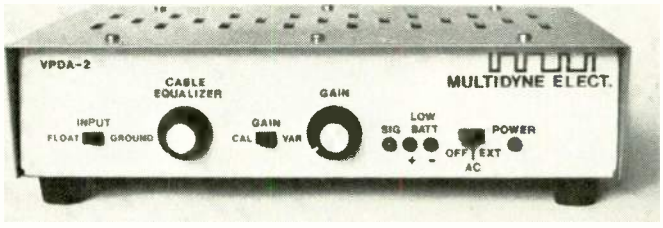
Camera Mart. It's the place where professionals provide customized service for every client. Camera Mart, a leading center for broadcast quality video products is the exclusive Multidyne distributor in the USA.

Camera Mart and Multidyne —A combination you can rely on for all your video needs.

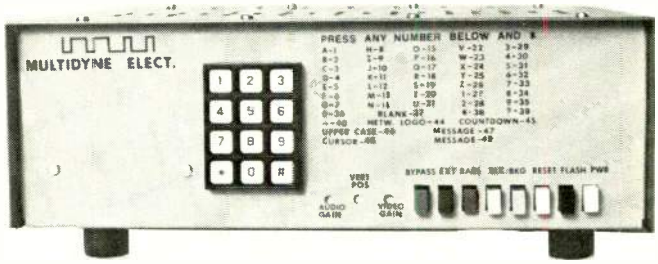


TS-1: A video/audio Test Generator with split-field NTSC bars, 1000Hz audio tone, optional black burst, ovenized crystal, cross hatch. The TS-1 is AC/DC operable which makes it an essential maintenance tool for ENG, vans and in-house editing.

TS-2: A Signal and Sync Generator with split-field NTSC bars, tone, black burst, and a 12-character message. Optional 10-second countdown with tone, a small character generator for video logging, and cross hatch. The TS-2 is ideal for vans, editing, and studio applications.



VPDA-2: A Multi-Purpose Video Distribution Amplifier. The very fast slewing time, bandwidth and high current capability of the output stage makes the VPDA-2 capable of driving six 75 ohm loads distributing video, pulses, or subcarrier. Equalization of 2000 ft. of cable is accomplished with the use of one control. Gain is variable. The VPDA-2 is operable at 115/230VAC or 12V DC which makes it excellent for EFP and location vehicle applications, especially where large runs are required.



TS-3: A videc/audio source identifier, provides split-field NTSC bars, black burst, 10-second countdown, 16-character message, and audio tones. Two additional messages are held in memory. Messages can be programmed by the key pad. The TS-3 is ideal for vans, editing, head end distribution and audio and video links.

Exclusive USA Distributor. Dealer Inquiries Invited.

The Camera Mart, Inc.
456 West 55th Street, New York 10019 • (212) 757-6977/Telex: 1-2078
Video Department: 800 Tenth Avenue
Sales • Service • Rental

Circle 166 on Reader Service Card

Solid State Logic

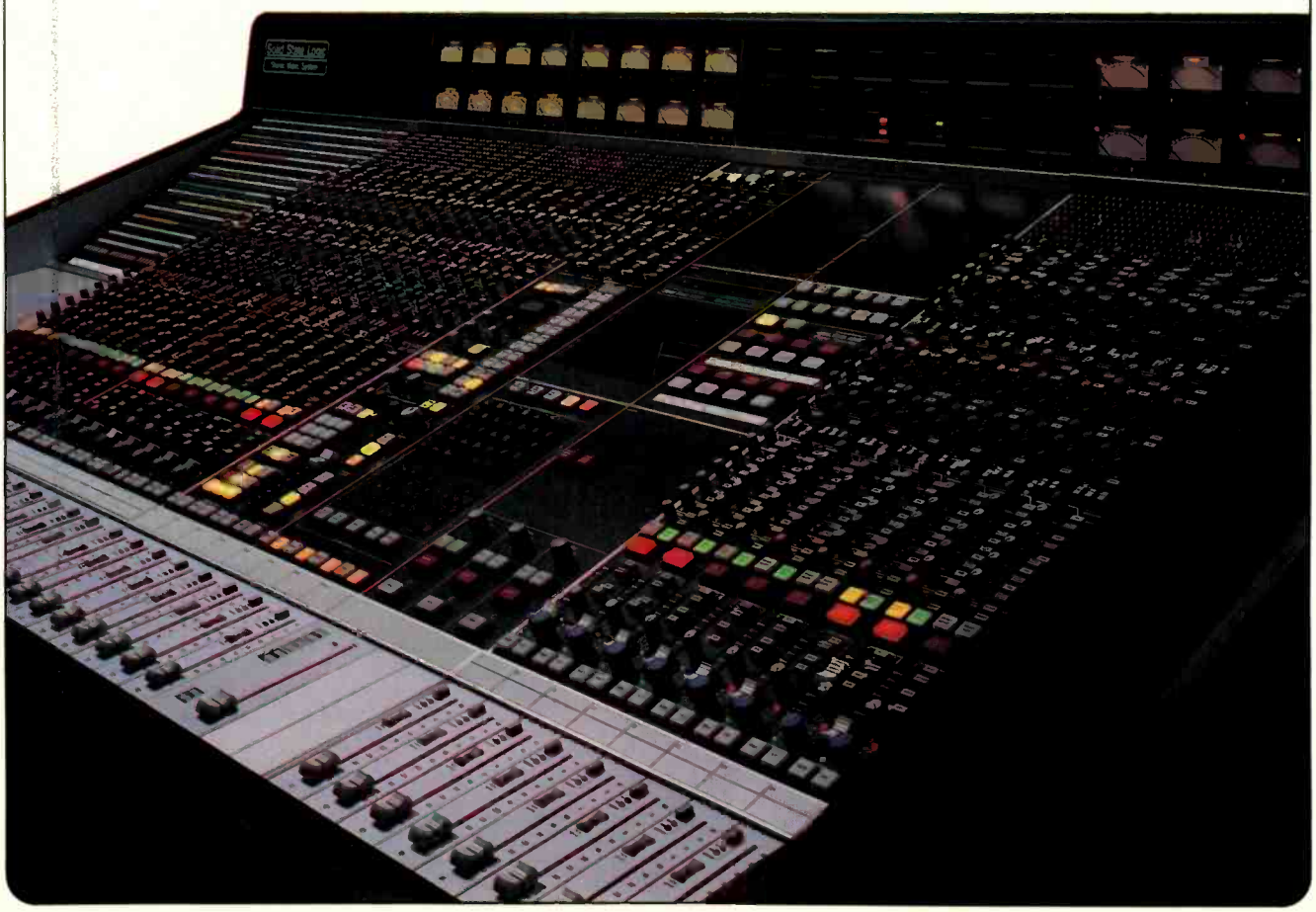
In the Foreground of Television Audio

Audio for video is on a lot of minds these days. Advanced video formats and transmission methods make dramatic improvement possible. Producers' concerns over the initial impact and residual value of their programmes make it desirable. EFP, new competitive arenas and increased consumer awareness make it necessary. And now, the SSL Stereo Video System makes it practical.

The SL 6000 E Series places all of the signal processing, switching and machine control required for live and post-production stereo audio under the control of a single engineer. Fully distributed master logic and extensive local switching accommodate the immediacy of broadcast requirements with the versatility of multi-track technology. Exclusive SSL software and a unique mix bus system combine the creative flexibility of film sound technique with the efficiency and economy of electronic production.

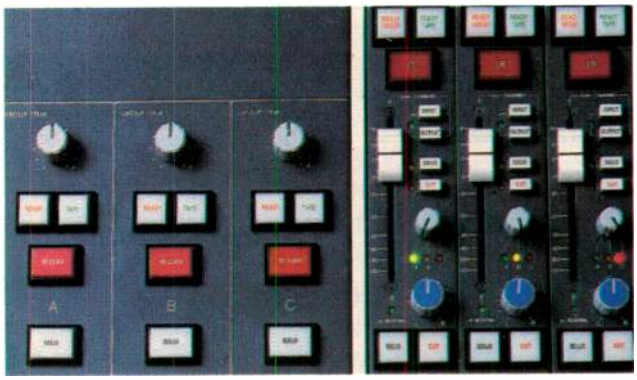
The SL 6000 E Series lets you specify a system which will meet your current needs exactly. As those needs grow and change, SSL fills them with additional hardware and software modules which retrofit in the field. The Stereo Video System is designed and built to last. Your investment is further protected by performance specifications which exceed the challenge of the best 16 bit digital recorders.

And of course, the Solid State Logic Stereo Video System provides you with the ergonomic and sonic attributes which have made our companion SL 4000 E Series the leading choice of the world's great music studios.



Format Flexibility

The Stereo Video System's six bus mix matrix accommodates all audio-for-video formats. Along with standard mono, stereo and multi-track operations, each input may be panned between one of three stereo mix buses. This allows the engineer to freely divide the console into dialogue, music and effects sections as each project requires.



The Dialogue, Music and Effects mixes may be recorded in mono on a 3 stripe or 4 track, or in stereo on an 8 track or the multi-track master. Composite stereo and mono mixes of all 6 buses are derived from the master mix matrix for monitoring, transmission and/or simultaneous (first generation!) layback to the stereo video recorder. Alternatively, the six buses may be used for stereo mix and mix minus feeds during live coverage.

Comprehensive Signal Processing

Each I/O module contains an expander/gate, compressor/limiter, high and low pass filters, four band parametric equalisation, six cue/aux sends and tape electronics remotes. Master logic, push-button signal processor routing, patchfree audio subgrouping, and 8 VCA Group Masters ease complex productions, and always provide the minimum signal path.

Total Recall

Complete details of all I/O module control settings are stored on floppy disc by SSL's Total Recall System, enabling console setups to be restored within .25dB accuracy. Not only does Total Recall save time on each production, it allows greater scheduling flexibility with fewer headaches than ever before possible.

Computer Assistance. Live And In Post.

The SSL Primary Studio Computer is instructed with simple phrases entered via dedicated command keys and an alphanumeric keyboard at the console centre. A small video display advises the engineer of all activity. Above this display, controls for the SSL Video Switcher enable the mixer to call programme, preview or computer displays to the main video monitor.

The computer accepts entries in all timecode and foot/frames standards, and provides complete cue, edit, punch-in and mix list management. In post-production, it links multiple ATRs, VTRs or film chains with the Dynamic Mixing functions, providing fast and familiar rollback and pick-up recording, with every move automatically updated in the computer!

In live production, the SSL Real Time System enables complex sequences of all channel and group fades and cuts to be pre-programmed, and then manually executed with a single set of controls.

The SSL Events Controller provides up to 16 multi-repeatable contact closures under computer control. The SSL Effects Controller adds 40 A/D ports to link the computer with external signal processors.

The Solid State Logic Stereo Video System is available in studio and Outside Broadcast versions from 16 to 56 I/O modules, with up to 112 line and microphone inputs plus four stereo effects returns. Please call or write on your letterhead for complete details and prices.

Solid State Logic LTD.
Churchfields, Stonesfield
Oxford, England OX7 2PQ
Telephone (099 389) 8282
Telex 837400 SSL OX

Solid State Logic
Master Studio Systems

Solid State Logic Inc.
2633 Fifteenth Street N.W.
Washington, D.C. 20009 USA
Telephone (202) 333-1500
Telex 440519 SSL DC

1983 CONFERENCE

Lipsner-Smith 809-811
Ultrasonic film cleaners; film previewers, editors, and rewinders.

Listec 802
Introducing Chroma color reference monitors. Also Vinten Merlin crane arm with remote control; other Vinten camera supports; Digivision prompting system.

Lowel-Light 433-435
Location lighting kits including Omni, D, Tota, and Softlight; new collapsible frame for lighting control materials.

LTM 1403-1408
HMI lighting from 200 W, including PAR lights; fiber optic lighting system.

L-W Intl. 101
Athena 4500 and 6000 telecines with motion controllers.

3M 100
Type C VTRs; routing switchers, machine control systems. Videotape and videocassettes.

Magnasync/Moviola 611
Videola film-to-tape transfer systems, including new V- 400 designed for on-air operation.

Magna-Tech 115, 117, 119
Magnetic film dubbers.

Matthews Studio Equip. 40, 44, 48
Sky-Cam support head remote control; other lighting and grip equipment.

Maxell 126
Complete line of audio and video tape and cassettes, including new line of tape for Betacam and M-format.

MCI/Quantel 347
DFS digital TBCs and frame syncs; DPE digital special effects systems; DLS digital still store and library; DPB-7000 digital "paint box" art and graphic system; Mirage 3D graphics system.

Merlin Engineering 716-718
ME-238 long-play VTR conversion; ME-288 standards converter; ME-258 ultra-wideband VTR.

Micron Audio 1503
Wireless mic systems, including new hand-held transmitters and diversity receivers.

Microtime 246-248
Digital video processing equipment including T²E digital effects system, T-120D TBC and S-230 TBC/frame sync.

Midwest Corp. 150
Mobile production and broadcast vehicle design.

Minolta 1413
Lenses and SLR cameras.

Mole-Richardson 711
Complete line of lighting products.

Multi-Track Magnetics 139, 141-143
Magnetic film dubbers; AVEC mixing console; new VITC time code synchronizer.

Nagra 702
ATRs.

N.A. Philips Lighting 654-656
Stage and studio lighting.

NEC America 401, 403, 405
E-Flex digital effects system with perspective and rotation; three-chip CCD camera; FS-16 frame sync.

Nova Systems 1523

O'Connor Engineering 601-603
Camera support systems, including Hydro-Ped and Model 50; new Model 55 aluminum tripod and new camera dolly.

Panasonic invites you to see the next generation of Video Cart Machines at the 1983 SMPTE show.

Introducing the MVP-100 Multi-Function Video Player.

It's the MVP-100 Multi-Function Video Player and it will revolutionize broadcast automation. The big story behind the MVP-100 is its computer-controlled broadcast programming capability. Commercials, station IDs, and promos can all be programmed with time code accuracy. The MVP-100 is more than a spot sequencer. It can also function as your complete program player. And because it's modular, up to 24 video cassette transports can be loaded in advance. The MVP-100 also features M-format for multi-generation picture quality that goes far beyond 3/4".

Panasonic
AUDIO-VIDEO SYSTEMS DIVISION

If you're not attending SMPTE but would like more information on the MVP-100, complete and send the coupon below.
Panasonic Broadcast Group
Panasonic Industrial Company
One Panasonic Way
Secaucus, N.J. 07094

Name_____
(Please Print)
Company_____ Title_____
Address_____
City_____
State_____ Zip_____
Phone (_____)_____
BME-103

Visit Panasonic at SMPTE Booth Nos. 715 & 815

Circle 169 on Reader Service Card

1983 SMPTE CONFERENCE

Omicron Video 1009
Video DAs, sync generator, edit controller/switcher.

Otari 1211
ATRs, including 5050 Mk-III-2 two-track quarter-inch; MTR-12 quarter-/half-inch 2-/4-track; CB-116 auto locator accessory; MTR-90 multitrack; MTR-10 master recorder; plus full 5050 Series.

Oxberry 158
Video animation equipment.

Panasonic 715, 815
ReCam recorder/camera and editing system; high-performance monitors; new MVP-100 multifunction M-format VCR.

PEP 147, 149
VHS recorder/camera system.

Perrott Engineering 748
Nicad and silver/zinc batteries; chargers; portable lighting equipment.

Phillips TV Systems 121, 218
LDK-6 triax and other studio, EFP and ENG cameras.

Plastic Reel Corp. 122, 124
Storage racks; tape and cassette shipping cases.

Precision Echo 454-456
Budget Squeezer digital video compressor/positioner; EFS video disk recorders.

Quanta Corp. 339, 341, 343
Quantafont character generators, including Q-8 font-loadable titler; Select 7 graphic titler; Nicrogen low-cost titler.

Q-TV 1515
Teleprompters.

Rank Cintel 515
Telecine systems with FeRRit magnetic sound follower, Slide File digital picture store, Amigo scene-by-scene color corrector.

RCA 211
TK studio and ENG/EFP cameras, including TK-47 and TK-47P; Hawkeye recorder/camera system with editor; Type C VTRs; telecine systems.

R-Columbia 640
Wireless intercom headphones; other headphones, including new UL-85 ultra-lightweight 1 oz. model; wireless/wired intercom interface.

Research Technology Intl. (RTI) 809-811
Videotape/cassette cleaner/evaluators.

Riviera Bdcst. Leasing 256
Equipment financing and leasing.

Rosco Labs 254-256
Lighting control media.

RTS Systems 531
Intercom and IFB equipment, including both conference and dedicated-channel systems; audio DAs, line amps, etc.

Sachtler Corp. 338
Camera supports, including new Video 20 and 25.

Sennheiser 750
Full line of microphones and headphones, including MKE-2 ultra-miniature lavalier; shotgun mics.

Sharp 1025
New XC-900D diode gun camera priced under $20,000 and XC-800 color camera; XC-803TX triax adaptor; other accessories for Sharp video systems.

Shintron 1125
Production switchers, including new component video switcher; character generators; DAs; routing switchers; SMPTE time code equipment.

Shure Bros. 305, 307
Microphones and audio products, including AMS automatic mic/mixer system; SM-6 3L omni mic.

Sigma Electronics 649
Terminal equipment for TV studios with sync generators, proc amps, DAs, system timing.

Skotel 208
SMPTE time code systems.

Solid State Logic 451, 453, 455
SL-6000E automated stereo audio mixing system for TV applications; SL-4000 master studio console; SSL automation system for live and post-production applications.

Sony 315
Betacam recorder/camera system with editor; full line of BVP cameras; BVH Type C VTRs; BVU VCRs; BVE editing systems. Pro Audio products will include the Sony CD player and RF microphones.

Soundcraft 151
Audio mixing consoles and multitrack ATRs.

Sound Technology 449
Audio test equipment, including 1510A ATR test system and 1710A distortion measurement system.

Stantron 255, 257
Modular cabinets, desks, consoles.

Strand Century 525, 527, 624, 626
Full line of studio and remote lighting equipment, including Ianiro fresnels and location kits.

Studer Revox 1127, 1226
ATRs, including A810 stereo broadcast recorder with center channel time code; A-800 Mk. III 24-track ATR; A-710 cassette deck; ECS-6000 automation system.

TEAC 939, 1038
Tascam audio products, including M-50 mixer, M-52 half-inch two-track ATR, M-58 half-inch eight-track ATR; system enhancement products.

Tektronix 801
New waveform monitor/vectorscope unit; new 10-bit frame sync; complete line of test and measurement equipment.

Tele-Cine 1417
Schneider TV lenses, including 14x ENG/EFP.

Telemet 1106
Computer-controlled routing switcher; system timing modules; demodulators, iso amps; fiber optics systems.

Telescript 842
MPS monitor prompting systems; high-resolution monitors; Telecue and Telescriptor transports.

Television Equipment Assoc. (TEA) 239
Video delay lines and filters; headsets; teletext systems.

Tentel 242
Tape alignment gauges, including Tentelometer tape tension gauge, spindle height gauges.

Thomson-CSF 617-619
Vidifont Graphics V character generator/graphics system with new software for weather and elections. Also Thom-C.A.T. computer-aided testing system.

TTM (Tri-Tronics Mfg.) 1412
Magnetic film dubbers.

Tyler Camera Systems 822
Helicopter mounts.

Union Connector 1509
Wiring system and connectors.

Ursa Major 1507
Audio processing equipment, including digital reverb.

Circle 171 on Reader Service Card

1983 CONFERENCE

Utah Scientific **1409**
Station automation centered around new MC switchers; routing switchers and audio/video DAs.

VEAM (Div. Litton) **1400**
Connectors.

Videomedia **335**
Z6000 and Eagle video editing systems; Q-Star serial transport automation system.

Videotek **743**
Monitors, including portable digital waveform monitor; rack-mount waveform monitor/vectorscope; AFV routing switchers; video audio, and sc DAs; picture monitors.

Vital Industries **530**
New DEMC data entry machine control panel for SMPTE-based inputs for station automation; 250 P/N digital production switcher; SqueeZoom digital effects.

Weaver Steadman **942**
Camera cranes.

West Coast Audio **1521, 1522**

Westrex (Div. Litton) **152-154**
Magnetic film dubbers.

Wide Range Electronic **304**
Magnetic film dubbers.

Winsted **703**
Modular editing consoles for all tape formats; production consoles; tape storage systems; equipment racks.

Zellan Enterprises 109, 111, 113
Distributor of Stellavox ATRs; Aaton cine cameras; Cooke lenses; HTL filters.

SMPTE 1983 FUTURE SIGHTS AND SOUNDS

Sunday, October 30
Morning Registration
Evening Registrants' reception

Monday, October 31
Morning Papers: Future Sights and Sounds—Back to Basics
Noon Awards luncheon
Afternoon Exhibits open
Papers: Exhibition Audio — Realizing the Possibilities in Film and TV

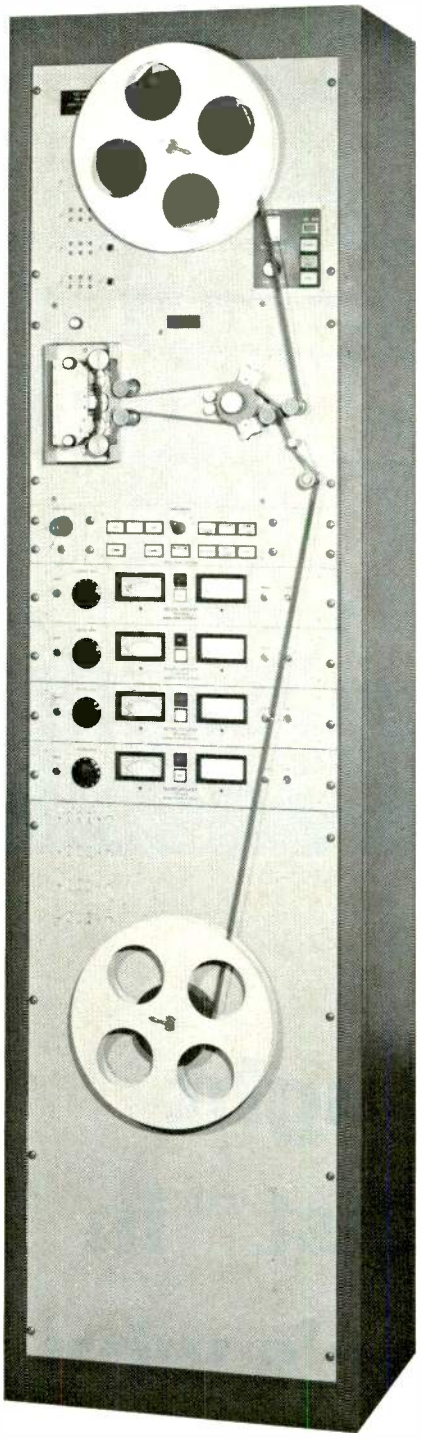
Tuesday, November 1
Morning Papers: Audio Production and Post-Production
Exhibits open
Noon Fellows luncheon
Afternoon Papers: New Image Display Technology

Wednesday, November 2
Morning Papers: Video Systems and Installations
Exhibits open
Afternoon Papers: Scientific and Industrial Video Systems
International papers
Evening Banquet

Thursday, November 3
Morning Papers: Post-Production Practices I
Exhibits open
Afternoon Papers: HDTV I
Papers: Post-Production Practices II

Friday, November 4
Morning Papers: HDTV II
Papers: Production Lighting Techniques
Afternoon Papers: Microprocessor Control Systems
Olympic Video

Partial Program as of July 15, 1983



MAGNA-TECH

THE SOUND HEARD AROUND THE WORLD

Magnetic Film Recorders and Reproducers for Television and Film Sound Post-Production

HIGH SPEED

Telecine Magnetic Followers
Video Tape-Film Interlock
Electronic Looping
Dubbing Systems
16 and 35mm Electronic Projectors
Total Facility Engineering

WORLDWIDE SALES OFFICES

Paris
Hi-Fidelity Services
4 Rue Semard
75009 Paris, France

Sydney
Magna-Techtronics (Aust.)
PO Box 150
Crows Nest NSW 2064
Australia – Telex 24655

Johannesburg
General Optical Co., Ltd.
15 Hulbert Road
Johannesburg 2001,
South Africa

Rome
Alberto Sciaretta
Via Siria 24
Rome 00179
Telephone 7943618

Brussels
A.R.C.
Rue de Boisde Linthout 45
1200 Brussels Belgium

Hong Kong
Paul Yang and Associates
901 Star House
3 Salisbury Road
Kowloon, Hong Kong

Bombay
Capt. P.K. Vishwanath
234/4 Rama Baug,
Deodhar Road
Bombay 400 019, India

Kehl West Germany
Zenon GMBH
Postfach 1743
Hauptstrasse 128
Kehl am Rhein
Tel: 07851/2991
Telex: 753537

London
Branch & Appleby
42 High Street
Harrow-on-the-Hill
Middlesex HAI 3LL,
England

Kuala Lumpur
Kinematronika Sdn. Bhd.
2852, Jalan Selangor/
Persekutuan,
Federal Hill
Kuala Lumpur, Malaysia

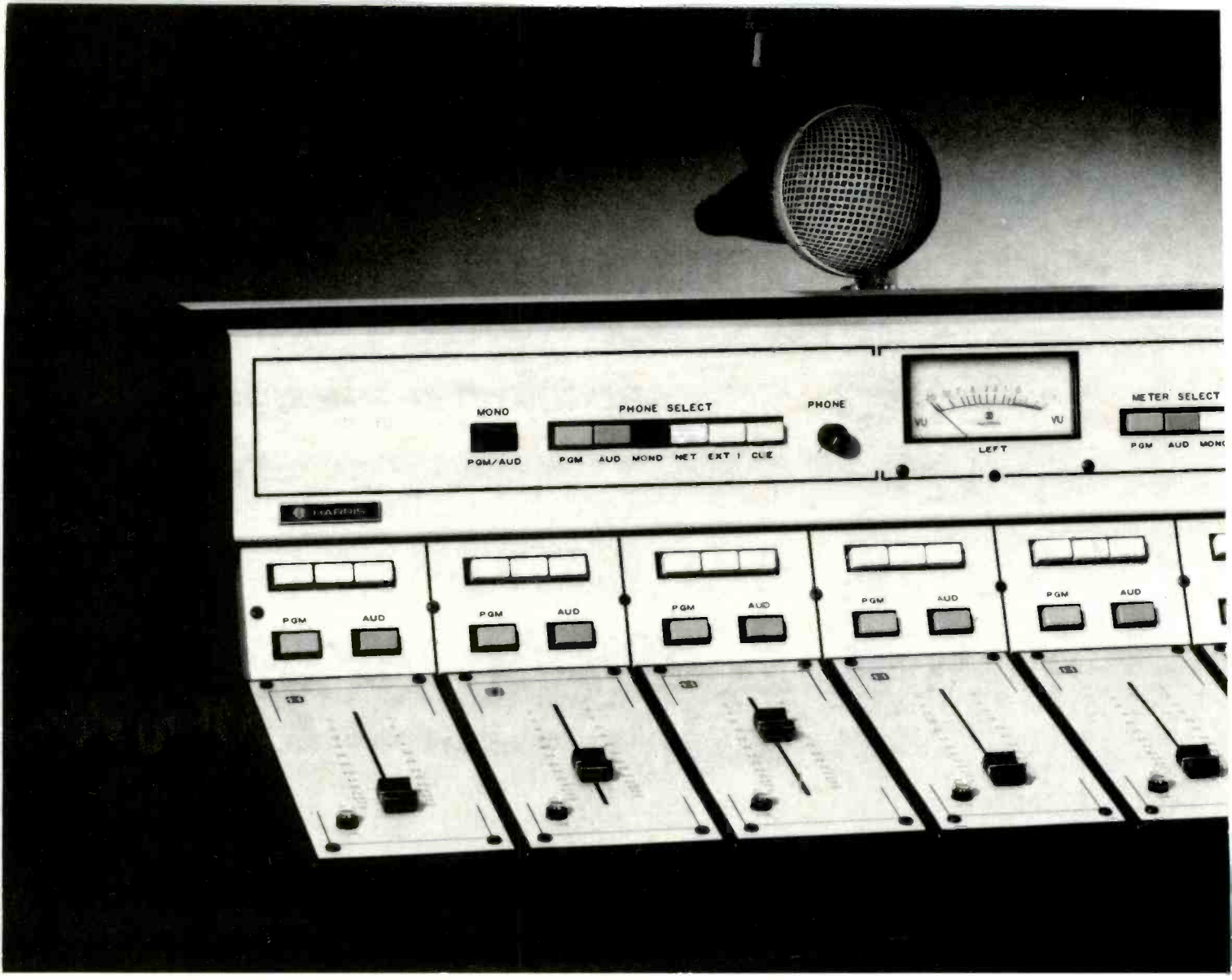
Caracas
Cine Materiales srl
Apartado Postal 61.098
Caracas 106 Venezuela

MAGNA-TECH ELECTRONIC CO., INC.

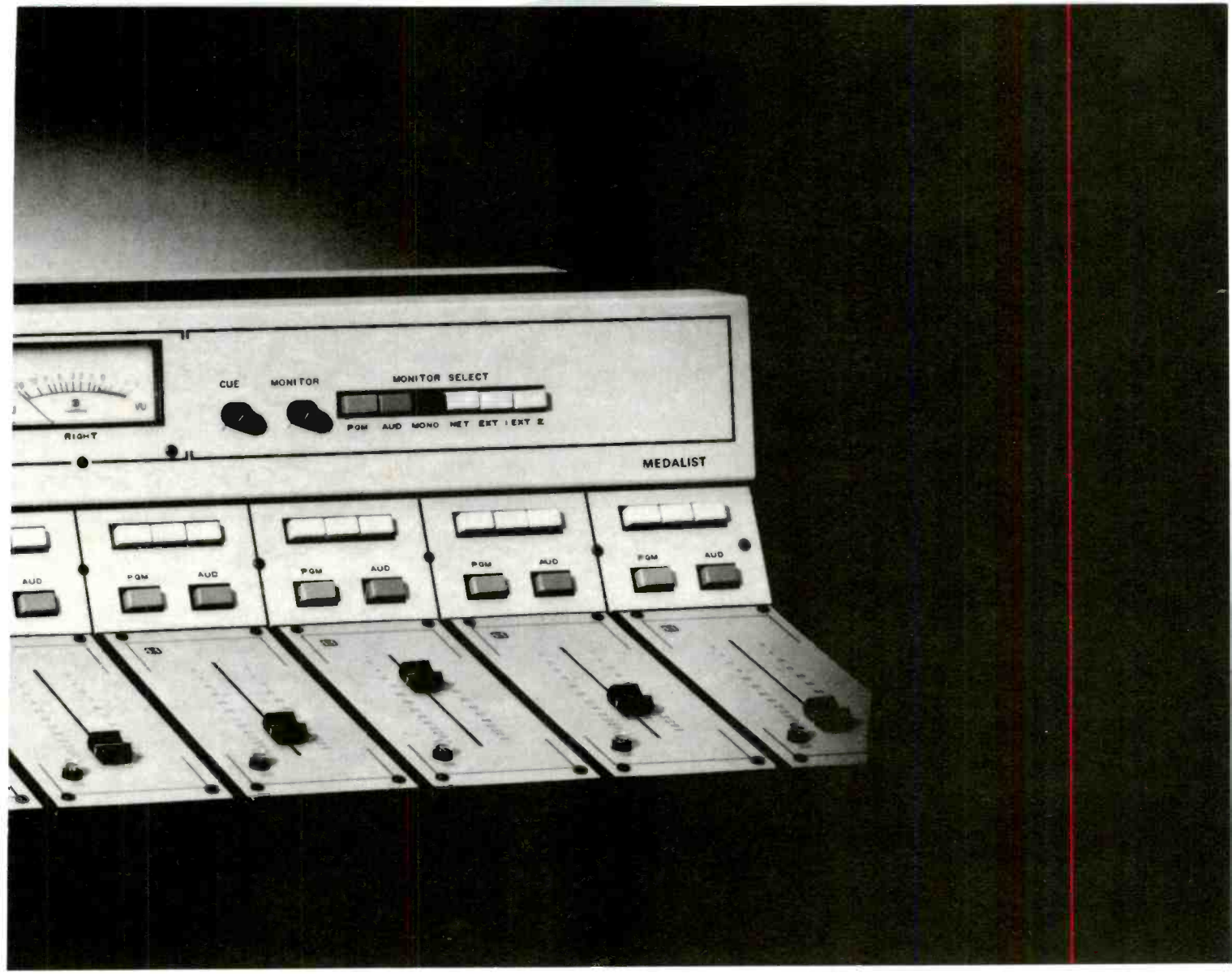
630 Ninth Avenue, New York, N.Y. 10036

Telephone (212) 586-7240 Telex 126191 Cables "Magtech"

Circle 173 on Reader Service Card



29 broadcasters bought the new Harris Medalist™ in its very first week! Here's why.



Wide input switching flexibility. Transparent audio performance. Choice of attenuators. Adaptability to any application. Excellent cost/benefit ratio. Broadcasters across the country cite these as major reasons for choosing the new Medalist dual stereo audio console over all others.

Switching Flexibility

Input selectors switch *after* the mic preamp, allowing intermix of mic and other types of sources on any channel. The Medalist also gives you six selector positions each for headphone and speaker monitoring.

Superb Audio Quality

Harris engineering makes the Medalist remarkably transparent. The Signal-to-Noise ratio of 95 dB beats the competition by 10 to 20 dB, and is typical of the Medalist's outstanding performance.

Linear Or Rotary: Take Your Pick

Harris gives you a choice—two styles of linear and two styles of rotary attenuators. Intermix rotary with linear if you like, to suit *your* station's particular needs.

Easy To Install... Easy To Maintain

The barrel terminals on the input and output circuits connect quickly and surely. Additional preamps and program amp interconnect with plug-in ribbon cables. Also, you can change attenuator modules—even while you're on the air—in about the time it takes to cue up a record.

Versatility In A Variety Of Applications

The Medalist is equally well suited for AM/FM/TV on-air and production applications. Take your choice of two models—8 or 10 channels.

Learn more about the Harris Medalist family of audio consoles. Write Harris Corporation, Broadcast Group, Studio Division, P.O. Box 4290, Quincy, Illinois 62305-4290. 217-222-8200.

HARRIS

Circle 174 on Reader Service Card

It was driving Arthur out of his tree.

Fidelipac builds the broadcast industry's most rugged, most reliable audio cartridge, by far.

Now, you know, we load those cartridges with tape from manufacturers whose tape meets our specifications. And we're very picky about those specs.

Every time we discover a hub with uneven oxide coating; poor surface bonding; ragged edges or spotty lubrication, Arthur Constantine, our VP Sales, goes out of his tree. He'll ship miles of the stuff back to where it came from, before he'll send twenty five feet of it out to you.

That's the way he is. That's the way we all are.

And that's why seven out of ten radio stations around the world use Fidelipac Tape Cartridges.

There's simply no way we'll compromise the quality of our product.

FIDELIPAC®
BROADCAST TAPE PRODUCTS

Fidelipac Corporation ☐ P.O. Box 808 ☐ Moorestown, NJ 08057 ☐ U.S.A. ☐ 609-235-3900 TELEX: 710-897-0254 ☐ Toll Free 800—HOT TAPE

Circle 175 on Reader Service Card

Radio Broadcasters at NRBA to Explore New Opportunities

The annual meeting of the National Radio Broadcasters Association in New Orleans, set to run Sunday, October 2 through Wednesday, October 5, will present attendees with perhaps the most aggressive approach to radio broadcasting seen in years. The conference goals—"Identify the Opportunities, Define the Problems, and Present the Solutions"—read, in fact, like a battle plan for a medium that is going to come out fighting—and win!

Two of the seminars are slated to draw attention from anxious broadcasters concerned about recent legislative developments. There will be an SCA seminar, including a half-day workshop dealing with the opportunities and realities in the new world of SCAs, providing business and technical information on this important new challenge.

The second topic requiring a special session will examine one of the most far-reaching radio actions of recent times: Docket 80-90. The questions under consideration will be how 80-90 affects all radio broadcasters, not just FMs, and what those in the radio industry can and should do about what promises to be radical changes in the business.

Other topics of interest will be seminars on both digital transmission and redundancy systems. Also of note will be sessions on new tech/new profit opportunities and how radio broadcasters can get the most return on their investment in new technology equipment.

Claiming that the seminars will be packed with actionable information regarding the challenges of the day, the NRBA has also set aside a specific time period each day when attendees can visit the numerous exhibits of hardware and program services. This equipment will be on display in the exhibit hall opening on Sunday at noon.

Engineers may want to attend the informal "rap" session intended to allow engineers to air their important views on the technology and business of radio. There will be many seminars and a great number of speakers, among the most notable of whom are Mark Fowler, Walter Cronkite, and Mary Kay Ash, who will discuss sales techniques, at the Tuesday luncheon.

CONVENTION PROGRAM HIGHLIGHTS

Sunday, October 2

10:00 am Convention Registration Opens
Noon Exhibit Hall Opens
6:30 pm Opening Reception

Monday, October 3

7.30 am Registration Opens
9:30 am Opening Session: Keynote address by Mark Fowler, Chairman FCC
10:30 am Engineering Workshop: FCC-Engineering Dialogue
Harold Kassens, NRBA Engineering Counsel
Bob Greenberg, Mass Media Bureau
James Gabbert, KTZO-TV
Ogden Prestholdt, A.D.

continued on next page

CONVENTION EXHIBITORS

Exhibitor*	Booth #	Product/Service
American Data Transmission	208	SCA Equip., Services
Antenna Technology	705	Earth Stations
Toby Arnold & Associates	410, 412	Programming
Associated Press	805-807	News Service
AudioMedia Associates	409, 411	Distributor
Briner-Chase	210-212	Automation
Broadcast Audio	600	Production Equip.
Broadcast Electronics	300	Production, Transmission
Broadcast Promotion Assoc.	214	Promotion
Broadcast Systems	415	Rental Service
Cablewave Systems	511	Microwave, Transmission
Capitol Magnetic Products	605	Carts, Tape
Ceco Communication	16	Production, Transmission
Columbine Systems	806-808	Automation
Computer Concepts	405-407	News Computers
Comtech Data	211	Earth Stations

continued on next page

Partial list as supplied by NRBA. 7/15/83.

* In addition to the above companies, many programming services will have hospitality suites, the locations of which will be listed at the convention.

Ring Assoc.
Greg De Priest, FCC Policy & Rules

12:30 pm Luncheon: Walter Cronkite receives NRBA 1983 Golden Radio Award

3:00 pm Visit exhibits and suites

4:00 pm Daytime Broadcasters Association Meeting

4:30 pm NRBA Membership Meeting

Tuesday, October 4

9:00 am Satellite Workshop: Technical Developments
Mark McKibben, Wold Communications
Richard Cassidy, National Public Radio
P. Michael Kelly, Scientific-Atlanta
J. Walter Johnson, Modulation Associates
William Wisniewski, Mutual Broadcasting

10:30 am Visit exhibits

11:00 am SCA Workshop: Facilities Unlimited
Harrison Klein, Westinghouse Broadcasting & Cable
Richard Cassidy, Na-

Exhibitor*	Booth #	Product/Service
Concept Productions	714, 813	Programming
Consolidated Communications	406	Programming
Continental Electronics	207	Production, Transmission
Creative Works	804	Programming
CSI Electronics	3, 4	SCA. Transmission
Custom Business Systems	500	Automation
Delta Electronics	9	Production, T&M
Dorrough Electronics	305-307	Production Equip.
Ellason Avionics	13	Weather Radar
Go Ahead Records & Music	14	Programming
Golden Oldies	314	Programming
Granlan Dist.	206	Distributor
Harris Corp.	400	Production, Earth Stations, Transmission
Howe Audio	14	Production
Inter-Cassette	515	Promotion
Jam Creative	213	Programming
Johnson Electronics	306	SCA, Antennas
M.A. Kempner	10	Programming, Telco Equip.
LEA, Inc.	310, 312	Lightning & Surge Protectors
Lexicon	505-507	Production
LPB, Inc.	513, 514	Production, Travel Info. Systems

tional Public Radio
Leonard Hedlund, McMartin
Joseph Wu, TFT

12:30 pm Luncheon: Mary Kay Ash, Mary Kay Cosmetics, speaker

2:30 pm Digital Workshop: Delight or Disaster?
Bill Sacks, Straight Wire Audio
Bob Adams, dbx
Mark Finer, Sony Audio
Daniel Gravereaux, CBS Technology Center

4:00 pm Engineering Workshop: Staying Alive
Milford Smith, First Media Corp.
Roy Carpenter, LEA
Phil Lerza, KFRC

5:30 pm Cocktail Party, exhibit hall

Wednesday, October 5

9:00 am Engineering: International Broadcasting—a visit to WRNO, a worldwide shortwave radio station

11:00 am Concurrent Workshops Continue

Noon Convention Closes

Exhibitor*	Booth #	Product/Service
McMartin	15	Production, Transmission, SCA
Microdyne	201	Earth Stations
Miller, Arase, Kaplan, Sheets	509	Broadcast Accounting
Mini-Bingo/Peter Powell	811	Promotion
Motorola AM Stereo	202-204, 301-303	AM Stereo
Nationwide Advertising	1	Advertising
Phelps Dodge	706	Transmission Equip.
Pro-Audio General	308	Distributor
Radac Marketing	203	Marketing
Radio Data Systems	615	SCA Service
Radio Systems	710-712	Production, Transmission
Record-Rama	810	Programming
Sacred Heart Program	707	Promotion
Sony Broadcast	413, 414	Production Equip.
The Sports Network	614	Programming
Station Research	7, 8	Consultants
Stoffel Seals	802	Promotion
TFT, Inc.	205	SCA, Microwave
TTC/Wilkinson	408	Transmission
United Press International	506-508	News Service
U.S. Tape & Label	11, 12	Promotion
Weather Services	713	Weather Service
Winton Communications	209	Program Syndication

In the past ten years,
computers have gotten smarter,
cameras have gotten simpler,
ovens have gotten quicker,
beer has gotten lighter,
bodies have gotten leaner,
athletes have gotten richer,
hi-fi has gotten higher,
radio has gotten stronger,
studios have gotten smaller,
towers have gotten taller,
movies have gotten longer,
cars have gotten shorter,
film has gotten faster,
outerspace has gotten closer
and blue jeans have gotten classier.

Now it's our turn.

In the past 10 years, the Premium Line from ITC has seen refinements, but no major changes. Frankly, it hasn't needed any. The Premium Line has been a dependable workhorse that's found its way into more studios than its next two competitors combined.

But we couldn't leave well enough alone. So this year, the Premium Line gives way to the Delta Series, a new generation of cartridge machines that offers you more than ten years worth of improvements.

It's mechanically better. The cart guides are improved. There's a crystal-referenced servo capstan motor with a vapor-honed non-magnetic shaft. Modular construction makes alignment and service convenient. High-speed recue is standard. And the Delta III gives you three independently removable decks.

It's electronically better. There are new, high performance components, including NE5500 Series amplifiers. There's an exclusive ITC/3M playback head for smooth frequency response and improved signal-to-noise. We've added a toroidal power transformer with fully regulated and protected power supplies. And a digital cue tone detector controlled by a powerful microprocessor.

And it's physically better because it's smaller. The whole unit is only one-third rack width (5⅝"). The enclosure is made of ¼-inch milled or cast aluminum, for stability. And the panel inserts are made of Lexan®.

Of course, we left in all the good things that made the Premium Line so popular. The ½-inch tool plate aluminum deck. Durable, high quality switches. And a solenoid-actuated, chain-and-sprocket pressure roller assembly. All backed by our famous two-year warranty on parts and factory labor, plus a 30-day guarantee of satisfaction. If, for any reason, you're not completely satisfied, you can return the unit within 30 days of purchase and we'll refund your money in full.

The good things are still there. But what you'll notice are the improvements. We think they were worth the wait.

For more information, or to place an order, call us collect from Alaska, Hawaii or Illinois, at 1-309-828-1381. From the rest of the U.S., call the following. Toll-free number:

1-800-447-0414.

1983

1973

3M hears you...

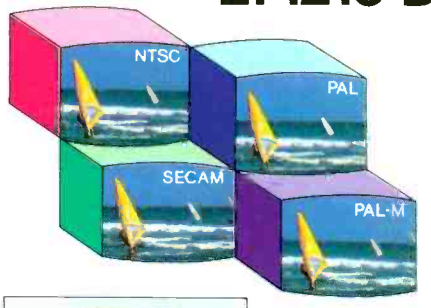
3M

Cost-Performance to Oki Doesn't Mean Less Performance for Lower Cost.

Performance Takes Priority!

New

LT1210 Digital Television Standards Converter



Professionals demand an uncommon level of picture quality in TV standards conversion. And production on the road requires a compact, reliable unit. Oki Electric built the LT1210 to deliver. It's the world's smallest converter able to handle NTSC, PAL, and SECAM, with PAL-M conversion as an option. Yet it incorporates every function and feature needed for producing studio-quality programming. The image enhancement function, for example, ensures a high-definition picture with outstanding image clarity. This converter is also a totally integral unit so no adaptor or changing of encoder/decoder modules is required for conversion between NTSC, PAL and SECAM.

The cost-performance of the LT1210 is nothing less than outstanding. Oki Electric's proven expertise in standards conversion combined with the latest in LSI technology results in a highly reliable, easy-to-use converter. The LT1210. Check it out. Anywhere.

Oki also produces the high-end LT1015Σ Digital TV Standards Converter.

In the U.S.A. and Canada, contact:
OKI Electric Overseas Corp.
One University Plaza,
Hackensack, New Jersey
07601 U.S.A.
Tel: 201-646-0011—0015
TWX: 7109905004 OKI ELEC HAK

In other areas, contact:
Head Office:
Overseas Marketing & Sales
10-3, Shibaura 4-chome,
Minato-ku, Tokyo 108, Japan
Tel: (03) 454-2111
Telex: J22627
Cable: OKIDENKI TOKYO

OKI
electric industry company, ltd.

Circle 178 on Reader Service Card

PROCESSING AM SOUND TO COMPETE WITH FM

The authors propose a preemphasis characteristic designed to improve the subjectively perceived bandwidth of monophonic AM radios and a receiver deemphasis characteristic designed to make the AM signal sound similar to FM to the consumer. The goal is to give AM stereo added attraction to broadcaster and listener.

By Robert Orban and Greg Ogonowski

THERE IS HOPE for AM music programming despite the perception by consumers that AM is a low-quality, monophonic medium compared to FM. This perception is reinforced by narrowband receivers that provide muffled sound. It can be further aggravated by inappropriate audio processing at the transmitter.

What is the way out? In this article we propose a practically proven standard preemphasis and deemphasis characteristic that can produce subjectively high-fidelity AM reproduction. An alternate route—decreasing preemphasis and widening receiver bandwidths—was rejected for the following reasons:

- Reduction of preemphasis would be unacceptable to most radio stations because it would make their sound noncompetitive on typical existing narrowband mono radios.
- Conversely, new wideband radios would sound strident and screechy when reproducing preemphasized signals required by stations.
- Wideband radios would have to have sharp transitions between IF passband and stopband to achieve marginally acceptable selectivity. Such an IF characteristic causes unpleasant coloration and ringing, and sounds very dissimilar to FM. In addition, steep-slope filters cannot be successfully equalized with any amount of practical preemphasis.
- Wideband radios would cause static, impulse noise, and SCR buzz to sound unacceptably edgy and irritating.

The millions of such radios in use today will not vanish in a puff of smoke (as attractive as the idea may sound). Indeed, consumers may be inclined to keep their radios longer, especially those in automobiles.

The proposed deemphasis is similar to the characteristics presently found in the better-sounding radios. Combined with AM stereo, the correct preemphasis, creative programming and a strong consumer education campaign, such receivers could revive music on AM.

Of course designing an appropriate preemphasis/deemphasis characteristic presents a number of problems that must be considered. These include frequency allocations and occupied bandwidth, receiver bandwidths and IF shape, and inappropriate audio processing.

Car radios the key

It is improbable that any amount of improvement to the AM transmission/reception system will significantly alter home listening habits. Not only does FM stereo have intrinsically wider bandwidth, but it also offers superior rejection of many common types of noise that plague AM, such as static, impulse noise, SCR dimmer buzz, and the like. The most important factor,

Robert Orban *and* **Greg Ogonowski** *head, respectively, Orban Associates, Inc., San Francisco, CA, and Gregg Laboratories, Tustin, CA.* *This article is based on a paper originally presented at a conference of the Canadian Association of Broadcasters in March 1983, and is published with the permission of the authors.*

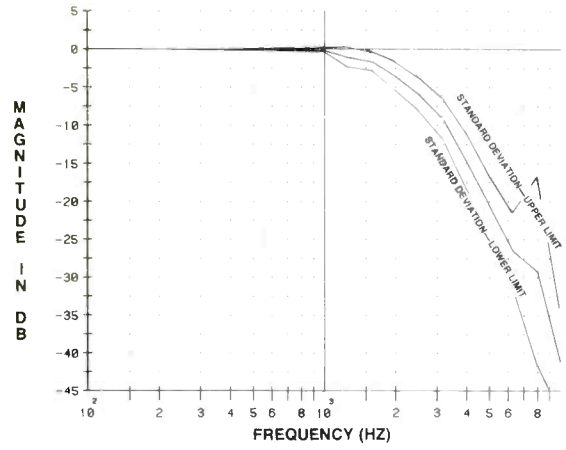


Fig. 1: Mean Measured Response Of Typical AM Radios (circa 1980)

however, is consumer conditioning. Consumers believe that FM stereo sound is better. If AM became better than FM tomorrow, it would take years to reverse this conditioning.

However, the automobile radio is different. There are many locations where FM stereo just does not work well. Bursts of severe multipath distortion, picket-fencing, and signal dropouts degrade the signal to well below "entertainment quality." AM is essentially immune to these effects. Moreover, AM stereo promises to deliver better, more consistent reception in the mobile automobile environment than FM stereo currently does. In fact, considerable audio processing of AM stereo in the car environment is desirable to make listening enjoyable despite the high acoustic noise level in the vehicle.

Matched preemphasis

A look at the mean measured response of typical AM radios (circa 1980) shows that despite the allocation of 15 kHz audio bandwidth to the AM channel, actual bandwidth of the radio is more like 2 kHz at -3dB (see Figure 1). This highly rolled-off response apparently was a reaction by manufacturers to consumer complaints about interference and static from impulse noise, but in taking such a severe design step manufacturers sacrificed quality.

Our proposed preemphasis curve shown in Figure 2 is the reciprocal of the "average" AM radio depicted in Figure 1 up to approximately 5 kHz, where slightly less than 18 dB preemphasis occurs. Above 5 kHz, it plateaus. If the boost continued, the extreme high-frequency boost would make manually tuned radios difficult to tune, might cause audio processors to misbehave, and would cause loudness loss. When this curve is applied to the average radio, the effective 3 dB-down bandwidth of the radio is extended from 2 kHz to 5 kHz—more than one octave—without midrange coloration.

The only digital stills store that's right for every studio

The new Rank Cintel Slide File is so flexible that it's tailor-made for every studio – and every budget.

With Slide File in your studios you will have all the benefits of advanced electronic stills storage without losing any of the flexibility associated with 35mm transparencies.

How is this possible? Simple.

Slide File is the first stills store to use streaming cartridge technology. Each cartridge stores up to 20 pictures which can conveniently go with you – anywhere, any time. Or, be tucked away for long-term storage.

Can you think of a stills store more flexible, or for that matter, better suited to the needs of your studios?

Slide File uses the latest EBU component encoding techniques and has a storage capacity of 80 frames, which is more than enough for any programme.

Slide File also incorporates numbered index pages that can show multi-picture composite displays; an image-enhancing electronic clean-up mode; frame grab with automatic synchronisation, pre-programmed still sequence selection; and a full preview facility.

Finally, cut, cross fade and dissolve facilities complete the studio capabilities of this unique new stills store.

If you would like to know more about Slide File, contact us now at the address below and we'll put you in the picture.

Rank Cintel

The world's finest broadcasting technology

Rank Cintel Limited, Watton Road, Ware, Hertfordshire, SG12 0AE. England.
Telephone: Ware (0920) 3939
Telex: 81415, Cables: Rank Ware.

Circle 179 on Reader Service Card

In order to control occupied bandwidth to meet FCC rules, this curve must be used in conjunction with a steep low-pass filter following the process. A fifth- or higher-order elliptical function filter with a ripple bandwidth of 12 kHz is appropriate.

This preemphasis curve is commercially proven and is already in use in several hundred radio stations. It is a practical way to improve the sound of existing radios without compromising the desired qualities of loudness, coverage, and receiver tuning ease. And with the use of a 12 kHz filter and appropriate audio processing, occupied bandwidth requirements are met.

Receivers that are slightly mistuned or whose IF bandpass is asymmetrical can produce objectionable distortion if excessive high-frequency energy is received. Such energy can also occupy excessive bandwidth. To control these potential problems, our recommended curve should be followed by a high-frequency limiter. This means that the transmission frequency response is identical to Figure 2 only when the program material contains a relatively small amount of high-frequency energy. When a large amount of high-frequency energy is present, the processing dynamically reduces the high-frequency response as necessary. With pink noise applied to the processing, the curve is typically up 10 dB instead of 18 dB. To achieve minimum perceived HF loss, we recommend dividing the preemphasized frequencies into several bands with relatively steep slopes, and processing each band separately.

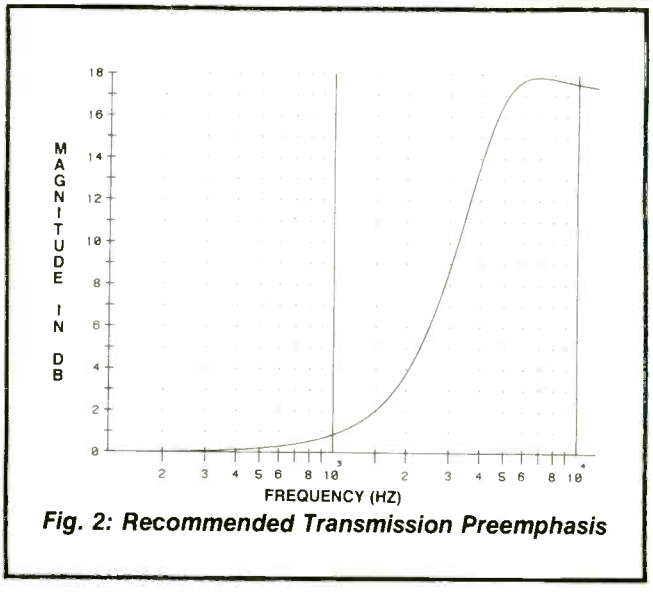


Fig. 2: Recommended Transmission Preemphasis

Matched deemphasis

At first thought, a curve exactly reciprocal to Figure 2 might seem necessary at the receiver to restore flat response. But there are some problems:

- When a commercially desirable amount of multiband audio processing is used, there is typically a very slight midrange "suck-out" on current pop records due to the dynamic frequency response of the processing, which effectively changes the preemphasis

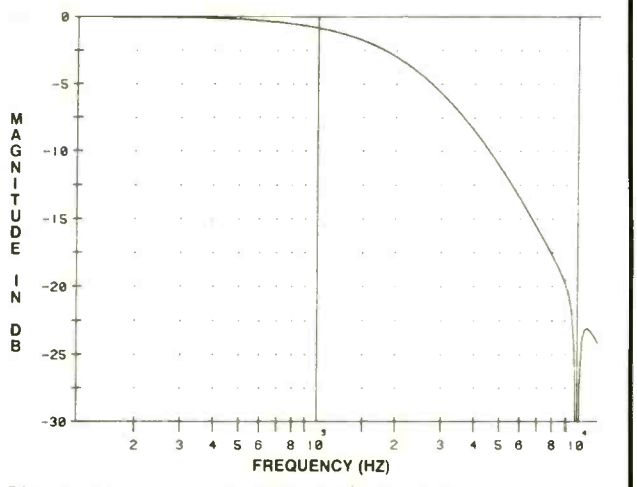


Fig. 3: Recommended Deemphasis Curve

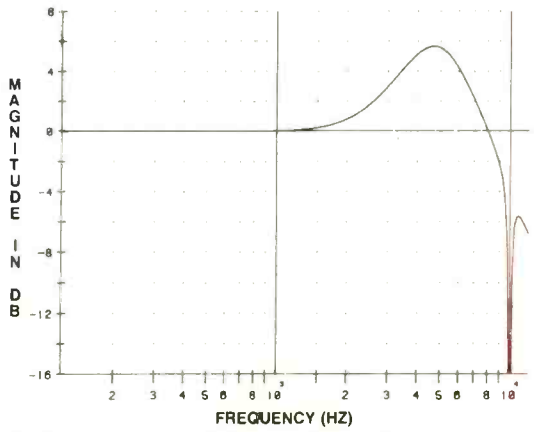


Fig. 4: Recommended Preemphasis Curve Cascaded With Recommended Deemphasis Curve

curve as a function of program spectral content.

- The shelf above 5 kHz tends to exaggerate distortion caused by aggressive audio processing.
- The reciprocal of the Figure 2 curve stops rolling off exactly where the most selectivity is required.
- Realizing the curve in a practical receiver would require a somewhat complex audio filter combined with synchronous detection, since realization of the high-frequency shelf in the IF would probably be uneconomical.

Accordingly, we performed listening tests with a parametric lowpass filter in an attempt to obtain a receiver frequency response which would sound FM-like, but which would respect the practical limitations of the AM channel and the economics of manufacturing. The curve in Figure 3 was eventually accepted as the best compromise, yielding a "quasi-hi-fi" sound on both

small speakers and large studio monitors. We believe that the average consumer would be unable to distinguish this sound from FM and that the audiophile would find it listenable and preferable to FM in an automobile environment.

Figure 4 shows the overall response of the recommended preemphasis curve cascaded with the recommended deemphasis curve. This response is not flat, exhibiting a substantial peak at about 5 kHz, and gently rolling off thereafter. The peak compensates psychoacoustically for the rolloff above 8 kHz, and also tends to equalize the dynamic frequency response changes typically introduced by multiband audio processing. The high-frequency rolloff reduces the effects of monkey-chatter and whatever high-frequency distortion might be induced by aggressive audio processing. Yet this HF rolloff is so gentle that the subjectively perceived bandwidth still extends 12 kHz.

Impact on AM stereo

While the recommended curve can probably be used with any AM stereo system, receiver design strategy in the linear stereo systems should be different from the nonlinear stereo systems.

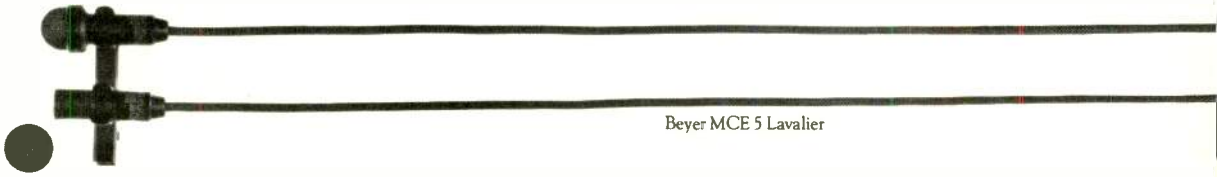
The linear system developed by Harris will exhibit no problems with preemphasis and deemphasis. Provided that synchronous detection is used for stereo decoding, the recommended rolloff can be incorporated either in the IF or after the detector with essentially no change in system distortion characteristics. There must be enough IF selectivity to avoid potential cross modulation due to unavoidable nonlinearities in IF amplifiers and synchronous detectors. The IF bandwidth can be made arbitrarily small with no degradation other than frequency response rolloff. Envelope detector reception in mono will exhibit some even-order distortion. Deemphasis after the envelope detector would tend to emphasize any difference-frequency IM, and the deemphasis should therefore be realized in the IF. Fortunately, this is where it is realized in current mono radios, and field experience suggests that the envelope-detector distortion is quite innocuous, mainly adding brightness.

The situation with the other, nonlinear systems developed by Kahn-Hazeltine, Magnavox, and Motorola is more complex. Here, IF filtering and audio filtering are not interchangeable because of nonlinear detection. Ideally, the nonlinear detection is the inverse of the stereo encoding, yielding a linear transfer curve from transmitter input to receiver output. Simultaneously, compatibility with envelope detectors is assured.

However, this assumes an infinite bandwidth between transmitter and detector, and limiting this bandwidth can introduce problems. For example, with 9 kHz and 10 kHz applied simultaneously to a nonlinear system, in addition to tones ± 9 kHz and ± 10 kHz from the carrier, the RF spectrum will also contain sum and difference tones ± 19 kHz and ± 1 kHz from the carrier. If such a signal were to be passed through an IF realizing our recommended rolloff, the 9 kHz and 10 kHz tones would be attenuated more than 20 dB, while the 1 kHz difference-frequency

Why Beyer mics represent a viable alternative to the usual choices in Broadcast.

Beyer MCM Condenser System



Beyer MCE 5 Lavalier

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, omni-directional 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

beyerdynamic

*Extracted from competitive promotional literature or advertising.
*Documentation supporting specific comparative claims available upon request.

Beyer Dynamic, Inc. 5-05 Burns Avenue, Hicksville, New York 11801 (516) 935-8000

Circle 183 on Reader Service Card

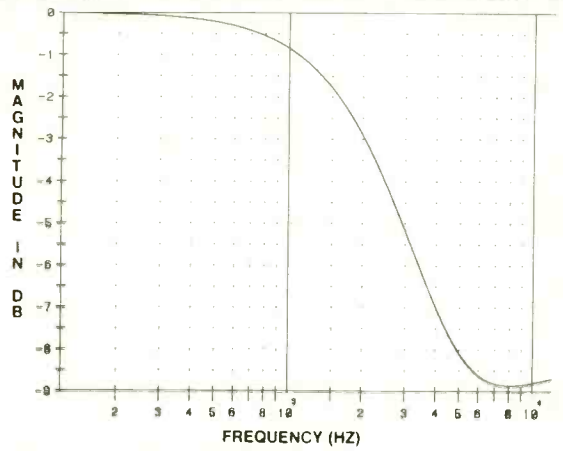


Fig. 5: Possible Audio Filter To Complete Recommended Deemphasis

tone would be essentially unattenuated. When presented to the stereo decoder, the phase and amplitude relationship between the 1 kHz, 9 kHz, and 10 kHz tones would not be the same as they were at the transmitter. The 1 kHz difference-tone would thus not be cancelled by the receiver, and would be heard instead as IM distortion.

As a result, the preemphasis and deemphasis should be realized in a very specific way to alleviate potential problems. First, the separation should be limited to 5 kHz by placing a sharp-cutoff 5 kHz lowpass filter in the L-R audio path before the stereo exciter, and placing in the L+R audio path an allpass filter whose phase response matches the phase response of the 5 kHz lowpass filter. This way, most of the extremely boosted high-frequency energy will be broadcast in mono and will not introduce difference frequencies into the RF spectrum.

Second, the IF bandwidth of the receiver should be flat and approximately phase-linear throughout the frequency range in which separation is transmitted, ± 5 kHz. This way, correct reconstruction of the audio can occur in the stereo decoder and difference frequencies will be properly cancelled. The IF can roll off beyond ± 5 kHz and can be shaped to realize the part of the recommended deemphasis located between 5 kHz and 12 kHz.

Finally, the audio section after the stereo decoder should contain filters that realize the part of the recommended deemphasis that is contained between 0 and 5 kHz, and which realize the 10 kHz notch as well. Figure 5 shows a possible audio response curve.

While different nonlinear AM stereo systems have different sensitivities to the problem of distortion induced by limited bandwidth before the decoder, the above strategy should result in cleanest sound with any of them. This strategy's only significant limitation is that it is probably impossible to use it economically to create a variable-bandwidth receiver for the mass market.

Now You Have a Choice...

Network Compatible Digital Audio Earth Station Terminals for ABC/CBS/NBC/RKO Program and Data Formats...from Comtech!

Comtech's commitment to the broadcast industry continues in the wake of our successful analog SCPC network now in place and operating for the affiliates of the Arkansas Radio Network. Our new digital Audio Receiver Terminal (Dart 384) is cost-competitive and fully compatible with the major networks digital audio systems. It also meets, or exceeds, all audio quality requirements. So, if you are now a network affiliate or considering becoming one, the Dart 384 Terminal will provide you with everything you need for quality digital audio to match your network's system.

The system is completely Comtech from top to bottom and draws heavily on our years of expertise in high-speed digital data communication equipment. It is also designed to accommodate the more restrictive spacing of future satellite placements. Comtech will provide site survey and/or turnkey installation services if desired. However, we have designed the terminal for ease of installation using local services.

The basic terminal consists of Comtech's high performance of 3.8 meter antenna; low noise amplifier, antenna-mounted down converter and demodulator shelf with 8 channel program capacity. The channels can consist of a mixture of audio channels, data channels and one voice cue channel. It is also user expandable with plug-in modules and expander shelves.

For a closer look *at this alternative source for your Digital Audio Earth Station, write or call Comtech Data Corp., 350 North Hayden Road, Scottsdale, Arizona 85257, (602) 949-1155, or Comtech Antenna Corp., P.O. Box 428, St. Cloud, Florida 32769, (305) 892-6111.*

Distributed By:
ALLIED
Broadcast Equipment
(317) 962-8596

PERFORMANCE IN SATELLITE DISTRIBUTED DIGITAL RADIO NETWORKS

COMTECH

Comtech Data Corporation Comtech Antenna Corporation

Subsidiaries of Comtech Telecommunications Corp.

Circle 186 on Reader Service Card

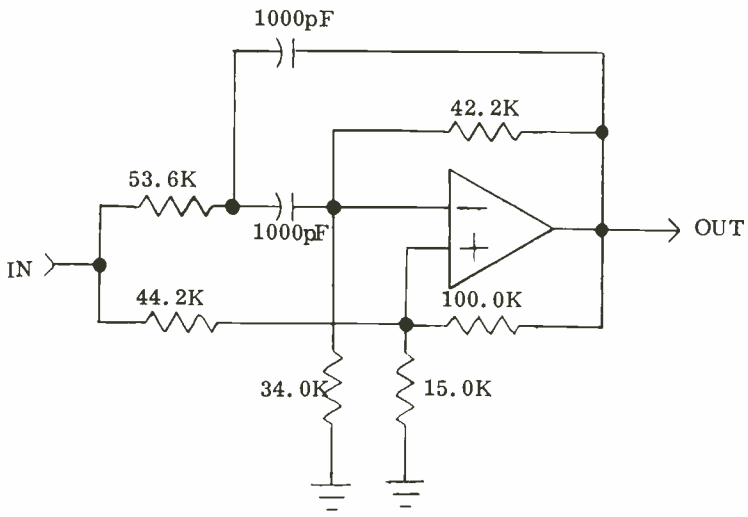


Fig. 6: Circuit Realization Of Fig. 5 Curve

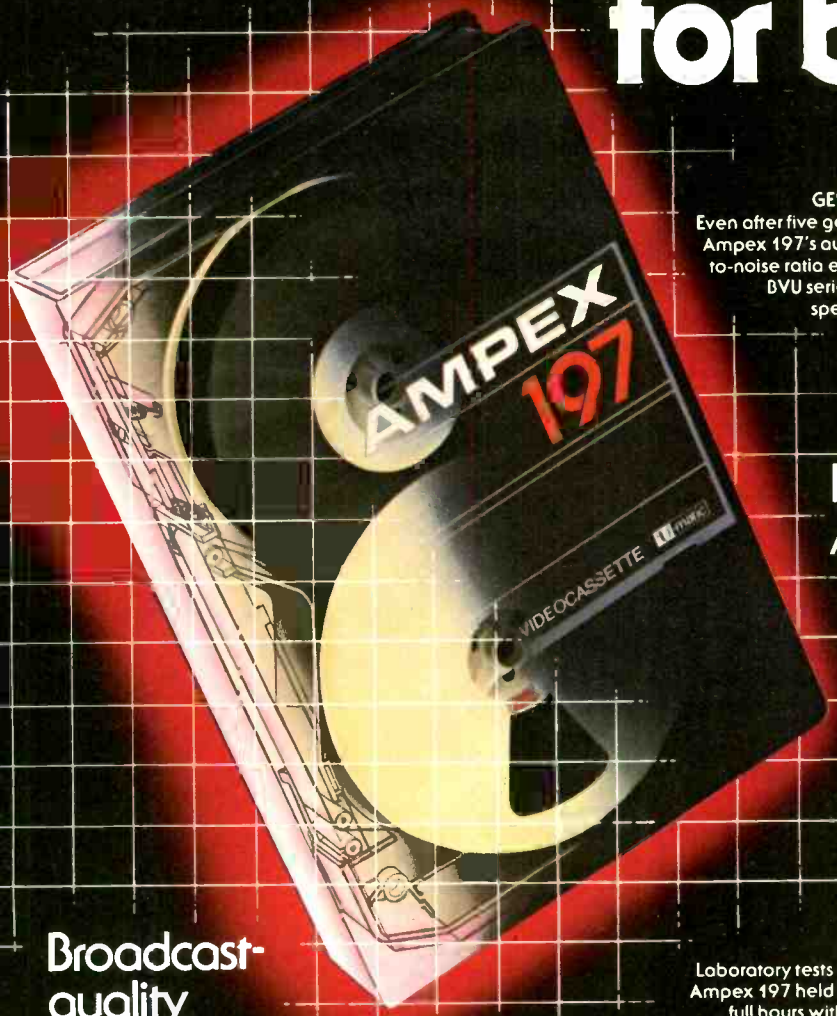
However, a reasonable compromise might be made by use of variable audio rolloff instead of variable IF rolloff.

Use of these preemphasis and deemphasis characteristics will permit the manufacture of economical AM stereo auto radios that perform notably better than FM stereo in the mobile environment. While we will not go so far as to predict a significant change in home FM listening habits, the improved sound in the automobile environment should return a substantial portion of the large drive-time audience to AM, reviving the sagging economic viability of AM music broadcasting. The experience of hearing high-fidelity AM stereo in the car may just change consumer listening habits in fixed environments as well.

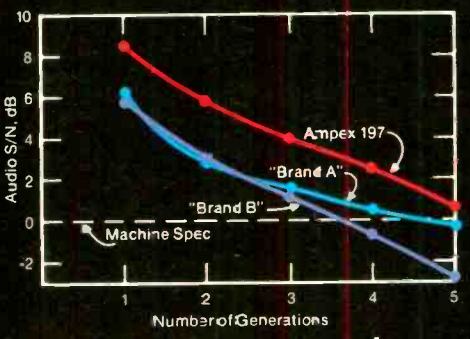
We hope that, just as we have cooperated in the development of this proposal in the hope that all the industry will benefit, others will realize that a standard can only lead to improved economic health for all. Since these curves are not protected by patent rights and are readily duplicated, nothing about them can be construed as anti-competitive. They are meant to achieve an AM service that is competitive with FM stereo in the ears and minds of the mass audience. **BM/E**

To receive a copy of the original paper, which provides more detail on receiver design and the specific mathematical characteristics of the preemphasis and deemphasis filters, please circle 250 on the Reader Service Card.—Ed.

Ampex 197: designed especially for broadcast.



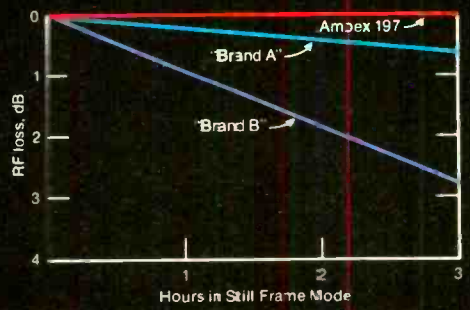
AUDIO MULTIPLE GENERATIONS
Even after five generations, Ampex 197's audio signal-to-noise ratio exceeds the BVU series machine specifications.



Broadcast-quality sound.

Ampex 197 offers superior signal-to-noise and low distortion characteristics. This means crisper, cleaner audio performance under heavy editing conditions and multiple generation dubbing. Plus excellent stereo fidelity when used for music recording.

STILL FRAME DURABILITY
Laboratory tests proved that Ampex 197 held up for three full hours with no RF loss.

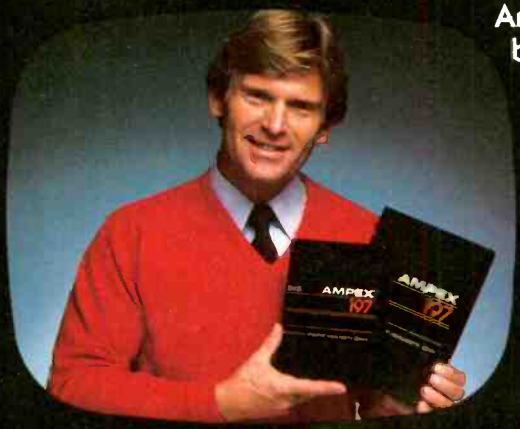


Broadcast-quality color and sharpness.

The Ampex 197 ¾" videocassette was developed with nothing less than perfection as the goal.

With superb chrominance and luminance performance it is ideal for ENG, EFP and on-line editing.

Ampex 197 has been especially formulated to optimize the performance of Sony BVU recorders.



Broadcast-quality reliability.

In blind field testing, Ampex 197 got the highest marks from broadcast professionals for picture quality, stability, and durability.

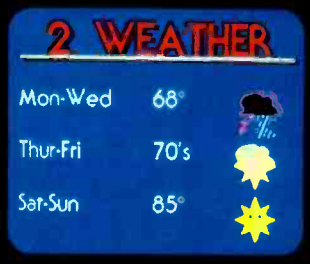
Find out more about why Ampex 197 is quality worth broadcasting. Call your Ampex Regional Office or write to: Ampex Corporation, 401 Broadway, Redwood City, CA 94063 (415) 367-3809

AMPEX

Ampex Corporation • One of The Signal Companies

Quality worth broadcasting.

Circle 188 on Reader Service Card



Keyboard Logo Compose.

Character Reduction.

Left/Right Italics.

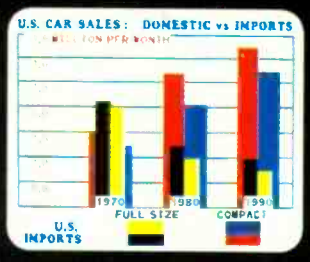
Dual Channel.

Mirror Image.

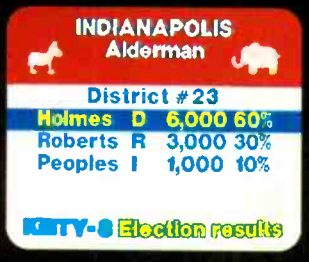
Character Reversal.

Auto Camera Compose.

Sports Logos.



Business Statistics.



Computer Interface.

Background Figures.

Character Outlining.

When you own a D-8800, it's easy to show off.

With the 3M D-8800 Graphics Generator, you can do all this and more. It gives you ten roll and crawl speeds. Hundreds of fonts. Eight mask positions. Automatic centering, both horizontally and vertically. Generous storage capabilities. And the dynamics of animation. All without any add-ons.

Yet with all its capabilities, you don't need special training to run it. It's quick. It's easy. The keyboard language is simple English. And our optional System Diagnostics package keeps your maintenance simple, too.

So give your productions the look of the top professionals. Show off with the D-8800.

All photos above are taken from actual TV monitors. If you'd like to see for yourself, call us collect at 1-612-733-8132 for a free demonstration. Outside the U.S., call 1-612-736-2549. Professional Audio Video Equipment/3M.

3M hears you...

3M

Circle 189 on Reader Service Card

When Deregulation Is Not a Boon

By Harry Cole, FCC Counsel

IN THE 50 YEARS SINCE THE ESTABLISHMENT of the FCC, the Commission has never shown any inclination toward abandoning its basic role as a technical "traffic cop" to govern users of the electromagnetic spectrum. Never, that is, until now. Apparently deregulatory fervor is overriding the FCC's historical concern for technical compliance and, by extension, interference-free broadcast service. In three separate actions the Commission eliminated most of its routine operating and maintenance log requirements, eliminated its modulation monitor requirements, and requested comments on the notion of permitting applicants for FM construction permits simply to certify that their proposals comply with applicable rules and policies.

Historically, the FCC has required broadcasters to maintain detailed logs of their technical, day-to-day operations. These included records, in a station's operating log, of the station's operating parameters, tower light observations, Emergency Broadcast System tests, and the like. Additionally, licensees were required to keep a maintenance log in which equipment inspections and repairs could be regularly recorded. One of the purposes, of course, was to assure that the Commission would have some means of reconstructing, after the fact, the otherwise ephemeral nature of a station's technical performance, in order to determine the extent of the station's compliance with the FCC's rules. Also, the fact that there is an ongoing record of a station's operations provided the broadcaster with an incentive to monitor performance and assure conformity with the rules.

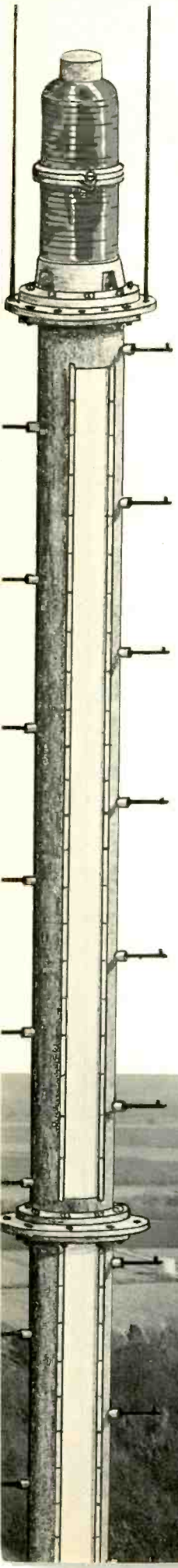
Now, however, the Commission has decided simply to throw out most of its technical logging requirements so that licensees may fashion the "most cost-effective operating and maintenance policies appropriate" for their stations. While the "fundamental responsibilities" of complying with the Commission's rules and the terms of their licenses still apply to broadcasters, virtually all broadcast services—AM, FM, TV, LPTV and auxiliary stations—are now free of detailed technical logging obligations. In eliminating those rules, the FCC acknowledged that some potential for abuse will exist among, for example, licensees willing to compete by use of technical means which could cause interference to others. Nevertheless, the Commission decided that a deregulatory measure intended to benefit many should not be "subverted by the potential for abuse by a few." Having said that, though, it went on to threaten the reimposition, across the board, of logging rules if abuses surface or if interstation interference increases. The Commission also noted that, in some instances, it might require individual licensees to complete technical logs in order to correct interference or "severely deficient" operations.

Despite the deregulatory thrust of the FCC's action, several technical logging requirements were nonetheless retained. AM licensees with directional antennas will still have to make periodic antenna-related observations and log entries, unless they have FCC-approved sampling systems. Experimental broadcast stations will still be subject to logging requirements. And *all* broadcasters will still need to log the results of Emergency Broadcast System tests. They will also still have to make periodic observations and inspections of their towers, and, if the tower lights go out, they will have to make appropriate log entries.

No more modulation monitors

Meanwhile, in a separate proceeding, the Commission decided that its general requirements concerning modulation monitors are not all that necessary, either. Accordingly, it announced that it is no longer requiring that monitors be type-approved or that they even be available to the operator on duty on a continuous basis. Instead, the FCC has left it up to each individual licensee to determine how best to measure and control its station's modulation levels to keep them in compliance with the limits set by the Commission. The underlying limits on maximum and minimum modulation have *not* been changed; the only rules that have been deleted are the "procedural detail[s]," as the Commission describes them, of having to have a type-approved modulation monitor available continuously to the station operator.

Finally, in yet another proceeding, the Commission has asked for comments on the possibility of having applicants for new or improved FM stations merely "certify" that the engineering information in their applications is accurate and consistent with all relevant rules and policies. In other words, the FCC's engineering staff would not analyze and evaluate each application independently. Rather, the staff would take each applicant's word that everything in the application was all right. The staff



New Harris Wavestar™...

The most reliable UHF slot antenna ever designed... because it's waveguide!

The new Harris Wavestar is the only slotted waveguide UHF antenna now available...the ultimate in design simplicity. No center conductor. No couplers. No insulators. Fewer parts mean fewer problems. And that means less off-air time and lower maintenance costs.

Additional advantages of waveguide over coax antennas include higher power handling capabilities and greatly increased safety margins to prevent arcing.

The Wavestar pattern performance is excellent by any standard. Cardioid and peanut directional patterns are currently available, and a highly circular omnidirectional pattern will follow soon. All of these Wavestar configurations provide the smooth elevation patterns necessary for high signal strength and minimum ghosting over the entire coverage area.

The Wavestar is a low windload design for tower top or side mounting. High mechanical strength and rigidity minimize picture variations caused by wind sway.

Every Harris antenna is completely assembled and tested at the Harris antenna test range...the largest, most comprehensive facility of its kind.

The range is located in an area far from the pattern-distorting clutter of urban development. Situated atop a 230-foot bluff, with test transmitters located up to 3 miles away on flat, unobstructed bottom lands, the range offers ideal conditions for testing, approaching the "free space" situation of an installed antenna.

Here, theoretical azimuth and elevation patterns are verified with the most accurate and sophisticated test instruments available—translating the theory of a calculated pattern into the reality of actual antenna performance.

You can depend on Wavestar for top reliability. And you can be confident that your Wavestar antenna will be thoroughly tested by Harris to meet your exact pattern requirements.

Contact Harris Corporation, Broadcast Division, P.O. Box 4290, Quincy, Illinois 62305-4290. 217/222-8200.

HARRIS

Circle 190 on Reader Service Card

would involve itself only if, say, a petition to deny raised engineering questions. This "certification" proposal is based on a report, prepared by the FCC's Office of Plans and Policies, which concluded that certification might work and that it might be worth experimenting with it in FM applications. The proposal is in a "Notice of Inquiry," rather than a "Notice of Proposed Rulemaking," which means that, even if the FCC decides the certification concept is sound, it will have to undertake a further rulemaking proceeding before it will be able to implement the process. For now, the Commission is simply soliciting comments from the public on whether certification is feasible, i.e., can the Commission count on applicants to be so careful with their technical data that no further review by the FCC is necessary? And the *real* question flowing from that is whether the Commission can get away with such a certification process without thereby generating widespread interference. Comments on the proposals are due to be filed with the Commission by November 7, 1983, and reply comments by December 12, 1983.

Empty benefits?

Now all these changes and proposed changes might lead one to think that the broadcast industry has taken and is taking substantial strides toward the day when it will be free of FCC regulation. That, unfortunately, is a wrong conclusion, for no matter how many of the "procedural details" the FCC may choose to strip from its rules, the Commission is still retaining its underlying substantive rules and regulations. It is only ridding itself and its licensees of certain requirements which it apparently feels are nonessential. But how nonessential are these items really? Even though the modulation monitoring rules have been deleted, licensees must still maintain their modulation within certain limits. Thus, they must still have some means of determining what their modulation level is at any given time . . . that is, they need some monitoring capacity. The Commission acknowledges this, stating that licensees "must of necessity have equipment installed and operating to ensure [modulation] limits are not exceeded." It also emphasizes that licensees will be held "strictly accountable for their broadcast operations and will be subject to FCC monitoring and inspections as always." In view of that, how many stations can realistically be expected to throw out their modulation monitors in celebration of the deregulation of the monitoring requirement?

The technical logging rules are similarly far from nonessential. Operating and maintenance logs provide the history of a station's operation. They can thus be very helpful, particularly to the Commission, in determining a licensee's compliance with the various technical rules and requirements. Elimination of these logs will make it more difficult, for instance, to figure out whether an interference problem is being caused by the willful misconduct of a licensee or simply by its negligence. Again, the Commission has focused on this, but only to the extent of saying that licensees who cannot demonstrate that they are taking "reasonable measures to ensure proper operation" will be deemed "willful" violators subject to forfeitures. The trouble is that, with no logging requirement, there is no performance "trail" to follow. The Commission's overall enforcement effort could thus be hampered and,

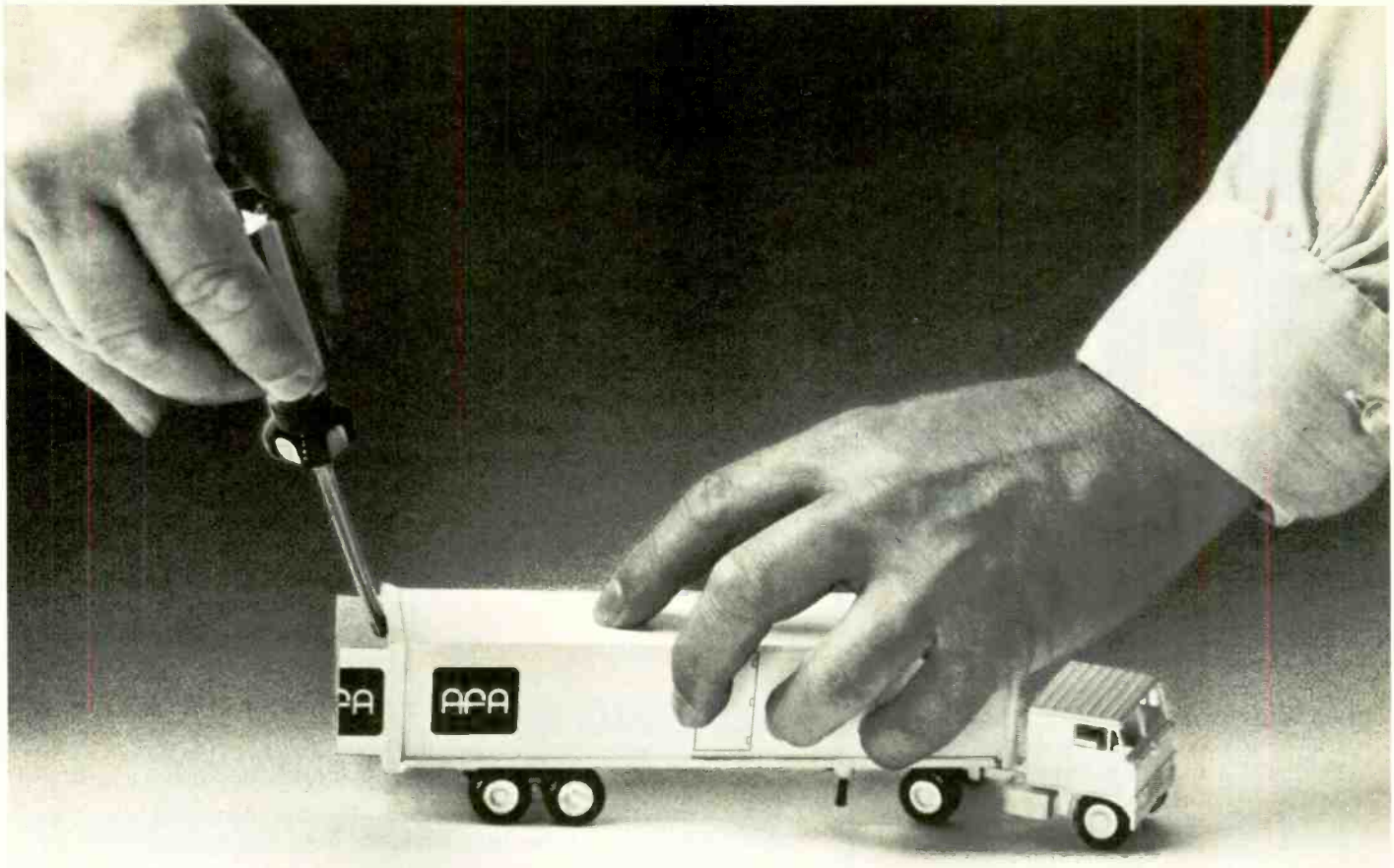
with it, the Commission's ability to assure compliance.

The certification matter also raises questions. That proposal is based on the Commission's view that not many mistakes (intentional or otherwise) are made by applicants in the technical portions of their applications. And, reasons the Commission, even if a station here or there is granted based on an incorrect initial engineering showing, the applicant will have to bear the cost of correcting the problem if and when it surfaces. This, in the FCC's views, is a big incentive for applicants to make sure their engineering is accurate. In both of these assumptions it seems that the Commission may be over-optimistic. With respect to the ability of applicants to file correct applications, it is readily apparent to anyone who has filed applications that, no matter how careful one may try to be, mistakes can happen. Further, reports in the trade press have indicated that at least one consultant has admitted to filing data he knew to be inaccurate, in order to derive some kind of strategic advantage in comparative proceedings. The FCC's confidence in the accuracy of technical information supplied by its applicants is not particularly realistic.

Deregulation's burden

With respect to the threat of having to correct a problem after the station has been built, it must be noted that, to make good on that threat, the FCC must first learn of the problem and *then* institute a "show cause" proceeding against the licensee to force it to change. All of this would take time, time during which interferences might be occurring. The process of "unscrambling the egg"—i.e., of correcting an interference-generating situation caused by an application granted by mistake—could also run into significant administrative expenses for the Commission. And the authorization of noncompliant stations—even if only "temporary"—could create additional problems if other allocation decisions are made using a data base which includes, even for just a short time, such stations. The potential for long-term, serious problems looms large. And, ironically, even the Commission acknowledges that the benefits which it would derive from a certification system would be slight.

Deregulation is not, in and of itself, a bad thing. What is unfortunate is the Commission's effort to invoke the term "deregulation" in connection with actions or proposals which do little but add to a broadcaster's burdens by adding to the uncertainty of his or her ability to comply with the FCC's rules. In the three areas described above, the Commission is, in effect, leaving the maze of its substantive rules and regulations intact, but taking away from broadcasters the maps, the "procedural details," needed to get through the maze. In that respect it is somewhat like a game of Super Pac-Man, when the maze disappears from the screen but continues, invisibly, to block the player's way. If the player has a detailed familiarity with the maze, he or she can still survive (albeit with some difficulty). If the player does not know how to navigate the maze, the lack of guidance can be fatal. Without Commission guidance relative to how best to satisfy the FCC's substantive requirements, broadcasters might find themselves in a similar position. And, if that happens, deregulation can hardly be said to be a boon for broadcasters or the public. **BM/E**



WE MAKE 'EM IN ALL SIZES!

We've been designing and building mobile video systems since 1976 when we delivered our first—a 40' production and post-production unit for the ABC-TV Network. Since then we've built video systems in every size and configuration.

And with each one—from "mini-vans" to giant units which put entire production and post-production operations on the road—we provide the same meticulous attention to planning and execution.

We make certain that all the equipment—from VTRs to switchers—is the most effective and efficient for the job. We design for safety, comfort and durability—carefully considering the problems of human engineering, power sources, air-conditioning, weight distribution and stress on the vehicle. And we see to it that your budget and delivery date is on target!

At AFA we believe there are no such things as *small* mobile systems. Only small designers!

A.F.ASSOCIATES INC.

ADVANCED SYSTEMS AND PRODUCTS FOR THE VIDEO INDUSTRY

AFA SYSTEMS DIVISION/100 STONEHURST COURT, NORTHVALE NJ 07647 (201) 767-1000

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.

Problem 23: Moisture Detector

Moisture is probably the worst enemy of electronics equipment, in both large devices such as transmitters and in smaller units such as cameras and recorders. Design either a macro or a micro moisture detector/alarm that can run on dc current in case of emergencies. Describe its applications and give its dimensions and mounting procedure if designed to be placed inside another device.

Solutions to Problem 23 must be received by October 24, 1983 and will be printed in the December 1983 issue

COMING IN JANUARY . . . Great Idea Notebook

Readers are invited to submit their great ideas and engineering notes for a new monthly series: Great Idea Notebook. Ideas should be legibly typed, double-spaced, approximately two to three pages long. Diagrams should accompany the idea and should be clearly drawn and labeled. For each idea printed in the notebook series, we will pay $50.00. Address submission to The Editor, *BM/E*, 295 Madison Avenue, New York, NY 10017.

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 _____

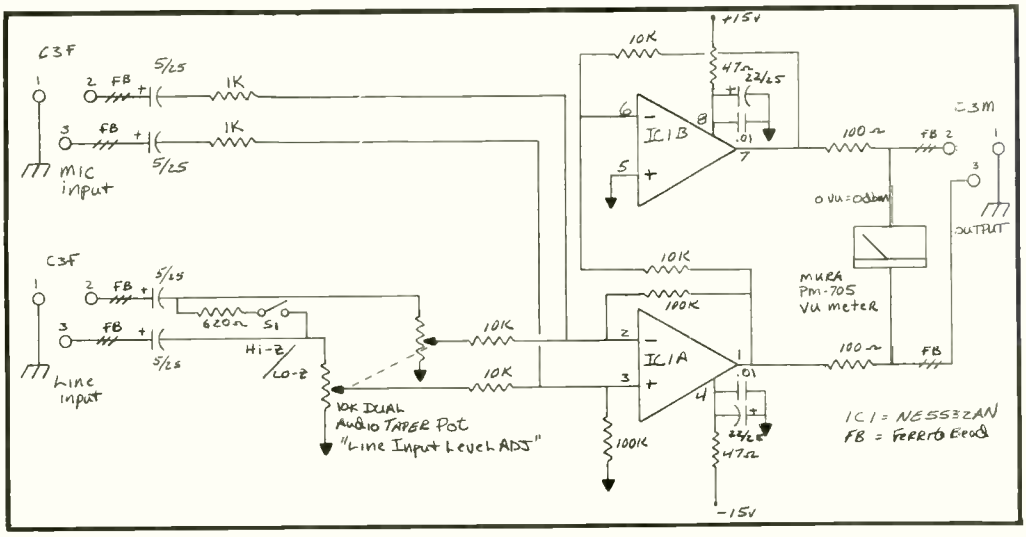
Date _____

SOLUTIONS to problem 21: Impedance Matcher

Readers were asked to design a low-cost, lightweight system to allow matching of recorder and input impedances in the field.

SOLUTION A

Allen D. Kass, CE
WISP/WQDW Radio, Kinston, NC



My idea has an input for both balanced low-impedance microphones and line level inputs, allowing either to be used to feed a recorder input. This circuit will work well with microphone impedances from 200 to 600 ohms and the line input will accommodate either low or high impedance inputs. S1 selects the loading on the line input and the potentiometer adjusts for varying input levels.

The microphone input has a gain of approximately 40 dB and the line input has a maximum gain of approximately 20 dB. The VU meter is included so the output can be monitored if the unit is not located near the equipment it is feeding. The output will feed 600 ohms at approximately −24 dBm maximum with a power supply of 15 Vdc.

The cost of this circuit should be low, since most of the parts can be found in your spare parts or obtained inexpensively from a parts house. The VU meter could be eliminated if not needed. If high output levels are not required, this circuit could be powered by a pair of 9 Vdc batteries in remote applications.

VOTE NOW!

BALLOT ON READER SERVICE CARD

SOLUTION B

James Sensenbach, CE
KMUW-FM, Wichita, KS

Most short audio lines do not need terminations, unless in a very electrically noisy environment not likely to be encountered in remote recording. I'd suggest modifying the inputs of the tape recorder to be balanced and bridging. Most equipment, including microphones, doesn't mind seeing a bridging load. I would then add two switches to the recorder inputs. One would tie the "low" side or the balanced input to ground to prevent ground loops when using unbalanced lines. The other would be a three-position switch that would place a load across the line *if* it was needed. The positions would be High-Z (no load), 600 ohm, and 150 ohm. These would be used only on the case of long lines picking up noise where the loads would increase the current in the line. This helps pull the signal up out of the noise.

ADVERTISER'S INDEX

Use Reader Service Card on Facing Page ▶

Manufacturer	Page No.	Circle No.
ADM Technology, Inc.	C-2	—
A.F. Associates Systems	125	193
Alexander Manufacturing Co.	22	119
Alpha Audio	16	113
Amber Electro Design Ltd.	94	168
Amperex Electronics Corp.	58-59	156
Ampex AVSD	57	148
Ampex MTD	5	107
	119	188
Amtel	136	205
Angenieux Corp. of America	98	172
Anton/Bauer, Inc.	67	142
Auditronics, Inc.	33	128
Belar Electronics Lab, Inc.	82	162
Beyer Dynamic, Inc.	115	183
Bosch (Fernseh)	83	163
Broadcast Audio Corp.	134	200
Camera Mart, Inc.	91	166
	132	197
Canon USA, Inc.	41	138
Capital Magnetic Products	110	187
Central Dynamics Corp.	36	133
Cipher Digital	4	106
Clear-Com Intercom Systems	104	140
Comtech Data Corp.	117	186
Continental Electronics Mfg. Co.	68	100
Convergence Corp.	63	102
Cool Light Co., Inc.	77	158
Corporate Communications Consultants, Inc.	39	135
Countryman Associates	40	137
Crosspoint Latch Corp.	90	165
Delta Electronics	18	115
Dolby Laboratories, Inc.	79	159
Dubner Computer Systems Inc.	123	191
Echolab, Inc.	114	182
Elector	1	105
ESE	124	192
Eventide Clockworks, Inc.	30	125
Fidelipac	102	175
For-A Corp.	19	116
Harris Broadcast Products Div.	23	120
	100-101	174
	122	190
Harris Studio Division	8-9	109
Harris Video Systems	50-51	103
Hitachi Pro-Video	21	118
Ikegami Electronics USA, Inc.	47	144
	86	164
International Tapetronics Corp.	106-107	177
U.S. JVC Corp.	55	146
Lake Systems Corp.	97	171
Laumic Co., Inc.	136	204
Lerro Electrical Corp.	44	—
Lexicon, Inc.	69	155
Listec Television Equip. Corp.	96	170
Lowel-Light, Inc.	135	202
LPB, Inc.	20	117
3M/Magnetic Tape Div.	70-71	—
3M/Pro-Av	11	110
	120	189
Magna-Tech Electronic Co., Inc.	99	173
Maxell Corp. of America	42-43	139
MCI/Quantel	17	114
MCI (Div. of Sony America)	26-27	123
Midwest Corp.	15	112
Modular Audio Products	116	185
Monroe Electronics	116	184
Motorola, Inc.	28	124
NEC America, Inc.	53	141
	133	199
Rupert Neve, Inc.	65	104
Oki Electronic Industry Ltd.	108	178
Orban Associates, Inc.	31	126
	105	176
Paco Film	118	196
Panasonic/Matsushita	95	169
Panasonic/Ramsa	12-13	111
Potomac Instruments	80	160
Professional Products, Inc.	40	136
Pye TVT Ltd.	84-85	150
		151,152
		153,154
Ramko Research	7	108
Rank Cintel	111	179
R-Columbia	135	203
Rohde & Schwarz	24	121
RTS Systems	56	147
Schneider TV Lenses	131	195
Sennheiser Electronics Corp.	128	209
Shintron	38	134
Shure Bros., Inc.	32	127
Sigma Electronics	133	198
Solid State Logic	92-93	167
Sony Broadcast	2-3	—
Sony Pro-Audio	137	206
Stantron	127	194
Studer Revox America, Inc.	60	149
Swiderski Electronics, Inc.	134	201
Swintek	112	180
TDK Electronics/Ind.	81	161
Tektronix, Inc.	34-35	129
		130,131
		132
Telex Communications, Inc.	49	143
Thomson-CSF Broadcast	C-3	208
UREI	64	101
Valley People, Inc.	113	181
Videotek, Inc.	25	122
Ward-Beck Systems Ltd.	C-4	—
Winsted Corp.	137	207
Yamaha Combo	75	157
	76	157

broadcast EQUIPMENT

New Studio Monitor From Studer 251

Designed to serve as the primary audio monitoring system in small-to-mid-sized control rooms, the new Studer 2706 audio monitor is suitable for radio studios and television post-production suites.

The 2706 is a three-way system incorporating a 12.5-inch woofer, a two-inch dome midrange, and a one-inch dome tweeter in a bass reflex enclosure. The crossover frequencies are 720 Hz and 2500 Hz. Anechoic chamber frequency response is 42 Hz to 20 kHz ±3 dB (90 dB SPL at 1 kHz, sine wave sweep). The studio monitor comes with threaded holes on the bottom to accommodate free-space installation on floor stands or suspension brackets.

The unit's woofer is designed so that the magnetic field remains constant over the entire excursion range of the voice coil, ensuring high linearity to just below the clip point, reducing distortion. Midrange and high frequencies are handled by new high-power dome transducers with specially designed polar patterns. The filter slopes of the crossover network were selected to match the corresponding mechanical properties of the three transducers.

Nominal impedance of the 2706 is four ohms with a maximum output level measured at 104 dB SPL. Dimensions are 24x15x13.5 inches. Available options include a wall-mount bracket and a floor stand that is adjustable from four to 6.5 feet. The monitors sell for $690 each.

Thomson Develops DBS Klystron 252

A new 1500 W klystron for DBS uplink transmitters has been introduced by Thomson-CSF Electron Tube Division. The TH 2445 klystron amplifier is designed to equip the uplink transmitters of DBS system earth stations for operation at a given point in the 17.3 to 18.1 GHz frequency range.

Precise tuning of the klystron is accomplished at the factory before shipment. The unit can deliver at least 1500 W carrier power at saturation, and has performance characteristics at an output level of 150 W as good as those obtained at full power. It can also be used at any intermediate power level.

In the TH 2445, the electron beam is confined by permanent magnets, and cooling is by forced air. In addition, the klystron amplifier has been designed for quick installation and easy operation.

Hitachi Debuts New Scopes 253

A new series of four portable 40 and 20 MHz oscilloscopes has been announced by Hitachi. These models offer a magnify function that allows the user to observe the standard waveform and a X10 swept waveform simultaneously on the CRT.

Also featured in the new series is a dc offset function that enables the user to measure the dc component of any waveform with an external voltmeter. The special TV sync separation circuit

Camera Mart and MiLAB™

Whatever your professional needs Milab makes the right microphone at the right price. Each model is engineered with special capabilities to give you top performance and versatility in all your PA, broadcast and recording requirements. *And each is the best in its class for the money.*


LC-25

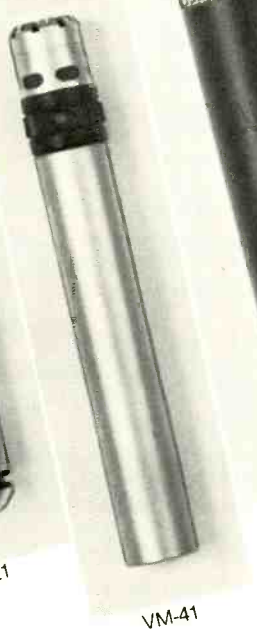
LC-25 Transformerless Cardioid:
For extraordinary purity of sound. Very low inherent noise for the most demanding studio work such as direct-to-disc or digital recording.


DC-63

DC-63 Variable Pattern:
For general studio and concert hall use, where the ultimate fidelity and ambient sound pick up is required, from close-in vocals to full orchestra and chorus.


DC-21

DC-21 Cardioid:
Small, rugged, lightweight. For podium, PA use, and as choir/orchestra pick up in close to long range. Good definition for strings and brass.


VM-41

VM-41 Cardioid:
For acoustic instruments, overhead percussion, cymbals, snare and brass. Close to medium range PA and ENG work.


DC-96B

DC-96B Studio Cardioid:
For all studio and line recording use. Low noise, high output. For instruments, narration or choir. Close or distant work.


XY-82

XY-82 Coincident Stereo Cardioid:
Top of the line dual cardioid stereo/mono with separate outputs. Two single membrane condenser capsules, smooth on and off-axis frequency response, two separate preamps, two separate output signals. Unmatched fidelity and versatility.


BM-73

BM-73 Cardioid:
For live hand held vocals, drums and amplified instruments. Built-in "pop" filter with LF roll-off. Close to medium range studio or outdoor work.

SIMPLY THE BEST PERFORMANCE FOR THE MONEY IN PROFESSIONAL CONDENSER MICROPHONES.

Exclusive USA Distributor. Dealer Inquiries Invited.

The Camera Mart, Inc.
456 West 55th Street, New York 10019 • (212) 757-6977/Telex: 1-2078
Sales • Service • Rental

Circle 197 on Reader Service Card

allows quick measurement of video signals and the use of a 150 mm rectangular CRT. The CRT is equipped with an internal graticule that eliminates paralax errors and maintains the inherent high performance and accuracy of the scope.

All four of the new models measure approximately 12.2 inches wide by 14.6 inches deep, and weigh about 13.2 lbs. Additional features include 1 mV/div vertical input sensitivity, autofocus circuit, and scale illumination. Two model prices are: V-422, $895, and V-222, $695.

■ *FOR MORE INFORMATION* ■

circle bold face numbers on reader service card

Nady Announces RF Intercom 256

The PRC-3X is the company's top-of-the-line duplex model radio communicator, enabling simultaneous two-way conversation. Two people separated by up to a half-mile line of sight can communicate without pushing buttons to talk, offering hands-free operation.

The unit consists of a lightweight headset with adjustable boom-mounted microphone and a small body-pack transceiver with belt clip.

Other features are a noise-cancelling microphone, a call beeper which alerts the user to switch to full duplex from receive-only operation, low battery light indicator, and optional external battery pack. The PRC-3X can be powered by an internal 9 V battery or by an optional external battery pack. The communicator operates at 49 MHz and is FCC-approved.

Applied Digital Technology Develops Digital Storage 257

Applied Digital Technology has introduced its new disk storage system for list management with the Sony BVE-3000. The new system, the ADT-MD2-3000, is a Z80 microprocessor-based dual 5¼-inch floppy disk system.

Specifications for the storage system are 64 kbytes of random access memory and resident PROM memory. The system allows the Sony to operate all functions at 1200 baud except the TT function. Including floppy disk copy and file maintenance capability, the ADT-MD2-3000 is priced at $4900.

UMC Unveils Splice Finder/Bulk Eraser 258

The new Beaucart SFE-100 automatic splice finder contains an all-new opto-mechanical sensing system. The resultant features include automatic location of splices, controlled stop beyond capstan window, and automatic cartridge ejector when a splice is found.

Additional features include a built-in bulk eraser that allows tape to be erased directly on the splice finder, and separate splice finding and eraser functions. The unit will accept cart sizes from A to CC with tape thicknesses of 0.5 mil to 1.6 mils, and splice thickness of 0.5 mil to 1.5 mils. Tape speed of the machine is rated at 15 ips. The Model SF-100 is also available as a splice finder only.

B&K Precision Announces New Scope 259

A new 20 MHz dual trace oscilloscope has been introduced by B&K Precision, a division of Dynascan Corp. The Model 1522 has a 2 mV/div vertical sensitivity to 20 MHz, selectable to 1 mV/div sensitivity to 10 MHz.

The new unit is a low-cost scope featuring a five-inch rectangular CRT with internal graticule and scale illumination. Also featured are five trigger sources, CH1, CH2, line (50/60 Hz),

external, and V-mode for viewing two signals unrelated in frequency. The user can select from 20 calibrated sweep time ranges: –0.5 s/div to 0.2 μs/div. Each sweep time range is adjustable between calibrated ranges.

Incorporated into the 1522 is an auto sweep that provides sweep without trigger input and automatically reverts to triggered sweep operation when adequate trigger is applied. An X10 sweep magnification is provided to allow closer examination of waveforms.

Other features include front panel X-Y operation, Z axis input (TTL compatible), channel 1 output on rear panel for

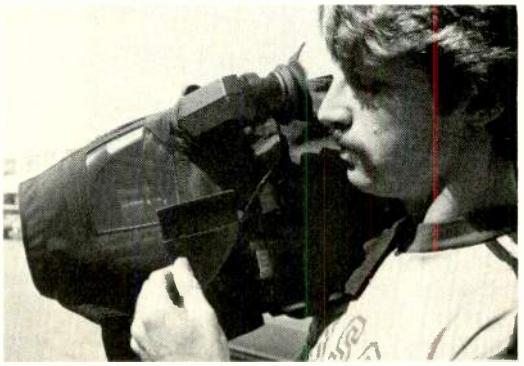
driving frequency counter or other instruments, and sum and difference capability of channels 1 and 2 waveforms displayed as a single trace. In addition, video sync selectable frame or line triggering is standard for observing composite waveforms. Model 1522 is priced at $695.

Broadcast Electronics 260 Reveals Transmitters

Three new FM transmitters with power output of 1500 W, 3500 W, and 5 kW have just been made available by Broadcast Electronics. Each model operates with a single tube and uses the FX-30 exciter found in the company's FM-30 transmitter.

Other features of the new series of FM transmitters are a patented, folded half-wave output cavity, a broadband input matching network, and automatic power control with proportional VSWR foldback. In addition, the transmitters provide a digital control system with optional microprocessor diagnostics.

Goose Releases Waterproof Camera Cover 261



A complete line of waterproof camera covers has been developed by Goose Enterprises for almost every ENG/EFP camera model. The covers are made of Cordura.

Some of the features provided by the covers are easy-handle access with cover intact, plastic window for viewing of lens setting, velcro closures for easy access to all controls, and covering of lens except for front element. Other standard provisions are hand access to lens from either side, cable closures, and mic port.

All covers are custom-designed for each specific camera and will also allow the camera to be put on the tripod without removal of the cover. Prices for the line of waterproof covers range from $130 to $170.

BTX Announces Multi-Transport Controller 262

A multi-transport controller/editing system has been announced by BTX. Known as Softouch, the system directly controls and synchronizes any combination of up to four multitrack audio or video transports while supporting additional transports in phase-lock synchronization.

The system consists of three distributed intelligence modules: the Softouch

controller/editor, the Shadow II synchronizer, and the Cypher time code system, all networked via RS232 interface.

Features of the advanced system include what the company calls Softkeys, which permit execution of repetitive pre- and post-production editing routines with one keystroke. The user can define, edit, and store as many as 16 Softkeys at a time. Two full, eight-digit time code displays are functional, as well as a real-time status matrix providing transport control and location, servo mode, and record status information simultaneously for four transports. In addition, an alphanumeric command display prompts the user throughout the editing process.

Time code applications include generating or reading SMPTE, EBU, VITC, or 24 frame code; regenerating code; or jam-syncing code. The ability to trigger events via time code is also facilitated, as is the conversion of feet (meters) and frames to time code for film applications.

The system contains a memory sufficient to contain all pre- and post-rolls plus beep tone trim, mark in/out, and record in/out data for up to 100 loops. Softouch also allows separate record assigns for each transport plus master record enable; the ability to auto-locate any transport independently of other activity; and the ability to control the record window during looping.

Battery backup for off-line Softkey entry, protection, and transportation considerations are also provided. An RS232 computer interface accepts over 50 multitrack audio and/or video transports.

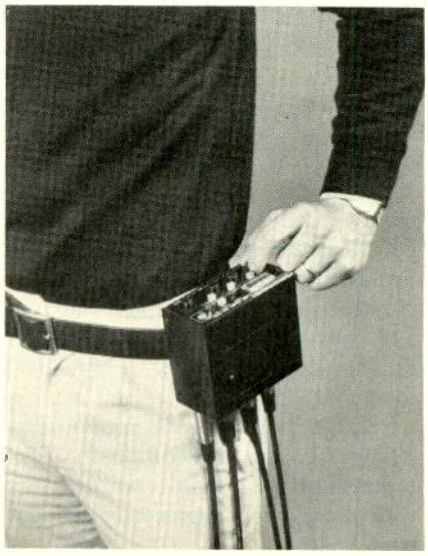
■ *FOR MORE INFORMATION* ■

circle bold face numbers on reader service card

Comprehensive Offers Mic Mixer 263

Comprehensive Video Supply has introduced a new portable mic mixer, the MX-1002, weighing only two pounds, six ounces. The unit measures 2⅜x4 15/16x4 5/16 inches.

The three-channel mixer contains a VU meter and headphone monitor jack,



and clips easily on a belt, making it suitable for ENG and remote production applications. Powered by three 9 V batteries, which are included, the mixer provides three balanced, low-impedance inputs with phantom powering and individual master gain controls.

Also featured are power source and low cut switches and low pass filters that eliminate low-frequency ambient noise. The MX-1002 is now available for $249.95.

Kodak Unveils CRT Imaging Outfit 264

Kodak has introduced the Instagraphic CRT imaging system for photographing computer-generated images from a video display terminal.

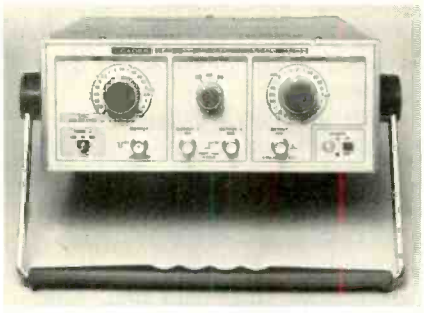
With this new system, consisting of the CRT cone and an Instagraphic camera (with adapter brackets to accept a 35 mm SLR camera in case slides are wanted), users can produce instant color photographs of static 12- or 13-inch color video screens. The print film has the same aspect ratio as color monitors

and can be reproduced on most copier/duplicators to create black-and-white images.

The Instagraphic camera comes with close-up lens attached. Other accessories in the kit include color print film, carrying strap, bumpers, spacers, and foam strips for mounting the cone to the screen. In addition, a cable release, tripod screws, and a Kodak Wratten gelatin filter are included.

■ FOR MORE INFORMATION ■
circle bold face numbers on reader service card

Leader Combines Functions in Calibrator 265



The new LOC-7005 oscilloscope calibrator combines functions needed to test, repair, and calibrate scopes. Three outputs are provided: an amplitude output to calibrate the vertical attenuator of a scope; a time marker output to calibrate the time base (sweep speed); and a fast rise time square wave to check the pulse response and rise time.

The calibrators are designed to be small in size for ease of use in service and calibration tasks. The LOC-7005 is priced at $1395, and backed by a two-year warranty.

BUSINESS BRIEFS

Delta Electronics has been selected to manufacture and market AM stereo broadcasting equipment under license to Motorola.

General Electric Video recently endorsed the North American Broadcast Teletext System (**NABTS**), and will introduce decoders and teletext products some time after 1983.

Mitsubishi Electric has acquired **Digital Entertainment Corp.** (DEC). DEC will provide all marketing and sales responsibilities of the Mitsubishi pro audio products, including its digital recorders.

Five new orders for the **Aurora** 100 videographic system, valued at over $700,000, have been received by Aurora from WJZ-TV, Baltimore; KSL, Salt Lake City; Universal Images, Detroit; and NAMCO, a Japanese game manufacturer . . . . **ADDA** has recently shipped ESP-C still store systems and video graphics systems to KOA-TV, Denver; WCCO-TV, Minneapolis; WPDS, Indianapolis; CBC, Montreal, and several others.

Control Data and **ADR/Cadre** have announced the formation of a partnership to provide computer-based services to the cable and broadcast industries. The new firm, **Magnicom Systems,** is 60 percent owned by Control Data.

Data Communications and **Mini-Pak** (MPI), two major computer service vendors, have agreed to merge, with MPI remaining a separate corporation as an affiliate of DCC . . . . DCC has signed with **United Satellite Communications, Inc.** for the BIAS traffic system beginning in September . . . . **Microwave Filter** Company has split its stock two-for-one to the 400 stockholders as of July 18, 1983, bringing authorized and issued shares outstanding to approximately 2.2 million.

During recent space shuttle launches, NASA has turned to the Weather Channel for information on severe storm activity that might threaten operations. Here, Pat Mongillo (right), Kennedy Space Center emergency preparedness officer, joins John Coleman, president of the Weather Channel.

M/A-COM recently announced its entry into the home DBS market with a four-foot Prodelin receiving antenna. Available for immediate delivery, the molded fiberglass dishes conform to the two-degree Ku-band spacing.

Audio + Design has reached an agreement with C.N. Rood of Holland for the U.S. distribution of the Rood line of digital stereo generators.

The **A. F. Associates** Products division has been named as sales representative for the **Abekas** A42 digital slide store and retrieval system for southern California, eastern Pennsylvania, Maryland, Virginia, and Washington, DC . . . . **Studer** has selected its first U.S. dealers authorized to carry the complete Studer line . . . . **Allen and Heath Brenell** has appointed **Secom Systems** of Chamblee, GA to represent its products throughout the southeast . . . . **Allsop** has established a new southern California office for public relations and promotions.

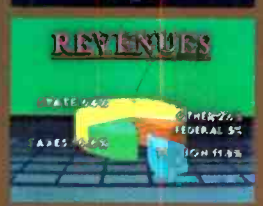
Digital Entertainment Corp. has tapped Bill Van Doren as a sales manager, operating out of Hollywood, CA . . . . Studer unveiled the appointments of Nancy Beyers as a sales engineer and Nick Balsamo as sales manager . . . . Bernard Gropp has been appointed manager of application engineering for analog products at **Weston Instruments** . . . . **Zenith** has named Jerry Pearlman president and chief executive officer, and named Walter Fisher chairman.

Robert Vanderheyden has been named to the newly created position of VP, programming for **RadioRadio** and the CBS FM stations.

Management changes at Ampex include two executive promotions: David Bocchini to VP, finance and chief financial officer; and Gary Masner to VP/GM of the company's memory products division.

Sony has promoted Steve Sarafian as product manager for one-inch videotape . . . . Robert Stephens has been named VP of corporate administration at ADDA . . . . Mark Medress was promoted to assistant VP, video products, at M/A-COM Linkabit . . . . **Leader** has appointed Bruce Storch as the new director of sales.

Siecor has a new VP for the corporation, Heinrich Kraft, who was director of research and development. Richard Mackey is the new president and CEO of **EMCEE.**



Vidifont® Graphics V. Performance that's picture perfect.

Picture crisp, clean, coordinated graphics that capture attention, provide information and create a distinct perspective that sets you apart.

Picture the Vidifont Graphics V. Combining the features and functions of character generation, graphics, animation and information displays into a single integrated system. All the creative tools you need for news, dial-up services such as satellite weather and sports, commercial spots, promos, elections and special programs.

Vidifont Graphics V allows multiple-user access of up to eight channels. On-line creativity is combined with off-line input, making it easy to update and display new information.

Vidifont. The picture of performance in over 500 TV and production studios around the world. Call or write Thomson-CSF Broadcast, Inc., 37 Brownhouse Rd., Stamford, CT 06902. Tel. (203) 965-7000. TWX (710) 474-3346. Telex 6819035-Answer Back 6819035 TCSB UW.

THOMSON-CSF BROADCAST, INC.

Circle 208 on Reader Service Card

When you didn't think you could!

To the imaginative broadcaster whose engineering appetite appears to exceed the limitations of his budget, we say, "Take heart!"

This versatile broadcast console is based on a standard L3242A design, modified to include an integral routing switcher. An excellent example of a Ward-Beck standard product that has been customized and delivered to WHIO-TV for substantially less than the cost of a purely custom system.

Talk to us about your needs. We have a broad range of surprisingly affordable standard consoles and there's a good chance we can move you up to Ward-Beck quality for much less than you might expect.

WBS

First by Design.

Ward-Beck Systems Ltd.,
841 Progress Avenue, Scarborough,
Ontario, Canada M1H 2X4.
Tel: (416) 438-6550.