

BROADCAST **engineering**

August, 1975: 75 cents



NAFMB **SHOW PREVIEW**
page 18

FACILITIES **REPORT**
page 20

New Dimensions in Sound

Trendsetting technology blends with timeless elegance in every Ward-Beck console.

The latest high performance Series 460 modules feature totally balanced circuitry and state-variable techniques. Configurations are planned for operational ease and flexibility.

Ward-Beck continues to challenge contemporary standards with innovative designs that reveal new dimensions in the Art of Sound.



Tomorrow's Technology Today.

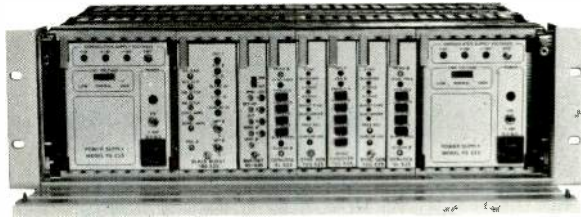
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841 Progress Avenue,
Scarborough, Ontario M1H 2X4
Telephone (416) 438-6550.
Telex 06-23469

Ward-Beck Systems Inc.,
290 Larkin Street,
Buffalo, N.Y. 14210

For More Details Circle (1) on Reply Card

Instrumentation Precision in Broadcast Terminal Products

TeleMation's Precision Line Terminal Equipment



Within TeleMation's "525 Series" audio and video terminal product line, certain units are designated *precision* as distinguished from their *broadcast* counterparts. The *precision* designation is much more than a simple "marketing label". *Precision* is a demarcation assigned through TeleMation R&D that puts a particular product into a separate, unique attention category, from design concept through manufacture and quality-assurance verification. All this to assure the buyer that the product not only meets or surpasses all known competitive products in its performance parameters, but also that it is designed to operate for months and even years without need for periodic adjustment or any other routine maintenance. This philosophy and practice, then, take the *precision* units in the 525 Series terminal equipment into a quality/stability/reliability realm that is usually associated with instrumentation electronics.

TeleMation has used a number of design techniques in accomplishing the high performance and stability achieved by these products. For example, one-percent-tolerance resistors having a temperature coefficient of 20PPM/°C are generally used as gain-determining elements and wherever drift would affect stability. They provide both freedom from temperature drift and freedom from the effects of aging that are common to the less expensive resistors normally used in video products. Junction matching — each PN junction being matched with an NP junction to cancel the characteristic 2.2mv/°C drift of silicon junctions — is also employed to improve stability and prevent offset drift in DC-coupled outputs.

Feedback is extensively used in *precision* grade units as a means of insulating performance characteristics from the effects of component variables. Audio amplifiers are typically high-gain op-amps inside 100-dB feedback loops, while video amplifiers are typically transistor pairs inside 40-dB feedback loops. In these applications, a 2:1 change in the gain characteristic of any active component will have negligible effects on overall circuit performance.

The advantages of push-pull, cascode, and complementary symmetry circuits are exploited to provide low distortion, wide bandwidth, and high signal handling capability. Current-sourcing techniques are also employed as a means of minimizing distortion that otherwise can result from operating semiconductor junctions over wide current ranges.

TeleMation engineers also have successfully coped with capacitor leakage (another source of long-term drift) in the *precision* series designs. Capacitors are either operated with minimum DC voltage drop or the effects of increased leakage with age are otherwise eliminated, as in the TVA-524 and TVA-525 video distribution amplifiers where the capacitance of a small capacitor having extremely low leakage current is "amplified" by a high-gain op amp; the result—longer time constant, less tilt, and greatly improved long-term stability.

Our TVA-525 video distribution amplifier, whose performance characteristics are listed below, is a representative application of the quality and stability factors inherent in the *precision* series product.

TVA-525 PERFORMANCE SPECIFICATIONS

	TYPICAL	PUBLISHED
Differential Phase @ 3.58 or 4.43MHz	0.12°	0.2°
Differential Gain @ 3.58 or 4.43MHz	0.11%	0.2%
Frequency Response to 5.5MHz	0.05 dB	0.1 dB
Frequency Response to 10MHz	0.20dB	0.25dB
Hum and Noise	72dB	66dB
Distortion, 50Hz Squarewave DC Mode	.1%	<.15%
Distortion and Tilt, 50Hz Squarewave AC Mode	.20%	<.25%
Output return loss @ 5.5 MHz	38dB	35dB
Input return loss @ 5.5 MHz	43dB	40dB
Bounce and Overshoot DC Mode	1%	—
Bounce, AC Mode (Monotonic)	8 sec.	5 sec.
Overshoot, AC Mode	None	None
K Factor	.25%	0.5%
Input Offset Compensation Range	>3VDC	>2VDC
Common Mode Rejection, 60Hz	>70dB	>60dB
Common Mode Rejection, 5MHz	>43dB	>40dB

A functional schematic of this amplifier along with a product description is available on request. We suggest you compare this circuit to that of any competitive product. We feel you will agree that the stability and long-term quality performance intrinsic to our *precision* design will justify whatever small additional initial cost might be involved through including such quality electronic devices in your broadcast system.



TeleMation

P.O. BOX 15068, SALT LAKE CITY, UTAH 84115
(801) 487-5399. TELEX: 388-352

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- 20 No More Rattle, Rumble and Roar.** KOY discovers that insulation against noise can mean isolation. They describe the studio within a studio...or the floating room. *Jack Williams.*
- 26 Building For 200 Reporters.** KBIA-FM designs their studios at the University of Missouri to handle trainees in droves and still operate efficiently. *Roger Karwoski.*
- 30 KCPX-TV Designs for Creative Lighting.** Description of a unique approach to lighting in new studios especially designed for TV production. *Gary Horrocks.*
- 34 A Facelifting For Control Room Audio.** Updating the Control Room audio is a big move. Equally important is the thought given to the logistics so no air time or production capabilities are sacrificed during the changeover. *Richard Thompson.*
- 36 Zapping The Snapping.** To overcome crackling, snapping and corrosion on their tower guys, this station is using non-metallic guy lines.
- 38 Montreux: The European Platform.** The International TV meet in Montreux considers the future of TV equipment and turns an eye to LIVE journalism. *Joe Roizen.*

About the Cover

The cover photo shows the studios at KOVR-TV, Channel 13, Sacramento. Facility change ideas start on page 20. Cover photo courtesy of KOVR-TV.

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EDITORIAL

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3250 SERIES

EQUIPMENT FOR SINGLE-LINE PULSE DISTRIBUTION SYSTEMS



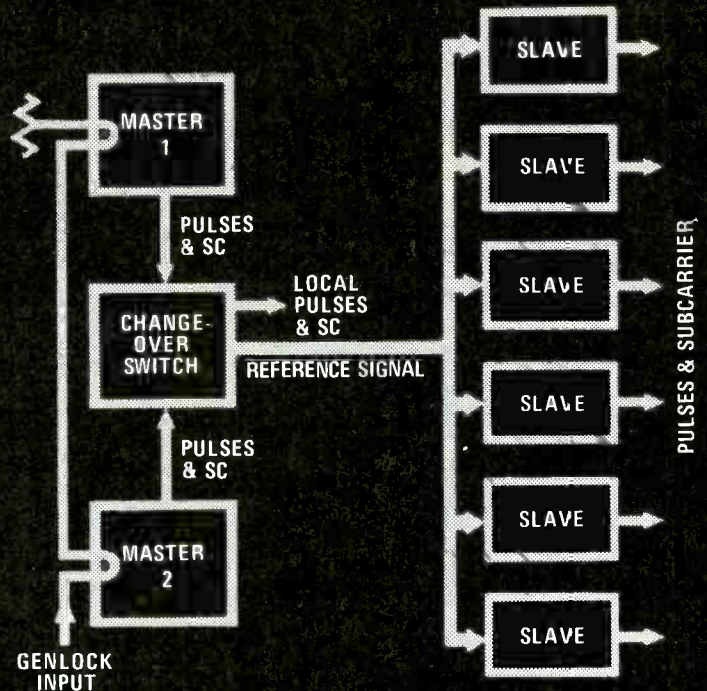
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Excellent stability, *plus* color frame accuracy, can be achieved with GVG 3250 Series single-line pulse distribution system components.

The master sync generators include genlock facilities and provision for an external rubidium input—complete with slewing controls. The outputs of two master generators can be applied to a changeover switch to provide automatic transfer to the standby generator in the event of failure of an input signal.

Slave generators lock to a unique reference signal provided by a master unit, and outputs can be either *advanced* or *retarded* with respect to this reference. In the absence of this signal, a slave unit continues to provide normal outputs, referenced to an internal crystal standard.

The equipment utilizes digital techniques throughout, including a custom-designed LSI integrated circuit. Systems are available for both NTSC and PAL applications.

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DIRECT CURRENT FROM D. C.



August, 1975/By Howard T. Head and Harold L. Kassens

AM Allocation Rules Relaxed

The Commission has relaxed its AM allocation rules (See Jan. '75 D.C.) Existing stations can now apply for power increases up to the maximum for their class; a new intermediate power level of 2.5 kW is designated for Class II and III stations; and daytimers and new applicants can apply for nighttime operation if they will provide the first or second nighttime service to the community of license (AM - FM combinations are counted as one) or if 25% of the proposed nighttime service area is without AM or FM services. Also, existing stations can apply for changes in frequency.

No changes were made in either day or night interference requirements. All proposals must comply with daytime overlap and nighttime contour protection standards.

The "suburban" rule (which said that a suburban application which put 5 mV/m over a nearby larger city was presumed to be trying to serve the large city) has been deleted except in hearing cases. Also the "swinging door" has been adopted: if the backlog of unprocessed applications becomes too large, the door is closed to acceptance of more applications until that backlog is reduced to reasonable size.

Commission Convenes Future Planning Conference

The Commission has just concluded a two-day Future Planning Conference at which it sought the advice from some 30 members of the industrial, academic, and research communities. Topics discussed included spectrum management, data transmission, computer-communications, technological developments, rural telecommunications, further radio deregulation, Citizens Band problems, and UHF television.

The Commission recently established an Office of Plans and Policy (OPP) whose job it will be to provide needed long-range policy guidance for the Commission. The Conference just concluded identified a number of problems which are likely to confront the Commission in the future and it is intended to make the Conference an annual event. It appears likely that the Commission

(Continued on page 6)

It pays to read more than the name on the front.

There's that old saying about judging a book by its cover. The name does not always indicate the quality inside. The same theory holds true for just about any piece of equipment, typewriters, fleetcars or radio broadcast equipment.

To illustrate this point, we have prepared a list of comparisons based on current published data from the five leading manufacturers of stereo audio consoles.

We want you to examine all manufacturers' audio equipment claims. Inquire. Compare. Read the facts, the whole story . . . carefully. Make up your own mind. We feel that only when you have fully evaluated all equipment claims factually, are your best interests served. And ours.



Manufacturer & Model	GATES Stereo 80	CCA 10S	COLLINS IC-10	SPOT-MASTER BESL-1006	SPARTA Centurion II
No. of Std. Program Busses	2	2	2S & Metered Mono	2	3S & Metered Mono

Only the SPARTA CENTURION II gives you three stereo program busses, plus metered monaural output.

Manufacturer & Model	GATES Stereo 80	CCA 10S	COLLINS IC-10	SPOT-MASTER BESL-1006	SPARTA Centurion II
No. of Input Mixers	8	10	10	6 - 10	8 - 12

Only the SPARTA CENTURION II gives you from eight to twelve mixers in the basic console. With extender options for eighteen or twenty-four mixers.

Manufacturer & Model	GATES Stereo 80	CCA 10S	COLLINS IC-10	SPOT-MASTER BESL-1006	SPARTA Centurion II
No. of Input Sources	18 (4M)	20	28	18 - 30	24 to 36, 54 and 72

Input Level Selection	Set 3 Lo 15 Hi	Optional Cards	Selectable Hi-Lo	Optional Modules	Switch Hi-Med-Lo

Only the SPARTA CENTURION II gives you three

inputs per mixer module in every configuration. And every one is switch selectable for high, medium or low level inputs.

Manufacturer & Model	GATES Stereo 80	CCA 10S	COLLINS IC-10	SPOT-MASTER BESL-1006	SPARTA Centurion II
Mixer Expanders Available	No	No	No	No	Yes

Only the SPARTA CENTURION II gives you the availability of mixer extender options.

Other SPARTA CENTURION II features include: remote turning on/off of all mixers; remote start capability through the mixers; motherboard construction with ground plane PC techniques for elimination of wiring harness; silent operation; audio-follow-video switching; fully interchangeable mixing modules; only three types of amplifiers throughout; optically isolated audio switching; either slide or rotary attenuators as options, at the same price; 25 Watts per channel monitor amplification; five VU meters as standard equipment.

There's much more to the story, theirs and ours, that you should know. We're only too happy to tell you ours. Write or call us collect, today, for all the facts on SPARTA Audio Equipment.

We're in the business of You.



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For More Details Circle (4) on Reply Card

(Continued from page 4)

will increasingly use the medium of research contracts to obtain analyses and guidance.

Radio and Television Rules Further Relaxed

The Commission's Reregulation Task Force has produced another Order further relaxing and clarifying the broadcast rules. The newest relaxation now gives one hour after fault detection to all AM and FM stations (educators, too) to terminate remote control operation and return to direct control when a malfunction of the remote control equipment results in inaccurate meter readings. Formerly, the rules required immediate termination and many stations were fined for not doing so. The rules still require that a loss of control automatically stop the transmitter from radiating.

The rule relating to AM antenna monitors (Sec. 73.69) has been clarified to indicate that the monitor must be calibrated weekly and the results entered in the maintenance log.

The requirement of the maintenance log rules for a statement as to the amount of time devoted to the weekly inspection of transmitting equipment has been eliminated. However, you still have to indicate in the statement (1) that the inspection was made, and (2) what you did to insure that the station was operating in compliance with the rules.

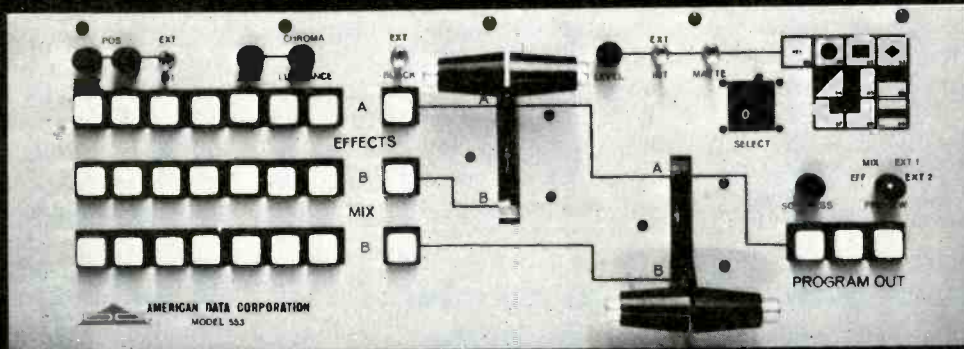
Until this latest Order, if you made a notation of any readings for the operating or maintenance logs on: "match covers, kleenex boxes, shirt cuffs, along with assorted sized scraps of paper", you could transcribe the readings onto the log, but you had to save the original scraps of paper. Now you can throw them away!

The rules have been modified to make it clear that EBS tests must be entered in the operating log.

The rules relating to AM, FM and TV tower painting have been recodified and revised to make it "perfectly clear" that on towers shared by two or more licensees, they can enter into an agreement for one of them to assume the responsibility for the painting and lighting of the tower. The letter request to designate one licensee as responsible along with a copy of the agreement must be submitted to the Commission for advance approval.

With the new Order, the Task Force has now modified, clarified and deleted in excess of 300 FCC broadcast rules. They are still interested in suggestions for further change and would appreciate hearing from you...just write: Part 73 Task Force, Room 314, Federal Communications Commission, 1919 M Street, N.W., Washington, D.C. 20554.

THE ADC 553



A TOTALLY NEW PACKAGE DESIGNED ESPECIALLY FOR:

- ★ THE LARGE MARKET
- ★ THE SMALL MARKET
- ★ THE MEDIUM MARKET
- ★ CABLE, CCTV, MOBILE
- ★ ONLY \$3,350

The ADC Model 553 Vertical Interval Color Production Switcher is designed to provide small studio and remote van operators with a broadcast quality switching system that incorporates the latest state-of-the-art advances. SOFT WIPE and LINEAR KEY are standard features, but a new development from ADC allows the combining of two 553 systems for a system of unmatched capability and economy.

The special effects generator provides nine wipes, including a circle, square, diamond, diagonal, H&V splits and corner inserts. In key mode, the special effects generator provides a choice of self or matte key on internal or external sources, and an external chroma keyer may be used on the external input. True SOFT WIPES are provided, with control for degree of softness. The keying system is LINEAR in nature so that edge crawl and key breakup are minimized.

The Model 553 is self-contained and designed to mount in a standard 19 inch console or rack housing. Input selector buttons are momentary contact, illuminated with relegendable lens caps. A blackburst and color background generator is included in the switcher to provide fades or wipes to any color or black, and in conjunction with the matte keyer, will provide colored insert keying.



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Controls Division

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For More Details Circle (5) on Reply Card

FCC proposes new radio class

The FCC has proposed establishing a new class of radio station to be used for the transmission of information to motorists and other travelers.

The Commission said that it, together with other Federal Government agencies, had been studying

the need for alerting motorists to road hazards, to inform them of available food, gasoline or lodging, or to direct them to local points of interests.

In addition, the Commission noted that other agencies have expressed a desire to use radio at parks and other national tourist areas to inform and advise travelers and to control traffic during emergencies such as forest fires.

Based on recommendations made by a special ad hoc group, the Commission proposed rules to establish the new category of station—

Travelers Information Station—that would use transmitters of approximately 10 Watts output on either of two frequencies just above or one frequency just below the AM broadcast band (1606, 1612 and 530 kHz).

The Commission said it was proposing the use of these frequencies since many standard broadcast receivers can be tuned just past the band edges, and therefore, many owners of vehicles now equipped with AM receivers could immediately utilize this service when it becomes available.

The Commission noted that the 530 kHz frequency was a Federal Government only frequency while the 1606 kHz and 1612 kHz frequencies were in the band allocated to the Aeronautical Radio-navigation, Fixed, Land Mobile, Maritime Mobile and Radiolocation Services. However, it said, since the Travelers Information Stations would be secondary to stations of the primary services, no harmful interference may be caused to the primary services.

It also pointed out that because of the shared use of these frequencies by Government operations, all applications would be coordinated with the Interdepartment Radio Advisory Committee.

Since the intent of this new class of station would be to serve the safety and convenience of travelers, the Commission said no commercial advertising would be allowed and eligibility for operation of such stations would be limited to entities now eligible in the Local Government Radio Service.

TeleMation expands

Arvin Systems, Inc., President, J. Robert Burns, and TeleMation, Inc., President, Lyle O. Keys, jointly announced negotiations of a marketing agreement wherein TeleMation will assume the exclusive marketing rights to commercial video products of the Arvin electronics subsidiary, Echo Science Corp. of Mountain View, California.

This agreement will encompass all ARVIN/ECHO Professional Products currently sold by the organizations and will also extend to those in development now and in the future.

No other tape cartridge machine can do so much for so little



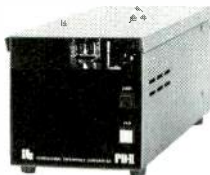
Recorder/reproducer \$775

PD II SERIES

At last—a machine that records and plays mono tapes in the "A" size cartridge, stops automatically on the 1kHz cue tone and—offers you longer life, less maintenance and better performance than any other cartridge machine at an economy price.

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- Deck is milled from a solid block of ½ inch thick aluminum. It won't warp... presents the same flat, stable surface to cartridges every time. Assures correct azimuth of heads.
- Heavy-duty micro adjustment head assembly with adjustable tape guides. Designed for easy, accurate adjustments.
- Direct-capstan, 450 RPM, hysteresis-synchronous drive motor—with an electrolyzed shaft—minimizes wow and flutter. Eliminates need for rubber belts and separate flywheel assembly.
- New trim-line design lets you place three units side-by-side in a 19 inch rack. Each unit is only 5¾ inches wide, 5¼ inches high and 15 inches deep.
- Features latest solid state components, even for switching applications. No relays. Printed circuit cards plug in.



Reproducer \$550



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If we didn't make a better refurbished quad head than either Ampex or RCA and with a better price/performance ratio we'd have been out of it a long time ago. (And that's the truth)

Videomax began to make refurbished quad heads 5 years ago. We were convinced a better job could be done and that you should have a choice. We were also convinced that a small company of specialists could offer a better product than the large multi-product manufacturers. Nothing since has changed our minds or the minds of our **more than 600 customers.**

Today, no one in the business comes close to our level of cost/performance. No one in the business exceeds our warranty protection. No one in the business offers a wider variety of

refurbished Ampex and RCA heads. And no one, according to our long list of customers, has a more respected manufacturing and Q.C. history.

So, if you need a Mark X or a Mark III quad head in our "L" or "M" Series ... or an RCA High Band or Low Band quad head in our "M" Series ... contact Videomax.



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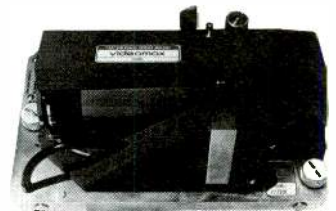
MARK X



MARK III



RCA LOW BAND



RCA HIGH BAND

SALES & SERVICES

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TV circular polarization on the air at KLOC-TV

KLOC-TV, Modesto, California, has been authorized by the FCC to conduct antenna tests using a circularly polarized broadcasting antenna. The antenna was designed and manufactured by Jampro Antenna Company, of Sacramento, California. It is the first omni-

directional circularly polarized TV antenna to go into operation.

Presently, only FM broadcasting stations have been authorized to use circularly polarized transmitting antennas for over 15 years, while TV stations must use only horizontally polarized antennas. The

new FCC authorization permits KLOC-TV to conduct experimental operations with the new antenna during daylight and nighttime hours. A status report is to be made to the Commission within six months, and a final report of the field propagation results at the conclusion of the tests.

The special FCC permit authorizes the station to broadcast with 324 kW of power during the CP tests. The circularly polarized antenna transmits half its energy in the horizontally polarized mode and the other half in the vertically polarized mode.

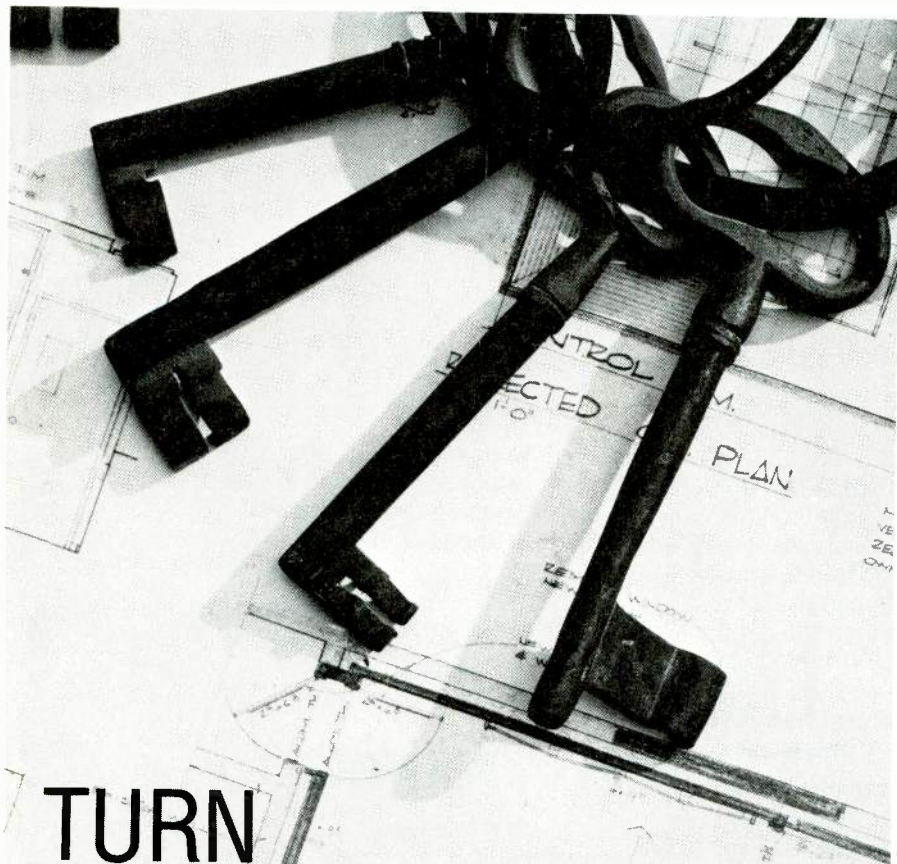
The use of circularly polarized antennas by FM stations has permitted greater penetration of signal into various types of receiving antennas. It is thought that this type of antenna will do the same for TV, and put a better picture into TV receivers with rabbit ear and loop antennas. There is also some evidence that ghosts will be greatly reduced, and in some cases, eliminated with the use of circularly polarized TV antennas.

Arrangements have been made to enable the transmission of identical program material, and instantaneous switching from one mode of polarization to the other. This A-B type of testing will be measured in the mobile test vehicle and observed in receivers, through a field observation crew which will visit several hundred homes, apartments, motels and other places. Field measurements and home observation tests will be conducted in Modesto, Stockton, and Sacramento, California. The final report of these tests will be filed with the Commission in October, 1975.

NAB vs. Pay TV

The NAB has petitioned the Federal Communications Commission to reconsider its new anti-siphoning rules for pay-TV on grounds they are an "unjustified relaxation" of present rules that were formulated after years of study.

Furthermore, it said, the new rules "contain the seeds" for further siphoning and "may lead inexorably to the very sort of siphoning" the Commission has tried to avoid.



TURN KEY!

that's what we're doing — designing complete Broadcast Audio Systems from the walls in —

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Appeals continue against fees

General Broadcasting Company and Sunset Broadcasting Corporation have appealed to the United States Court of Appeals for the District of Columbia Circuit for review of the FCC denial of their requests to reconsider Commission orders on fee schedule rates.

The U.S. Court of Appeals for the Fifth Circuit (New Orleans) upheld the Commission's fees in 1972. However, in response to a petition by the National Cable Television Association (NCTA) the Supreme Court on March 4, 1974, said the Commission could not recover its total costs of regulation, since some of its activities were of value to the public rather than to the regulated industries or individuals, and remanded the case to the Commission for further consideration. It did not nullify any fees.

As a result of the Supreme Court decision, the Commission denied numerous requests for refunds of fees, other than cable television annual fees covered in the NCTA case, collected under the 1970 fee schedule.

Philips on the move

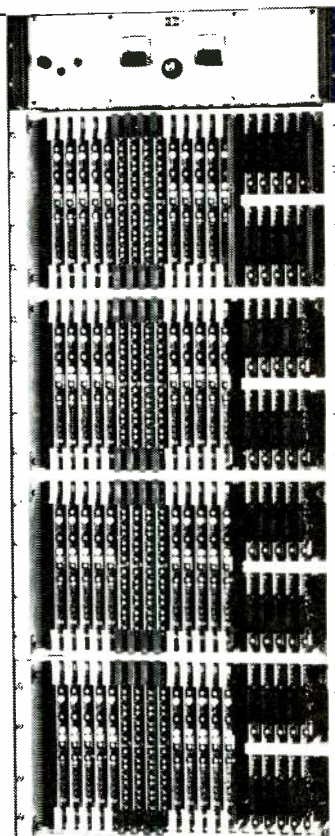
Company officials at Philips Audio Video Systems Corporation have moved their offices to 91 McKee Drive, Mahwah, N.J. 07430. The company is a subsidiary of North American Philips Corporation.

Philips Audio Video Systems now has four divisions. They are: the audio division, including AKG microphones, Hi-Fi components, paging systems, sound reinforcement systems and professional audio equipment; the broadcast equipment division, with Philips and Norelco color TV cameras and ancillary equipment; the video systems division that includes closed circuit and mini-studio origination equipment; and the government systems division that features design, development and production in thermal imaging, low light-level TV systems for defense and commercial applications.

THE COMPLETE VIDEO-AUDIO ROUTING SYSTEM

...only Datatek has all these features:

- Choice of matrix building blocks—12 x 10 (breakaway audio), 20 x 10, 20 x 15, 30 x 10 or 30 x 15
- Independent, simple and flexible control facility for each bus
- Front access operational adjustments (input and output gain, frequency response, cable equalizing) with modules in normal operating position (not on an extender)
- All connections are plug-in
- Front access video, audio and power test points
- Four section continuously adjustable cable equalizers on *both* inputs and outputs
- Plug-in matrix PC boards are all front mounting and vertically oriented for unrestricted air flow
- Crosspoint latch feedback tallies (BCD) and source (camera) tallies brought out as standard
- Simple expansion facilities (video, audio, control, tally and power connectors) provided as standard
- Soft clamp provided for video inputs
- Differential (hum bucking) bridging video inputs with high return loss
- Two video outputs and two + 24dBm (150 or 600 ohms) balanced audio outputs per bus
- Multi-reference vertical interval or random switching facilities for each bus
- Rear access audio level systemizing pad facilities
- Highest quality non-proprietary multi-source components used throughout



D
DATATEK
CORP.

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For More Details Circle (9) on Reply Card

Going remote?



Use the only monitors made for it,
from TFT

If you're considering remote control, or upgrading existing operations, TFT frequency and modulation monitors give you performance no other monitor can match — in AM, FM, FM Stereo, SCA or TV.

One important reason is that you don't need an RF amplifier. This results in a much cleaner RF signal. You won't get caught for undermodulation due to false peak indications.

What's more, TFT monitors are easy to install. Just plug-in the antenna. You don't need several tuning stages. And they're stable. Once in operation, they don't need periodic maintenance or tuning.

TFT monitors also have wide-range AGC. So, signal strength variations at the remote location won't affect monitor performance.

Both analog and digital (BCD) outputs are available on TFT monitors for use with remote logging equip-

ment. You can also choose a number of alarm options: Carrier-Off; Loss-Of-Modulation; and Off-Frequency.

TFT remote-optimized monitors come in either frequency *and* modulation, or modulation-only models: for AM, FM, and TV (UHF or VHF). Every model also has high level inputs for direct connection at the transmitter to make your proofs.

All TFT monitors meet applicable FCC requirements and make FCC-required proof-of-performance measurements. Frequency models can be calibrated directly against NBS with the TFT Model 735 WWV receiver.

For a demonstration on *your* frequency, call or write TFT at the address below. In Canada: Glen-tronix, Ltd., Don Mills, Ontario, Canada.

National service network set for Spotmaster

Broadcast Electronics, Inc. has announced the establishment of a nationwide network of repair and spare parts depots. These depots are equipped to provide complete service and support for the entire SPOTMASTER® line of audio consoles, tape cartridge machines and studio equipment manufactured by Broadcast Electronics.

The repair and parts depots are arranged on a regional basis—covering both the United States and Canada. These firms have factory trained technicians, all appropriate test equipment and large spare parts inventories. They were selected to provide fast and efficient service and parts shipments.

For additional information contact the Marketing Department, Broadcast Electronics, Inc., 8810 Brookville Road, Silver Spring, Md. 20910. 301-588-4983.

SBE will sponsor Midwest convention

The Society of Broadcast Engineers, Indiana Chapter, is sponsoring a regional two day convention with presentation of engineering papers and exposition of broadcast related equipment. The event will be known as the "Midwest 75 SBE Convention" which will be held on September 16 and 17 at the Atkinson Hotel, Indianapolis, Indiana.

Approximately thirty-five manufacturers are already committed and there are more on the way. This will be a fine chance for engineering and station personnel of the Midwest to evaluate and compare current broadcast equipment.

There will be no registration fee; however, there will be an optional luncheon on the 17th with a notable speaker at \$5.50 for which reservations will be necessary due to the limited accommodations.

For further information contact: Paul G. Raymond, Convention Chairman, 6121 East 30th Street, Indianapolis, Indiana 46219, or call 317 546-3122.

TFT TIME AND FREQUENCY TECHNOLOGY, INC.
3000 DUNCOTT STREET, SANTA CLARA, CA 95051 (408) 246-6365
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AKAI RELIEVES BACK PAIN.

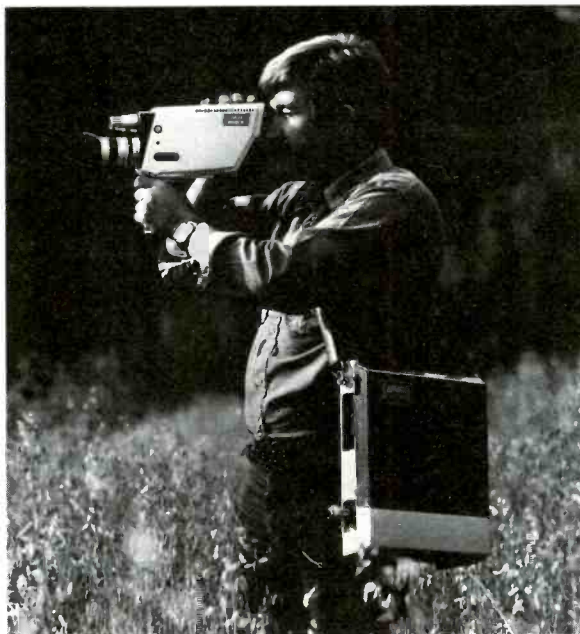
One of the common discomforts due to excessive videotaping is back pain.

Lugging around those 35 and 40 pound VTRs through crowds, down stairways, up stairways, up hills, steep hills.

Well, no more. Akai has a remedy — our new VTS-150B we call the Hustler.

The Hustler doesn't weigh 35 or 40 pounds like other recording units. It doesn't weigh half that.

In fact, it doesn't even



need to go on your back.

The Hustler is a 16 pound color videotape recorder you sling over your shoulder, and a 6 pound color camera you can carry in one hand.

No wonder 63 TV stations are now using our little Hustler.

The lightweight, two-piece, one-man operation that isn't a pain in the back — or anyplace else.

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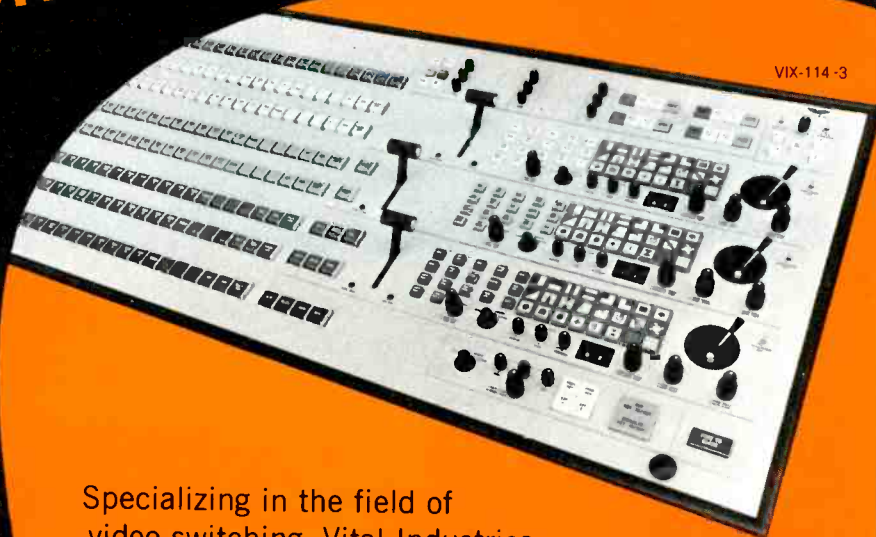
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The all digital VIX-114 series

is
PRODUCTION • ENGINEERING • SALES

- Digital rotary patterns. Hard, soft or border wipe.
- Digital key edging. Border, shadow and outline.
- Digital quad split. All directions. Independent horizontal split.
- Digital switching controls.
- Vari-key. Soft, hard or see-thru key.

13 years of specialization. Designed, manufactured and delivered some of the world's largest and most complex integrated telecommunication systems.



Specializing in the field of video switching, Vital Industries offers the broadcast industry a new electronic approach to match film production techniques with graphics-generating capabilities at your fingertips. The VIX-114 series production switching systems are human-engineered for ease of operation of the control panel without interpolation of functions. Digital electronics is used throughout for superb linearity, stability and reliability.

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Arlington, Texas 76010
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Phone 804/584-7001

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7960 West Beverly Blvd.
Los Angeles, California 90048
Phone 213/653-9438



SOCIETY OF BROADCAST ENGINEERS, INC.
P. O. Box 88123 Indianapolis, Indiana 46208

SBE newsletter goes to press

At the SBE editorial office in Washington, D.C., ideas and encouragement for future issues of **The SBE Signal** are arriving from all over the country. Such universal response is taken to mean that **The Signal** is expected to provide a successful vehicle for a strongly expressed eagerness to share information.

If any SBE member is not receiving his issues of the newsletter, we want to know about it. The problem may be no more than an outdated mailing address, or it may be as serious as an omission in our computer program. Please advise Assistant Secretary Virginia Doss, P.O. Box 88123, Indianapolis, Indiana 46202.

SBE

regional conventions

The Society of Broadcast Engineers would like to invite all interested people to join them at this year's regional conventions. Several SBE chapters across the country have scheduled conventions this fall, and are hard at work setting up exhibit booths and technical presentations. This will be a really good chance for anyone who missed the NAB Convention to see and talk to the manufacturer's representatives about their equipment. SBE convention chairmen say they'll welcome any interested persons and will be glad to fill in details as their convention programs develop.

Chapters 1, 2, and 22: New York

Chapters 1, 2, and 22 will hold their regional convention this year on Friday, October 24th. Tentative plans call for Syracuse to be the location for the meeting. Since many of the details were uncertain at the time of this writing, please contact Paul Barron, WCNY-FM, 506 Old Liverpool Road, Syracuse, New York 13088, (315) 457-0440, to get the latest information.

(continued on page 16)

ALL SOLID-STATE AURAL STUDIO-TRANSMITTER LINKS



■ MONAURAL AND COMPOSITE VERSIONS

OPERATION IN ALL STL BANDS —

- 890-960 MHz
- 450-470 MHz • 300-330 MHz
- 200-240 MHz • 148-174 MHz

All solid-state aural STL's to fulfill almost every requirement. Moseley Associates has pioneered many STL concepts — solid-state systems, true direct FM modulation, and composite operation (FM stereo on a single link)...just to name a few. Front-panel metering of all important parameters is included on all Moseley STL transmitters and receivers. Subcarrier capability enables wireless remote control, secondary program service, or intercom service.

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TRANSMITTER REMOTE CONTROL SYSTEMS

Analogue



Fifteen telemetry and thirty command functions are provided by the TRC-15A. The **Model TRC-15AR**, when used in conjunction with a Moseley STL, or other radio link, will provide total wireless operation. The **Model TRC-15AW** is for use on leased telephone, or other wired circuits.

Digital

Fully digital remote control of a remotely located transmitter point is provided by the **DCS-2 Digital Control System**.



Multiple transmitter site operation—a standard option. **Command, telemetry, and status** provided in groups of thirty channels. **Automatic parameter logging** available. Computer-assisted operation of the DCS-2 is another standard option, and can provide **totally automated plant operation**. The **Model DRS-1 Digital Remote System** provides many of the features of the basic DCS-2 at an affordable price. Up to 30 telemetry functions and 24 status channels to a single transmitter site.

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REMOTE PICKUP LINKS

Models RPL-3 and RPL-4 Remote Pickup Links provide unsurpassed audio performance for remote broadcasts. Two full-time microphone and high-level line audio inputs are standard. The RPL-3 and RPL-4 Transmitters are only 4 inches high and weigh a mere 16 pounds—complete with audio mixing and AC/DC power supplies.



For 148 to 470 MHz operation

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OTHER MOSELEY PRODUCTS . . .

- FM Subcarrier Generators and Detectors ■ Stereo Generators
- STL Accessories ■ Remote Control Accessories

VISIT US IN BOOTHS #4 AND #5 AT THE NAFMB CONVENTION



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SANTA BARBARA RESEARCH PARK

111 CASTILIAN DRIVE, GOLETA, CALIFORNIA 93017
Telephone (805) 968-9621 / Telex 658448 / Cable: MOSELEY

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(continued from page 15)

Chapter 9: Arizona

Plans at Chapter 9 are even more tentative, since this group will not hold its regional convention until December 5th and 6th. In conjunction with the Arizona Broadcasters Association, they plan to use one day for technical papers and save the second day for equipment exhibits. However,

for up-to-date information, call Al Hillstrom at KOOL, Radio TV, Inc., 511 West Adams, Phoenix, Arizona 85003, (602) 257-1234.

Chapter 11: Massachusetts

The Sheraton Yankee Drummer Inn in Auburn, Massachusetts will host Chapter 11's regional convention on September 26th and 27th. The program will begin Friday noon and last until 9 p.m. The session will continue on Saturday from 9 o'clock in the morning until 1 p.m. Mike Goldberg, convention chairman, expects about 30 industrial exhibitors, and adds that plans so far include a technical

presentation on the "Care and Feeding of Magnetic Tape Heads" by a representative from Nortronics, and also an FCC/Industrial discussion panel, currently planned for Friday evening. The committee expects to send out a final mailing about a month before the convention, which will give exact times for all events. If you want to get on that mailing list, write or call: Mike Goldberg, WGBH, 350 Cedar Street, Needham, Massachusetts 02194, (617) 449-3067.

Chapter 20: Pennsylvania

Chapter 20 will hold this year's regional convention on Friday, October 24th, at the Howard Johnson Motor Inn in Monroeville, Pennsylvania. For those not familiar with the area, Pennsylvania Turnpike Exit 6 will take you straight to Monroeville and the Howard Johnson motel. Thirty-nine exhibitor's booths have been made available to the manufacturers, and the convention chairman expects to fill them all. To contact him, Roy Hoover, write or call Radio Station KDKA, 1 Gateway Center, Pittsburgh, Pennsylvania 15222, (412) 391-3000.

Chapter 25: Indiana

Convention Chairman Paul Raymond is busy organizing Chapter 25's regional convention this year. The meeting will take place on September 16th and 17th (Tuesday and Wednesday) at the Atkinson Hotel in Indianapolis. The first day's program is scheduled to start with technical papers, in the morning from 9 to 12, and the afternoon will feature equipment exhibits from 1 to 8 p.m. Wednesday morning will pick up with another technical presentation, breaking at 11:30 for a luncheon session and guest speaker, and resume with an afternoon of manufacturer's displays from 1 to 8 p.m. For further information please contact: Paul Raymond, Tektronix, 6121 East 30th, Indianapolis, Indiana 46219, (317) 546-2408.

Some of you may notice that the format of the chapter news is a little different. This section will try, whenever possible, to feature meetings scheduled in the future, in time for those of you reading the current issue to note the program and perhaps plan on attending. Past meetings will be covered briefly—just enough to cite speaker and topic. However, this effort will succeed only if the SBE editorial office is kept informed of your plans. Please call or write about any upcoming events to: Jeanne Smith, SBE Editor, 2000 N. Street, N.W., Suite 210, Washington, D.C. 20036, (202) 293-7742.

CHECK... COMPARE... CONSIDER...

does your audio console, or the one you're talking about purchasing, have all these standard features:



	AMPRO		YOURS	
	YES	NO	YES	NO
Every input channel equipped with preamp	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4 transformer coupled inputs per channel	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Remote start contacts on all high level inputs	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Modular plug-in amplifiers	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 location cue/intercom system with remote talkback	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4 selectable monitor inputs	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4 programmable speaker muting outputs	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Step type faders with cue on all channels	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15 watt rms protected monitor amp	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4 selectable headphone inputs plus stereo cue	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
+ 18dBm transformer coupled outputs	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Telephone grade lever keys	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shielded PC board mixing bus for extra RF immunity	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Engraved panel markings	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Extra cost hidden options	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
High purchase price	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Ampro audio consoles are available in 6, 8, 10 and 12 channel rotary or slide fader versions in mono, dual mono, stereo or dual stereo/simulcast configurations. Priced from \$1,995.00 to \$5,275.00.

Ampro also produces a comprehensive line of *broadcast tape cartridge equipment*. For complete details, call collect today or write.

See us at NAFMB, Booth #1, Atlanta.

AMPRO CORPORATION

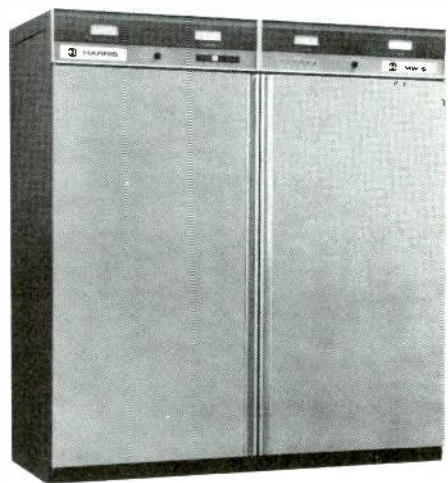
850 PENNSYLVANIA BLVD., FEASTERVILLE, PA 19047 • (215) 322-5100
Professional Equipment for Broadcasting Professionals



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Harris MW-5 5kW AM transmitter has PDM* going for it.

Harris' MW-5 transmitter needs only two tubes for 5,000 watts—provides 125% positive peak modulation capability for a louder sound—has plate efficiency approaching 90% for lower operating cost. All this possible because of Harris' patented Pulse Duration Modulator* (PDM) also featured in our top-selling 50,000 watt MW-50 transmitter. For complete information write, Harris Corporation, Broadcast Products Division, 123 Hampshire Street, Quincy, Illinois 62301.



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FM Broadcasters Take On Atlanta

It's onward and upward for the NAFMB as they meet in Atlanta, to consider how they'll be affected by the new EBS requirements, quad selection, profitability, all-channel legislation, and their movement toward major association status. By Ron Merrell

More and more it's becoming obvious that FM is a growing and profitable member of the communications community. Just as their numbers have grown to 3,450 stations, their professional association—the National Association of FM Broadcasters—has been growing in numbers and strength.

Then last year the NAFMB surprised the industry by pulling away from NAB convention dates and held their annual conference in New Orleans. It came off better than many had suspected. The technical and management sessions were well attended, and the exhibit hall was crowded. In that crowd there were a number of manufacturers who confessed they wouldn't miss the chance to exhibit at the 1975 conference.

A Word From The President

Broadcast Engineering asked James Gabbert, President of the NAFMB and president/GM of KIOI-FM, for some pre-convention thoughts, and here's what he had to say.

"The NAFMB was created out of sheer necessity. FM, fifteen years ago, needed help. The industry banded together and formed a single voice, the NAFMB, to increase listenership, to represent FM before the FCC and to help FM grow into a viable communications force.

"Today, the NAFMB membership is at its peak. Our services have been increasing on a month-to-month basis. We now provide sales material, promotion material, and a weekly memo advising members of industry news. We now have a comprehensive, monthly Washington memo and will soon be offering a free used equipment listing. Shortly, we'll be starting an engineering newsletter.

"As FM has matured and become accepted as radio, we now realize that we have many things in common with AM broadcasting. We have a common problem of being in the shadow of television, with respect to the FCC and major

advertisers. As an association, our emphasis today is more on radio, because FM is radio. Today, whether a person is an FM or AM broadcaster, his daily life is influenced by what television does. This is why we are having the National Radio Conference in Atlanta, and we enthusiastically invite all AM broadcasters to join us in this radio conference."

The broadcasters conference and exposition will be held this year from September 17 to 20, at the Marriott Hotel in Atlanta. For reservation information, we suggest you contact the NAFMB at Suite 1450, 500 Fifth Avenue, New York, NY, 10036 or call 212-869-8873.

Attendees will be able to participate in workshop sessions covering: sales, programming, management, promotion, research, engineering, recruitment, training, community service, news, license renewal, and FCC and legal trends.

The technical program for the Conference which will include both panel and open discussions as well as presentations of papers has been scheduled with the following sessions.

September 18, 10:00 - 11:30 A.M.

A panel discussion of four channel discrete quad by the National Quadraphonic Radio Committee of the EIA. Each proponent of a discrete system will describe his system. A discussion will be held of the test results and the report submitted to the FCC.

September 19, 9:30 - 11:00 A.M.

Papers will be presented on the Emergency Broadcasting System

(EBS) and the new two tone alerting program; up-dated developments on AM stereo; and cures for FM overmodulation.

September 20, 11:00 A.M. - 12:00 A.M.

"Engineering for Managers and Wives". A panel session where expert engineers discuss station technical problems in non-technical language so everyone can understand.

Background Radio To The Front

The U.S. Supreme Court has ruled that ASCAP could not collect performance fees from a Pittsburgh fast food chain playing music through their loudspeakers. The decision sets a precedent after a long, hard battle. It means that restaurants and stores using background music services or playing radio music in their establishments can do so without licensing by ASCAP or BMI.

The music performing rights societies will still be charging Muzak and other background music companies the usual fees. But, they can't ask individual restaurants, bars, etc., for fees as well.

FM Penetration In Automobiles

Radio All-Channel legislation still may be the best answer to boosting the penetration of FM further and faster into new cars. Los Angeles is about the most heavily automobile-populated urban area in the country. A recent survey there revealed that only 36.6 percent of the

families questioned owned automobiles equipped with FM radio.

A survey taken in that city a year ago showed FM automobile penetration at 33.2 percent. Meanwhile, car manufacturers' prices for FM are on the high side.

For The Record

The FCC has corrected its order specifying the location of translator and booster station records to make clear that such records may be kept by licensees of primary stations either in one of the principal communities of the translator or FM booster or at the same place where the primary station records are kept.

The FCC noted that primary station licensees now keep all station records at their studios or principal places of business, where they are easily available during business hours.

On May 28, the FCC corrected an omission in the rules for television and FM translators and FM boosters by requiring station records to be kept at a convenient place in one of the principal communities of the translators.

Although the order was clear with respect to nonlicensee-owned translators—those licensed to persons or entities other than the licensees of primary stations—the

Commission said there was some confusion about licensee-owned translator records.

The Commission pointed out it did not intend the rule to require primary station licensees to keep translator records only in the communities of license. The order was to have clarified the rule—not to have imposed additional burdens on licensees or FCC field personnel by requiring dispersal of these records to many small communities where their translators were located.

In correcting this oversight, the FCC said primary station licensees would have the choice of keeping translator records either in the translator community of license or at a place where the primary station records are kept, so long as the identity and address of the record-keeper was posted at the translator or FM booster site.

The period for filing competing or denial applications for new FM and television stations has been limited through recently amended FCC rules that are effective August 8, 1975.

The change provides a cut-off date for FM and television applications similar to present AM new and major change applications. This date will avoid the disruption of application processing that occurs when a new, mutually exclusive application is received after

processing of the original application is nearly complete.

The existing rules provide for the periodic publishing in the Federal Register of a list of AM applications that are near the top of the processing line, announcing a date (not less than 30 days after publication) on which the applications will be considered available and ready for processing and by which all applications must be filed if they are to be grouped for processing with any of the listed ones.

This AM processing rule identifies within a reasonably short time those applications that are mutually exclusive with each other, assuring that an application will not be virtually ready for grant only to be plunged into a lengthy comparative proceeding by a newly filed competing application.

The new rules bring uniformity to the processing rules for the AM, FM and television broadcasting services, the Commission said.

The new rules also change the period for filing formal petitions to deny applications for new facilities. While such petitions now must be filed within 30 days of acceptance of the application for filing, the new rules require that the cut-off for petitions to deny be the same as that for filing mutually exclusive applications. This change also applies to major change applications.

The following is a list of companies who plan to exhibit at the NAFMB exposition. The list is limited, of course, to those who had signed up for booth space before our press time.

A. C. Sportwear	Cetec Corp.	Johnson Electronics	RCA
AEL, Inc.	Collins Radio	LPB, Inc.	Roh Corporation
Ampro Corp.	Compu/Net, Inc.	Marti Electronics	Rupert Neve, Inc.
Audio Services, Inc.	Control Design Corp.	McCurdy Radio Industries	Schafer Electronics
Belar Electronics	CSI Electronics	McMartin Industries	Stanton Magnetics
F.T.C. Brewer Co.	Dolby Laboratories	Micro-Trak Corp.	Susquehanna Productions
Broadcast Electronics, Inc.	FaxNet, Inc.	Moseley Associates	Systems Marketing Corp.
Broadcast Programming International	Fidelipac	Orban Associates, Div.	Thomson-CSF Labs
Camex	Garron Electronics	Kurt-Orban	Time & Frequency Technology
Capitol Industries	Harris Corp., Gates Radio Div.	Paperwork Systems, Inc.	U.S. Pioneer Electronics
CCA Electronics	International Tapetronics	Phelps Dodge-Cablewave Systems	
		QRK Electronic Products	



No more **RATTLE RUMBLE and ROAR**

By Jack Williams, *Pacific Recorders*

Does this formula for a production studio sound familiar? In the room formerly used to store stationery and the secretary's coat, install the tired Air mixer, turntables and cart machines the other studios are done with. To dull the sound of the typewriter next door and the whistling and rattling from the air conditioning vent, paste ceiling tile squares to wall and ceiling. To correct for the small working space and the cramped leg room, limit the production people to the smaller members of the staff.

While members of the production team can produce miracles in such facilities, we believe they deserve something far better. The public and the advertisers are increasingly sensitive to audio quality and production sophistication. Where

the broadcaster is competing with independent studios and perhaps better equipped stations for this production dollar, it makes sense that his facilities should be the best possible. The money seems to go not to the stations with the best production staff, but the stations with both staff **and** studio.

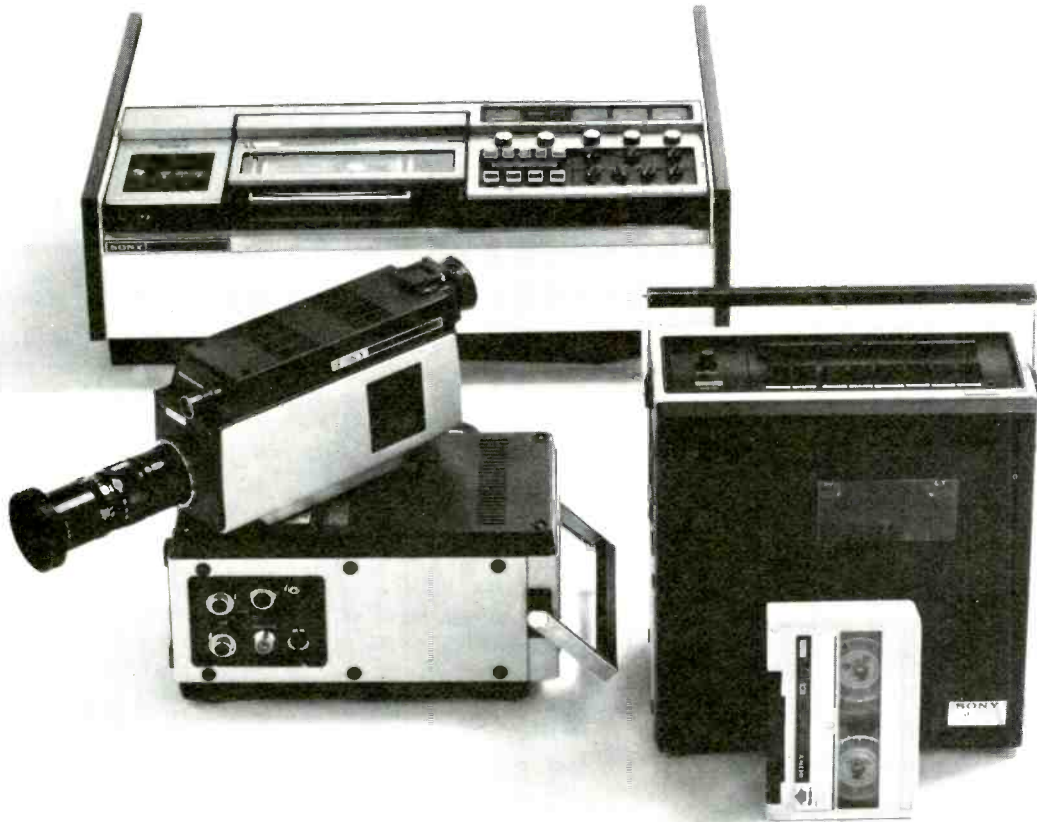
Radio station KOY in Phoenix, Arizona wanted a new production studio in a room which offered some challenges by no means unique. They wanted to improve audio quality, achieve a high degree of production sophistication, yet remain flexible enough to produce high quality automated tapes for their FM sister station, KRFM. All this was to be constructed in a 17 by 33 foot room, formerly a "live broadcast" studio.

A detailed examination of the existing studio was required. Acoustic noise measurements were taken and noise sources were tracked down and identified.

The air conditioning (which makes such studio work possible in an Arizona summer) was clearly a trouble spot. The problem was not that the studio was near the cooling plant. It stemmed from the rigid ducting which transmitted the system rumble into the production room.

This duct was the source of a second problem: whistles and rattles emanating from the registers. The ducting was of such small diameter that a comfortable room could be achieved only by forcing the air through the register at an extremely high velocity.

NAB Show-stopper:



The ENG (Electronic News Gathering) sessions stood them in the aisles. And Sony stood them on their ears with the complete ENG System.

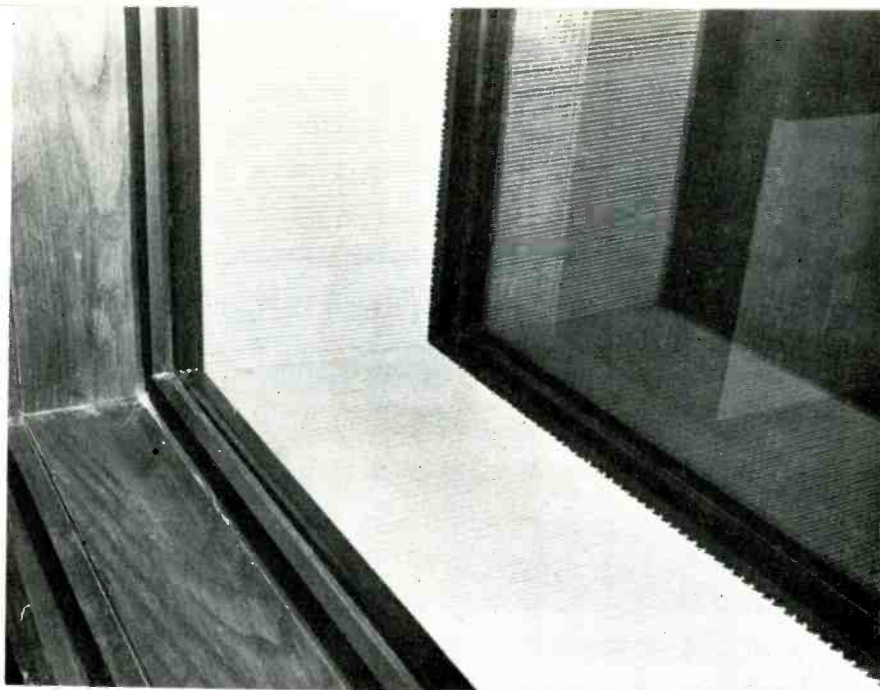
Things like this were said at the Show: "If you don't invest in ENG now, your news department may be obsolete in just a few short years."

So write now for information about the only ENG System that goes all the way through editing using videocassettes.

On your letterhead to Sony Corporation of America, P.O. Box 1594, Trenton, New Jersey 08607. Attn: Broadcast Services Dept. BE-085-221

The Sony ENG System.

For More Details Circle (19) on Reply Card
For Demonstration Only Circle (20) on Reply Card



This picture shows the details of isolated/insulated glass between the control room and the voice booth. (Photos by Jack Kimbell.)

It also was apparent that the existing acoustic treatment was antiquated. The requirements of thirty years back permitted attaching the sound absorbing media to the existing structure. As a result, the room itself was a transmitter of the annoying noises from offices and hallways adjacent to the studio. The attempts to attenuate this sound had been successful primarily in reducing the high frequencies, causing the room to be bassy. Recordings were described as both muddy and boomy.

It was clear from our study and the original construction prints that

further attempts to apply only internal acoustic treatment would be futile. To achieve the requisite acoustical balance and the isolation a good production studio must have, the studio would have to be stripped and rebuilt.

Removing Air Conditioning Noises

We began by working to solve the problems created by the air conditioning. Closer examination of the system showed that adequate space was available for a larger,

flexible duct and for isolation-type distribution boxes. This effectively stilled the rumble, the rattle and the whistle. However, the air return system was an additional source of noise. Since it had vented into the hallway, the inevitable conversations and footsteps of passersby drifted effortlessly through the staggered, unlined returns. A zig-zag flexible duct and register system, which doubled as a baffle, proved to be the practical solution.

KOY's concept of a production studio required two rooms within the one studio. There was to be a control room and a separate voice booth. Each had to be acoustically isolated with a low internal noise level. Furthermore, the acoustic environment of the control room had to provide for accurate loudspeaker monitoring, while both rooms had to minimize any muddy "room sound" on live voice. If these conditions could be filled, the station's voice talent would be free to exercise the full range of their microphone techniques.

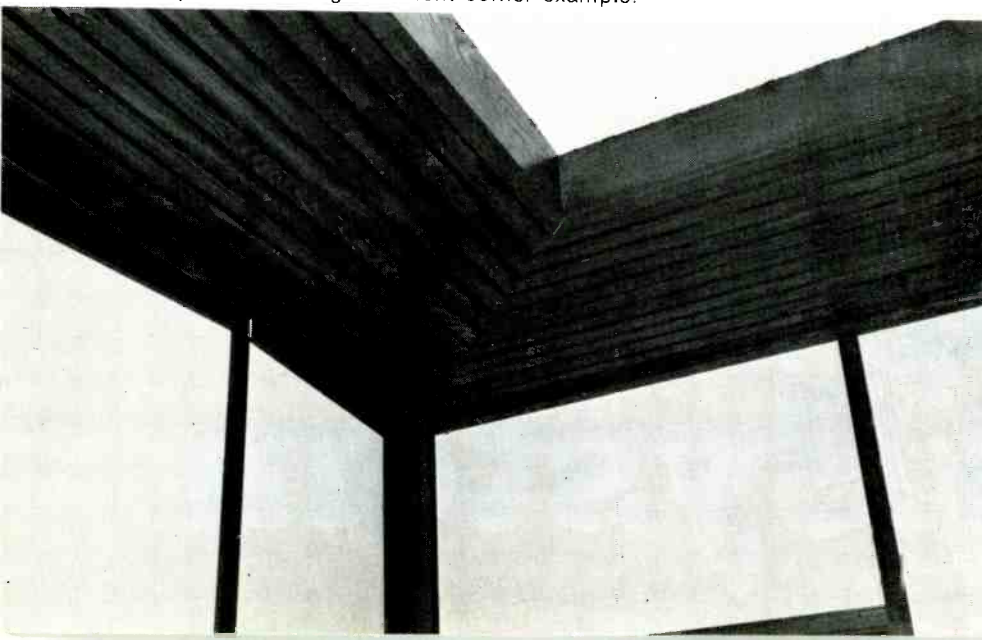
Studio Isolation

To provide the required isolation, two completely independent rooms were constructed. In our design, the wall of one room does not touch the wall of another room. The ceilings were to be supported by the walls of each room rather than being suspended from the ceiling of the original studio. Two rooms within a shell; facing each other, but never touching!

Elastic caulking compound was used at all joints and on all frames. Doorways were equipped with adjustable damper stops and the doors themselves with automatic threshold dampers. The window assemblies were made of two panes of dissimilar glass installed in extruded aluminum frames and then caulked with silicon compound. The sound lock connecting the two studios with the outside world was made large enough to serve as a walkway and a much desired storage area for tapes, cartridges and supplies.

To facilitate better voice recording, both rooms were designed to have low reverberation times with a high degree of low frequency filtering. Slot-type Helmholtz resonators were built into the ceilings of the

Here you see ceiling treatment corner example.



rooms, thus minimizing the loss of floor space.

The interior acoustic treatment of each room required some individual consideration. The control room had to be live enough for accurate loudspeaker monitoring. This function was best served by permitting only a minimal amount of reverberation; achieving a tight bass while insuring some brightness. To accomplish this we used angled wall sections to minimize standing waves, installed low-Q resonator traps, and mounted broad-bank absorption elements on the walls. As a result, the control room can be used to record live or simply as a monitor room for recording in the booth.

In the voice booth we wanted to be able to accommodate up to three voices while still maintaining the isolation between the voices necessary for good mixing. Here we installed two overlapping low-Q resonator traps and again surface mounted the broad-band elements.

To equip this production studio, the station selected the UREI Mod-

One Mono/Stereo console. Although it is only 24 3/4 inches wide, the console handles six microphone and 21 stereo line inputs in 10 modules. With this compact arrangement there is ample work space left and still more room for accessory equipment.

Equipment Placement

Immediately in front of the mixer is the remote control panel for the cartridge and reel-to-reel tape machines. To the left of the mixer is an Automated Processes Model 575 multi-frequency test oscillator. A custom accessory panel is to the right. This panel contains the headphone selector to the voice booth, telco feed, limiter insert, digital stopwatch, and the compare speaker switch. The latter mutes the JBL 4311 monitors, sending a mono sum of the monitor channels to a table radio type speaker. This effectively approximates the sound that is heard in a car or from a table model radio.

The mixer contains a talk-back

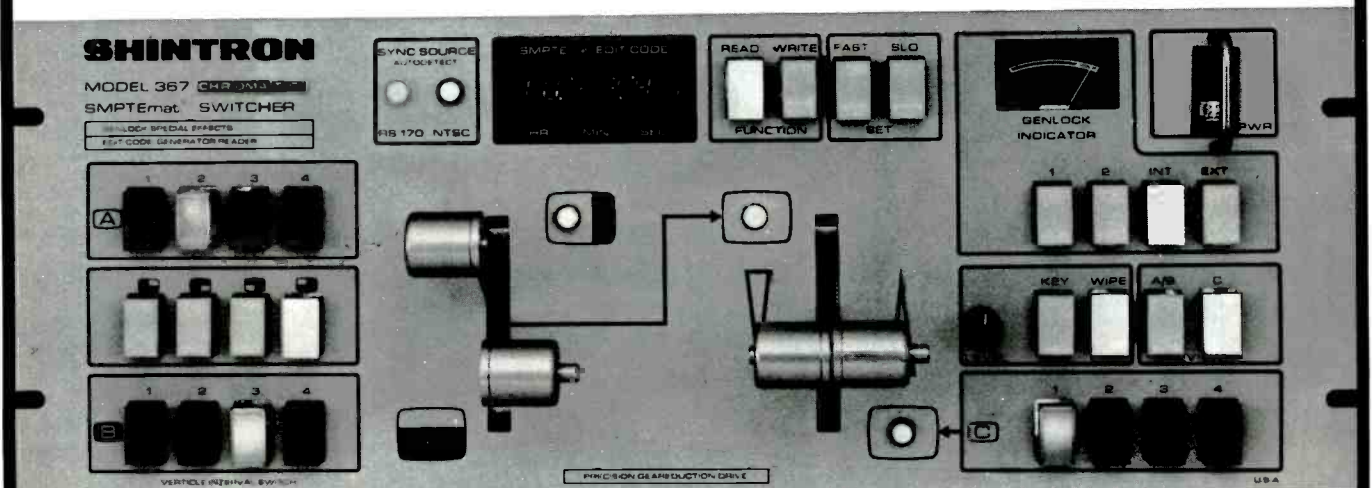
and slate system for booth communication and tape identification. Six rows of 26 patch points each allow full access to any part of the audio system, accessories and tie lines to other control rooms.

The custom cabinetry provides ample knee space below the mixer, the reel-to-reel recorders and even the turntables. When the turntables are not in use they can be covered by a hinged work surface. Another equipment rack area is located in the turntable cabinet and contains the power supplies, the amplifiers, a tuner and accessory electronics.

The finished production complex has exceeded its performance criteria, both acoustically and electrically. Put into service last November, the booths have prompted the staff to comment on the ease of getting good voice tracks, the high quality of monitoring, and the sheer joy of working with the system.

Finally, when KRFB began producing its automated tapes and recording good music flawlessly, we felt the flexibility of the system had been tested and proven.

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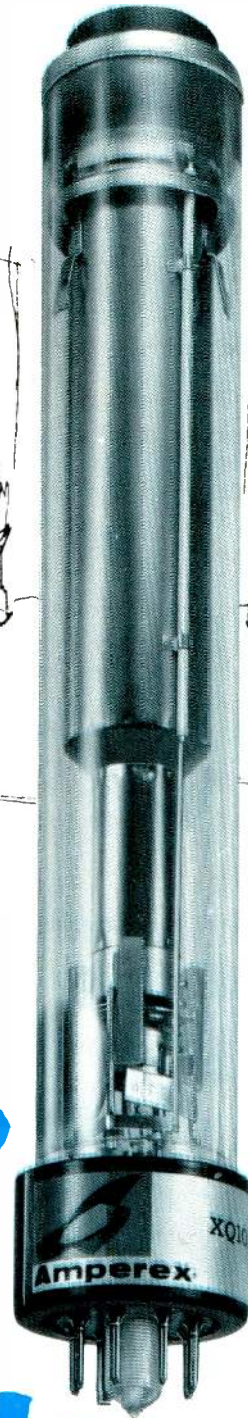


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field engineering staff a call and we'll have an expert there to help with the job.

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KBIA-FM gears up for 200 reporters

By Roger Karwoski

Chief Engineer and Operations Director,
KBIA-FM, University of Missouri.

When it came to designing and installing the newsroom facility for KBIA (FM), we really had our work cut out for us. In addition to the typical newsroom functions, we had the added task of providing space and equipment for between 150 and 200 students who would be using the facility as a training laboratory each semester.

KBIA is located at the University of Missouri-Columbia, Missouri. We're a noncommercial, 100 thousand Watt, stereo-FM station. For the past three years, we have been providing fine arts, news, and public affairs programming for the mid-Missouri area, as well as a training ground for broadcast students who are enrolled in journalism and speech courses at the University.

Almost all of our operating engineers, announcers, news reporters, etc. are students. Under the watch-

ful eye and guidance of the station's faculty and staff, they operate the station during its 19 hour a day, 7 day a week schedule.

Due to space limitations, it was necessary to construct the newsroom in a different building than the master control room and main offices. While this is not the most ideal arrangement, it has worked out well through the extensive use of telephone and intercom connections between the two locations to coordinate activities (although, at times, I wished I owned a pair of roller skates to be able to shuttle back and forth quicker).

The Studio And Control Room

Since the newsroom complex is completely separate from the main on-air studios, its control room and studio are available for taping panel discussions, interviews, and production work whenever it is not on the air.

The studio has four microphones,

on desk stands, set on a round table. Even though we shock mounted the microphones, we still had quite a bit of trouble with noise pick up from the table surface when we first installed it. Many people just liked to thump pencils, pens, fingers against the table while they were talking. We solved this problem by "upholstering" the table, first with a layer of foam rubber, and then with Naugahyde. The result was a quiet surface and an attractive table.

The control room, in addition to the control board and tape machines, has one turntable which is used for production use, such as music backgrounds or sound effects. We constantly had trouble with people stacking books, copy and tapes on the turntable when it wasn't in use. After several ruined styli and a couple of close calls with the tone arm, we came up with a wooden cover for the turntable.

The cover is held in position by four wood dowels set into the



Fig. 1 Every station should be designed for efficient operations, and this was especially important when KBIA-FM put together their newsroom.



Fig. 2 Student newswoman Scottye Hedstrom working at an editing position in the newsroom. At top left is an intercom connected to Master Control. Below the cart machine is the "Karco Box".

bottom of the cover. These work as positioning pins to a mating set of holes in the countertop. In addition to protecting the turntable, it has provided valuable counter space.

One other item of note in the control room is the "air check" machine. This is a cassette recorder wired so that its audio input is connected to the program output of the control board. The remote control plug is wired to a spare set of contacts on the microphone switch. Students working at the station are issued cassettes for air checks. When a student is doing a newscast, he or she inserts the cassette into the recorder and puts it into the record mode. The air check machine starts and stops with the turning on and off of the microphone. When finished, the cassette contains only the segments of the newscast containing the student announcer's voice. This system offers the student and his instructors a condensed and convenient form of an air check for critique. A similar air check machine is used in the master control studio for the rest of the announcing staff.

The Karco Box

The newsroom contains the wire service machines, radio scanners,

and tape editing positions. Since we had to make provisions for a large number of people who would have to use the newsroom equipment and since many of them would be novices at operating audio equipment, the equipment selection and layout had to be chosen with simplicity of operation and durability in mind at all times.

How do you put together a system to handle tape dubbing, telephone interviews and feeds, network feeds, two-way radio reports, etc. in a simple rugged package? For us the recipe has been: two open reel tape recorders; two, three-line telephones; a record/playback tape cartridge machine; a liberal amount of wire and associated connectors; all mixed and tied together into one "Karco box". (Don't let the name "Karco" bother you, it's just a nickname I have here.)

Figure 2 illustrates the set up. A "Karco box" is made up of four, two pole - twelve position rotary switches and a small monitor amplifier. The rotary switches work as the input selectors for the two open reel machines, the tape cartridge machine, and the monitor amplifier. As you can see in Figure 3, the switches are simply wired in parallel. Two conductor twisted

wire was used to construct the unit. Since all of the audio sources have balanced bridging inputs and high level, balanced outputs (except for cassette connections), shielded wire was not needed. We have not had any problem with crosstalk or noise with this arrangement.

The wires from the selector switches terminate at a barrier type terminal block. This allows for easy connection of the input and output cables after the initial construction, and for later changes after installation. Good quality rotary switches should be used in construction as they are given heavy use. The use of control knobs with brass inserts and a double set of set screws will be quite helpful in keeping the switches properly indexed.

The unit is housed in a metal cabinet rack (Bud type CR-1726). The front of the cabinet is a standard 7-inch high, 19-inch rack panel. The four input selector switches and monitor amplifier controls are mounted on this front panel. A small two or three Watt amplifier (such as an Amperex PCA-4-18A) completes the unit.

The Practice Lab

While the newsroom is used for producing material intended for air



Fig. 3 Here we see the KBIA-FM practice lab area.

Fig. 4 The turntable has its own cover, which enlarges the countertop area when installed.



use, classroom projects are done by students in the practice lab area. This room contains two additional "Karco boxes" with their associated equipment. The room is also well-stocked with typewriters. Students enrolled in the broadcast journalism program do quite a bit of story writing, editing, and rewriting here. The lab is also equipped with a movie screen for instructional use. In operation then, this room can be used as a classroom, with the added benefits of tape machines and visual aid backup; as a work area for class assignments; and as a supplemental editing and pro-

duction area for air use material.

To one end of the practice lab, three small interview rooms have been built. In room "A" we have set up a single open reel tape machine, a tape cartridge machine, a microphone mixer, and a monitor speaker. A set of microphone lines run between rooms "A" and "B" enables the two rooms to be operated as a control room-studio arrangement. Rooms "B" and "C" each have their own tape recorder for interview use. All of the rooms are used for cassette to reel transfers, and tape editing.

Summary

The entire news complex has been designed and redesigned during the past three years. We may never get everything "finally" set up in one particular way - there's always a better way to do it. But at the present time, we feel that our facility offers the students an excellent opportunity to learn broadcast journalism. It also provides the means to provide our listeners with thorough and complete news and public affairs programming. Why, with a staff of almost 200 reporters, how could we miss anything that goes on!

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KCPX-TV designs for creative lighting

By Gary Horrocks

Director of Engineering, Salt Lake City, Utah

Our original television studios could have been located in an old garage for all the flexibility in production they allowed us!

In fact, when KCPX-TV moved into offices in downtown Salt Lake City in 1954, the building we renovated for our quarters was an old garage. The layout was terrible. Studios were located close to the street, the sales people were buried deep within the two-building complex, and our lighting system was primitive. Television lighting wasn't nearly as sophisticated 20 years ago, when we merely put up some two-inch pipe, outlet boxes, and plugged in a batch of lights with extension cords.

When KCPX-TV planned to move to new quarters on the outskirts of Salt Lake City, I was determined that the new building

would be optimally designed. Now, visitors tell me that our plans were highly successful, and our entire staff is just as enthusiastic.

Although greater flexibility in lighting for television production was a prime consideration, the new facility, which opened in December, 1974, was completely designed for functional efficiency. Radio and television sales personnel are located at the front of the building, where visitors can get to see them conveniently. The AM and FM studios are placed in front of the reception area, so that visitors can watch the radio personalities at work.

Conference rooms are located near each of the areas, and other details, such as having the art department set up near the newsroom, have made for operational efficiency. The newsroom has its own entrance, allowing news and camera personnel to get to their

cars quickly, and without having to carry heavy camera equipment long distances.

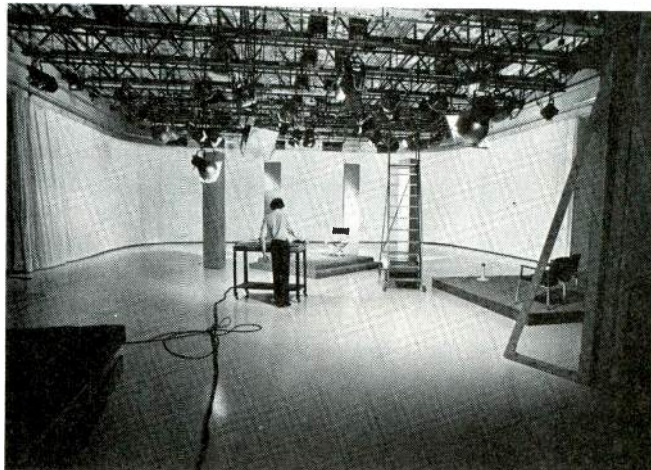
The building plan also allows for expansion. Our large, 50 x 70-foot studio is built so that a second studio, of like dimensions, complete with control room and prop area, can be constructed for future production needs. Both the large studio, and our smaller 30 x 40-foot news studio make extensive use of the latest technology in lighting.

Lighting Designed for Maximum Utility

The larger studio is used for commercial production, and by KCPX for locally-originated studio programs. These are primarily talk shows, and a children's program, "Hotel Balderdash". The big studio includes large double doors which open on to a ramp, making it easy to bring large props in, or drive automobiles directly into the studio



With the dimmer control panel mounted on a mobile stand, the board can be moved to any location for close in viewing of lighting adjustments.



The 50 by 70 studio at KCPX is equipped with 60 fixtures mounted for maximum versatility, and controlled by the mobile dimmer control.

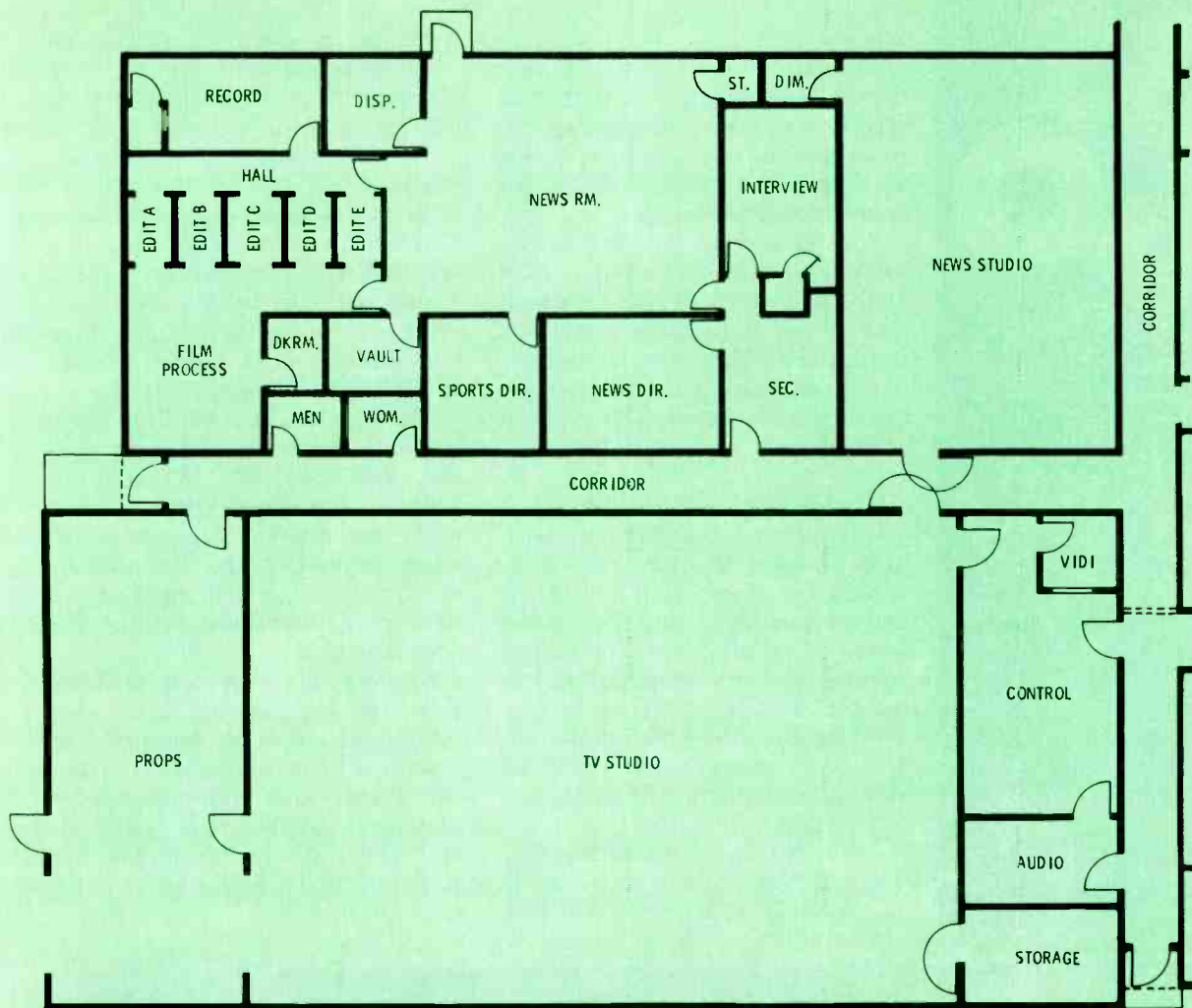


Fig. 1 While this drawing shows only about one-third of the KCPX-TV facility, it does show the production side of the facility, along with the studio shown in other photos in this article.

for car commercials.

The big studio is equipped with approximately 60 lighting fixtures, including 5kW and 25kW Ring-Focus Fresnels, Super Scoops and Cyclights. All are controlled through a two-scene preset Colortran Dimmer board containing 12, 6kW dimmers, and is mounted on a novel mobile stand.

The rolling stand is connected to the power source by means of a long umbilical cord which also contains leads to control the various lighting fixtures. With this long cord, we are able to move the dimmer board to any point in the studio, and control lighting from there. Our lighting director frequently handles one of the cameras during production, and is able to take the control board along with him wherever he works. The cord is long enough to wheel the board

into the control room. This allows the lighting director to take instructions from the director, while watching the monitors, in order to accomplish cross-fading or any special lighting effects needed.

We plan to install connectors in the control room so that the board can be carried in and plugged directly into the lighting system, thereby eliminating the need for the long cord. The mobile dimming stand was the brain-child of our lighting director, who has found the system invaluable for allowing one man to comfortably handle chores which would otherwise require two or more people.

The 2kW fresnels are our work-horse lights; but we've been amazed at what we can do with the 5kW units. They throw out an enormous amount of light. Our "Hotel Balderdash" program, for example, re-

quires a huge set that runs the full 70-foot length of the studio. We're able to light it with three of the 5kW fresnels. However, for lighting small subjects, including people, the 2kW fresnel is used. The broad, bright beam of the 5kW units are perfect for larger subjects, like automobiles, and for lighting the entire set.

We used one of the 5kW units for a recent automobile commercial. At the time, our black Cyclorama curtain hadn't been installed. Despite this, we needed a black limbo effect—in a white studio with a white curtain. Using the big, 5000-Watt light, we were able to bathe the car in light while leaving the rest of the studio in darkness.

For a large set, we often key light with the 5kW fresnels, backlight and accent light with the 2kW units, and baselight with 10 Super

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Scoops.

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For commercials, we often need a soft light quality, and use two, 4kW and four, 2kW Softlights on stands that we roll in to bathe a scene in soft, pleasing light. For illuminating our Cyclorama curtain, we use lights which cover 120 feet of curtain.

Lighting Versatility

Our lighting budget was somewhat limited—we have no ellipsoidals, for example—but with the fixtures mentioned, and the dimmer board that allows us to preset lighting and do cross-fading, we still get excellent versatility.

In our smaller news studio, the lighting is pretty much fixed; we only vary the lighting on infrequent set changes.

About 40 lights, including fresnels and Super Scoops, are used in the news studio, along with a two-

scene preset dimmer board—this one fixed to the wall—and 12, 6kW dimmers. The dimmer board is used at least three times daily to cross-fade lights for the news program.

As the program opens, only the backlights are on, silhouetting the set and its furnishings. Then, during the introduction, the news team walk onto the set and take their places, and we fade in the key and fill light. It's a nice effect.

The news studio is used for three, half-hour newscasts daily: at 8:30 a.m., and 6:00 and 11:00 p.m. In addition, throughout the day, live spots are inserted into programming, promoting the news show. For this, a single spot light and a color camera are installed in the newsroom.

By designing our new facilities from the ground up, and with lighting requirements in mind, we were able to take advantage of the best layout and optimum use of equipment. What we've achieved, we believe, is a facility layout that is functional, expandable and economical.

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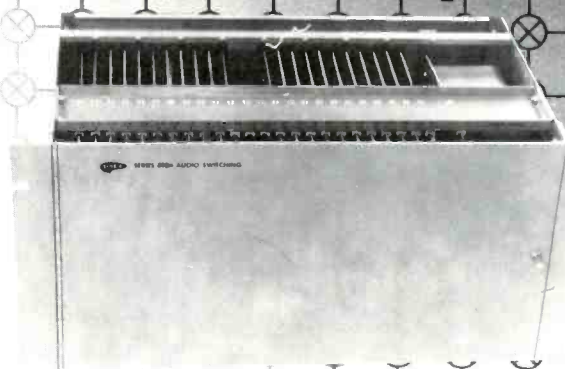
Still using the same basic frame assembly, other configurations such as 20 by 5, 10 by 20 or combinations in between can be assembled. Greater capacities, including dual inputs or outputs, are just as easy . . . just add.

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A facelifting for control room audio

By Richard L. Thompson

Director of Engineering, McClatchy Broadcasting Corporation

In January this year a target of mid-year was selected by Gordon Lee, CE and Bob Beebe, studio supervisor of KMJ-TV in Fresno, California, with Bart Hancock, special projects engineer for owner McClatchy Broadcasting Corporation, for a complete new control room audio mixing facility.

The console chosen was a 12-mixer Sparta Centurion I with 6-mixer Extender Panel, giving a total of 54 badly needed audio inputs into the eighteen separate channels. Although Sparta supplies studio furniture for their consoles and related audio equipment, it was decided that the space and other conditions in the KMJ-TV control room necessitated custom cabinetry. Customizing is frequently done in the McClatchy engineering building at headquarters station KFBK in Sacramento to exactly suit the several broadcast stations in the chain.

To further facilitate installation and operation ease, the Centurion console was selected for our three

TV studios, KOVR-Stockton and KOVR-Sacramento, and KMJ in Fresno. The Sacramento installation (see cover; Ed) was completed first, in late 1974. The KOVR-TV change had been accomplished over a weekend in relatively leisurely fashion, but to complicate things the KMJ-TV change had to be made between 1:00 and 6:00 on a Monday morning.

The only answer to such time pressure on a sensitive operation is pre-planning, which Bart, Bob and Gordon proceeded to do with a vengeance. Initial planning alone took approximately a month of telephone calls, visits, measuring,

consulting with our operators in Fresno and Sparta audio engineers, drawing plans, and finally creating wooden scale models of the equipment and control room. Existing ductwork and dimensions of the console and other equipment had to be allowed for, and somehow made to fit the given room space. Besides the dimensional problems, there were technical considerations which called for Bart to make additions to the console to operate 'On Air' lights in special ways in the studios, and such.

When the design was tied down firmly, Bart laid out the ductwork and real studio space in his shop in



This is the audio end of the KMJ-TV control room as it looked before installing the new console and extender panel.

Management Highlights

Any major change in the facility automatically means many hours of meetings and discussions as to what changes are really needed and how much money will be involved.

Equally important is that transition from the old to the new and how it will be made without disrupting production or losing air time. Here we get some tips from KMJ-TV engineering on how they replaced a key piece of equipment without losing a step ...or money.



The actual changeover time to this new setup was only three and a half hours. Step by step planning included the console desk, utility cabinet for record and tape equipment, and turntable cabinet.

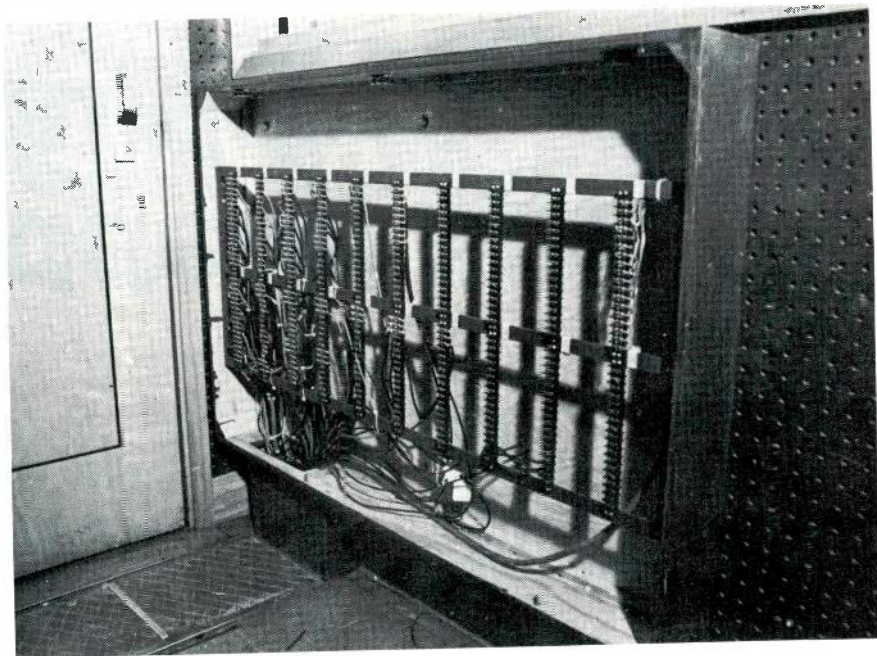
Sacramento by taping outlines on the floor. He worked within that imitation studio space for another two weeks before the console was modified, wiring in place, fanning strips attached, and the entire lashup tested as completely as possible.

The first step in physical preparation was construction of the terminal frame pictured. It was sent to Fresno, installed in series with the old console, and careful notes gathered for a fast change to the new console; this step was the key to the entire operation. Bart keyed the fanning strips from the console to the coding on the terminal frame, with wiring of sufficient length to permit it to be tested on-site without removing the old console first.

The next step was comparing the old and new side-by-side. Bart and the engineering staff at KMJ-TV pulled the old console feeds from the terminal frame after signoff, and tied the new console in temporarily for operational tests. This took three nights as one section after another was carefully tested and all audio levels trimmed. Each morning the 'dress rehearsal' ended as the tested section was reconnected to the old console and sign-on proceeded.

I realize that many broadcast operations cannot afford the time or expense of such customizing and pre-planning, but I recommend it for ultimate savings. In particular, a terminal frame and changeover test system such as Bart devised can save a great deal. Our own situation is such that the audio mixing rejuvenation for all TV operations is a 'must' because of increasing local programming ventures.

I can say that our experiences at KOVR-TV/Sacramento and KMJ-TV, and the upcoming change at KOVR-TV/Stockton, which is past the planning stage at this writing, show that the time and expense in pre-planning to meet every foreseeable contingency pays back the operator in the one irreplaceable commodity—lost air time.



Cover removed from the terminal frame. The unit was built in Sacramento by McClatchy engineers and was the key to the fast changeover. The existing console was attached in series to it, enabling the new console to be tested a section at a time by lifting the existing wiring and attaching a fanning strip from the new console.

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MONTREUX: The Major European Platform

By Joe Roizen

This year's International Television Symposium and Technical Exhibition shared many similarities with the Las Vegas NAB. The general business climate was optimistic. There was no really revolutionary hardware, but the emphasis was on the best utilization of existing equipment for both operational and economic advantages.

There were about 4000 participants and over 1800 paying delegates from 42 countries visited the exhibition or attended the 182 technical papers and two round tables that the symposium provided. Many of the delegates were from countries relatively new to color television, such as Bahrein, Iran, Kuwait, Oman and Quatar, and

this also reflected the new emphasis in the Middle East for the use of petrodollars on television expansion.

The People's Republic of China had a substantial delegation led by Mr. Hsu Chung, technical director for Peking Television. Countries starting color services this year, such as Australia and South Africa, had representatives present and some of the Eastern European countries like Poland, the U.S.S.R. and Yugoslavia had fairly large groups, obviously interested in the range of equipment on display.

Interest in Electronic Journalism, while not at the level of the USA, was nevertheless substantial. However, the equipment dedicated to this application is quite different as no large network in Europe as yet considers cassette VTR's as broadcastable. The ENG package is, therefore, a heavier and more expensive package.

Technical Symposium

The symposium opened with a futuristic theme presented by R. J. Clayton of G.E. who projected direct satellite to home transmissions in the early eighties. His contention was that there are no inherent technical problems to such TV signal distribution, but that other factors relating to economics or politics will more likely affect the institution of such services. The last paper was by Marius Morais of ORTO, which described the TV coverage plans for the Montreal Olympic Games in 1976.

A significant activity at the Montreux symposium was a series of round tables that permitted some healthy exchange between delegates, exhibitors and other participants. One such round table, which was very heavily attended, was dubbed a "Dialogue between Users and Manufacturers on Future Evaluation of Video TV Equipment".

This meeting was ably chaired by Joseph Polonsky, technical director for the Broadcasting Division of Thomson-CSF. The opposing panels were labelled "Users" and "Manufacturers" and they included a truly blue-ribbon panel of experts.

The main speaker for the "Users" was Joe Flaherty of CBS, and his team included: R. Appleton, ITCA; E. Boehnke, Sender Freies, Berlin; P. Hansen, Denmark; H. Z. Jushkevitch, U.S.S.R.; and M. Remy, French TV.

On the "Manufacturers" side, the speaker was J. J. P. Valetton of Philips, who was followed by: C. Anderson, Ampex; H. R. Groll, Fernseh; A. Luther, RCA; and W. Turk, EEV/Marconi.

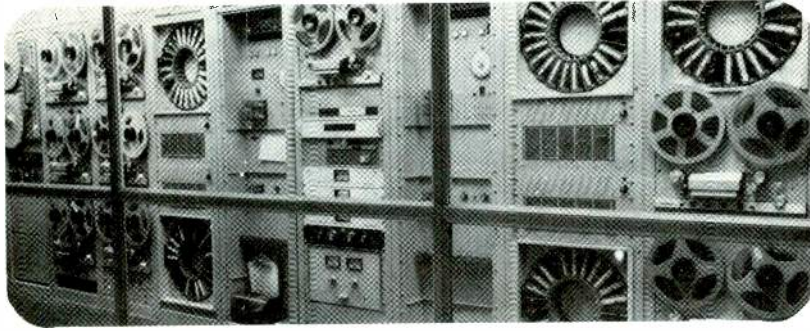
It was indeed a lively discussion led off by Joe Flaherty who gave the most incisive analysis of the evolution of equipment needs from the early days of television to the present. Mr. Flaherty's contention was that in the fifties and sixties every new technological breakthrough produced a much needed and eagerly awaited improvement in picture quality or operational utility. Today, he claimed, that situation no longer exists and some of the technical developments seem to be solutions to problems the broadcasters did not even have.

Today's range of available equipment is more than adequate for broadcast needs, therefore Mr. Flaherty was calling for improvements which relate to better economics, greater operational flexibility, or an interface with automation. Mr. Flaherty emphasized that the longer schedules and increased programming most broadcasters have to contend with has changed their needs considerably. Systems have become preeminent and individual equipment pieces must fit the overall requirement. He expected that digital techniques will

(continued on page 40)



Under the ornate architecture of a meeting room of the Montreux Palace Hotel session chairman Joseph Polonsky called upon this panel of broadcasters on the left to discuss the future of television equipment. This was followed by responses from representatives of major manufacturers at the table on the right.



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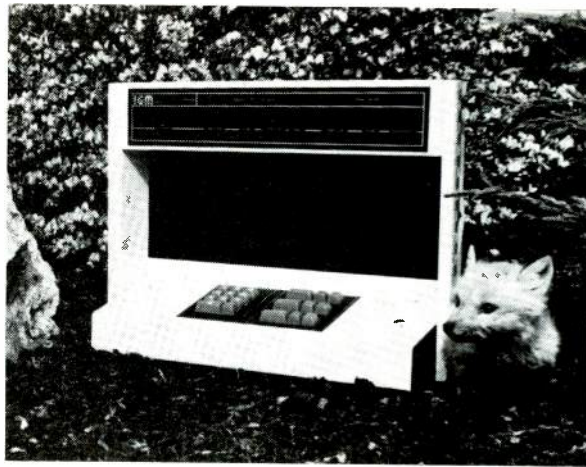
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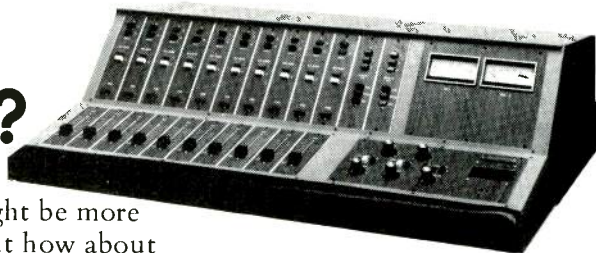
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(continued from page 38)

not only do what analogue cannot, but will replace analogue where it can do it better. Its greatest potential being in the reduction of manpower because of elimination of controls.

Mr. Flaherty's comments were echoed by many of the other user-panel members, in particular, the Soviet representative who emphasized the desire of broadcasters for better, more reliable and simpler operating equipment at reasonable prices.

Leading off the comments for the "Manufacturers", Mr. Valetton made the plea for EBU committee action in which the users would agree to purchasing specs so as to similarize equipment being built for them. While this request for standardization among users seems a desirable and simplistic solution to the growing proliferation of non-interchangeable hardware, it is nevertheless true that one noted attempt in that direction has failed.

Mr. Turk summed up the situation rather pointedly by saying that normal competition between manufacturers would continue to produce non-similar devices in areas of the world where independent commercial enterprises exist; only in those countries with government control of equipment design and manufacture could there be a uniformity of product, with the consequent limitation in range of choice. Mr. Turk felt strongly that this was not an acceptable trade-off and that technical progress is better served in the competitive arena.

The Exhibitors

The largest European suppliers of studio equipment and mobile vans had the biggest and most lavish stands, complete with elaborate presentations to exhibit their cameras, VTR's, switchers, and monitors. Philips, Bosch/Fernseh, and Thomson-CSF each had completely enclosed areas with wide ranges of equipment covering broadcast, CCTV, and even CATV products. Not far behind in size and complexity were the major U.K. and American suppliers. Ampex, Marconi, RCA, and Rank Cintel showing their own and OEM products.

Some American companies with specialty products in the TV field, who have learned to cope with



LIVE journalism was a topic of interest. Here we see the RCA Ranger Rover, one of many vans on display. This one will accept cameras on the tailgate and roof in addition to the one pictured.

European color standards, were also well dispersed throughout the exhibit areas. Conrac, Dynair, Telemation, Arvin, Datatron, Grass Valley, to name a few, attracted considerable attention from technical visitors who were comparison shopping between stands.

Several major manufacturers and a few smaller ones were displaying new SECAM equipment which they have recently begun constructing. These included Robert Bosch, Marconi, Michael Cox, Link, Conrac, Matra and a second generation of SECAM hardware from Thomson-CSF.

The new SECAM gear included broadcast and CCTV encoders, decoders, monitors and switching equipment. Many of the standard pieces of equipment being displayed, such as cameras, VTR's and monitors, in the RCA, Barco, Quantel, etc. stands were shown in SECAM configurations, as well as in the standard PAL format.

ENG European Style

While there is no apparent rush in Europe to equipping their TV station news teams with a portable cassette VTR and then put to air color under digital TBC-type images, there is a healthy interest in live news coverage using television techniques.

To cater to the higher picture quality levels that European broadcasters insist on, many of the VTR and camera manufacturers have come up with special ENG packages aimed at this requirement.

On the portable camera side, virtually every supplier had a model that was either a cut-down version of their studio camera or one specially designed for hand-held operation. The importance of these portable cameras in today's television operations was evident from the amount of time allocated to presenting them in each of the major exhibitors' floor shows related to camera technology.

Several manufacturers put together unique packages that were

claimed to give adequate performance at competitive prices for ENG operation. One such package was the Ampex combination of the BCC 2, a three-tube hand-held color camera jointly developed with Commercial Electronics Inc. The camera when combined with a new version of the VR3000 quad backpack (VR3000B) provided an acquisition package which could record at 15 or 7½ ips and then played back directly through Ampex's TBC 900 digital time base corrector.

(continued on page 43)



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Microwave Associates, Inc. of Burlington, Massachusetts has appointed **Lawrence J. Cervon** as Vice-President-General Manager of the Communications Equipment Division. Cervon had been Vice-President-General Manager of Harris Corporation's Gates Broadcast Equipment Division since 1967.

Harold R. Krelstein, Board Chairman of the Plough Broadcasting Co., Memphis, was re-elected Chairman of the Radio Board of Directors of the NAB...**V. Kay Melia**, general manager of station KLOE, Goodland, Kansas, was elected vice chairman of the Board.

The Broadcast Products Division of Harris Corporation has announced the promotion of **Curtis I. Kring** to the position of Manager, Industry Relations and Government Sales. He will be maintaining relations with the FCC, consulting engineering firms, group ownerships and the NAB, and will be responsible for Division sales to the U.S. Government.

John Pritchett, formerly with the James B. Lansing Co. and Altec Inc., has been appointed to the office of Company President of Quantum Labs Inc....**James Morrison**, former Fernseh Western regional manager, has joined Omega Associates of Hawthorne, Ca., as head of its broadcast television sales division. Omega has signed an agreement with the Robert Bosch Corporation's Fernseh Group to be a prime distributor for its complete line of Fernseh video cameras in the Pacific states area.

Named as vice chairman of the 1975 national UN Day Committee is **George D. DeRado**, president of TEAC....Honored with a "Debby" award was **Benjamin B. Bauer**, Vice President and General Manager of the CBS Technology Center, Stamford, Connecticut. The award, presented by the Society of Audio Consultants during the Consumer Electronics Show in Chicago was for development of CBS' SQTM quadrasonic system.

Raymond E. Johns has been appointed manager of field engineering for the Broadcast Equipment Division of Philips Audio Video System Corp. He will be in charge of customer service operations in the company's six field engineering facilities in the United States....Also from the same division of Philips Audio Video Systems is the appointment of **Frederick L. Bones** as Northeast regional sales manager.

Ken Herring has been named national sales manager-industrial products, magnetic tape division at Ampex Corporation, Redwood City, Ca....**J. D. Burge** has resigned from Davis Communications to form a new company: Pay TV Services, Dunwoody, Ga., to assist Cable TV operators in the start-up of new Pay TV operations....Appointed as the new President of the Professional Super 8 Film Institute is **Mr. Soo Hum**, motion picture producer, researcher and writer on all aspects of Super 8 production and post-production.

(continued on page 44)

(continued from page 41)

RCA also had a new color camera, the TK 76, that was shown for the first time in Europe in Montreux. This battery powered camera couples with a portable cassette recorder, the TR 1000, a time base corrector, the TBC 1000, and a small microwave system, the TVM 1000. For studio or replay, or editing, a companion VTR, the TRP 1000, is used to put together news or other programs. RCA claimed the system could be set up in minutes and could be used from a building window to relay images back to a mobile van or the studio.

The next category related to Electronic Journalism was in evidence in the proliferation of small mobile vans designed and constructed for this application.

The RCA version in this category was built at their U.K. facility in Jersey and used a Range Rover chassis that could mount three cameras using the van's tailgate and the roof-deck. Recording was done inside the van by a pair of TPR 10 quad VTR's or a single TR 600.

The Fernseh news van could also field two color cameras and used a BCN mobile recorder internally together with video mixing equipment that allowed for title insertion and up to four inputs. Other vans incorporated AVR 2's or IVC helical recorders, depending upon the supplier and the equipment specified by the customer.

The Marconi Company announced its start of production on the IBA-developed Digital Intercontinental Conversion Equipment (DICE). DICE is an all electronic field store converter which can translate NTSC 525 line color pictures into 625 line PAL or SECAM. Marconi has been assigned worldwide manufacturing and marketing rights by the British Independent Broadcast Authority.

Summary

The Montreux Television Symposium and Exhibition has unquestionably become the major European platform for the world's manufacturers of television equipment. It is the one place where the widest range of such equipment is visible under a single umbrella (something not to be forgotten when you go to Montreux) of exhibits.

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The following are comments by Joe Roizen (our Video Editor) on the selection of John Silva as this year's NAB engineering award winner.

The NAB engineering award for 1975 went to John Silva, a television veteran and long time chief engineer of KTLA, Channel 5, one of Los Angeles' most noteworthy independent stations which was owned by Paramount and is now part of Golden West Broadcasters.

Silva was recently promoted to director of R & D for a joint venture between KTLA and Garrett Corporation to develop airborne television equipment.

According to the NAB engineering committee, this well-deserved award was given to Silva in relation to his well-publicized work on the TV news telecopter which he developed and won an Emmy for. This "eye in the sky" gave KTLA a special advantage over the other local stations, in the gathering smog of the Los Angeles environment.

The early fifties, during John's tenure, saw some exciting changes in TV. He found ways to cope with the engineering problems of the televising of the first atom bomb blast from Nevada, when no microwave networks to L.A. were in existence. He supervised the installation of the first color studio on the West Coast, put together from prototype equipment bought off the floor of an NAB convention, and then built the first color mobile unit which acted as a studio control room or mobile color van on demand.

Then there was City at Night, a surprise visit to some interesting spot in that 450 square mile megalopolis to bring the viewers a one hour, unrehearsed view of a visiting battleship, Don Loper fashions, a movie studio, or the Ice Capades. EJ was not even a gleam in anyone's eye, but KTLA remote crews had a few healthy ex-Canadian hockey players who could bodily carry a live camera (transistors were still to be invented) with 32 conductor cable attached down the conning tower of a submarine or up the ladder of a water tank to bring back scenes of one of the worst train wrecks in Southern California's history within 30 minutes of it happening.



John Silva (right), NAB award winner, reminisces with BE Video Editor Joe Roizen.

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NEW PRODUCTS

Production Switcher

Telemet, one of the Geotel Companies, has announced a totally new TV broadcast production switcher, Model 7960, which was previewed at NAB in Las Vegas. The 7960 combines the latest in production effects, a modularly expandable package, and features highest reliability, state-of-the-art integrated circuitry design throughout, assuring the standards of performance and dependability expected from every product bearing the Telemet name.

Model 7960 is a 4 bus switcher with re-entry and an independent preview option. The control panel is available in 3 standard configurations; 9, 15 or 21 inputs. Custom panels are available with up to 29 inputs, additional key, preview and program busses, machine control, audio breakaway, etc.

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Mixing Console

Sphere Electronics has announced their new Alpha I & II Pro-Quality mixing Consoles. Equipped with 8 input channels, the Alpha I has stereo outputs and Alpha II features 4 mixing busses. Designed for broad use in television, film-sound, and all recording work, the small size (22"W, 23"D, & 9"H) combined with numerous functions makes it a practical remote mixer or a permanent sound system.

The Alpha series contain long-throw, conductive plastic faders, solo input, program echo & return, independent cue mix, program echo pan (optional 2 or 4 buss assign color-coded & illuminated pushbuttons), full monitoring control, and an optional Hi/Lo equalizer—all housed in an expandable input new package.

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Eddor, manufacturers of wireless sound systems offers the All Purpose Wireless Sound System designed to convert any wired type standard or portable PA or recording system into wireless sound. This compact system offers high quality sound reproduction while providing total mobility to existing wired type systems without a single microphone wire.

It is available as a system only and consists of a lavalier radio microphone/transmitter and a miniature receiver antenna unit, both totally battery-operated. The lavalier microphone clips to a shirt or dress leaving both hands completely free while the receiver is easily mounted on any recorder or PA system and connects to the microphone jack input. Each unit features solid-state circuitry for worry-free performance and distortion-free reproduction enclosed in a rugged light weight Lexan case.

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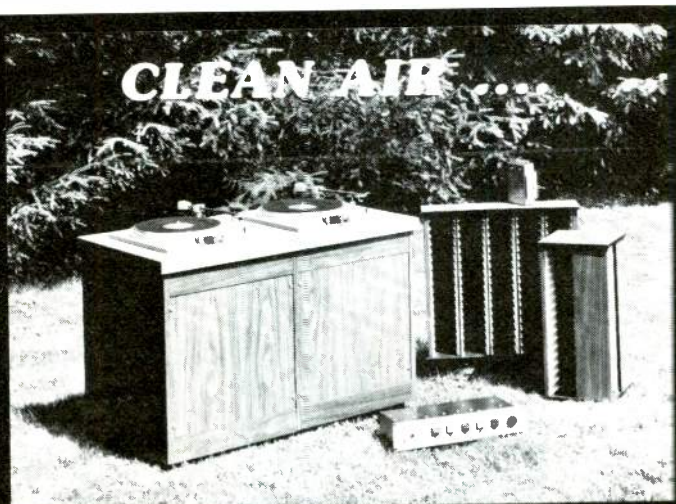
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Compact Audio Console

Broadcast Electronics, Inc. announces the introduction of a new, compact audio console. Designated as the Model 4BEV-50 "Versa Console," this new console is a versatile single channel mixer designed for CATV, CCTV, film studios, commercial sound installations, dubbing facilities, and remote broadcast uses.

The Versa Console has four mixers and it accepts ten inputs—seven inputs being externally switchable for microphone or line level sources. All inputs are transformer coupled to IC pre-amplifiers. The mixers are long life sealed pots with cue detents. The Versa Console provides both a balanced 600 Ohm line output and a high impedance PA output. An internal 1 kHz test oscillator supplies tone directly to the mixing bus to facilitate quick and accurate level adjustments.

Monitoring facilities in the Versa Console include a switchable VU meter, a separate FET muted cue amplifier and a speaker. There is also a front panel headphone jack switchable to either the program or cue circuits.

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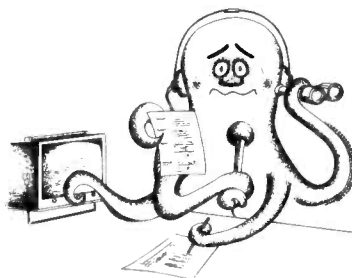
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LIVE Journalism Equipment

A quality broadcast portable video system for on-location coverage of documentary and live news events has been placed on the market by **Ampex Corporation**.

The system was demonstrated for the first time at the Ninth International Television Symposium and Technical Exhibit at Montreux, Switzerland.

The ruggedly-designed system features the lightweight Ampex BCC-2 hand-held color camera, associated portable VR-3000B battery-powered videotape recorder/reproducer and TBC-900 digital time base corrector.

The BCC-2 is equipped with a battery pack that provides 1.5 hours of operation and an AC-operated power supply. With a special cigarette lighter adapter, it can also work off a standard 12-volt automobile battery.

Designed for remote use, the lightweight BCC-2 comes with a 10x zoom lens and tiltable viewfinder. Three 1-inch Plumbicon™ tubes, including an extended red, are standard.

External controls on the BCC-2 are conveniently located in the camera head. They include automatic/manual iris, headphone level, power switch, VTR stop/record, master video gain,

auto white balance, and encoder-video-bars.

The viewfinder has external controls for contrast and brightness and a peaking signal switch.

Workhorse of the portable broadcast system is the 55-pound VR-3000B, an improved version of the widely used Ampex VR-3000.

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Up/Down Counters

ESE is now producing the ES-301 and ES-302 digital, up/down counters. Both are 4 digit, 100 minute timers featuring four .55" planar gas discharge displays. Digitals display up to 99.59.

Six separate controls count up, count down, stop; minutes advance, seconds advance and re-set. The controls are single pole; momentary, push-button switches. When the stop control is pressed, the 4 digit display is automatically held at the precise second.

Both the ES-301 and the ES-302 may be pre-set to a desired number for a specific count and timing can be activated from that point, up or down. Desired numbers on the ES-301 can be pre-set by advancing the minutes and seconds simultaneously or independently.

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With the Model FIM-21, electromagnetic field strengths can be measured to within 2% across the entire 535 to 1605 KHz AM band. And to intensity levels as low as $10 \mu\text{V}/\text{m}$. Its integral shielded antenna in the cover, front panel speaker, large illuminated mirrored meter, and ganged oscillator/receiver tuning, make it easy to operate in the field. An optional telescoping stand adds convenience. It's also a versatile instrument - use it as a tuned voltmeter for RF bridge measurements.

Contact us now for complete details on our line of field strength meters.



POTOMAC INSTRUMENTS

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Parametric EQ Consoles

Audiotechniques, Inc., Stamford, Ct., announces the immediate availability of the new Allen & Heath Modular Series audio mixing consoles. The new consoles by the well-known British manufacturer have been designed to economically meet the requirements of the new or expanding multi-track recording studio. The consoles are offered in a variety of con-

figurations from eight input/two output to sixteen input/eight output. The totally modular system of construction permits immediate expansion as required.

Design features of the Allen & Heath Modulares include full TT series patch bay, three range equalization with parametric mid range, complete separate monitor mix section with overdub/sync capability, phantom powering, variable frequency oscilla-

tor, cue mix, echo and cue sends, talkback/slate and other features usually found only on the most expensive mixing consoles.

For More Details Circle (71) on Reply Card

Video Tape Cleaning Cassette

A "Scotch" brand Head Cleaning Cassette has been introduced with a pre-recorded color-bar signal that indicates when the tape has finished its job. 3M claims this is the only cleaning cassette available with this feature.

3M's Magnetic Audio/Video Products division says that "with proper handling and attention to operating instructions...the tape should be effective longer than two years."

The cassettes, containing five minutes of pre-recorded cleaning tape, are for 3/4-inch U-Matic machines. Packaged in 3M's protective shipping/storage container, the cleaning cassette is marketed (after May 1) through helical video tape dealers handling "Scotch" brand tapes and accessories.

For More Details Circle (72) on Reply Card

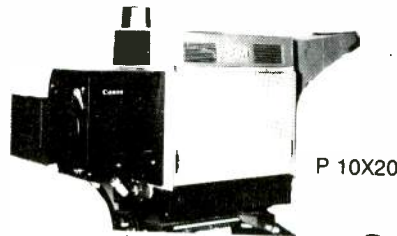
Character Generator

Datavision Video Products, Mincom Division, 3M Company, is now marketing a video titler providing multiple-font capability.

The titler, Datavision D-3000, is supplied with characters of Style 1, a typeface patterned after News Gothic Bold, in 2 fonts: 28 and 20 scan-lines high. Style 2 is an optional, specially-designed serif typeface, with 28 and 20 scan-line type fonts. A switch selects either style. The two character sizes can be used separately or intermixed.

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According to Frank D'Ascenzo, "The D-3000 produces high-quality characters, without the obvious stair-step effect of lesser equipment. The reason for this is 1120-element resolution of the characters. Yet, the D-3000 sells for thousands of dollars less than units offering comparable character quality."

Housed entirely in desk-top enclosure, the D-3000 is designed for "remotes" as well as studio use. Unit is trim, compact and lightweight. Composition is easy with full cursor controls, automatic centering, separate preview display, and simple edit and erase functions. The built-in random access memory (RAM) stores four full pages, each page a maximum of 10 rows, with 22 characters per row.

For More Details Circle (73) on Reply Card

Hand-Held Color Camera

Philips "NOMAD" LDK-11 Broadcast-Quality, hand-held color television camera was one of five new color cameras introduced by the Broadcast Equipment Division of Philips Audio Video Systems Corp. at the 1975 National Association of Broadcasters convention in Las Vegas.

The tiny (15 pounds including camera head with electronic viewfinder and lens; 16-pound backpack) camera uses three 2/3-inch Plumbicon imaging tubes with bias light to minimize lag at low light levels.

Uniquely, it produces a fully processed, NTSC encoded, contour enhanced signal coming out of the backpack. It has a built-in sync generator and is capable of being genlocked.

Among other features are two commentator microphone channels, automatic white balance, and automatic iris.

For More Details Circle (74) on Reply Card

Automatic Video Equaliser

Matthey has a new product for TV broadcasting stations—the 'Automatic Video Equaliser 2503'.

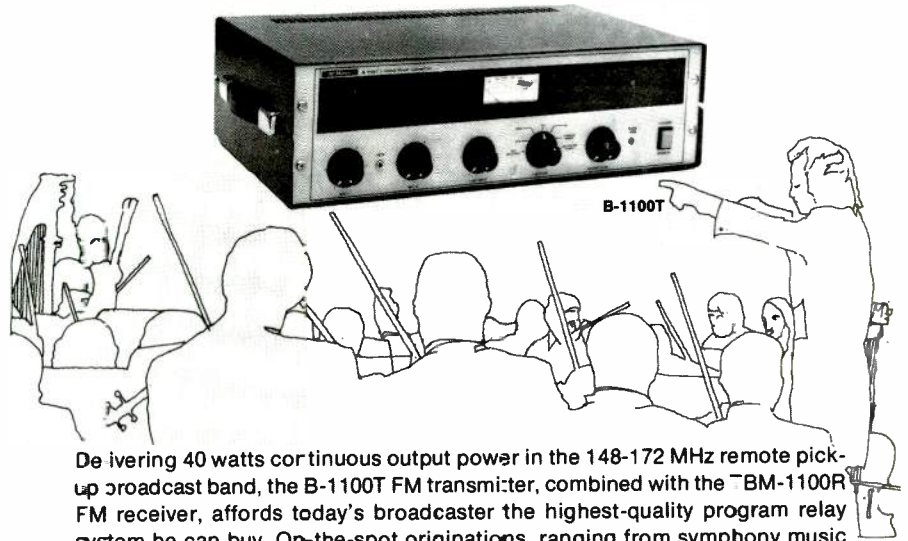
Designed for the PAL and SECAM colour systems, the '2503' will detect, and continuously correct, distortion in the six parameters of the video signal that are most noticeable to the viewer at home; overall signal level, 2T pulse amplitude, 2T pulse shape, bar tilt,

chroma amplitude and chroma delay.

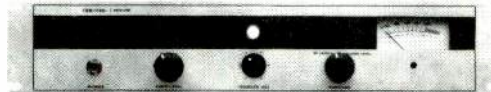
The unit works on an I.T.S. (Test Signal) incorporated in the transmitted picture. As the I.T.S. is received by the '2503' it is compared with stored reference voltages, and any differences are then corrected electronically.

Principal uses of the new Automatic Video Equaliser are at station inputs, station feeds to the transmitter, in central apparatus rooms for

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Delivering 40 watts continuous output power in the 148-172 MHz remote pickup broadcast band, the B-1100T FM transmitter, combined with the TBM-1100R FM receiver, affords today's broadcaster the highest-quality program relay system he can buy. On-the-spot originations, ranging from symphony music to emergency news-break coverage, puts the broadcaster "where it's at" ... quickly, economically and reliably.

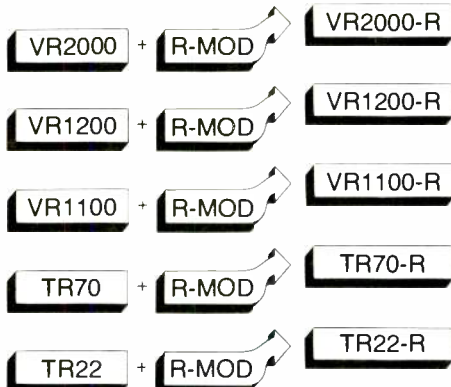


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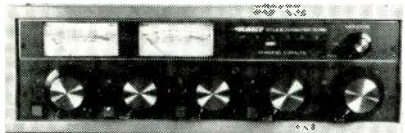
The field installable modification kit upgrades your existing VTR transport to achieve performance like that of the newer vacuum buffered drives.

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50 For More Details Circle (45) on Reply Card

establishing outside broadcast lines quickly, and at the input to standards converters or transcoders, where the '2503' can be used in either closed or open loop modes.

For More Details Circle (75) on Reply Card

LIVE Journalism

RCA introduced its new electronic newsgathering system that combines a battery-operated color TV camera and portable video tape recorder with a lightweight microwave link for live picture and sound relay to an accompanying van or directly to the studio.

The Newsmaker system for news, sports or other remote coverage was featured in RCA Broadcast Systems exhibit at the National Association of Broadcasters convention.

With the portable microwave system, LIVE TV news coverage can be transmitted from a building window to a mobile unit on the street, for example, or pictures of a golf match sent to a relay point for re-transmission or recording.

RCA officials said the new lightweight TV equipment can be set up and microwave links established in minutes, giving the broadcaster the option to put live coverage of fast-breaking news on the air immediately if desired.

The system's camera is RCA's newest color portable, the TK-76, which weighs less than 30 pounds, including camera head, electronic viewfinder, 10-to-1 zoom lens, and power pack.

The camera's small size is made possible by using three two-thirds-inch diameter pickup tubes. Despite its compactness, the camera has a shock-mounted optical system, with prism efficiency four times that of field lens systems. It also has such big-camera features as aperture correction, automatic iris and automatic white balance.

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Audio Diplexer

Coastcom announced the development of a new FM program audio diplexer, designed to provide full fidelity stereo or mono TV sound on nationwide, network TV microwave and satellite systems.

Designated the SBC 418, this system's receiver incorporates an exclusive active HF receive tracking filter. Designed after years of research, this filter provides the SBC 418 with high immunity to noise on

(continued on page 52)

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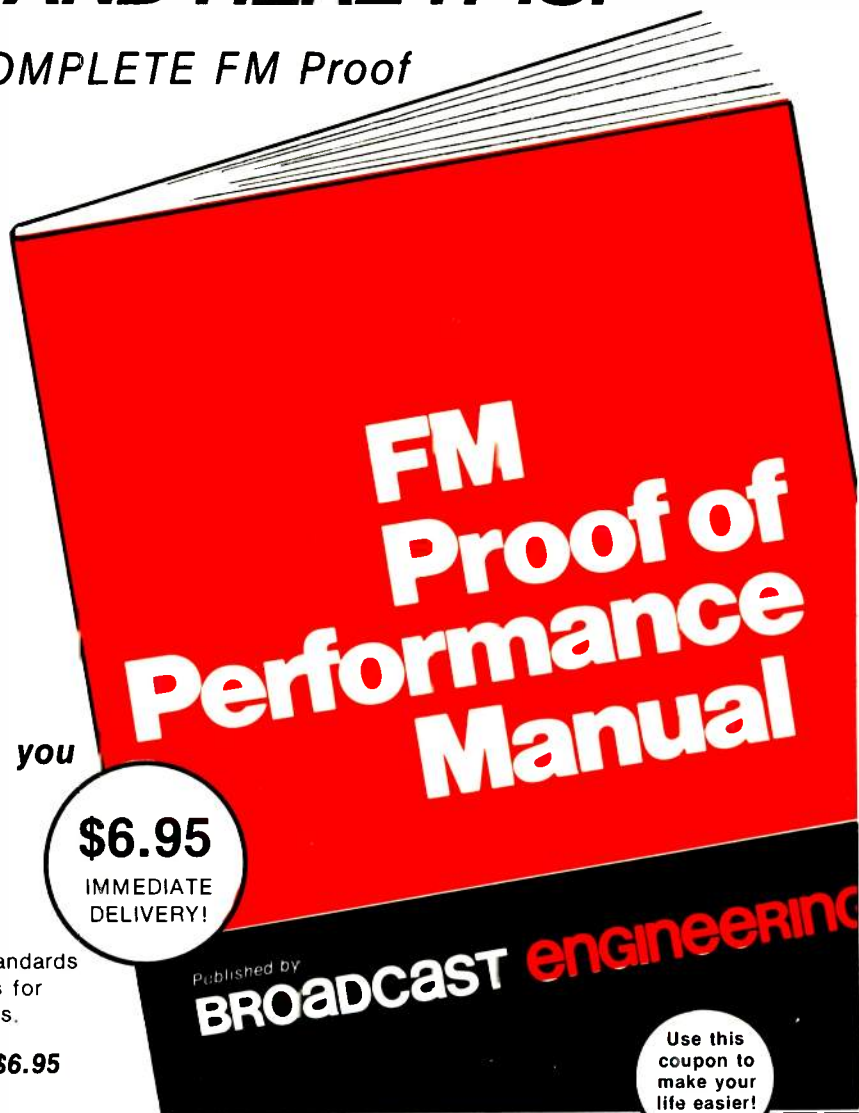
Here's everything you need to comply with the FCC's annual proof-of-performance test. Every procedure, every detail is spelled out *step-by-step* in simple, concise language—all reviewed by the FCC. You save time, money, headaches—and you're sure of doing it right the first time.

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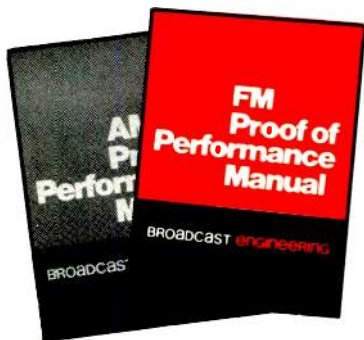
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For complete details write to:

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701 Chesnut St., Trainer, Pa. 19103
Telephone: (215) 497-5100

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(continued from page 50)

long haul microwave networks and satellite links. The filter allows the desired FM carrier to pass freely through its narrow pass-band window, but it presents a high impedance wall to the interference and noise commonly found on a long haul microwave system carrying video. Tests over 4000 miles of working TV network facilities confirmed the SBC 418's ability to overcome system noise and provide full fidelity stereo TV sound coast to coast.

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Transmitter Remote Control

The Moseley Associates DCS-2 is a transmitter digital control system that offers up to 90 channels and multiple-transmitter site operation.

The DCS-2 has capabilities up to 60 status channels and the PLU-1 parameter logging unit can record up to 20 parameter. A computer option allows computer-assisted operation, even full automation. Moseley also manufactures the DRS-1A digital remote system that has up to 30 channel and a companion 24-channel status subsystem. The DSL-1 digital logging system records up to 20 parameters.

For More Details Circle (78) on Reply Card

Tape-Cartridge Machine

Garron Electronics, Inc. introduced the new Elite Series Rapid-Q tape cartridge machine to broadcasters attending the NAB convention.

The Elite Series model E17 Reproducer and its companion unit, the E15 Record Module, are built around solid cast frames. The Reproducer features a brushless design Hall Effect motor which offers the high torque characteristics of a DC motor without electrical brush noise.

The new Elite Series Reproducer is the first with Electronic Solenoid Damping (E.S.D.) resulting in quiet solenoid operation and a constant rate of actuation applying force in proportion to the mechanical resistance presented by the tape cartridge and pinch roller.

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1-72-tf

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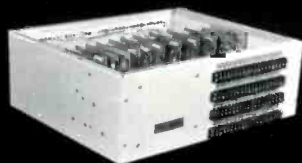
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