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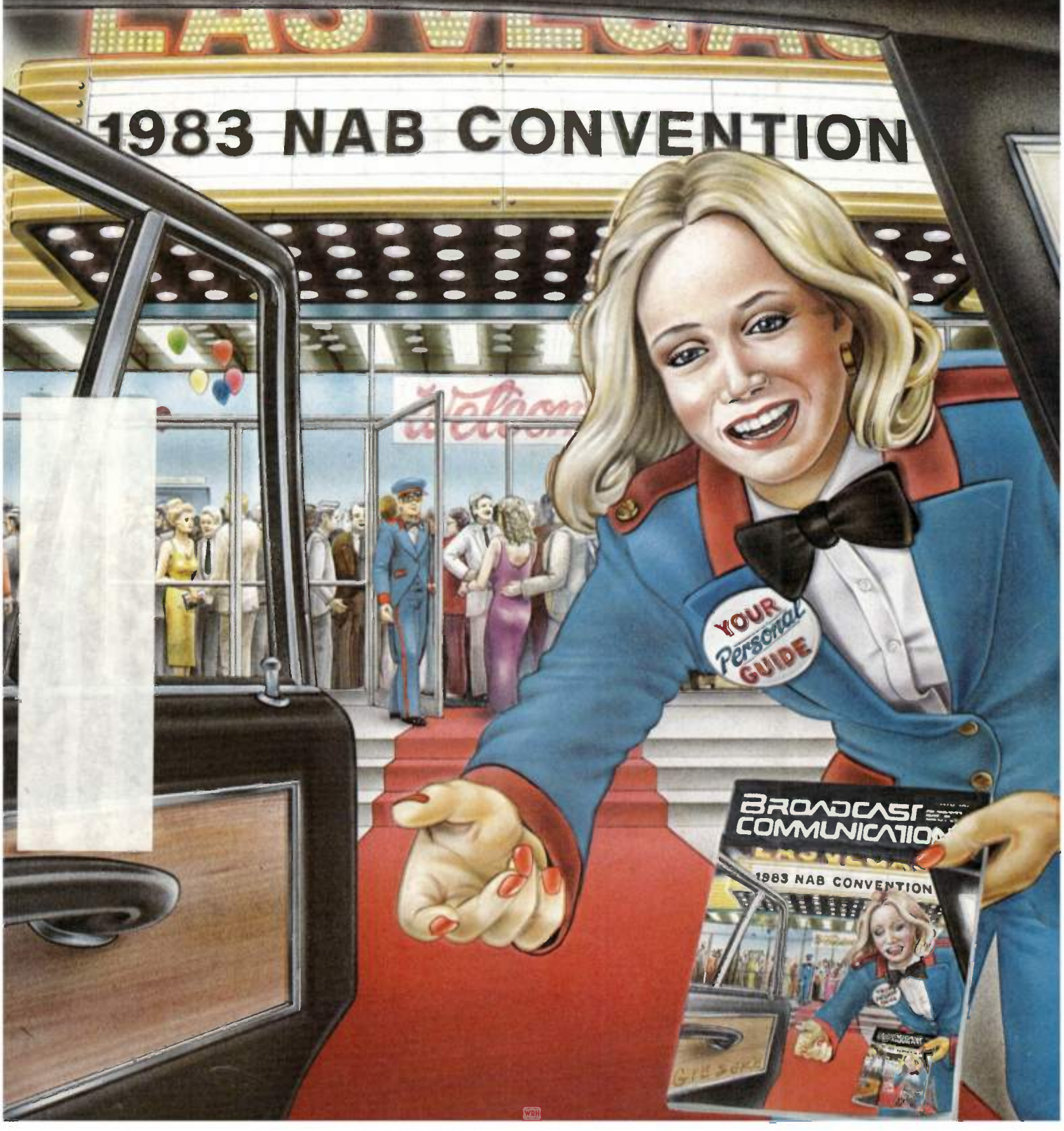
MARCH 1983/$3.00

THE INTERNATIONAL JOURNAL OF BROADCAST TECHNOLOGY



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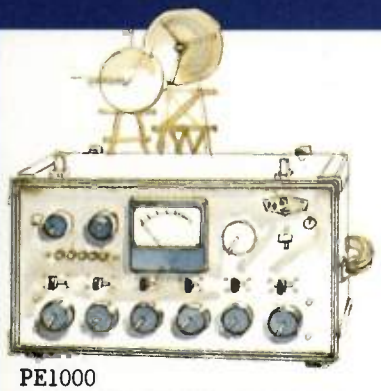

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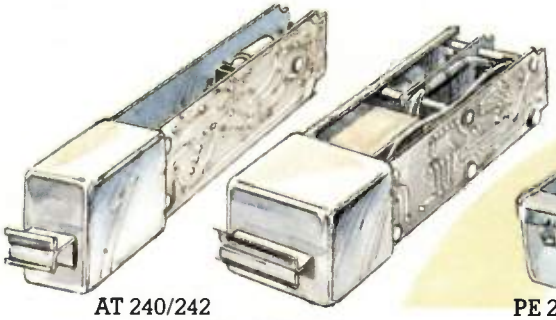

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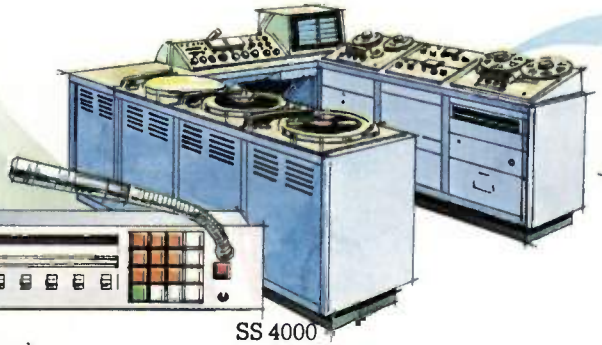

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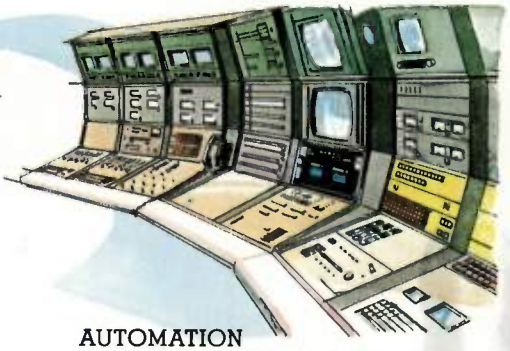

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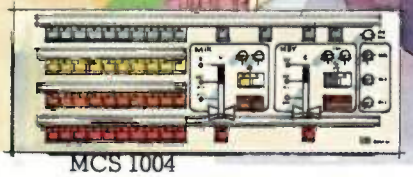

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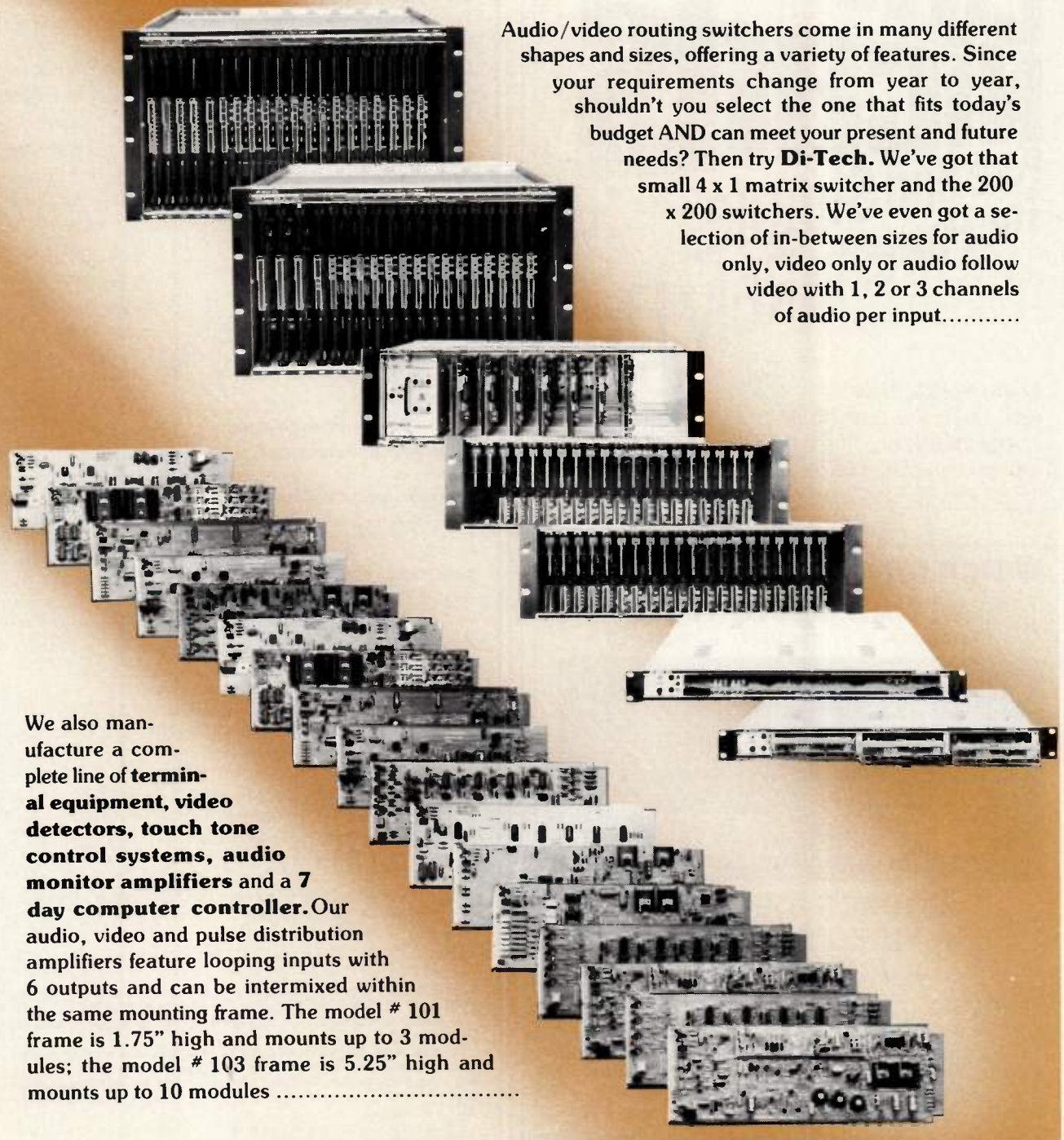

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BROADCAST COMMUNICATIONS

THE INTERNATIONAL JOURNAL OF BROADCAST TECHNOLOGY

NAB '83

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Cover illustration by Tom Gieseke.

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GVG 1600-1Xs, MkII DVE, Linked In Complete Video Post-Production System!

(LONDON) Complete Video, one of London's newest facilities houses has installed a unique post-production system featuring a pair of Grass Valley Group 1600-1X switchers (vision mixers) and a MkII Digital Video Effects system. The system consists of two identical edit bays each with full computer editing facilities serially interfaced to a 1600-1X. The MkII DVE can be used in either bay as required for the edit session.

The 1600-1X with standard E-MEM™ effects memory system permits control of most edit decisions from the editor keyboard. Complex effects involving switcher functions not controlled from the editor keyboard are easily programmed in the 1600-1X E-MEM system registers for precise re-creation at the appropriate edit point. With the E-Disk™ system effects can be stored on a floppy disk for use at a future session or for final auto assembly.

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The MkII DVE system provides the widest variety of effects provided by any unit. Not just the typical picture compression and expansion effects, but truly artistic effects such as chrominance/luminance resolution for posterizations, and strobing and decay effects for titles.

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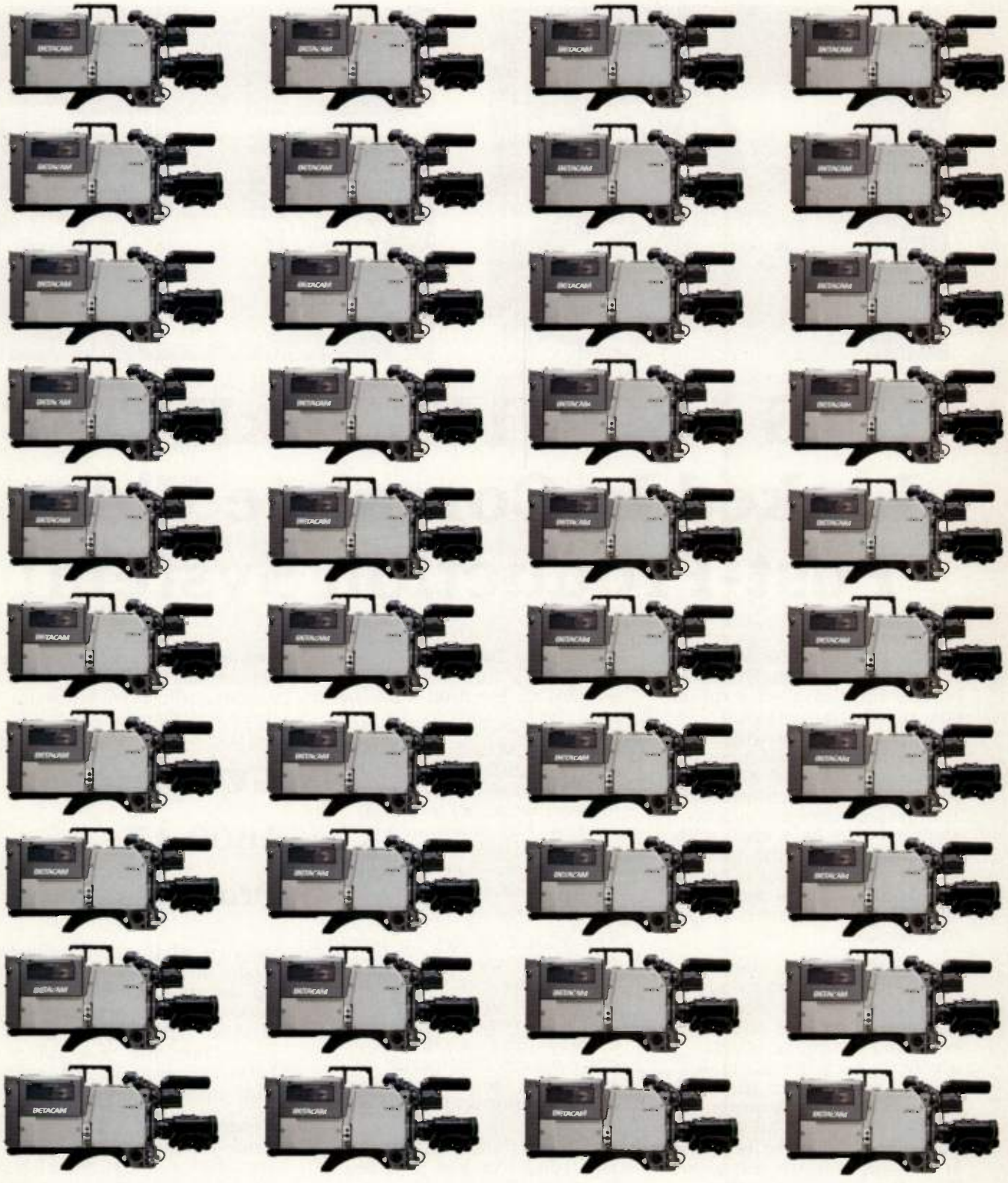
"TO RELIEVE MY CAMERAMEN'S BACKACHES AND MY



Art Biggs coordinates major engineering purchases for the six Corinthian stations. After careful evaluation of all the ½-inch camera/recorders on the market, he made a multi-million-dollar purchase of the Sony Betacam™ system.

"Betacam has several pluses. The most obvious of them are size and weight. We have one-man camera crews at all our stations. The camera/recorder that they take into the field is right at 54½ pounds. Betacam will reduce this load by more than half—a significant reduction.

"As for quality of playback, you can see the difference with the naked eye. Its superiority is most apparent in scenes of fully saturated colors, particularly reds. It's cleaner. It doesn't have quite as much of the heavy, stringy-type noise we've grown to tolerate over the years.

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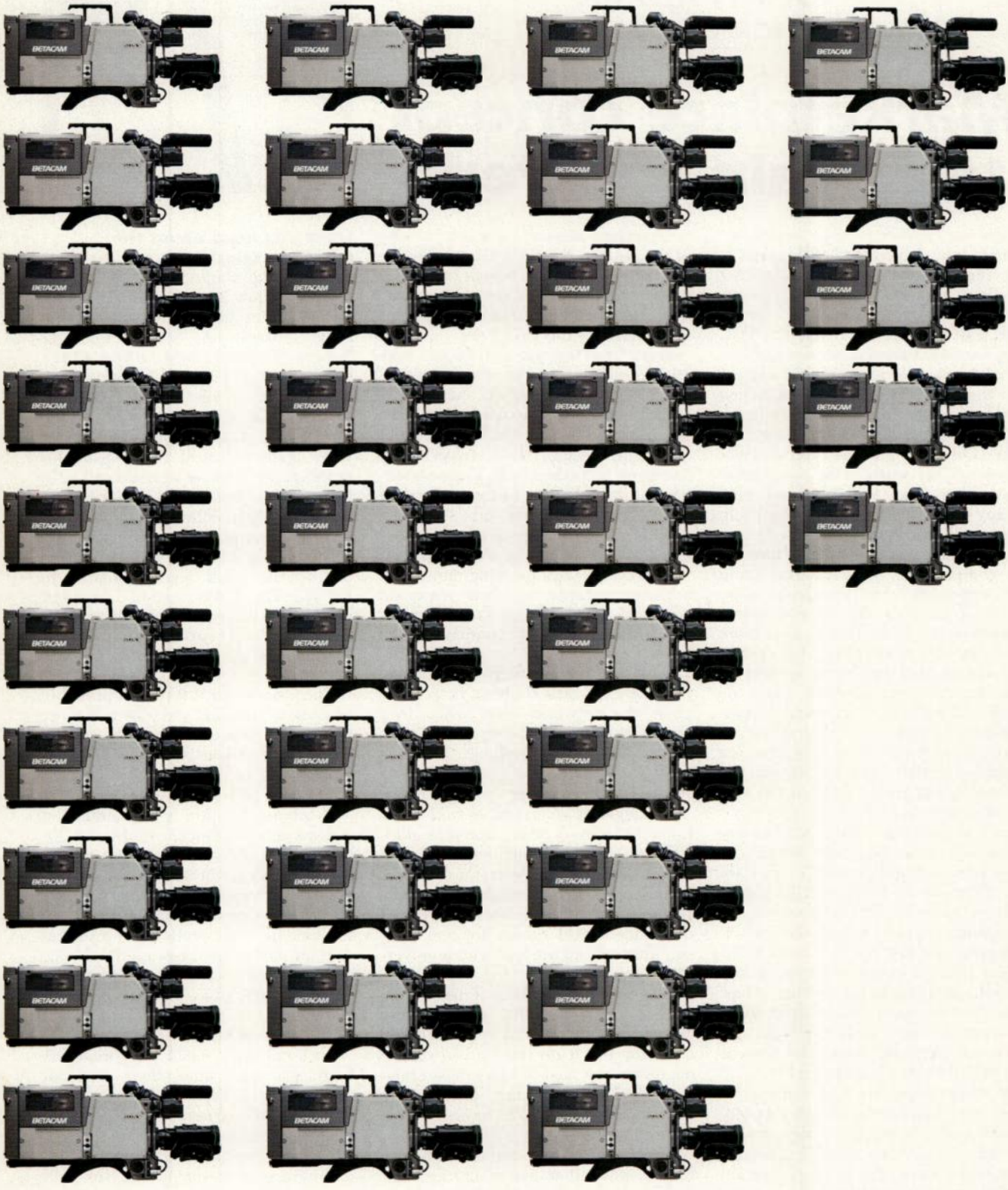
CONTROLLERS' HEADACHES, I TOOK ALL OF THESE."

—Art Biggs, Vice President, Engineering, Corinthian Broadcasting Corporation



"Another Betacam plus is that it's not a patchwork approach. It's a total Sony system developed from the camera to the recorder to the player.

"Then there's the bottom line. Betacam is at a very attractive price. It would have cost me hundreds of thousands of dollars more to get the same amount of camera/recorders that even approach this kind of quality from someone else.

"I'll definitely be back for more."

For more information on the Sony Betacam system, and there's a lot more to know, contact Sony Broadcast in New York/New Jersey at (201) 368-5085; in Chicago at (312) 860-7800; in Los Angeles at (213) 841-8711; in Atlanta at (404) 451-7671; or in Dallas at (214) 659-3600.

SONY.
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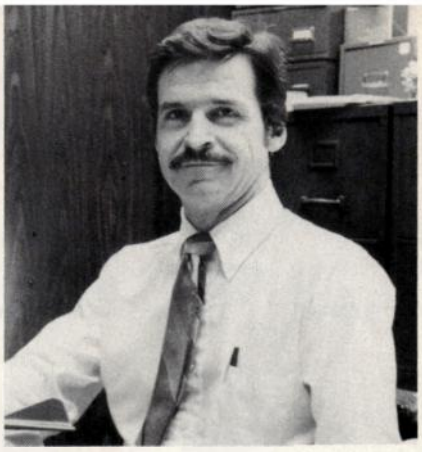
ON-THE-AIR

RON MERRELL



Marketplace concept to remain the trend

If the marketplace concept means anything, why doesn't the FCC apply it to the real world of communications? That's what the networks want to know.

It was back in 1970 that the FCC adopted their financial interest and syndication rules. At issue was the contention that the networks were restricting program competition. How? By favoring selection of programs where they would obtain a financial interest in syndication. They were, in fact, accused of paying less than the programs were costing in production! How long could anyone sell at a loss?

So the rules were intended to increase the competition, for networks would not be allowed to restrict sales based on financial interests. More independent producers would be free to deal more fairly in the marketplace. Of course, this meant that producers seeking financing for their product could no longer sell rights to or shares in the programs to the networks. This left the producers to seek financing only from the studios. And that move had the effect of decreasing the competition in the supply of programs to the video industry.

CBS pointed out in their late January comments to the FCC that even if the rules were warranted in 1970, they are out of line for the 1980s. As CBS stated, "In the 1969-70 television season, 60 companies supplied prime-time television programs to CBS, ABC, and NBC. In the 1981-82 season, there were only 41 such suppliers. As the number of suppliers has decreased, the market share (in terms of hours) of the top eight suppliers has increased from 43.6 percent in 1969-70 to 59.4 percent in 1981-82."

At a time when new technologies and other new rules have spawned a variety of new delivery systems, program supply has never been more important. And, meanwhile, the networks remain buried under rules that they say were never more inappropriate than they are now.

What of deregulation and the marketplace concept? Or are they reserved for everything but full-power, over-the-air television?

While the networks have been gathering support, the studios and the independent stations have the backing of the NAB in opposing repeal. There's no doubt that independents have been growing in power and showing increasingly better in the ratings war. And this is the result of the 1970 rules.

Scars from the war will be left with others, such as the Association of National Advertising (ANA). Megabucks are involved for the networks, but if the wounds are deep with the ANA (let alone the AAAA), the networks may lose more in the long run. Their contention is that costs are a factor, and repeal might bring on higher costs. This cost would be passed along to advertisers. A quick run through the cable channels these days shows a growing number of advertisers displaying their wares on cable TV. So advertisers already are going further than just considering the alternatives.

Both sides have some points to make. But the FCC will show us how much clout the networks have when they resolve this one. And they will further define their marketplace.

A universal answer

As suggested several times in this column, AM stereo's future would be guided by receiver manufacturers. At the recent Consumer Electronics Show, manufacturers showed they were putting emphasis on receivers that would do justice to AM stereo. But one, Sansui, jumped into the lead with a universal receiver.

The Sansui receiver will receive all systems automatically, without any manual switching. And apparently the company has it on the road so station engineers can hear for themselves how the receiver does not discriminate against any system. It receives them equally well.

The question now remains whether Sansui, and other manufacturers, can produce sets with acceptable price tags. They're saying the cost will be roughly 20% higher than sets designed to accept one AM stereo system.

The long-range effect will be that all AM receivers will be improved even if they don't accept AM stereo. And the fourth quarter of 1983 should see AM stereo finally reaching the home.

Have you head about the traveling salesman...

It's no joke. Radio has a new format. A new station is on the air in Gaithersburg, Maryland, with a "comedy radio" format. As station manager Robert Cobbins told BROADCAST COMMUNICATIONS, "It only took eight years to get the license for WJOK." The station signed on for the first time just as February got under way; and at press time, Cobbins reported that ad sales were booming. In fact, Cobbins said that WJOK sold over a half million dollars in advertising before the station went on the air.

Apparently there's no end to the comedy routines and jokes available to WJOK. The 1 kW station is stocked with comedy records and tapes collected over an 18-year period. Some of the material dates back to the turn of the century.

The jokes about WJOK will probably be endless. And that's fine with WJOK, because at least people will be talking about them. Advertisers hopefully will be laughing all the way to the bank... right along with WJOK.

If listener reaction is any indication of listener acceptance, WJOK is right on target. Cobbins reports that during the first week on the air, the station was flooded with calls from listeners outside the service area complaining that they couldn't hear the station. The station does hit part of the Washington, D.C., market, where a little humor undoubtedly will go a long way.

SBE at the NAB

As usual, the Society of Broadcast Engineers will hold their national meeting during the NAB convention in Las Vegas. Not so usual is the possibility that a prominent political figure may address the meeting. And along with installing a new president, the SBE will be considering a name change that would broaden its scope.

As covered in the February issue of *BC*, the SBE is sponsoring Operation Golden Rule. It's an attempt to improve frequency coordination while on remotes. For more information, call Richard Rudman at KFWB. He can be reached at (213) 462-5392. BC

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NAB '83 to stress productivity

BY EDWARD O. FRITTS

There is something for everyone at NAB '83 being held April 10-13 in Las Vegas. It is bigger and brighter than ever in terms of topic variety, session schedules, product exhibits, speakers, and entertainment.

NAB '83 has adopted as its theme, "Increasing American Productivity." This represents the broadcasting industry's initiative to combat one of our nation's most threatening problems. NAB is proud to have taken the first step in launching a program to help remedy a situation which directly affects our success as an industry and as a nation.

This convention will be my first as president of the National Association of Broadcasters; and the opening session presents an opportunity to share my thoughts with you on where NAB is now, and where we are going. At that same session, Vincent T. Wasilewski will receive the Distinguished Service Award. His remarkable career spans 33 years at NAB, the last 17 as president.

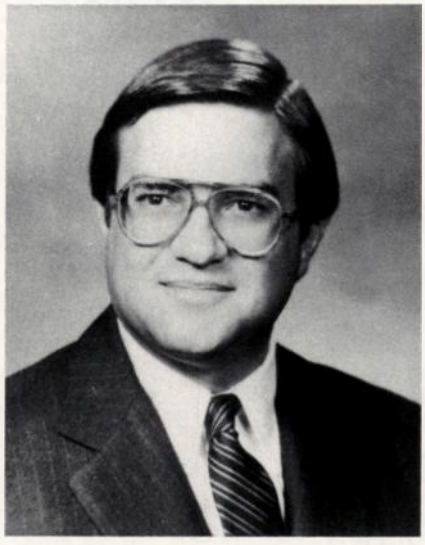
The grand opening of this, our 61st convention, will also be highlighted by country music's Oak Ridge Boys, whose unique style and unmistakable zest infects all.

On Monday, April 11, the official business begins with radio groups discussing all areas of money management: from investing, to effective sales, to cash flow. Concurrently, the television section looks into the crystal ball, discussing new technologies. And our engineers will help you keep pace with the latest in state-of-the-art broadcast studio and transmission equipment. Demonstrations will be available.

That same day, NAB's TV opening session will examine recent trends as perceived by the audience. Fifteen hundred viewers will let it be known how they feel about cable, pay TV, local news, and network programming. There will also be a session on strategic planning and venture investment to prepare attendees to evaluate information given in specific workshops (SMATV, MDS, teletext).

As an extra, all ham radio operators are invited to the 5th annual Ham Reception, Monday evening at 6 p.m. Chris Imlay, who serves as Washington counsel for the American Radio Relay League, will speak on recent regulatory changes which affect hams.

For the early birds among us, Tuesday's sessions start at 8 a.m. In one, your questions on the new tax laws will be answered by a panel of experts. In another, the international scene will be the focus—specifically, the bilateral meetings with Canada, Mexico, and Caribbean and Latin American countries.



The engineering luncheon on Tuesday features the presentation of the 1983 Engineering Achievement Award, with Joseph A. Flaherty, vice president, engineering and development, CBS Broadcast Group, as the honored recipient. Dr. George Brown, formerly of RCA Laboratories in Princeton, New Jersey, will deliver the luncheon address.

Throughout the day will be the ever-popular Sales Forum to help you improve your bottom line.

The Sales Forum will focus on what stations should be doing to increase sales quotas. There will also be a fascinating session on the 10 most common sales training errors and the 10 best ways to correct them.

On Wednesday, all radio and TV engineers are invited to a special session on spectrum management. Discussions will center on the problem of land mobile radio incursions into the broadcast spectrum, as well as the ramifications of new FCC-proposed rulemakings.

All the FCC commissioners are expected to attend a Wednesday forum where there will be complete updates on pending regulations at the commission and at other agencies. No other convention offers such a unique opportunity to question these key regulators.

Wednesday will conclude with a luncheon speech by FCC chairman Mark Fowler.

Radio engineers will find sessions on meetings with Canada and Mexico involving increased night-time power for Class IV stations and post-sunset operations for daytimers; the ever-worsening Cuban interference problem; FCC rulemakings on FM broadcasting which propose new classes of stations, closer separation for stations, and the deregulation and revision of FM-SCA transmissions; new methods for improved AM transmission; new uses for FM SCA's and stereo remote pickup systems; and case studies on AM stereo conversion.

For television engineers, there will be reports on establishing standards for advanced television systems (ATS); the findings of the newly formed standards committees; and engineering development in the areas of production, transmission, and recording. There will also be papers presented on topics such as digital recording systems, operational experiences with circular polarization, "loudness measurement," and control equipment.

Television engineers can look forward to the latest in satellite receiving terminal installation and plans for TV network distribution. There also have been marked improvements in UHF transmission systems and diplexing UHF signals in one waveguide. These will be covered, along with a progress report on the klystron tube.

NAB and a special industry committee have made evaluations on reducing FM interference to Channel 6 TV stations. Findings are to be presented to TV engineers, the FCC, and the entire industry. Our technical paper presentation will offer all engineers the latest in state-of-the-art technology. The focus is practical; and the information valuable and certainly applicable to engineers of every market size.

Being an industry in transition, television must look to solid, secure financial planning. Much information will be available, including discussions on expansion, renovation, construction, and even achieving energy efficiency

Continued on page 14

AFFORDABLE ONE-INCH

Introducing the Ampex VPR-80.
Type "C" broadcast quality on a budget.

Excellent picture quality and low cost. That's what you get with the VPR-80, the new professional video recorder from Ampex. Whether you're adding to your present facility, or moving into the professional video market, you'll find the VPR-80 to be a totally new concept. Yet, it incorporates the most demanded features of the world's most popular one-inch Type "C" VTR, the VPR-2, plus several new and advanced capabilities.

The VPR-80 provides the latest in recording technology. You get a transport designed for superior tape handling of all reel sizes from 6½ inch "spots" to 2-hour, 11¾ inch reels. It has dual microprocessors to control all VTR functions and servo systems, a universal power supply, built-in audio monitoring and a power-down feature that remembers the control panel setup even when the power's off. Plus built-in diagnostics to keep operation and maintenance costs to a minimum. But there's more.

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The VPR-80 was truly designed for the operator. And it's backed by the unique worldwide service and support that Ampex is known for. To find out how the VPR-80 fits into your application, contact your Ampex representative or write Ampex Corporation, Audio-Video Systems Division, 401 Broadway, Redwood City, CA 94063 (415) 367-2011.

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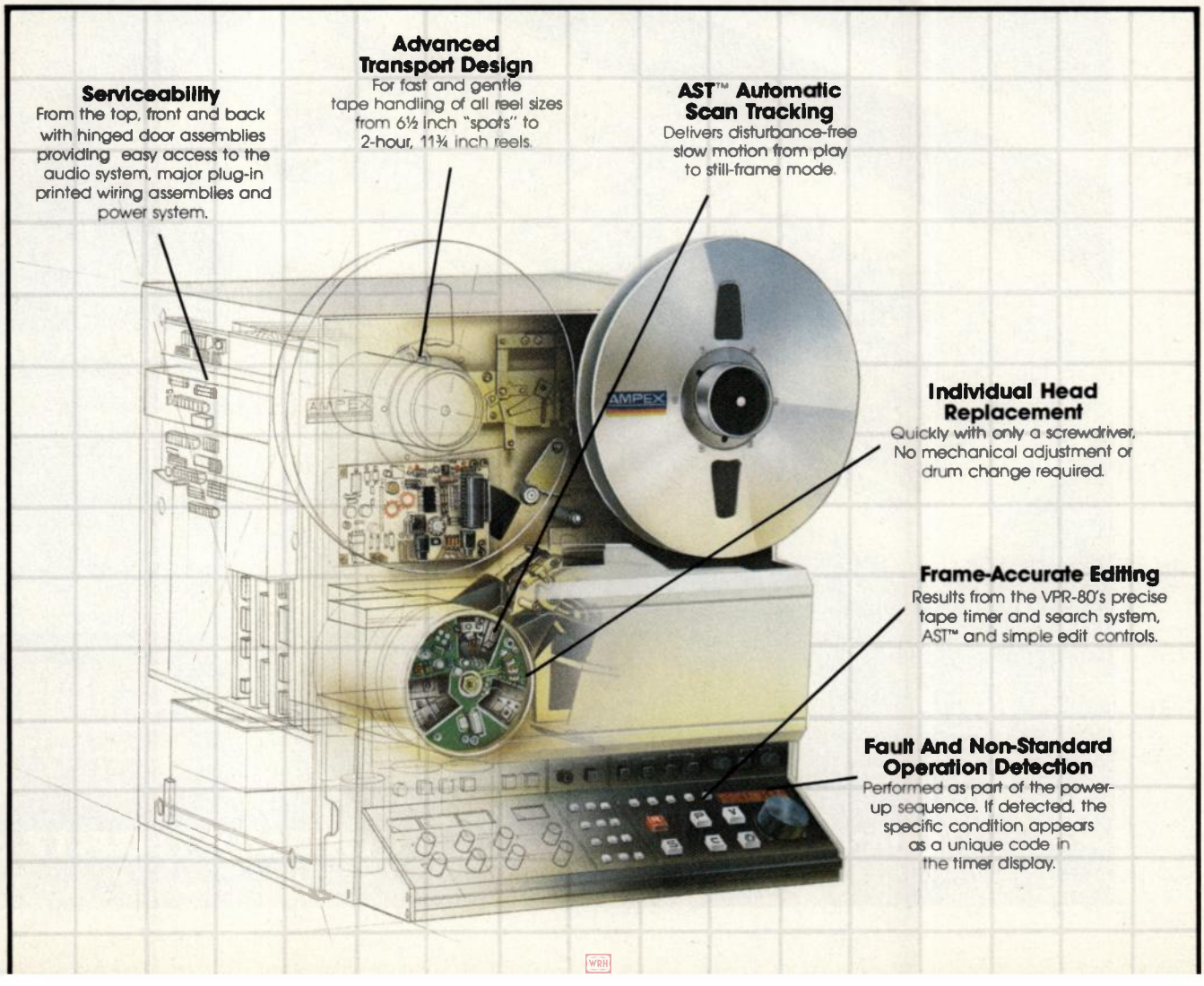

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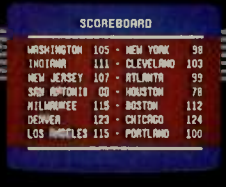

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for your television station. There will be financial management sessions for the not-so-financial GM, and even engineering sessions for the non-engineer.

Throughout the convention, there will be in-depth sessions on the changing regulatory climate, including an update on FCC and congressional efforts to loosen the reign on programming and business decisions. Discussions will center around a wide range of issues including national defense, broadcast deregulation, cable copyright, and the First Amendment. In other sessions, you will learn how recent developments in Congress, at the courts, and at the Copyright Royalty Tribunal will affect you in terms of sharing a piece of the "copyright pie." Now that spectrum scarcity is no longer a valid argument, we will discuss whether Fairness Doctrine rules are really unfair. Many senators and congressmen who serve on various committees representing broadcast interests will be present throughout the convention.

I invite all TV broadcasters to join me as we talk with Larry Harris, chief of the FCC's new Mass Media Bureau. This discussion will be open to all questions and comments on regulatory matters. It promises to be very informative.

Senator Howard Baker (R-Tenn.), who is instrumental in legislation to allow floor proceedings to be televised, will address our special TV luncheon on Monday. This year's special breakfast is sure to be as successful as last year's, as we meet and talk with legislative and regulatory staffs from Washington.

There will be a timely discussion on crime and the media. This has become an increasingly alarming problem, one in which broadcasters are becoming intimately involved. Are crimes committed for the publicity? Recent incidents point to yes, and this session will offfer solid advice on how broadcasters should be prepared to best serve the public interest.

NAB '83 will celebrate its grand finale with one of the greatest comedians of all time: Bill Cosby.

Clearly, topics and information abound. Our aim is to be productive—in more ways than one—at NAB '83. We've planned it with you in mind so that you can see the newest equipment, old friends, learn about state-of-the-art, and hear from those who set and change the rules of our trade in Washington. I sincerely hope to see you there to work, to learn, and to enjoy what NAB '83 has to offer everyone in the industry.

President, NAB

Boost transmitter efficiency with EIMAC TV tubes. VHF, UHF, MDS, ITFS.

EIMAC, a leader in communications tube design, introduces its new tubes for TV translators (transposers), low-power TV (LPTV), and TV transmitting service worldwide (VHF Bands I, II and III; UHF Bands IV and V).

In addition to concentrating on VHF and UHF applications, EIMAC has developed tubes specifically for Multipoint Distribution Systems (MDS) and Instructional TV Fixed Service (ITFS).

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Circle (10) on Action Card

WORLD UPDATE

SMATV study released

A new study just published on satellite master antenna television (SMATV) discusses the system's history and its emergence as a viable broadcast option. The study, released by the National Association of Broadcasters, also defines the numerous variations and requirements in its design and construction.

The 100-page study was prepared by the University of Tennessee's Dr. Herbert H. Howard, professor of broadcasting; and Dr. Sidney L. Carroll, professor of economics, College of Business Administration.

The study discusses practical and strategic suggestions for assessing, developing, and maintaining a successful SMATV installation. In addition, it includes a model analysis of dwelling variables, technical variables, programming, and marketing.

The SMATV study is available to NAB members for $15 per copy and to nonmembers for $45 per copy. Order from Judy Meehan, publications manager, National Association of Broadcasters, 1771 N Street, N.W., Washington, DC 20036; (202) 293-3529.

Conference to explore future of cable audio

Management, technical, and programming experts from the radio and cable fields are scheduled to speak at a comprehensive two-day conference on new technology being sponsored by BROADCAST COMMUNICATIONS.

The conference, called "Change, Challenge & Profit," will take place May 13 and 14 at the Sheraton Airport Hotel in Kansas City, Missouri. It is designed to explore new opportunities for radio broadcasters and cable operators in an era of rapid technological change.

Speakers will include Dennis Waters, president of Waters & Company, a radio consulting firm, and publisher of *New Radio*, a newsletter for the radio industry; Joshua Koenig, consultant to National Public Radio and director of the NPR Cable Audio Project; Ned Mountain, marketing manager of Wegener Communications, which designs audio modulation equipment for cable audio programming; Bob Pates, vice president of CNN Radio; William Rasmussen, vice president, corporate development, Satellite Syndicated Systems, which distributes audio and video services to cable operators; Ed Shane, broadcast programming consultant who is program director of KTRH-AM, Houston, and radio programming editor of BROADCAST COMMUNICATIONS; and Laurie Leonard, president and general manager of WMTV, Madison, Wisconsin.

Sessions during the two-day conference will cover the following topics:

- The impact of new technologies on radio;
- The future of cable radio and audio services;
- Management and technical considerations for new ventures;
- Programming ideas for "narrowcast" cable audio programs;
- How to get started in cable radio;
- How cable can increase radio's share of market;
- Generating additional advertising revenues;
- What the research says;
- National vs. local program alternatives;
- How joint ventures can profit both radio broadcasters and cable operators;
- Public radio's role in cable audio development;
- And more.

The conference fee is $395, including luncheons and coffee. Group discounts are available, based on the number of persons attending from one company. Special conference rates are available for rooms at the Sheraton Airport Hotel.

For more information on "Change, Challenge & Profit," contact Pamela Shane, Conference Coordinator, Shane Media Services, 7703 Windswept Lane, Houston, TX 77063; (713) 461-9958.

Study examines electronic publishing

The first in-depth analysis of the advertising-revenue potential for electronic publishing systems has been released by Communications Studies and Planning International.

Entitled "The Advertising Value of Electronic Publishing Systems," the report is part of CSP International's multi-client service, "The inContext Program on Videotex, Teletext, and Related Services."

"Now," said CSP International president Michael Tyler, "companies that have entered the electronic publishing business, or are thinking of doing so, have something substantial on which to base a financial model for their undertaking.

"Advertising revenues must be tapped if electronic publishing services are to be financially viable on a large scale. This study demonstrates that advertising revenues can be tapped, and tells the potential electronic publisher how to do it. In fact, the research shows that electronic publishing has substantial advertising-revenue potential."

Three of the emerging videotex technologies are examined in-depth in the report: one-way broadcast teletext, two-way videotex, and alphaphotographic cabletext.

While recognizing the distinct disadvantages of electronic publishing systems for advertising, as compared to the visual display and color capacity of color magazines and broadcast television, the report cites three major compensating advantages:

- Selectivity in reaching a highly specific audience with well-defined characteristics and interests;
- The immediate linkage that can be established between advertising and direct sales;
- The scope for direct, on-line electronic measurement of results in both cases.

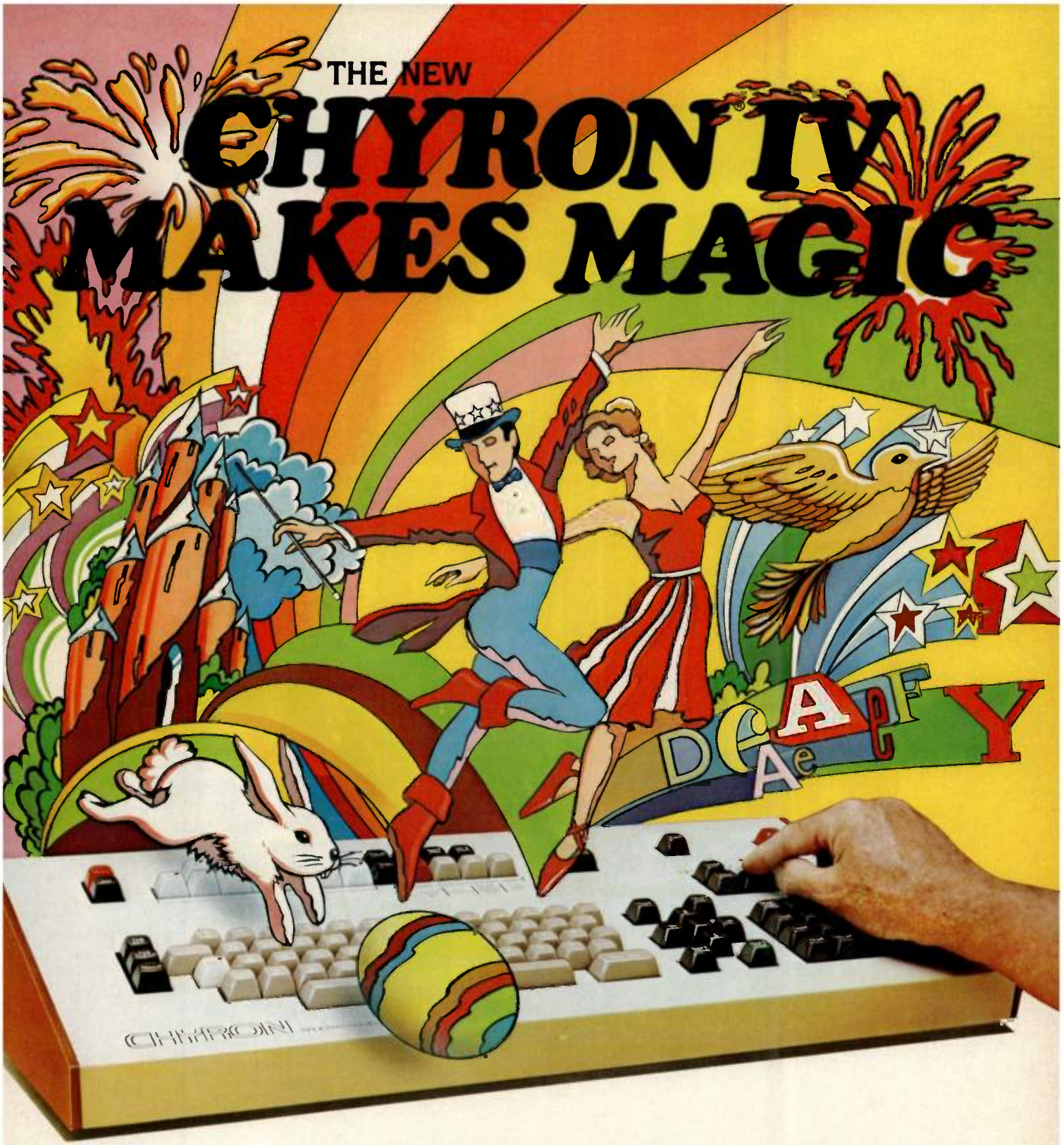
It is the effect of these factors on the market value of advertising space in electronic advertising databases that is analyzed. A two-stage process is used.

Said Tyler: "In the first stage, we develop a general approach to explain the observed market value of existing advertising media. In the second stage, this same approach is applied in order to assess the potential market value of advertising on electronic publishing systems."

The study identifies four major types of advertising "message positions" for each of the three electronic publishing systems and assigns to each cost-per-thousand (CPM) rates based upon the value of the spot in relation to existing media. The CPM concept is the basis of virtually all advertising buying in the U.S.

The study estimates advertising-revenue potential on a per-household basis for teletext, videotex, and cabletext in a manner analogous to broadcast media (i.e., by the number of audience members exposed to the message per day). Combining available

Continued on page 20



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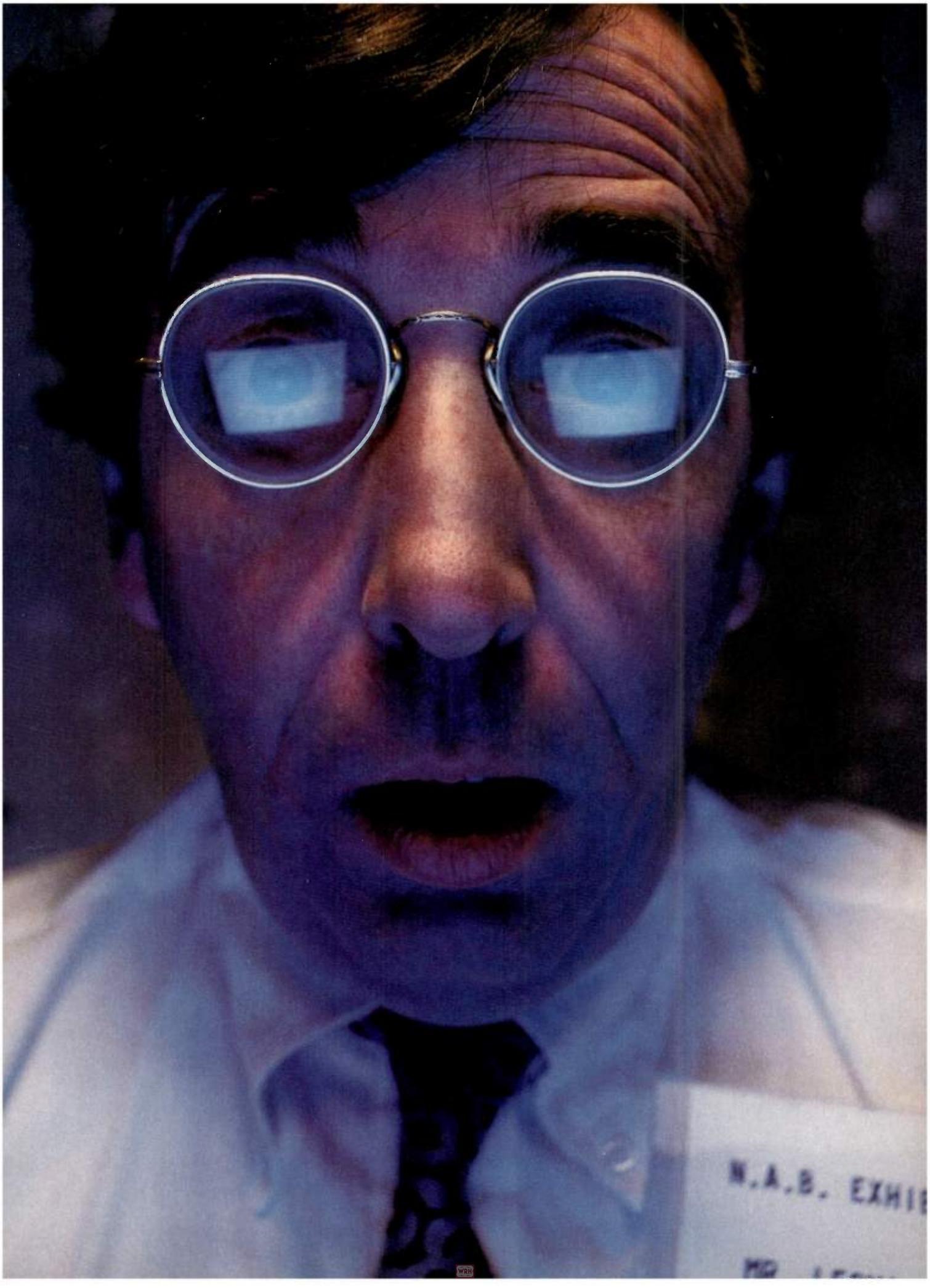
N.A.B. EXHI

usage data from Oracle (U.K. teletext) and Times-Mirror (U.S. videotex) with a model of the typical search path for each type of system, the researchers were able to draw the following conclusions on advertising revenue potential:

Teletext: Projected annual advertising revenues on a per-household basis for a 250-page magazine would be $7.03. While this is a modest figure, the very low costs of broadcast teletext suggest that it may still be sufficient to make systems profitable.

Videotex: The larger size of the system and greater time spent with it (45 minutes per day as compared with 23 minutes with teletext) leads CSP International researchers to conclude that revenues of $49.47 per household per year are possible. The long-term potential is much greater.

Cabletext: Cabletext (interactive, and with still pictures in gray scale and/or color on demand) is projected to produce about 25% more advertising revenues than the basic videotex system without this feature. The study reports per-household/per-year advertising revenues at $62.19.

Although the report cautions that its estimates are conservative at each step of the analytical process, the estimate for cabletext revenues is considered particularly modest. The report further points out:

"If the still-picture capability proves sufficiently attractive to direct-mail catalog advertisers, the full potential of cabletext may be substantially greater."

Persons wanting more information about CSP International's inContext Program or copies of the report should contact Sarah Ordover at CSP International, 90 Park Avenue, New York, NY 10016; (212) 599-1526.

NCTA attacks CRT decision

The National Cable Television Association has asked a federal appeals court to nullify the decision of the Copyright Royalty Tribunal (CRT) that increased copyright royalty fees paid by cable systems and effectively reimposed the signal rules that the FCC had repealed because they were not in the public interest.

"This cavalier disregard for the adverse impact of its rate adjustment decision upon the public interest is directly contrary to Congress' intention in carefully crafting the Copyright Act of 1976," the association said.

NCTA asked the U.S. Court of Appeals for the District of Columbia to set aside the CRT's ruling of November 19 which greatly increased fees charged cable systems for retransmission of distant broadcast signals affected by the FCC's repeal of the syndicated exclusivity and distant-signal rules.

NCTA told the court that the CRT's prohibitive rate increase ruling was "arbitrary, capricious, an abuse of discretion, and not in accordance with the law."

Further, the association said, the CRT did not support its actions in fact and refused to consider "the adverse impact of its decision upon communications policy and the public interest."

The association also maintained that the CRT did not have jurisdiction to issue its final decision because the statutorily mandated deadline for its proceedings had passed before the decision was issued.

"In setting such high rates," NCTA

Continued on page 22

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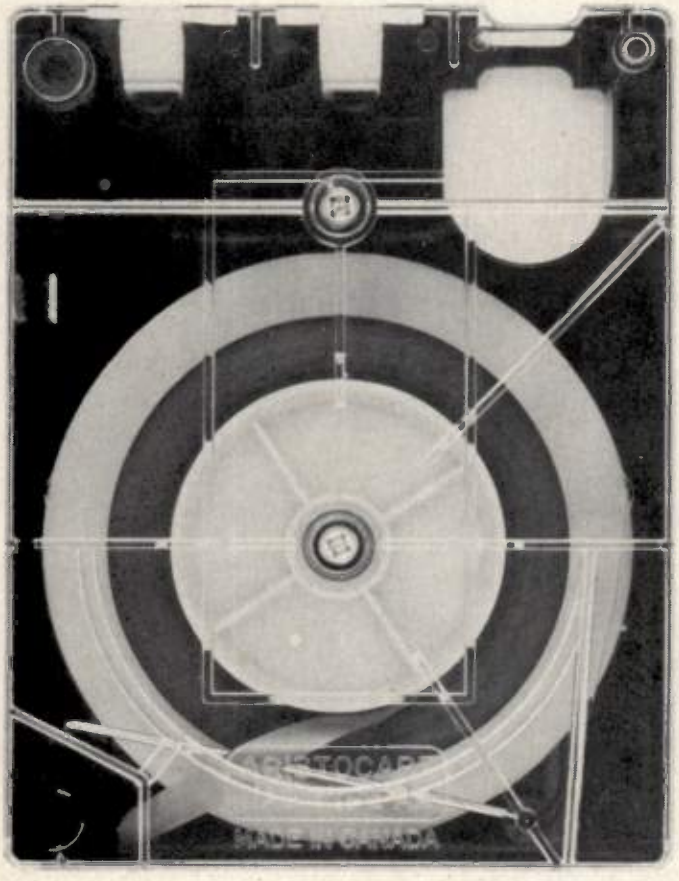
Circle (13) on Action Card

maintained, "the Tribunal upset the 'delicate balance' Congress intended to achieve between the need to encourage the flow of information to the public and the need to fairly compensate copyright owners for the use of these works." In setting the rates for distant signals far above their value to cable operators, the Tribunal has discouraged this flow of information, the association said, by forcing cable operators to stop carrying many of those signals.

NCTA noted that the Tribunal's only explanation for the very substantial increase in added signal rates was that the CRT considered the copyright owner's proposal for a 5-percent increase and somehow discounted that request. But the 5-percent proposal was based on an analogous marketplace argument that the Tribunal had determined, as NCTA had argued, was inapplicable to the distant-signal market. Moreover, NCTA noted that it had submitted a marketplace model showing that little, if any, adjustment in rates was warranted.



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VPA welcomes new members

The 14-year-old Videotape Production Association has launched 1983 with a new membership drive that for the first time encourages the participation of independents active in the videotape production industry.

Previously, membership in the VPA was restricted to corporations; but according to executive director Janet Luhrs, "The board of directors has recognized the growth of the independent contractor and their valuable contributions to the industry by establishing the individual membership classification."

The new $50 individual membership is open to independent or freelance producers, directors, camera operators, or other craft people involved in videotape production independent of a firm, company, or corporation.

Warren Rosenberg, chairman of the VPA's membership committee, notes that "the VPA is expanding its interests and activities. The new memberships will offer those who contribute so much to our industry an opportunity to participate more fully and help shape video's future direction."

Membership applications are available by contacting Janet Luhrs, VPA, 236 E. 46th Street, New York, New York 10017; (212) 986-0289.

NAB opposes DBS decision

The National Association of Broadcasters has asked an appellate court to reverse the FCC's decisions establishing a direct broadcast satellite (DBS) service and granting COMSAT's DBS application. NAB asked the court to instruct the agency to adopt rules and policies consistent with the Communications Act.

The commission has authorized the Satellite Television Corporation, a wholly-owned subsidiary of COMSAT, to construct a DBS system.

Saying that the commission "has usurped the function of Congress" and amended the Act on its own, NAB told the U.S. Court of Appeals for the District of Columbia that the FCC has violated the Act's requirement of local broadcast licensing by authorizing what amounts to national broadcast licenses.

Continued on page 24

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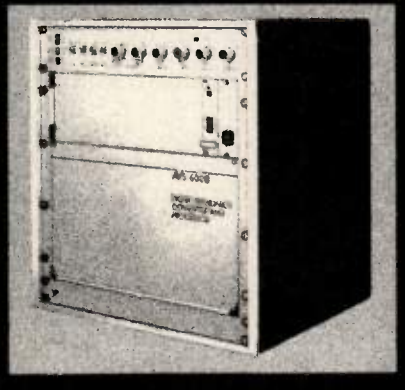

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SEE US AT THE NAB, BOOTH 1609-1611, RICHARD LUNNISS, NOEL PARENTE AND MARC BRESSACK.

Circle (15) on Action Card

It said that both the statutory language and legislative history "make clear that Congress intended stations to be licensed to localities, with concomitant local service obligations."

NAB stated that even if non-local licensing were permissible, STC is ineligible because its parent company is authorized statutorily only to function as a common carrier and is precluded from operating as a broadcaster.

It also said the agency erred by giving an arbitrary exemption to DBS broadcasters from the multiple-ownership restrictions that cover other broadcasters. It said the FCC did not even hold a hearing to determine the validity of STC's claim that it needed three channels to be commercially viable, even though that claim was refuted by STC's own submitted data. That evidence indicated that land-based subscription television stations would lose 40 to 80 percent of their market share to DBS, which would curtail their ability to provide locally oriented programming.

The association also asserted that "the commission's rush to embrace DBS and to grant STC's application is reflected not only in the refusal to hold hearings on substantial and material questions of fact, but in the commission's insistence that parties opposing STC's application state their objections before the commission adopted the rules and policies that would govern the application. By proceeding in this fashion, the FCC thoroughly entwined its rulemaking and its adjudicative functions and deprived interested persons of a full and fair opportunity to be heard."

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Circle (16) on Action Card

UPI installs satellite dishes

Broadcasters served by United Press International have switched off land lines and onto satellite news delivery in Wyoming. UPI has completed installation of its satellite dishes at all newspaper, radio, TV, and cable sites in the state.

Wyoming is the first state to go "all satellite" with UPI, as 28 subscribers have been connected to the Westar II signal. New Mexico is in the process of completing satellite installations.

The earth stations in UPI's program are a combination of 3-meter Harris dishes and 2-foot Equatorial dishes, which can be simply mounted on their own metal ring.

The conversion in Wyoming and New Mexico alone is expected to save UPI upwards of $100,000 per year, as the news service completes satellite conversion in every community it serves.

The program will complete a system of 2,000 earth stations by the end of 1983, enough to reach UPI's 5,400 domestic newspaper, radio, television, and cable TV subscribers.

Business Hotline

COMPUCON—Compucon, located in Dallas, Texas, has opened an office in Washington, D.C. The address is 1200 New Hampshire Ave., N.W., Suite 320, Washington, DC 20036.

AEG-TELEFUNKEN—AEG-Telefunken Nachrichtentechnik GmbH (Telecommunications Limited), based in Backnang, West Germany, is introducing top-quality, highly sophisticated telecommunications equipment to the U.S. market. Lines will include encryp-

Continued on page 26

THE WORLD'S ONLY FULLY DIGITAL TELECINE IS NOW IN AMERICA!

It's the MARCONI LINE ARRAY TELECINE B3410—the telecine that not only delivers a new standard of quality for film-to-tape transfers but can appreciably add to your productivity and profits!

The reasons are simple. The Marconi B3410's fully digital processing and CCD image sensors deliver an extraordinarily true video picture. And the Marconi B3410 does not require time-consuming tweaking, day-to-day adjustments and set-up arrangements that rob you of valuable hours of productive work.

The Marconi B3410 delivers full performance within two minutes from the time you switch on. Moreover, there is no registration drift and no tubes to replace. It interfaces with all available color correctors, converts into all international standards and—by its very digital nature—is designed to have an exceptionally long life.

And, because the Marconi B3410 is distributed and supported by A.F. Associates—America's largest designers and builders of video systems—there is no lack of engineering backup and spares on both the East and West coasts!

For more information on specifications, costs and delivery, contact Richard Lunniss in New Jersey (201) 767-1000 or Noel Parente in California (213) 466-5066.

THE MARCONI LINE ARRAY TELECINE B3410

Now in America and only from

AFA

A.F. Associates

100 Stonehurst Court, Northvale, NJ 07647

1438 N. Gower St. Box 47, Hollywood CA 90028

SEE US AT NAB BOOTH #1609-1611

Circle (17) on Action Card

ARTEL AT CAMERA MART:

WHERE YOU'LL FIND THE BEST NAMES IN VIDEO.

New Artel EN-1000 Portable Fiber Optic Audio/Video Transmitter.

Now, your crews can cover remote events where vans cannot go, where coaxial cable and microwave are not practical...returning audio and video signals of amazing clarity without interference, hum or ground loops.

Unprecedented ENG/EFP mobility! The tiny, one-pound Artel EN-1000 mounts on belt or camera and transmits *broadcast quality* video and audio up to two miles on lightweight fiber optic cable.

The EN-1000 attaches easily to standard video, audio and 12 VDC camera battery or power supply connectors, without adjustments, alignment or equalization. Connect the fiber optic cable to the EN-1000 and SL-2000 receiver in the van or control center, and you have studio quality transmission two miles over land or under the earth, around corners, over obstacles...wherever the story is.

The EN-1000 is available for sale or rental. At the Camera Mart, of course.

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

SEE US AT NAB BOOTH #1018 Circle (18) on Action Card

tion and scrambling equipment for all means of communications; wide-area and in-house paging systems; and special sound studio equipment. Martin Munzer, president of Solway Inc., Hollywood, Florida, is responsible for the sales, marketing, and service for these products. For more information, contact Solway, P.O. Box 7647, Hollywood, FL 33081-1647.

SHIVELY LABORATORIES—Shively Labs and SIRA s.r.l. have announced a joint marketing agreement to introduce SIRA products in the United States. SIRA, an Italian company, is a major European supplier of FM antennas as well as high-power and low-power TV antennas. It also produces a full line of RF components, including automatic switches, filters, and directional couplers. The Shively-SIRA products are available immediately, and will be exhibited at the NAB convention in Las Vegas.

BOSCH-FERNSEH—Bosch-Fernseh has received an Emmy Award for Engineering for development and implementation of CCD technology in its FDL-60 telecine. The FDL-60 uses CCDs to replace conventional pickup tubes. The company was cited by the National Academy of Television Arts and Sciences for "a substantial contribution to technical advancement in television." Fernseh manufactures and markets a wide range of advanced electronic equipment for broadcasting and teleproduction.

3M COMPANY—3M recently announced the acquisition of APC Industries, a privately held manufacturer of electronic test and measurement equipment for the telecommunications industry. Based in Austin, Texas, APC will be operated as a subsidiary of 3M's TelComm Products Division.

TELE-CINE—The recently reorganized Schneider lens manufacturing company is now fully operational. The new company is known as Jos. Schneider Optische Werke Kreuznach GmbH & Company KG, a West German limited partnership. Tele-Cine, located in Woodbury, New York, is the exclusive U.S. and Canadian distributor for Schneider TV lenses.

BASYS—Cable News Network will soon be delivering their rundowns with the help of a computer system supplied by Basys Inc. of Mountain View, California. News and commercial rundowns will be distributed for both CNN Headline News and CNN. The rundowns will be distributed on the satellite subcarriers associated with each service. The information will then be distributed to CNN's 135 broadcast affiliates.

Continued on page 30

Introducing our new klystrons for UHF TV

32kW of high efficiency power and no beryllium oxide ceramics.

K3230 and K3231 join our family of high efficiency klystrons.

- Power output 32 kW
- Efficiency 40% minimum
- Long life, 25,000 hours plus
- Bandwidth 8 MHz
- Water or vapor cooled

See us at NAB in booth 1335.

470 to 860MHz in one tube and no beryllium oxide ceramics.

K3270 BCD up to 15 kW power output
K3271 BCD up to 25 kW power output

- Efficiency 40% minimum
- Beam control device for low beam current
- Water or vapor cooled

Another innovative, cost-effective product from EEV, the Company that has continuously advanced high power tube technology for over 40 years.

EEV

Achievement in electron tube technology

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Circle (19) on Action Card

EEV4a

IN-HOUSE. INTERA

INTRODUCING THE NEW KA

KBS is a totally new computer system for the broadcasting industry. It's not a rewrite or an adaptation of any existing system. KBS was created from scratch by broadcasters, from a broadcaster's point of view, to meet broadcasters' needs—now and for decades to come.

Incredible power, capacity and flexibility.

KBS gives your station or group awesome information handling and communication capability: A single system that can handle traffic, sales, billing, accounting, autoswitching, word processing, films, news writing, and news archiving.

A single system that can accomodate up to 80 work stations (CRTs or tabletop printers), two high-speed line printers, up to eight remote lines with as many as eight displays or printers per line—all simultaneously, if need be.

KBS was designed for IBM System/38 hardware to give broadcasters a system with almost unlimited capacity and growth potential, unequalled availability of hardware and maintenance, simplicity of programming and operation and the choice of hardware lease or purchase.

The incredible speed and utility of a completely interactive system.

KBS links together every department in your station to form an integrated information network of unsurpassed usefulness. Information generated in Sales, for example, instantly becomes part of the database for Traffic and Accounting. Enter a contract and it immediately goes into the avails and logs.

Sensitive data, such as financial reports and payroll can, however, be restricted to authorized parties. And KBS can be networked with other IBM systems for corporate reporting and electronic mail.

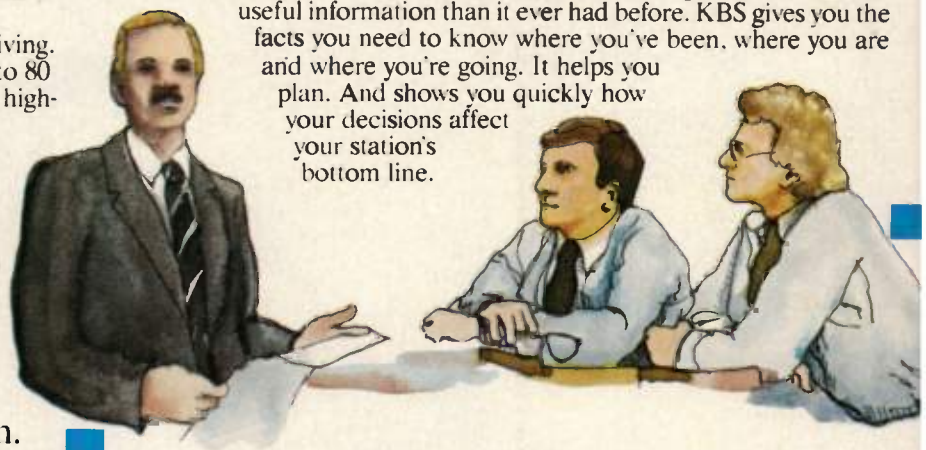
The incredible economy and convenience of an in-house system.

KBS eliminates the need for expensive and frequently unreliable phone lines tying your station to a computer hundreds of miles away. It does away with waiting for avails, logs or reports. Because KBS is completely in-station, it is always under the control of station staff. And, even though the system is designed to give you complete independence, you're not left totally on your own: KBS customer service representatives, themselves experienced broadcasters, are available at all times to help you get the most from your KBS system.

Shows Management the past, the present . . . and the future.

KBS brings all of the data processing activities of your station or group together in one integrated system. In addition to making departments and individuals within your organization more efficient, it helps you manage better by providing the most comprehensive customized management reports in the industry.

The basic system automates all accounting, billing and traffic functions. Optional subsystems such as Autoswitching and Word Processing, and planned subsystems such as Demographics, Films, and News interface with the basic system to provide management with more useful information than it ever had before. KBS gives you the facts you need to know where you've been, where you are and where you're going. It helps you plan. And shows you quickly how your decisions affect your station's bottom line.



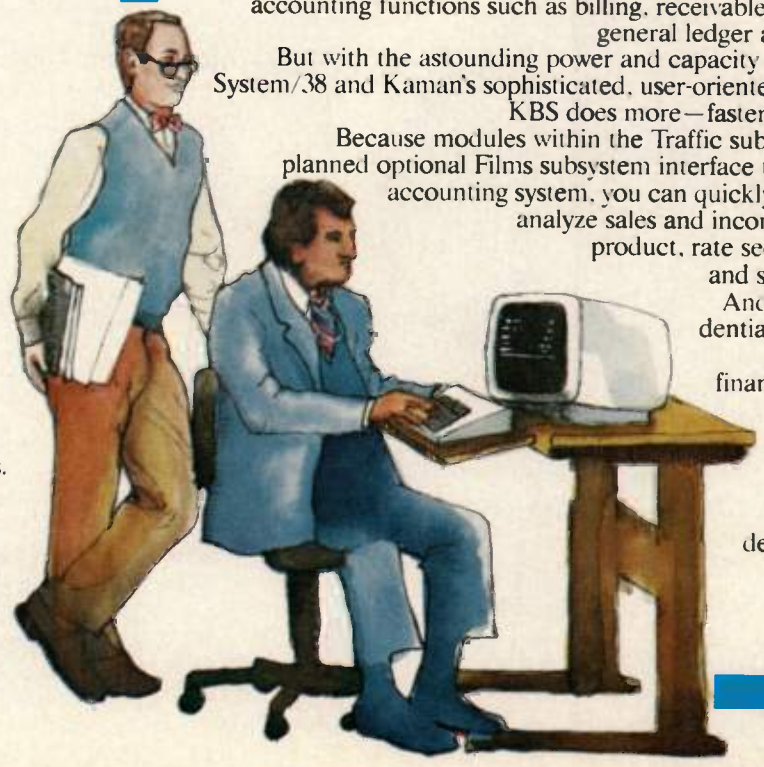
Gives Accounting input from Sales and Traffic . . . and vice versa.

Any computer system will perform basic day-to-day accounting functions such as billing, receivables, payables, general ledger and payroll.

But with the astounding power and capacity of the IBM System/38 and Kaman's sophisticated, user-oriented software, KBS does more—faster and easier.

Because modules within the Traffic subsystem and planned optional Films subsystem interface to the basic accounting system, you can quickly and easily analyze sales and income by time, product, rate section, show and salesperson.

And, the confidentiality of your important financial data is protected from access by users in other departments.



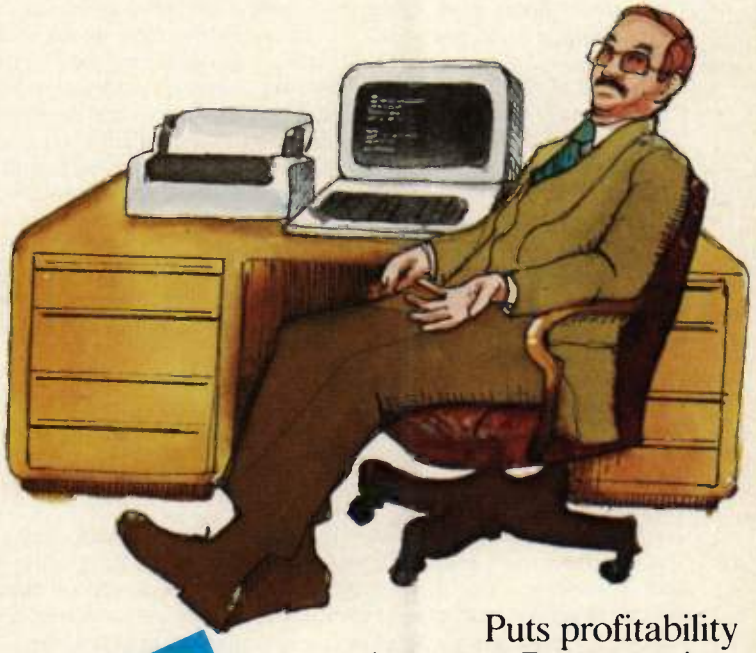
TIVE. INCREDIBLE.

IAN BROADCASTING SYSTEM.

Takes the jam out of Traffic.

The KBS Traffic system takes raw contracts and schedules and produces on-line avails and finalized logs. Meanwhile, it maintains your cartridge inventory, providing up-to-the minute information on the subject, availability, pull data and disposition of every commercial, PSA, program or promotion in your possession—plus copy, agency instructions, your client information file, and the like. It also produces reports such as confirmations, pull lists and daypart avails.

Because KBS offers on-line, real time access to your database, you'll always know what's going on.



Gives Sales a competitive edge.

Your sales staff wants up-to-the-minute avails to work with. KBS will make sure they do.

KBS will offer an optional Demographics subsystem that helps target sales objectives more productively and profitably. You'll enter information from multiple rating books and retrieve information based on combined-book ratings; information on competitive ratings and pricing; cost-per-point or cost per thousand for both individual submissions and complete packages.

Because KBS is always on-line, you can put together detailed proposals at a moment's notice—a competitive edge that can have you writing contracts while the other stations are still thumbing through Arbitrons.

Puts profitability into your Programming.

Our planned optional Films subsystem will take a big load off your programming staff and put it on the computer.

KBS will store detailed information on all the films and series in your library for instant retrieval. It'll let you select the movie or syndicated program that accomplishes what you, your sales manager and your business manager want it to. You can choose programs by audience share, stars, length, awards won, target audience, content or any of a dozen other criteria—in combinations that help you deliver the audiences your advertisers want.

KBS will also automatically provide reports on contract expiration, amortization and payables—numbers Accounting needs for accurate forecasting.

Kaman Broadcasting Systems
a product of

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a Kaman Company

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(303) 599-1500

Circle (20) on Action Card

TV RECEPTION SPECIALISTS—TV Reception Specialists of Houston, Texas, recently announced the formation of a new division, Satellite Transmission and Reception Specialists (STaRS). STaRS is also the name of the new transportable uplink designed with the latest state-of-the-art electronics. For more information, contact Dave Olson, Sharon MacDonald, or Jim Wilder at (713) 988-7711.

MODULATION SCIENCES—Modulation Sciences has signed a contract with Wold Communications calling for Modulation Sciences to supply the hardware for Wold's new Satellite Subcarrier Transmission System (SSTS). In the first phase of this multi-million dollar project, the company will design and build 2 dBW bandedge SCPC modulation equpment for Wold's uplink, plus demodulation equipment and high-density TV subcarrier systems. The contract will be implemented using the Modulation Sciences newly developed optimized SCPC R-SAT receiver as well as the SX 710 agile SCPC modulator system. Modulation Sciences specializes in communications equipment for satellite and terrestrial broadcast/data networks.

LYON LAMB—Lyon Lamb Video Animation Systems and Oxberry have formed a co-marketing venture that will effectively reach the entire domestic and foreign market for film and video animation hardware. Oxberry, a division of Richmark Camera and leading manufacturer of animation stands, cameras, and optical printers, will sell Lyon Lamb products overseas as well as in domestic applications involving animation, optical printers, and A/V products. Lyon Lamb will have domestic sales rights to Oxberry's video animation stands. Entire systems will be available containing both film and video components.

PROCESSING PLUS—Processing Plus of Allentown, Pa., has been named regional representative for the Cetec Broadcast Group. Processing Plus will be responsible for sales of MAPS business systems for broadcast, Schaeffer 7000 automation systems, and Cetec audio equipment for an area encompassing Delaware, Pennsylvania, New York, Connecticut, Rhode Island, Massachusetts, Vermont, New Hampshire, and Maine. For more information, contact Processing Plus, 1701 Union Blvd., Allentown, PA 18103; (800) 523-9396; in Pa. (215) 432-0671 collect.

EMCEE BROADCAST PRODUCTS—EMCEE has received a turnkey contract from the Municipality of Monroe Country Translator Group for the development of a four-hop turnkey translator system. The system, currently under construction and scheduled for operation in late spring, will utilize 20 EMCEE TU-100U 100-watt UHF translators to provide reception of five Miami television stations. EMCEE, located in White Haven, Pa., is a manufacturer of television translators and low-power TV transmission equipment. For more information, call (717) 443-9575.

BC

RTNDA NEWSLINE

Special committees named

It's tough enough these days to keep track of all those mysterious alphabetical clusters that are the by-products of the technological explosion—DBS, MDS, LPTV and HDTV to name a few. It's difficult just to tell them apart and remember what each one stands for. But for thousands of people working in radio and television news, broadcast, or cable, the big question is, "How will all this affect my job?" The board of directors of the Radio-Television News Directors Association has decided to undertake a study to try to get some answers to this question.

A committee headed by RTNDA past-president Paul Davis, news director at WGN-AM/TV in Chicago, has been directed to commission the study. The committee will first draw up a set of parameters for the study. Then a contract will be let for a series of in-depth interviews with those most knowledgeable about how information will be transmitted in the future and how technological changes will affect employment in electronic journalism. The report is scheduled to be ready for presentation at this year's RTNDA International Conference in Las Vegas, September 22-24.

"The way we get news and information will change enormously over the next few years," Davis said. "The changing formats of AM and FM radio, cable systems, satellites, videotex, teletext, and all the other products of advancing technologies will have a profound effect on communications economics, job training, and career opportunities, and the very nature of electronic news."

Radio journalists are already feeling the effects of competition from the new technologies, especially cable. Deregulation is also having an impact on radio news. For these reasons, the RTNDA board of directors also voted to create another new committee. It is expected to find ways to improve the association's services to radio members. Lou Adler, vice president and news director at WOR Radio in New York City, will chair the committee. Other members include news directors Steve Vogel, WJBC/WBNQ, Bloomington, Illinois; David Lampel, WBLS/WLIB, New York City; and Bob Cain, WGBS/WLYF, Miami. Adler said one way of improving services to radio members will be to increase the number of RTNDA regional conferences. "That's something we can do right now," he said.

In a preliminary report to the board, president-elect and conference chairman Ed Godfrey, news director at WAVE-TV, Lousiville, said CBS correspondent Bill Moyers will be the luncheon speaker on the first day of the conference. Godfrey also announced that Charles Osgood, CBS News; Av Westin, ABC Television News; and Rob Sunde, WCBS, New York City, will lead a workshop on radio and television news writing on the second day of the conference.

One program session being put together by Skip Haley, news director at WSFA-TV, Montgomery, Alabama, will be devoted to personal computers. The session is designed to show how electronic journalists are now using personal computers as management tools in their newsrooms. Haley is looking for volunteers, and would like to hear from anyone in a radio or television newsroom who is making such use of a personal computer. Write Haley at WSFA-TV, 10 E. Delano Street, Montgomery, AL 36105.

Other topics being considered for the three-day conference program include business and economic reporting; election and convention coverage; and management and assignment-desk operations. Godfrey expects attendance at this year's conference to exceed 2,000.

Studer Re-States the Art

With the new A810, Studer makes a quantum leap forward in audio recorder technology. Quite simply, it re-states the art of analog audio recording.

By combining traditional Swiss craftsmanship with the latest microprocessor control systems, Studer has engineered an ATR with unprecedented capabilities. All transport functions are totally microprocessor controlled, and all *four* tape speeds (3.75 to 30 ips) are front-panel selectable. The digital readout gives real time indication (+ or − in hrs, min, and sec) at all speeds, including vari-speed. A zero locate and one autolocate position are always at hand.

That's only the beginning. The A810 also provides three "soft keys" which may be user programmed for a variety of operating features. It's your choice. Three more locate positions. Start locate. Pause. Fader start. Tape dump. Remote ready. Time code enable. You can program your A810 for one specialized application, then re-program it later for another use.

There's more. Electronic alignment of audio parameters (bias, level, EQ) is accomplished via digital pad networks. (Trimpots have been eliminated.) After programming alignments into the A810's memory, you simply push a button to re-align when switching tape formulations.

The A810 also introduces a new generation of audio electronics, with your choice of either transformerless or transformer-balanced in/out cards. Both offer advanced phase compensation circuits for unprecedented phase linearity. The new transport control servo system responds quickly, runs cool, and offers four spooling speeds.

Everything so far is standard. As an option, the A810 offers time-coincident SMPTE code on a center track between stereo audio channels. Separate time code heads ensure audio/code crosstalk rejection of better than 90 dB, while an internal digital delay automatically compensates for the time offset at all speeds. Code and audio always come out together, just like on your 4-track. Except you only pay for ¼" tape.

If you'd like computer control of all these functions, simply order the optional serial interface. It's compatible with RS232, RS422, and RS422-modified busses.

More features, standard and optional, are available. We suggest you contact your Studer representative for details. Granted, we've packed a lot into one small package, but ultimately you'll find that the Studer A810 is the most versatile, most practical, most *useable* ATR you can buy.

The Swiss wouldn't have it any other way.

STUDER REVOX

PRECISION FROM SWITZERLAND

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Circle (21) on Action Card

TECHNOLOGY HOTLINE

AM stereo: Picking a winner

U.S. set manufacturers are skeptical, but Sansui Electric Limited claims to have the answer to the AM stereo problem. Without a standard system, Sansui has taken the approach of building a receiver that will decode all systems equally well. The result: stations can run any system and be received well on the latest Sansui receiver.

Among the receiver manufacturers at the recent Consumer Electronics Show, Sansui jumped into the lead with a set that uses a phase-locked-loop synchronous detector to automatically process any AM stereo signal it receives. The PLL detector demodulates the stereo signals and makes its selection.

According to Sansui, the sets will be marketed this fall. The cost is reported to be about 20-percent higher than a single standard receiver. (For a station engineer's reaction to the receiver, see the "AM Stereo Gets a Silver Lining" article in this issue.)

Digital audio for ABC affiliates

WTKN-AM and WWSW-FM are the first ABC affiliates to receive ABC Radio Network programming via a digital satellite transmission system. The stations will get their programming from Los Angeles and New York.

Programming is being sent through the RCA SATCOM I satellite in encoded digital. ABC will provide 19 program audio channels of 15 kHz each, and one data channel.

The receiving equipment installed at the WTKN transmitter site was specially designed and manufactured by Scientific-Atlanta to specifications supplied by the ABC Radio Networks. The equipment includes a 2.8-meter dish to receive the signal from the satellite, and special electronics which convert the digital signals into high-quality audio.

Edward McLaughlin, president of the ABC Radio Networks, sees the conversion to digital satellite distribution as the greatest technological change in radio since the advent of FM stereo. According to McLaughlin, "ABC is investing over $10 million in new studio facilities to improve the quality of its network-originated programs. All new ABC affiliates will receive programming from the networks via this satellite system. With this receiving system, which is purchased by the individual radio station, an operator can select from any one of the numerous services provided by any of the major networks merely by the flip of a switch."

WTKN and WWSW are the first of over 3,000 radio network affiliates in the U.S. that will switch to this digital system in the next 18 months. In addition to ABC, other radio networks (NBC, CBS, and RKO) are joining ABC in converting to this method of program distribution. (212-887-5293)

Playing the game for radio nets

A unique satellite-based delivery system for distant-origin radio programs, such as major-league sports, has been unveiled by Wold Communications. Satellite Subcarrier Transmission System (SSTS) is offering its service to radio stations and other entities holding broadcast rights for baseball, basketball, football, and ice hockey. Inaugural use will begin this month, marking the thirteenth consecutive season that Wold has arranged transmission facilities for virtually all road-game broadcasts of baseball.

"SSTS is a remarkably simple system that will be superior in both quality and cost as compared to the traditional use of telephone company landlines," said Gary Worth, president of Wold Communications. "We're creating an innovative marriage of two different satellite technologies. And this marriage will work with small earth stations for both uplinks and downlinks. The two technologies are Single Channel Per Carrier (SCPC) used for uplinks and subcarrier diplexing used in downlinks.

The initial universe of cities in the SSTS network will total 39 in the U.S. and Canada. Added Worth: "We'll expand the number of cities as needs grow. And, of course, we'll use telephone line extensions to leg out from our earth stations in certain cities. Eventually, SSTS will be pure satellite. (213-474-3500)

An MDS system for Salt Lake

American Home Theatre, Salt Lake City, has notified the FCC that it has started offering the first multipoint distribution system (MDS) television service with programming on eight adjacent MDS channels from a single source.

The Salt Lake City system uses EMCEE transmitters that have been modified to accommodate the special adjacent-channel operation of the experiment at 100 watts of output power.

Channel View of San Diego actually holds the FCC license to test the feasibility of broadcasting eight adjacent MDS channels from a single source. American Home Theatre, a subsidiary of American Stores, worked closely with Channel View to obtain the license.

American Home Theatre and Channel View hope to provide programming for 500,000 homes throughout the Salt Lake City area.

NAB #502

We Made The First.
And We Still Make The Best.

THE 1710A WAS SPECIFICALLY DESIGNED FOR THE BROADCAST INDUSTRY!

The Sound Technology 1710A Distortion Measurement System has the only *true* balanced and floating oscillator that will provide you with a clean low distortion signal throughout the *widest output level range available in the industry:* -90 to +26 dBm. This performance is delivered right where you need it . . . at the transmitter (the 1710A has an RF rejection ratio of 10 volts/meter).

WHAT'S SO UNIQUE ABOUT OUR LOW DISTORTION OSCILLATOR?

The 1710A balanced oscillator, its power supplies and control circuits, are a totally floating and shielded entity. The 1710A oscillator is located within a double electrostatically shielded assembly, with shielding extending not only around the oscillator itself, but also around its power supply and down into the transformer windings. The oscillator's attenuator, also electrostatically shielded, is on the output of the oscillator, and as a result gives you very clean low level signals.

HOW DOES THAT BENEFIT THE ENGINEER?

What all this means is that the 1710A can drive *any* kind of load — balanced, unbalanced, off ground, or whatever, with no loss of level and no ground loops. Configuring the output attenuators as we do, allows you to cleanly measure down to and *below microphone line levels* (clean signals even at 24.8 μV!). Having the 1710A is like having the ultimate insurance policy at a very reasonable price. It is virtually impossible to obtain erroneous readings under any condition.

OUR SPECIFICATIONS ARE CONSERVATIVE

The published specification for the residual distortion of the 1710A is less than .002% THD below 10 kHz. This we guarantee. However, the *actual* residual of a typical 1710A varies between .001% and .0005% over each of the three lowest frequency bands.

CALL SOUND TECHNOLOGY TODAY!

We'll show you why we have the best distortion analyzer on the market today.

SOUND TECHNOLOGY 1710A

I WOULD LIKE TO KNOW MORE ABOUT THE 1710A

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NEWSMAKERS

Vincent Wasilewski, a partner with Dow, Lohnes & Albertson, Washington, D.C., and former NAB president, and **Joseph Flaherty**, vice president, engineering and development, CBS Broadcast Group, are being honored at this year's NAB convention in Las Vegas. Wasilewski is the recipient of the NAB's 1983 Distinguished Service Award. The award, established in 1953, is presented to a person who has made a significant and lasting contribution to the American system of broadcasting by virtue of a singular achievement or continuing service for or on behalf of the industry. Flaherty, who joined CBS is 1957, has been named recipient of the 1983 Engineering Award.

Larry Scott has been appointed operations manager for KCOY-TV, the CBS affiliate serving Santa Barbara and San Luis Obispo Counties. Scott will be responsible for all commercial television production for the three studios in Santa Maria, Santa Barbara, and San Luis Obispo. In addition, he will oversee all on-air operations including commercial and non-commercial aspects.

Mike Beck of King Broadcasting has been chosen to produce *The Emerald City Marathon Classic*, a benefit for the Seattle/King County convention and visitors bureau. **James Burns** has been named director of the marathon broadcast.

Fred Steurer, chief engineer of KSDK, St. Louis, has been named director of engineering for the Pulitzer Broadcast stations. He will remain as chief engineer of KSDK, one of the Pulitzer stations, until the station is transferred to Multimedia, a move awaiting approval by the FCC.

Susan Alvarado, assistant to Vice President George Bush for legislative affairs, has joined the NAB's Government Relations Department. Alvarado previously was the vice president's legal assistant, and from 1976 to 1980 served in that capacity to the Senate's assistant Republican leader. From 1975 to 1976, she was staff assistant to Senator Ted Stevent.

Thomas Hayden has been named a regional manager of the NAB for Alabama, Florida, Georgia, Puerto Rico, and the Virgin Islands. He succeeds **Dan Valetine**, who will be retiring. Hayden was formerly a sales representative for Midwest Corporation, northeast U.S. region, in the firm's communications system division.

David Wyler has been appointed vice president, programming, for the Home Video Network, ABC Video Enterprises' home-entertainment recording service. In his new position, Wyler will be responsible for all HVN programming.

Alvin Puryear has been appointed by the NAB's executive committee to the board of directors of Broadcast Capital Fund, and Broadcast Capital. Puryear presently serves as a

Continued on page 36

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The complete newsgathering machine.

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When you absolutely, positively, unequivocally, categorically need to look your best.

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Available in 2", 1", ¾" and ½" Beta and VHS.

SEE US AT NAB BOOTH #1413

Circle (24) on Action Card

Too much muscle for PSA?
Eagle Hill has the answer.

The Eagle Hill PSA Adapter

- Sign on every morning at 6 a.m.
- Pick up 150 hours prime time each year.
- Operate with powers as low as 1 watt.
- Switch up to regular power at local sunrise—manual or automatic.
- No changes needed inside transmitter—normal transmitter readings.
- Normal monitor readings—plus readings for absolute power.
- No unusual circuits—replacement parts readily available.
- Field proven over one year.
- Easily installed by station engineers.

Don't sign on late during busy season—short days cost money.

BE READY FOR THIS FALL AND WINTER

Call Electronic Industries Inc.
19 East Irving; Oshkosh, WI 54901
(800) 558-0222 (414) 235-8930

Circle (157) on Action Card

professor of management at Baruch College, New York, where he teaches graduate courses in business policy and entreprenuerial strategy.

Robert Jones is the new program director of King Television. Jones is currently in charge of programming and production at WLKY-TV, Louisville, Kentucky. Throughout his 20-year career in broadcasting, his programming has won local and national awards, including NATPE Iris awards and a national Emmy nomination.

Jack Petrik, a 25-year broadcast industry veteran, has been named director of programming for SuperStation WTBS, Atlanta. In his new capacity, Petrik will oversee the day-to-day operations and long-range planning of SuperStation programming. For the past 13 years, Petrik served as general manager of KDNL-TV, St. Louis; and president, general manager, and part owner of Evans Broadcasting, which operated KDNL-TV.

Business Moves

Daniel Maase has been appointed vice president, engineering, at ADDA Corporation. He was formerly vice president, engineering, at the video systems division of Harris Corporation. Also at ADDA, **Fred Grab** has been appointed director, market development; **David Brack** is the new district sales manager, New England district; **Harry Gladwin** has been named district sales manager, Great Lakes district.

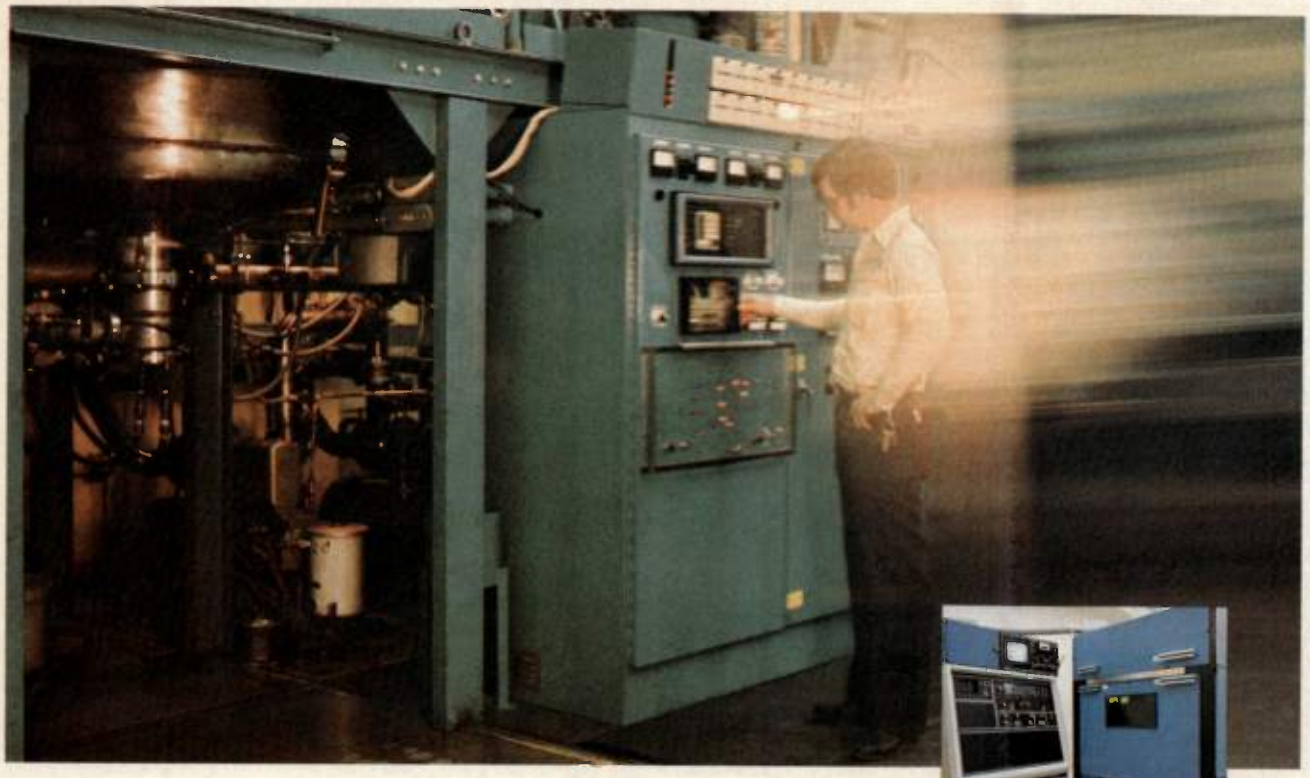
Richard Reilly, president, Broadcast Marketing Assoc., announces appoints to two newly-created positions. **Jim Sherry**, former sales manager at Beston Electronics, joins BMA as midwest district manager at 13417 W. 78th Pl., Shawnee Mission, KS 66216, phone (913) 631-3439. **Bob Kelly**, a Ford Motor Co. executive for seventeen years, becomes industrial sales manager. He will serve northern California from BMA's world headquarters in San Jose, CA. BMA distributes an extensive line of high-technology audio and video equipment.

Mark Hutchins has been named broadcast representative for Lake Systems Corporation of Newton, Massachusetts. Hutchins, formerly with Continential Electronics, will be responsible for audio and RF products and systems for the radio and television industry.

Michael Sipsey was recently named vice president of marketing, a new position at BTX Corporation. Sipsey has over 12 years of technical marketing management experience, and joins BTX from Applicon, where he held various marketing positions.

John Bell has been appointed European sales manager for Calvert Electronics International. He will be based at the company's European headquarters in Chelmsford, England. Bell was with EEV for over two years before joining Calvert.

Les Davis has been hired to direct Hitachi Denshi America's "Dynamic New Stance" program. In his capacity of national marketing services manager, he will be in charge of the company's advertising, public relations, direct-mail, trade-show, and sales promotions and supports for all divisions and product categories, including broadcast, studio, professional, industrial, visual products, and test and measurement. BC



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RADIO
LOUD & CLEAR

Good audio starts with basic care

BY MORRIS COURTRIGHT

Although digital audio and computer-synthesized speech are becoming more common for radio stations from the 250-watt rural AM to the 100-kW major-market FM, the vast majority of programming originates from one of three sources: microphone, disc, or tape. And, the taped programming, be it cartridge, reel-to-reel, or cassette, probably also originated from one of the first two.

While there have been tremendous improvements in the equipment associated with each of these sources of program origination in the past 20 or 30 years, each source has certain basic problems and limitations which, though minimized, must be considered to assure the best possible on-air sound. The on-air sound is, of course, the final, saleable product of a radio station; and deficiencies here will soon become apparent in the bottom line.

As you know, we have come a long way from the original carbon button microphone; and most of today's microphones can be classified as ribbon, dynamic, or condensor. Combine these three types with the normal pickup patterns of omnidirectional, bidirectional, or unidirectional (cardioid) with its many variations, and you have an almost endless variety of microphones from which to choose. Add to this the increased low-frequency response of some microphones when held close, plus the effect of performer technique, and many engineers throw up their hands when asked to select a microphone.

Frequently, the test is to plug it in. Another approach is to use whatever microphone management prefers and let the announcers adapt to it as best as they can. This latter approach at one station led to announcers orienting the microphone at all kinds of angles in an attempt to improve the sound of their voice. This continued until the night one of them had it turned at such an angle that it slipped straight down into his cup of coffee.

Over and above the type of microphone and pickup pattern, there are a few basic characteristics often overlooked in microphone usage. We all learned about impedance matching in basic electronics, and would not expect the best performance from a 250-ohm microphone connected to a 50-ohm input. How many of us, though, have really paid attention to the reactive component? Remember the microphone that worked great in one room, but not in another? Acoustics was the cause, wasn't it? Or, was it the capacitive loading of the added 150 feet of cable? Similarly, what is the reactive load of your microphone preamps? Inductive or capacitive? How much?

Multipath is a commonly known effect where a reflected component and direct component arrive out of phase and cancel to varying degrees. The same effect can occur when a microphone is placed at a distance to pick up a performance. The sound waves arriving directly at the microphone can be cancelled by out-of-phase sound bouncing off the floor or ceiling. Have you ever tried using a pair of microphones to achieve a stereo effect? Everything is fine until the announcer moves or turns his head. What happens is that either the distance from the two microphones becomes unequal or the sound level becomes unequal; and out-of-phase cancellation can occur at certain frequencies.

Last are the old mechanical problems of vibration and mechanical isolation. While common sense usually cures these, don't overlook vibration transmitted by the cable.

Some of us remember the "gold old days" when all records were 78 rpm. And if forced to admit it, I remember changing "steel needles" while listening to my grandfather's Victrola that had the big horn to amplify the sound. One of the greatest dangers was dropping a favorite record; in those days, they broke. What a tremendous advance when "unbreakable" records appeared on the scene. Then came 33⅓ and 45 rpm, and here we are. One thing has not changed, however. While not as quickly perhaps, records still do wear and are subject to scratches, dirt, and warping.

One of the more common annoyances of record playback may be more prevalent in the dry Southwest, but occurs elsewhere when conditions are right, and that is static electricity. Those brief popping sounds during playback arm setdown; frying or crackling noise during playback; and dust sticking to the record producing both noise and undue wear, are probably the result of static electricity. Since vinyl is one of the most easily charged materials, normal actions such as removing the record from its jacket or wiping it off, even with a wet cloth sometimes, are certain to produce a static charge. In addition to the commonly known noise and dirt problems, static electricity can also cause excess stylus pressure because the cartridge is attracted to the record.

The best solution to the problem would be for the records to be made of a conductive material; and, in fact, some are. However, until this becomes commonplace, we will have to fall back on the techniques of ionization (either active or passive) and bleeding the charge off by contact. At least one cartridge manufacturer uses a graphite fiber brush to remove the charge from the groove before playing.

As we all know, the phono cartridge is a transducer that converts the information stored in the grooves of the record to electrical energy by moving the coil of a transformer or the plates of a capacitor. The ideal transducer would extract the information without changing it or the record itself—thus, that modern mechanical engineering marvel everybody takes for granted: the phono cartridge. Since the cartridge must faithfully track a decreasing spiral, we also have the companion mechanical marvel: the playback arm.

The purpose of all these mechanical contrivances is pursuit of that characteristic called trackability, or dynamic performance. In other words, minimize mass so the transducer can better respond to the changing groove and minimize tracking force to reduce

Continued on page 40

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wear on the record. Probably the most critical parameter is the tip of the stylus, since this is the point of contact with the record where the information is extracted and the wear on the record occurs. Of course, if the stylus shank, the stylus suspension, and the transducer element won't faithfully follow the movement of the stylus, the best stylus tip in the world is of little use. How many of you remember ruby-tipped stylii? Metal? Yes, we've come a long way.

Does anybody out there still have a penny next to the turntable to place on the cartridge so it won't skip while playing the last cut on the disc? As long as we are on memory lane, how many still have preamps with switches to select RIAA, AES, or LP playback equalization curves? There are two points to remember, however: in spite of increased durability, the stylus does wear and must be replaced; and dust and dirt in the stylus suspension will negate the marvelous mechanical engineering of the designer and the manufacturer. The key word is cleanliness.

There used to be a story that during World War II magnetic tape recordings of military information were broadcast at high speed, recorded, then slowed down for playback. The high-speed gibberish on the air apparently confounded eavesdroppers and served as a crude, but effective, code for some time. In any event, magnetic tape has been around for some 35 years, and was a welcome replacement for the wire recorders that appeared on the consumer scene in the Forties. Reel-to-reel, cartridge, or cassette, all use the technique of storing audio information in magnetic form in the oxide coating on a plastic tape.

The common element in all three methods is tape travel past the recording and playback heads: thus, the concerns about head height, azimuth, and zenith; and the tape transport system. A fairly common error is the alignment of all the tape heads in a station to a particular test tape. This works for internal recordings, but results in varying degrees of incompatibility with tapes brought in from (or sent out to) other recording and playback facilities. The goal of any head-alignment process should be repeatability and conformance with NAB standards for the particular tape system in use.

Most tape equipment manufacturers have developed head mounts and tape guides that will yield satisfactory head contact and tape travel if properly aligned and adjusted. Modern tape playback machines have virtually eliminated the need for periodic head demagnetization, with the result that the need to demagnetize them before playing test tapes or after contact with tools and gauges that may be magnetized is often overlooked.

All tape equipment needs periodic maintenance and cleaning, especially cleaning. Lubrication, tension adjustments, pinch-roller pressure, and head wear should all be checked periodically; and the manufacturer's instruction book should be followed. The most perfect head alignment will not compensate for oxide buildup on the head or a worn head. A "poor man's" method of checking head alignment also results in clean heads. Use a soft felt-tip black pen to lightly coat the head from top to bottom, in an area slightly larger than the tape contact area. Then run a few feet of tape through the machine and visually inspect the pattern where the ink was removed from the head. Most head cleaners will remove the remaining ink; and, of course, the felt-tip pen used should be free from particles that might scratch the head surface.

After all these basics have been taken care of, the greatest concern is something known variously as phase integrity, phase jitter, phase error, or dynamic phase—particularly in cartridge or cassette systems. The prime source of dynamic phase error, and to a degree wow and flutter, is probably the cartridge itself, while static phase error is a function of the playback equipment. Normal manufacturing variations can cause differences between supposedly identical cartridges, and cartridge wear contributes even further to the problem.

Selection of a particular brand of cartridge is often a very subjective matter, and hundreds of dollars are frequently spent to buy new cartridges after a brief record-and-listen test. Imagine the chagrin when phase error skyrockets after 50 to 100 playbacks.

It would seem to be a far wiser course of action to evaluate a sample cartridge by recording a test signal for measurement of response, phase error, signal-to-noise ratio, and wow and flutter. Then, after initial playback and measurement, repeat the measurements after 25, 50, or even 200 playbacks.

The source of most of your program material is microphone, record, or tape. With all three, common sense, cleanliness, and paying attention to the basics can be the keys to improved audio on the air. There was a saying about automobiles many years ago that applies equally as well to today's sophisticated highway machines: "Successful operation depends on the nut holding the steering wheel." In today's environment of vastly improved broadcast audio equipment, successful operation depends on a similar concern for basics.

Next month we'll focus on those phase errors: how to detect them, what they do to your sound, and how to eliminate them. BC

Morris Courtright is facilities editor.

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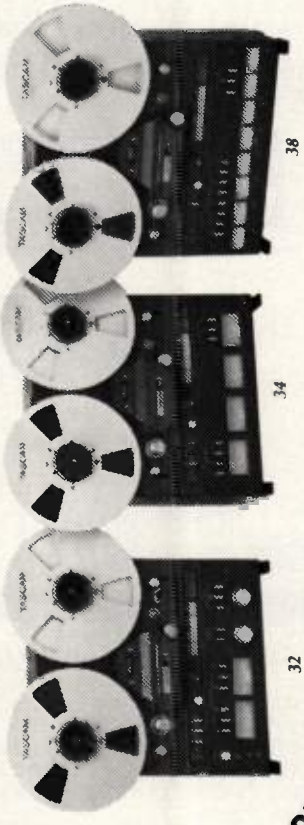

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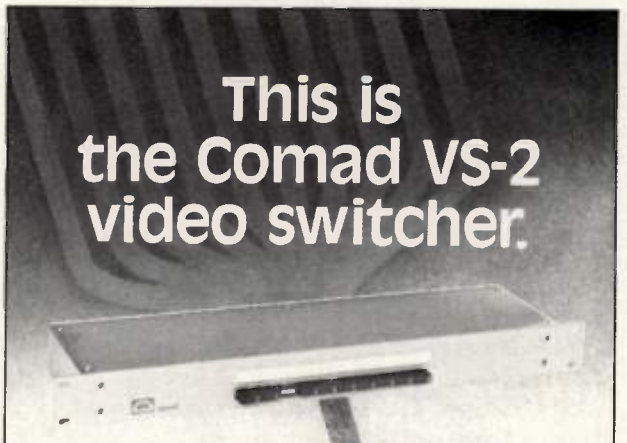

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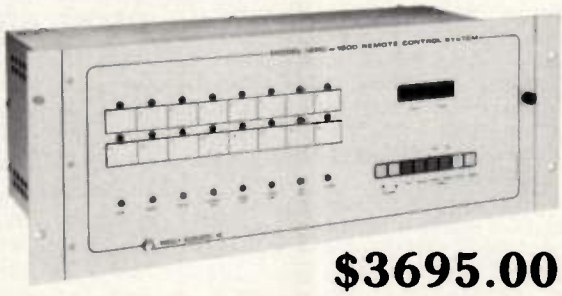

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SBE MONTHLY LOG

SBE certification program

Since the SBE certification program began in 1976, 2,300 broadcast engineers have recognized the value of certification to themselves and to the broadcast industry.

SBE has a three-level certification program. Each level of certification is issued for five years, and may be renewed by earning professional credits or by examination. The highest level, senior broadcast engineer, requires the candidate to have at least 10 years' responsible broadcast engineering experience and achieve a passing grade on the proficiency examination.

The broadcast engineer level requires the candidate to have five years' suitable experience in broadcast engineering and achieve a passing grade on the proficiency examination.

The new entry level of certification, broadcast technologist, was added to the certification program in 1982. Five hundred broadcast engineers have applied for this new level of certification in the last few months. Broadcast technologist certification may be obtained in one of two ways. Engineers holding a valid FCC First Class Operator license and having either two years of continuous satisfactory service in broadcast engineering prior to the date of application, or three out of the last five years of satisfactory service in broadcast engineering, may apply at any time. No examination is required.

Engineers who do not hold a First Class license and who do not meet the service requirement, may apply for the broadcast technologist examination.

The next certification exams for all levels of certification will be given from June 17 through June 25. The deadline for applying is April 29. For a copy of the application and Program of Certification booklet, write to the Certification Secretary, Society of Broadcast Engineers, P.O. Box 50844, Indianapolis, IN 46250.

Requests for SBE information should be directed to the national office at (317) 842-0836; or write to the Society of Broadcast Engineers, P.O. Box 50844, Indianapolis, IN 46250. BC

SBE Meeting Schedule for NAB '83

Saturday, April 9

8:00 a.m. Chapter, Certification, and Frequency Coordination Chairmen Meeting with national officers, directors, and committee chairmen

1:00 p.m. National Officers and Directors Meeting

Monday, April 11

4:30 p.m. Reception

5:00 p.m. Annual SBE Membership Meeting

The SBE booth will be open in the convention center during regular exhibit hours.

Thursday, April 14

10:00 a.m. "Operation Golden Rule" will be launched at the first National Part 74 Frequency Coordination Meeting in the history of the industry. This is the day *after* the 1983 NAB convention ends.

The meeting will begin at 10 a.m. at Channel 8 in Las Vegas. Please contact Richard Rudman, chairman of the SBE National Frequency Committee, at KFWB Radio, 6230 Yucca Street, Hollywood, CA 90028. Anyone interested in frequency coordinating is invited to attend.

The SBE has made Part 74 frequency coordination a high priority project. Serving on the SBE National Committee with Rudman are Robert O'Connor, CBS; Martin Meany, NBC; Mike LoCollo, ABC; Ben Wolfe; Elmer Chancellor, WEHT-TV; Robert Van Buhler, KDKB; Vir N. James; and Ross Kauffman, WCVB.

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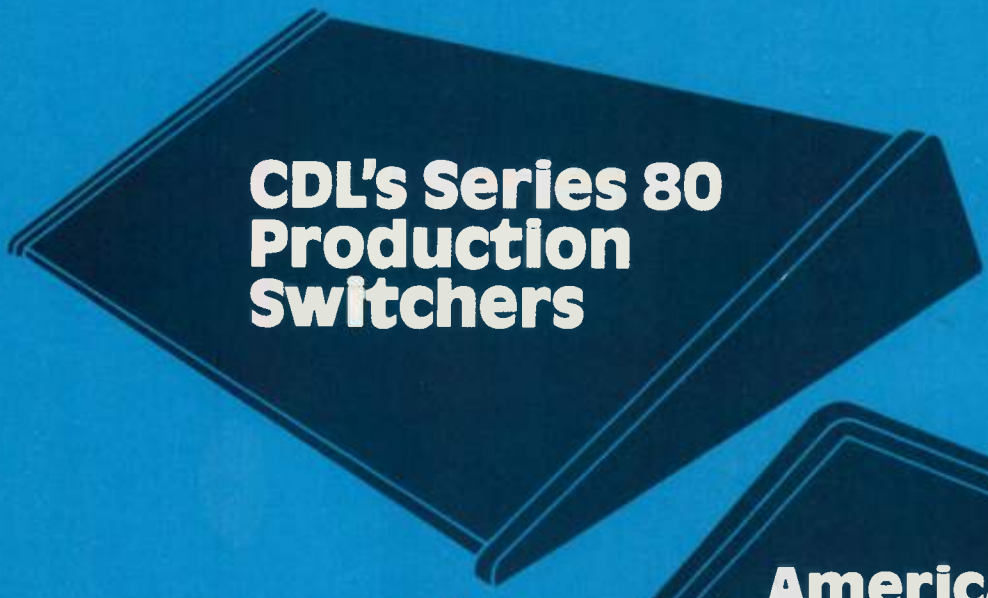

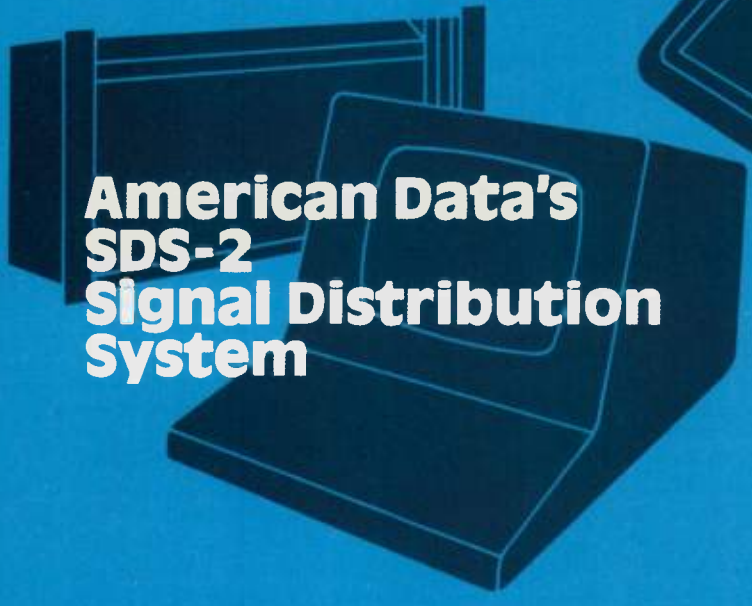

These are only 3 of the many new products being introduced by the combined engineering teams of American Data and Central Dynamics.

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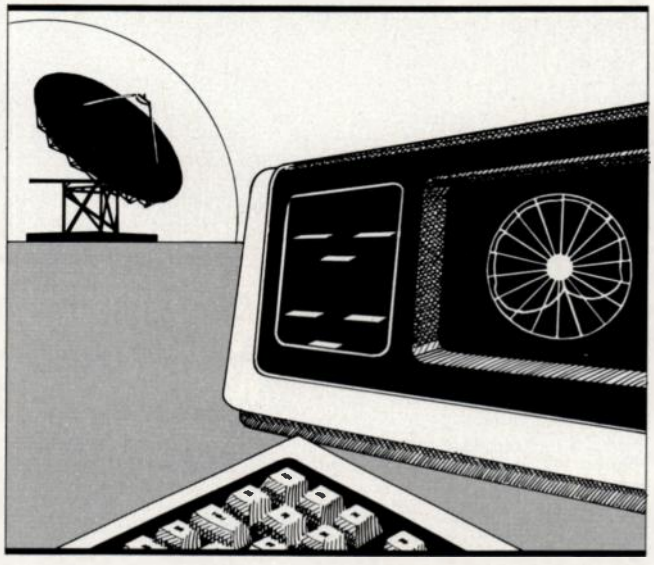
DYNAMICS

COMPUTER PRINTOUT
BRYAN BOYLE

Engineering and computers

Most of the subjects I've talked about in this column have dealt with the uses of computers in sales, traffic, billing, and office areas of the station, sadly neglecting my own chosen profession, engineering.

Engineering has been more responsible for the development of these machines than you would think. Personal computing devices were, from the start, almost the sacrosanct province of amateur radio operators. Many of the computers that we take for granted today were originally conceived to be used with transmitters, receivers, and the other tools of the radio trade. There is even a company called HAL Communications in Illinois that is still manufacturing computer components for use in your neighborhood ham shack.



So, where are the computers now? For most of us, not in our shops or transmitter areas, that is for sure. Our job, whether we want to or not, is to integrate these devices into our daily tasks to make the job easier; more accurate and most of all, provide us with a tool to make our station the best, most modern facility in our respective markets.

How can we do this? First, a hypothetical problem: where do you aim that satellite dish the station manager has ordered? One of the considerations is making sure you have a clear site with no obstructions between the satellite and the dish. Next you have to consider how efficient the low-noise amplifier will need to be to get the signal. Finally, where do you point it on the arc, based on where your site is? There are many concepts involved in this, some based on a wealth of knowledge already accumulated in this area, others based on what the particular vendor has available to sell.

So where do computers come into the picture? They can't take the place of a good eyeballing of the area you have chosen to place the dish, but they can help in that most critical of operations involved: the aiming of the dish itself to pick up the proper bird and transponder.

Most likely, if you have progressed to the stage of actually installing your dish, the vendor has already either done a site survey, or has contracted for someone to do it for you. Wouldn't it be nice to have a check on the figures you are given for your dish by running a simulation on your personal computer? Or better yet, dispense with the site survey and do the calculations yourself (within a reasonable degree of accuracy), thus saving time and money? You can, and later on I'll tell you how.

Have you ever wanted to extract the last measure of efficiency from your transmitter while you were tuning it up without using a calculator; and, as an added attraction, have a printed output that could be included in your proof? There is a program available to do that, too, with the added ability to store that information on a disc for retrieval at a later date.

Let's suppose you want to spot check your directional antenna pattern for your AM transmitter, but don't want to do the tedius job of radial measurements between the necessary proofs. There is a program available to do this.

Just as in the traffic and business areas of the station, computers can play an important role in engineering. What is available now is built around ease of operation with minimum training. Take a look at your antenna pattern for your consulting engineer. In many cases that pattern was arrived at by tedius hand calculations that, while accurate enough in the past, could be questioned today. Computers allow for more consistent, faster, and repeatable results.

So, how do you as technical director or chief engineer approach your station management with a proposal to "computerize" your operation?

If your station doesn't already have a computer, present the computer not as an "engineering toy," but as a viable tool to increase the accuracy of your work, which in turn increases productivity. Point out that the computer doesn't really cost that much. For a single-ended system with two disc drives, the cost is about $2,000. Programs will cost a little more, but as time goes by, many of you will be able to write your own.

Point out that a good engineering survey by your consultant could cost as much, and even more, if you continue having the same work done over and over. A computer will allow you to do those jobs that were formerly sent to outside firms.

Now, how about the dearth of programs that are available to the general public dealing with broadcast engineering? I propose a software sharing plan to pass along useful programs that have engineering applications. If you have any software for small computers (such as the Apple II, TRS-80, or the like) that you would like to place in the public domain, please send a listing (hard copy only) to Bryan D. Boyle, 171 East 205th Street, Bronx, NY 10458.

These will be included in a booklet which will be passed on to the second group. If you are looking for broadcast engineering programs, drop a line to the above address or call (212) 933-9459 (300 baud, 8 bit, 1 stop) and request whatever programs are available either online or hard copy.

This way we can justify the use of these computers in our areas, and just possibly make these machines as useful to engineers as they are to the non-technical areas of broadcasting. BC

The Asaca/Shibasoku monitor like the human eye resolves certain colors best; reds, oranges, yellows, and flesh tones. The I-Q decoding system enables the monitor to display these colors at a higher resolution using wide band demodulation of 1.3 MHz rather than 0.5 MHz as in R-Y, B-Y systems.

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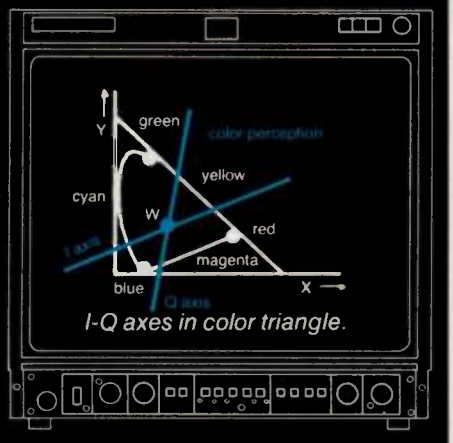

I-Q axes in color triangle.

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SOUND IDEAS

ERIC NEIL ANGEVINE

Studios can be used for LO

As mentioned in my last column, the next few columns will deal with some acoustical problems associated with local origination. For the last two years, I have concentrated on acoustical problems of quality studio spaces. Many of the concepts presented offer little help to a station with limited existing facilities and a limited budget.

For many years, most local stations' experience with local origination has ended with two half-hour local news programs. A few larger stations have produced daily audience-participation programs for children or adults, but the concept of originating program material in other areas was left to the networks and a select few large stations in the big cities.

Now cable TV systems and direct-satellite reception offer the average viewer a plethora of channels to select from. However, the glut of channel options is creating a programming shortage which the existing industry is unprepared to fill. Many cable operators have franchised obligations to provide programming on a large number of channels. The specter of multiple reruns of *I Love Lucy* and *Leave It to Beaver* is not very appealing.

Many cable franchise agreements now have local access requirements, suggesting that local governments, in drafting franchise requirements, see a need for local origination which does not now exist. While new cable systems are designing and building quality studio facilities from which to operate, as many as 3,000 existing cable systems may lack adequate facilities at which they could produce quality programming.

Local origination need not be limited to programs of local significance. The shortage of quality programs for cable systems suggests a lucrative market which local broadcasters can tap.

Local broadcasters can help fill the programming gap by leasing production facilities to cable firms or by producing original programs of their own.

Commercial production is another profitable use to which any studio can be put. At present much of this work is done by independent production and post-production studios. But use of a broadcaster's studio facilities for commercial production helps defray large overhead expenses associated with an idle facility.

Radio stations may also benefit from increased emphasis on local origination and local production. While most radio broadcasters do originate the majority of their programming, this is only a matter of semantics. Most radio programming is only a step away from engineering, with an on-air radio personality (deejay) supplying verbal fill between recorded material.

But the market exists for local production of both commercial spots and program material. Every station, to preserve its FCC operating license, needs a sprinkling of public-service programming, which can be locally produced or purchased from syndicators. Thought should be given to producing public-service material worthy of *selling* through syndication.

The real application of local-origination improvements for radio broadcasters is in remote broadcasting. This may be reportorial programming, such as sports events or broadcasts of civic meetings, legislative sessions, etc. However, one facet of remote broadcasting which is on the rise today is the use of the mobile-van studio, which may be simply to expand station exposure at county fairs, store openings, or shopping malls. I'm sure that it is no surprise to anyone that mobile-van studios have a host of acoustical problems unrelated to anything found in the normal studio facility.

Of course, television stations may also employ mobile vans, but these tend to be equipment/-control facilities rather than studio spaces. When used as announce booths or for voice-over dubbing, they can be treated as though they were radio van studios.

In the coming months, I will be delving into a variety of acoustical problems associated with increased local origination.

At the present time, I am planning to focus on developing quality studio spaces in limited existing facilities. Problems may be encountered both in control of exterior or extraneous interior noise levels as well as improving internal acoustics. The problems associated with remote broadcasting will be discussed in other columns. One will detail ways of providing acceptable (read: good) acoustics in a mobile-van studio. Another will discuss how to pick up the desired sounds at a remote event while keeping extraneous noise to a minimum.

Readers with specific questions regarding acoustical problems associated with local origination (or other areas) should send their inquiries to Acoustics Editor, Broadcast Communications, 4121 W. 83rd Street, Suite 265, Prairie Village, KS 66208. I will attempt to cover questions of general interest in future columns. BC

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ELECTIONS can be won with SIMULCASTS

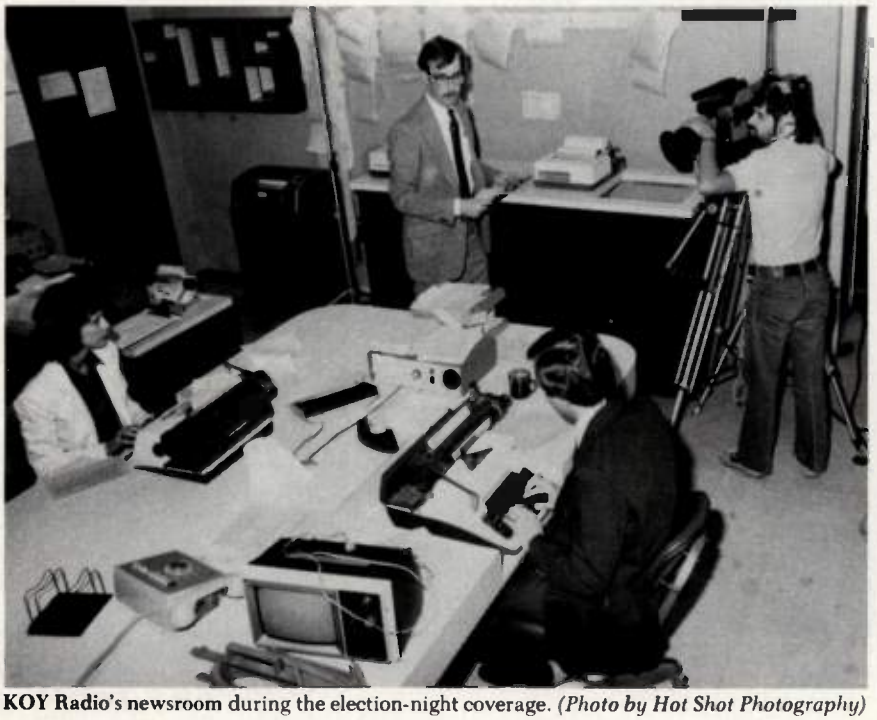
BY ROGER JOHNSON AND JOSEPH MANNING

The simulcast of television program audio by a radio station is commonplace; however, the simulcast of radio programming by a television station is quite out of the ordinary.

In Phoenix, Arizona, on election night, November 2, 1982, public-broadcasting station KAET-TV and KOY Radio combined resources to provide some five hours of election coverage and analysis to the combined audiences from the KOY studios. Prior to election night, KAET-TV and KOY Radio simulcast both senatorial and gubernatorial debates with KAET-TV providing a program feed to KOY, thus setting the stage for this unique cooperative effort.

KOY has a consistent record of providing in-depth election coverage with expert analysis as the primary focus; and KAET-TV, with *Horizon*, the nightly public-affairs program, is a natural partner for such simulcasting.

Full sponsorship of both the primary and general election coverage on KOY was sold to a local financial institution which also made a grant to KAET to help defray expenses for the added television coverage. Cross-promotion by both stations and newspaper advertising was instrumental in making the community aware of the debates and election coverage.



KOY Radio's newsroom during the election-night coverage. *(Photo by Hot Shot Photography)*

In this broadcast, KOY was to provide the major input with direct access to the election computer and an additional feed to the KAET studio. Four cameras were set up in the KOY facility and offered the radio listeners an opportunity to view the KOY operation and personnel. KOY news director Paul McGonigle and his news staff, along with Michael Grant of KAET's *Horizon*, provided news analysis; while Mike Hellon, Republican Party representative, and Charlie Pine, former chairman of the Arizona Democratic Party, contributed political analysis.

Twelve minutes of each hour consisted of a breakaway to KAET for further analysis from the *Horizon* staff. During this period, KOY carried NBC news, commercials, and promos. The KAET/KOY broadcast continued 90 minutes longer than election coverage on other stations in the area.

The simulcast offered viewers continuity of election coverage (i.e., if they could not watch television, they could listen to the radio, and the flow of information was always the same source).

Preparation for this remote pickup was similar to many others except for the anticipation of receiving a new microwave system the night before setup. Fortunately, the equipment arrived as promised and only a few problems had to be resolved with the equipment for the two-hop feed.

Being a major election, every microwave unit available to the other stations in the area was in use for live inserts. This required location coordinating with the other stations for their pickup and the frequencies they would

Continued on page 54

BSM Systems

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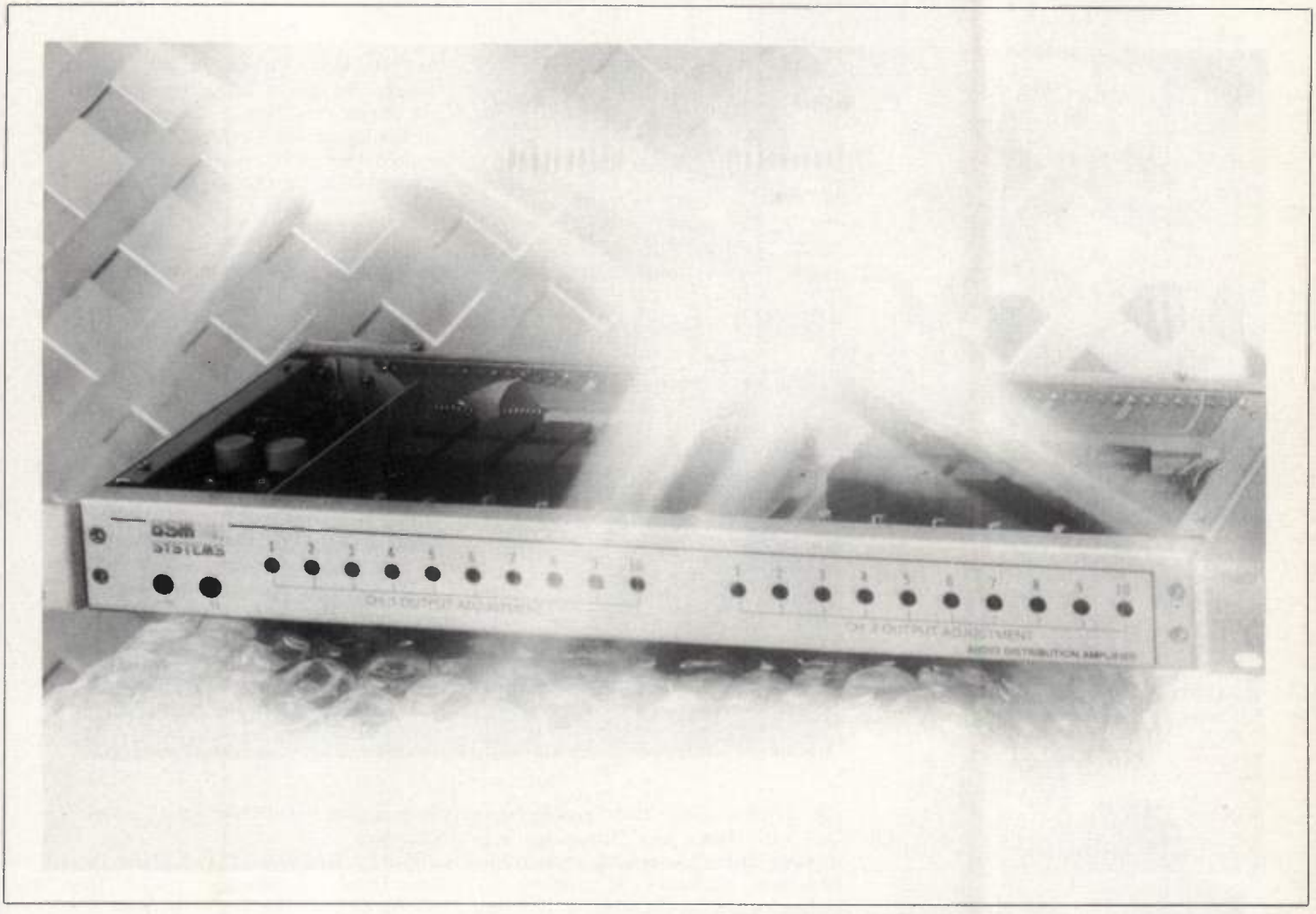

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ADA-1 is designed to give you the state of the art technology now. State of the art IC's provide input buffering and output line drivers. Individual level controls and output amps provide excellent isolation. The level controls for each output are recessed to eliminate pesky tinkering. Shielded power supplies, wire clamping connectors, plug-in circuit boards, all are standard. The ADA-1 is available in a mono or stereo version.

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Check out the competition — we think you will find the ADA a superior product. And now, for a limited time, we are offering the unit at last year's prices. While engineers will be impressed with our technology, your accountants will be **amazed at the low cost!**

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(At left) Mike Hellon (on left, facing camera), Republican Party representative, and Charlie Pine, former chairman of the Arizona Democratic Party, analyze election results in the KOY master control room. *(Photo by Hot Shot Photography)*

(At right) Michael Grant (left) and Paul McGonigle discuss election results in KOY's production studio "A." *(Photo by Hot Shot Photography)*

KAET-TV technician Karl Voss aligns the microwave unit atop the Westward Ho hotel.

use. Some stations used fixed frequencies and others used frequency synthesizer units, so frequency coordination was necessary to prevent interference on co-channels or adjacent channels.

Most of the microwave receivers are located at the common transmitter site on South Mountain. Even though the first-hop transmitter could not see South Mountain directly, there was enough signal level received to prevent the use of certain frequencies. In fact, there was a last-minute change in frequencies just prior to going live to eliminate co-channel interference.

The audio feeds to and from KAET/KOY were split from sub-channels so each facility could monitor and mix the other station's program feed for the transitions between studios. If there are any changes in the format for future simulcasts, it is the transitions that will receive attention. The election-night transitions affected the overall smoothness and flow of the program content.

The television portion was handled by the clock and the radio transition by content. The clock and content did not always occur at the same time. It is generally agreed that content played the more important part of the election coverage; the clock was of secondary importance. This was particularly true when a major candidate was to make a statement.

Would KAET/KOY undertake this same kind of coverage again? The answer is yes. The response from the legislators and people in the business community has been very favorable. Audience research indicates viewers watched and listened to the joint effort more than they did other stations, and felt they received more in-depth analysis rather than number crunching.

News and election analysis alone may not fill the void in voters' understanding of propositions, issues, and the candidates; but for the first time a major portion of the Arizona community had an opportunity to participate in the combined efforts of KAET/KOY to present the top candidates for office, the debates on issues, the analysis of experienced radio and television people, and political experts. These analysts each presented a perspective and information for the radio/television audience to consider. The event will stand as ample evidence that divergent delivery systems can make a meaningful, combined contribution when the audience comes first. BC

Joseph Manning is manager of engineering at KAET-TV, Arizona State University. Roger Johnson is chief engineer, KOY Radio, Harte-Hanks Communications.

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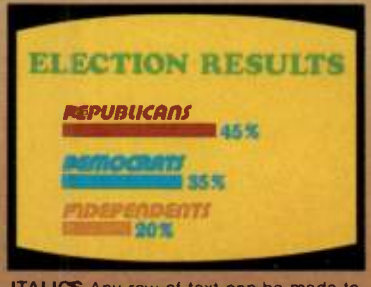

ITALICS Any row of text can be made to instantly assume a 13-degree slope at the touch of a key.

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

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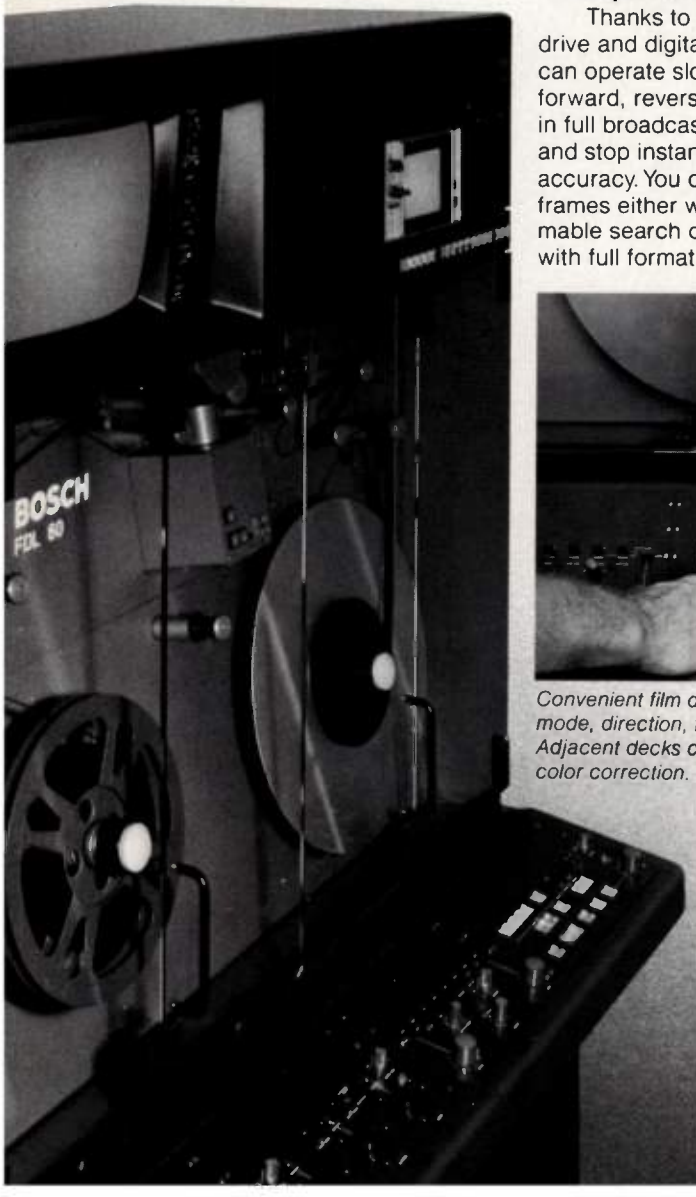

Convenient film deck controls include speed, mode, direction, format, framing, and focus. Adjacent decks control audio, video, and color correction.

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1982 Emmy Award Winner For CCD Technology

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A SILVER LINING FOR AM STEREO

BY RON MERRELL

Ever since AM stereo settled in as a serious issue for broadcasters, it has been the subject of controversy. Early-on detractors flatly denied it would ever come to pass. And even its supporters admitted that it would be a long time coming. As the industry prepares to gather in Las Vegas for another NAB convention, the prospects that AM stereo will finally get on track have never been better.

Talk around the convention will focus on the meaning of the Delco tests and the response of the winner and the losers. From the beginning, BROADCAST COMMUNICATIONS has insisted that the solution to system selection would ride with the decision of the receiver manufacturers, and we're coming closer to that reality as key events unfold.

Delco Electronics is a division of General Motors, so any selection made by Delco has deep implications. However, GM still has not fully committed to the Motorola AM stereo system, leaving the door open for other options. Surely indecision is the key to flexibility. Of course, GM would be hard pressed to explain a general dumping of the research conducted by their Delco division.

Engineers around the country have been contacted by various receiver manufacturers for their opinions on the competing systems. In that respect, stations are playing an important role in deciding system selection. And while Delco has thrown its support behind Motorola, keep in mind that they are concerned with car receivers.

In many cases, Sansui has been the receiver modified to demonstrate AM stereo reception. It was in the middle of January that BROADCAST COMMUNICATIONS received word of a Sansui visit to station KFI in Los Angeles.

Marvin Collins, KFI's chief engineer, told *BC*: "I believe they have the answer to our current AM stereo dilemma. The two engineers [who visited with us] are employed by the Sansui Electric Company and [they] drove to the KFI studios in a car equipped with a very interesting AM stereo receiver.

"The receiver employed a universal AM stereo decoder that decodes all four stereo systems automatically, without any manual switching. I enjoyed listening to KFI in Harris stereo, and then tuning up the dial to KHJ in Kahn stereo. The engineers told me that the receiver does not favor one system over another, but works equally well on each system. The receiver can be built for only a slight additional cost over a single-system receiver."

Summing up his impressions of the Sansui visit, Collins added: "If all receiver manufacturers will produce universal stereo receivers, our present chicken-and-egg dilemma will be solved. A universal receiver means broadcasters are free to choose any AM stereo system they like, knowing that all receivers will receive all systems. This will surely encourage widespread AM stereo broadcasting soon. Congratulations to the Japanese and Sansui for leading the way. Now I hope the American manufacturers will do their part."

The key, of course, is the cost of chip decoder development. Perhaps Sansui has done it at a cost that will make AM stereo receivers attractive. However, Sansui is not alone in its quest for the receiver-market's newest bright spot. At the recent Consumer Electronics Show, there were other manufacturers clamoring for position and attention. But the significance is that if the receiver manufacturers want AM stereo, we'll get it. And their recent activities indicate they are seriously pursuing the ideal receiver.

The Delco tests did get AM stereo on stage for another run. While system proponents anxiously waited for the results, they explained that regardless of which system was selected, the losers would not desert their position. Harris, for example, issued the following statement when the Delco decision was announced:

"Harris is disappointed that Delco has chosen not to recommend its Linear AM Stereo system to the General Motor's car divisions at this time. Although it is important, the Delco announcement is not a decisive factor in the AM stereo marketplace, and will not cause Harris to alter its plans.

"Broadcasters will be particularly concerned about the wide bandwidth of the Motorola system. It will require them to eliminate or severely limit the use of pre-emphasis to stay within the FCC limits on radiation. The wide bandwidth will also cause distortion in current AM receivers.

"Harris will continue to move ahead with the broadcasters and the receiver manufacturers for their final adoption of the Harris system."

Before the Delco tests could get under way, Kahn rejected an offer to participate. Declining for a number of reasons, Kahn stood its ground as a proponent of a marketplace decision. In this case, marketplace meant users, not receiver manufacturers.

In a bevy of decision defections, the

Continued on page 58

FCC has opted for leaving the system selection to the marketplace. However, the FCC has not defined what they mean by marketplace. They misfired if they thought the American home audience would make the choice that gets AM stereo going. The question will be settled by receiver manufacturers cooperating with broadcast station engineers.

Now Kahn has announced the formation of Kahn Consumer Products. While it won't be a subsidiary or division of Kahn Communications, the new company will be licensed to use certain trade secrets of Kahn Communications.

The first product of this company is an AM-stereo/FM-stereo tuner with emphasis on the design of a quality AM section. It will come with a decoder for AM stereo, using the Kahn/Hazeltine stereo system already on the air.

In commenting on the formation of the new company, Kahn said that it was important for AM receivers to have superior performance characteristics for AM stereo to be successful.

Despite the future of AM stereo, the prospects are good that AM receivers will benefit from the emphasis now being placed on their design—an emphasis brought on by research and design focusing on how to take advantage of AM stereo. Passing 3 kHz won't do it. Any new receiver will at least double that. While they are probing, manufacturers surely will realize that their time and money won't be lost, even if AM stereo fades and dies. A better receiver will sell, and stations will be more diligent about their sound because more of their total signal will be reproduced for the listener. Signal-quality competition will take on new meaning.

In the past, receiver manufacturers have pointed to the broadcaster and insisted that their sound didn't warrant a better receiver. All the while, broadcasters have contended that no matter what they produced, it wouldn't sound good on modern-day receivers.

Perhaps receiver manufacturers will be further encouraged by ABC's digital audio transmission via satellite. The ABC Radio Network began pumping digital audio to selected affiliates in January. Eventually ABC will have 650 stations receiving 15 kHz audio. If AM is to take advantage of that great capability, the listener will need a better receiver. Most of it would be lost on current sets.

Spurred on by the prospects of AM stereo, and now looking at the reality of satellite-delivered digital audio, receiver manufacturers will see the advantage of a new generation of receivers.

The marketplace decision may have validity after all, for if a universal receiver can be marketed successfully, listeners will finally be in a position to judge.

Does the marketplace mean listeners? Station engineers who make equipment selections? Receiver manufacturers? Apparently it means everyone who could be involved (other than the FCC).

Receiver manufacturers wanted the reaction of engineers. And they've kept track of how many of each system have been sold. Engineers and stereo-system manufacturers looked to the receiver manufacturers for a clue on how they would go. Set manufacturers saw no clear lead by one system manufacturer. If their response is to produce a universal receiver, we may see a new set of winners with economic interests. But regardless of how the issue is settled, AM radio and its listeners will be winners.

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Why LPTV applications are still in the mill

BY RUSSELL BALCH

The FCC has never been noted for speedy processing of applications for service, and that's especially true in the case of the thousands of applications on file for low-power television. But in this case, there are different reasons for the logjam and some unique answers for speeding up the process.

Russell Balch, an attorney with a law firm that specializes in telecommunications law, is the legal editor for LPTV *magazine. The charter issue of* LPTV *will be available at the NAB convention.*

The question most frequently directed to the Federal Communications Commission is, "When are you going to start granting LPTV and translator applications?" Unfortunately, the answer you get depends upon whom you ask and when you ask. This is because several questions essential to routine application processing have yet to be resolved, and opinion varies widely as to when they will be settled.

First, the commission has to sort through the approximately 2,000 amendments which were filed in response to the September 21, 1982, deadline (to bring applications into compliance with the new rules which became effective June 17, 1982). Since many of these amendments made substantial engineering changes, the commission will have to review this material manually in order to determine which applications are *now* in conflict with each other, or with existing applications.

Secondly, there are still pending several Petitions for Reconsideration which ask for certain changes in the new rules. One critical matter raised by these petitions is whether the commission should relax the new, very restrictive definition of a "major change" in a low-power television or translator station. Unless this relaxation takes place, it will be very difficult and expensive to modify or improve station facilities in any significant manner. (If a modification is deemed a "major change," it must go on a cut-off list, is subject to Petitions to Deny, and generally will take longer to process than a "minor change.")

Third, the commission will be manually processing all Tier I applications, and there simply aren't enough warm bodies on the third floor of the FCC to process more than a handful of these applications at a time. The meticulous work of determining whether proposed stations will cause interference to one another, or to existing stations, is time-consuming; yet obviously it must be done accurately to avoid chaos.

Finally, the commission has yet to finalize the program for computerized processing of low-power and translator applications. Projections currently call for test running the full program shortly after the new year; but no one really knows if it will work. That is, they know what kinds of values the program will process and, generally, what will cause the computer to give a particular application either a green light or a red light. But realistically, there *are* going to be bugs in the program, and many applicants haven't provided the necessary information in the proper format. Put simply, when you hear predictions of "several hundred" grants per month after the computer goes on line, you can also count on a lot of fingers being crossed in hope.

In light of these unresolved matters, you must be careful when someone tells you he has the answer to the question of "when." Take his answer with a grain of salt, or perhaps a couple of pounds.

Continued on page 62

"Despite what some people believe, low-power will get off its rocky road and move onto smoother terrain."

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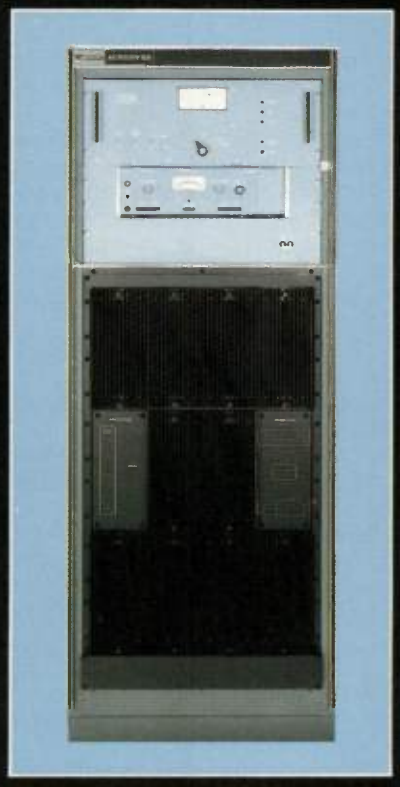

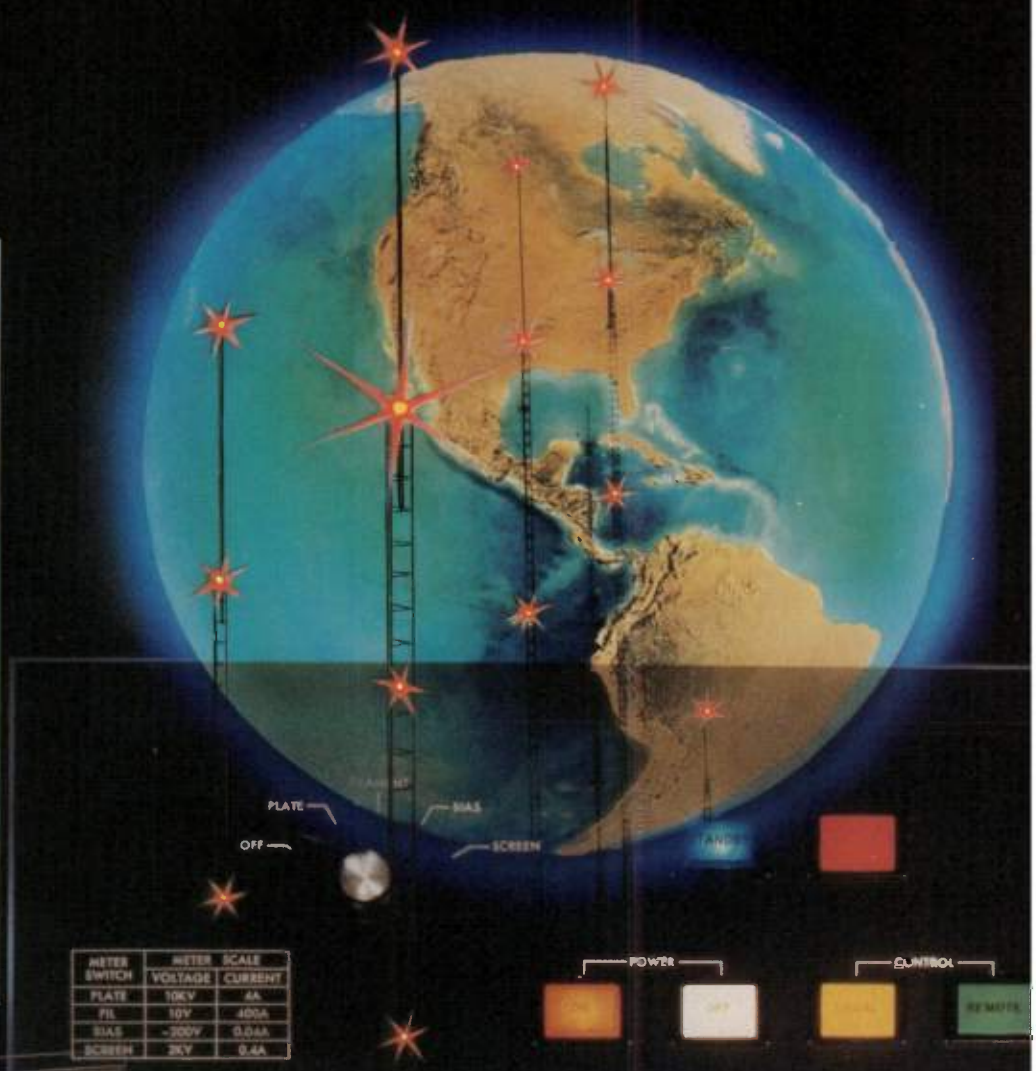

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Nevertheless, indications are that the logjam will begin breaking up in the first quarter of 1983. It will be slow and halting at first, and some applications may be returned as defective, incomplete, or in conflict with the FCC rules. But there will be, at long last, some forward movement.

After that movement begins, one of the first things to be encountered will be the lottery method of choosing between applicants competing for the same facilities. In 1982, Congress virtually ordered the FCC to adopt and use a lottery for the selection of a winner among mutually exclusive LPTV and translator applicants. Very detailed and complicated mathematical formulas will be used to give some applicants (minorities and those with few or no other broadcast interests) an advantage when the dice are rolled.

The commission must adopt its lottery rules by mid-March 1983 in order to comply with the congressional mandate. Once adopted, the rules may face legal challenges. Such challenges could bear upon what groups are entitled to the preference (or whether any group should receive a preference); the extent of that preference; and the definition of "broadcast interests."

However, the question with the greatest practical impact on applicants will relate to who is eligible when the time comes to spin the wheel. The commission proposed to take *all* mutually exclusive applicants, assign the minority and diversification preferences, throw the dice, and *then* determine if the winner is otherwise qualified to be a licensee—that is, is not an alien; is not guilty of discrimination; proposes technical facilities in compliance with the FCC rules; proposes a tower which is not an air hazard; has not made misrepresentations to the commission; etc. If the winner of the lottery is found unqualified, the dice are thrown again until a qualified winner is selected.

The problem with this approach is that it would allow unqualified applicants to reduce the odds on winning for qualified applicants. The question arises whether this treatment of the qualified applicant is lawful, or whether the commission can permit only qualified applicants to participate in the lottery.

On the other hand, to qualify all applicants before the lottery would be very time-consuming and would be a wasted effort for an applicant whose number is not drawn from the hat. And the preservation of commission resources and administrative efficiency have been recognized by the courts as valid factors for the commission to consider in making decisions such as this.

The manner in which this question is resolved is of critical importance to applicants because it will determine, in part, how quickly the commission can resolve mutually exclusive situations, the actual odds on winning for each applicant, and the cost to each applicant of proving himself qualified, and proving others to be unqualified. Such pre-lottery skirmishes between applicants would consume both time and money in substantial amounts.

Perhaps it will be realized that many applicants have very little time or money left, and that costly, seemingly endless procedures are the last thing which the low-power television service should have to endure in the future—especially in light of its troubled birth.

Sooner or later, however, there *will* be several hundred applications that have been processed to the point of being ready for a grant, have already been granted, or are in conflict with other applications. Despite what some people believe, low-power *will* get off its rocky road and move onto smoother terrain.

Once that happens, a whole new range of questions, problems, and issues will arise. There will be success stories and there will be failures. And, to a great extent, the legal environment existing at a particular time can spell the difference between success or failure. Future articles in *LPTV* magazine (being introduced by Globecom Publishing this month) will focus on that legal environment.

We will look at programming issues such as how the Political Broadcasting and Fairness Doctrine rules will be applied to LPTV stations; the matters of copyright, program acquisition, and rebroadcast consent; and the implications, responsibilities, and risks of new LPTV networks.

We'll also look at business issues such as the relationship between the station operator and his program suppliers; the growth of multiple ownership of stations, either in one market or in several markets; the sale of low-power stations under the FCC's various restrictions; and the raising of new capital for LPTV operations.

In addition, we'll examine some of the legal problems which arise when signal interference occurs; the procedures for resolution of that interference and the parties' respective rights; and other technical issues which have legal consequences.

Finally, and most importantly, we will endeavor to answer those questions which are most pressing in the minds of LPTV applicants, owners, and operators. It is clear that the question asked in the first sentence is currently the most pressing. However, in light of the imponderables discussed above, anyone who claims to have a definitive answer as to "when" is offering merely the illusion of certainty. We prefer to trade in reality. BC

Russell Balch is an attorney with Fly, Shuebruk, Gaguine, Boros, Schulkind and Braun, a firm specializing in telecommunications law.

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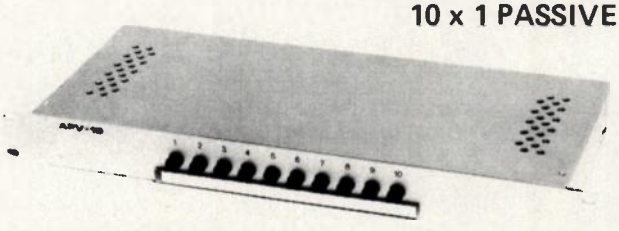

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OVERCOMING THE ELEMENTS
of a Mt. Everest climb

BY CINDY BICKFORD

Behind the scenes of any remote you'll find the people who make the event coverage come to life. Usually they receive credits, but usually their trials and tribulations remain behind the scenes, catalogued perhaps, but never exposed.

After returning from her Mt. Everest assignment, Cindy Bickford, technical manager for the Mt. Everest remote crew, wrote a memo that was passed around the ABC News Nightline *staff. ABC passed the memo on to* BROADCAST COMMUNICATIONS, *allowing a rare opportunity to relive the event, along with the agony and ecstasy of the team that made a tough assignment look easy.*

The notion of the Canadian climb of Everest started in the works four years ago. They established a corporation to handle the public relations and financing under the name "CanEverEx" (Canadian Everest Expedition). About 18 months ago, operations had progressed to the point where the expedition was interested in television coverage, and together with a small Toronto production company called AdverTel, CanEverEx approached the CBC with the idea of television coverage.

Evidently, the CBC bought the idea, and AdverTel started hiring cameramen and studio personnel to complement its own small staff. With the exception of AdverTel's chief engineer, and one of the cameramen who was on leave from local CHCH, all of the Canadian technicians were freelance. CBC provided a producer—the director and the PA were freelance.

The control room was set up on the

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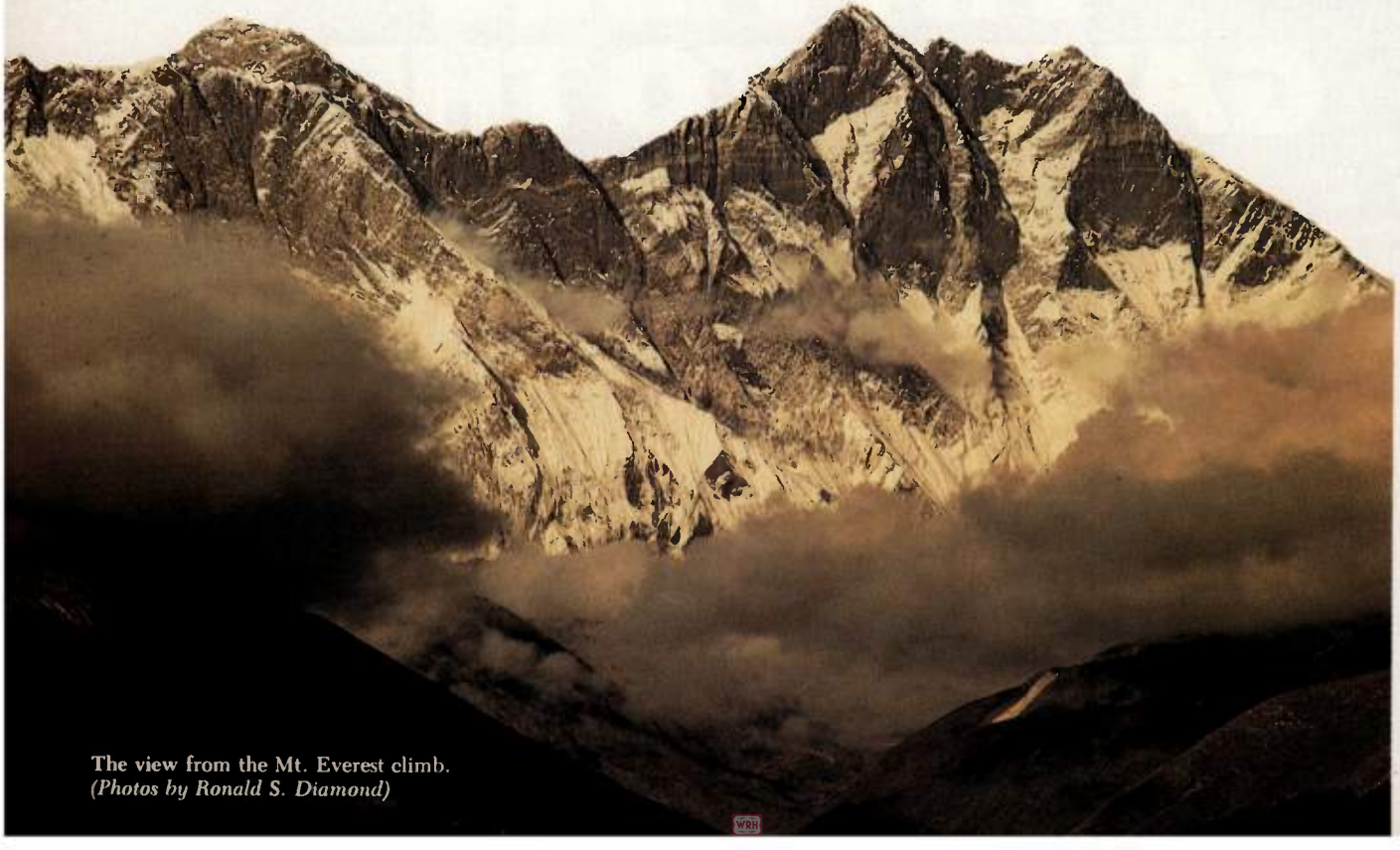

The view from the Mt. Everest climb.
(Photos by Ronald S. Diamond)

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top floor of the Sheraton Hotel in Kathmandu. The hotel is still under construction and decoration after nine years, so we weren't making a mess out of anything that wasn't a mess already.

CanEverEx convinced Hitachi to donate a good deal of equipment to the venture. As a matter of fact, aside from some rack equipment and the production switcher which belonged to AdverTel, Hitachi donated three studio 1-inch VTRs (HR200), a portable 1-inch VTR, three or four color monitors, a number of black-and-white monitors, three SK-91 color cameras, and an FP-10 color camera. The Neve audio console was a rental.

Teleglobe Canada was the satellite contractor for the job. They brought a portable 7-meter dish with them and constructed a hut in the parking lot of the Sheraton.

As with any complicated operation that has a hard deadline, the Canadians encountered fairly severe equipment delays, so that by the time we arrived in Kathmandu, they were running about three weeks behind schedule. In addition, AdverTel's chief engineer was also having to worry about the radio gear for the climbers, along with the video equipment which was documenting the climb. Given the climber's lack of expertise with all things of a broadcast nature, the chief's time was taken up with their problems.

The timing of the ABC offer and the desire to broadcast live to North America isn't clear to me, but somewhere in there, live broadcasts from the top of Everest were desired, and AdverTel acknowledged that they didn't have the time, manpower or equipment to do a live shot. From what I gather, inquiries for live capabilities were made about a month before the summit attempt. AdverTel did bring four rented microwave links: an assortment of TerraCom 7 GHz and M/A 2 GHz and 7 GHz gear with 2- and 4-foot dishes.

ABC gets involved

With the advent of the ABC involvement, Jerry Cudmore was asked to go over to Nepal to make an assessment of the live shot feasibility. Cudmore and producer David Bohrman did the heavy leg work of finding workable sites using Army topographic maps and trekking maps, and surveying the sites from the air. Cudmore was able to determine that the paths that he laid out would work given some help, time, and a lot of luck.

Rick Knipe and I brought the necessary equipment with us to complete a link that spanned 130 miles of mountainous terrain for a total of five links. The longest of these was 34 miles, and was accomplished with a 7 GHz link and 4-foot TerraCom dishes. The "bottom" of the link rested on the roof of the Everest Sheraton Hotel in Kathmandu, and the "top" of the link was located at the Everest View Hotel, 14,000 feet above sea level and still 12 miles away from Mt. Everest.

The original intent of the coverage was to have one of the climbers, who also happened to be a freelance cameraman, shoot footage of the climb. This was done until the cameraman's death in early September. After that, the other climbers took up the responsibilities of making video (with less-desirable results).

Summit pictures were originally going to be provided to the upper end of the microwave link at the Everest View Hotel by one or more of three methods. First, the climbers were going to carry a small diode-gun camera weighing about five pounds which was equipped with only a 10mm wide-angle lens and automatic iris, with all the ancillary equipment (the zoom lens and the viewfinder) removed.

The climbers had at their disposal three Futek ¼-inch videocassette machines but were not going to take a cassette deck with them on the climb to the summit. The deck wasn't doing well at high altitudes... much above 20,000 feet. Even with the unit inside a climber's one-piece down suit and surrounded by chemical handwarmers, it wouldn't stay warm enough to perform reliably. The climbers were also to carry a small UHF transmitter with an omnidirectional antenna.

Ostensibly, the reason that the camera did not go with the climbers to the summit is that they weren't charging the camera batteries properly with the solar recharge unit (which wasn't working well, anyway) and were killing batteries. There weren't any batteries left to power the camera to the summit. It is speculated that the climbers just decided not to take the unit with them, as they were not professional cameramen, and at 30,000 feet, five pounds weighs a ton.

Pictures were going to be procured from the summit using the same type of UHF transmit unit attached to an SK-91 in a chartered plane which would fly around the summit.

We were hoping to provide "up close" pictures with an SK-91 attached to a Questar telescopic lens, which had several focal lengths, the longest of which was about 14,000mm. The lens/camera combination was mounted on an aluminum bracket on a concrete pedestal which had been sunk into the ground about 12 inches in an attempt to reduce wind motion. The unit was housed in a tent to further reduce atmospheric interference with the lens, although we found that it didn't matter.

The biggest enemy was the 12 miles that separated the Everest View from Mt. Everest... there is somewhat of a valley between the two, and the air rising from it is warmer than the surrounding atmosphere. The heat waves were incredible, even at 6,000mm. It was extremely difficult to tell whether the camera was even focused on the mountainside, much less be able to pick out the climbers. The lens wasn't used on the air (at least to the States). In the end, the pictures from the plane were the only successful pictures we made.

Onward to Kathmandu

On the way over, the only notable thing was the Delhi airport. Mr. Sharma was a big help getting me on a packed flight to Kathmandu without a ticket (a little screaming in Hindu and a gift worked wonders), and he was instrumental in getting customs officials to allow us to leave the gear in the airport overnight and leave for a hotel without the cases being subject to tedious inspection before going on to Nepal.

Bohrman and Cudmore had the first (actually the last and closest one to the Sheraton in Kathmandu) microwave link already up when Knipe and I rolled into town.

The next four days were spent in helicopters setting up links. I was in the Sheraton riding radio relay and nudging our military liaison into getting the Royal Napalese Army Signal Corps into position at the various sites. We had contracted with the army to drop their troops in place, two at each of the locations with tents, sleeping bags and supplies. It was necessary, obviously, to have each of the sites manned, since AC outlets don't grow out of the sides of Mt. Everest. We were forced to rely on generator power. (I think that we must have had all the Honda generators in the country tied up.)

The links were set up two days prior to the first *Nightline* live show, but no tests involving the whole system had been made, given the fact that by the time one flies to site five, site one is out of gas. Keep in mind also that it is easy to get behind schedule when you are relying on helicopters as sole means of transportation, since helicopters are hampered by various weather conditions.

The rush to air

On the day prior to the first *Nightline* shoot, we realized that the army was not going to have its men in place in time for us to make air on the following morning. In Nepal, there are no time deadlines to speak of, so getting things done in any kind of timely fashion is impossible. In that event, we deployed our own troops.

We accomplished a complete path test the evening we were dropped in place—Friday evening. Since *Nightline* aired on Saturday morning in Nepal, we settled into our tents for the night.

Nightline went on the air the next morning without a hitch. We saw the tape replay after we got back down. On Sunday, the military was deployed and we left for the Sheraton. The hand-held radios were left with the signal corps who reported to a major stationed at the Sheraton and a lieutenant stationed at the Everest View. Both understood English and could translate our planning meeting into Nepali for the signal corps so they would know when to power up the equipment.

Kathmandu offered a unique opportunity to discover a different way of life while making final arrangements for the ultimate climb to the top of Everest.

Try it by plane

The radio equipment for the venture was provided by CanEverEx: 2-meter VHF equipment made by Kenwood and also 3.88 MHz equipment made by Yaesu. We ended up dumping the use of the 3.88 MHz gear, because 3.88 MHz is just too close for comfort to 3.48 MHz, and every time the transmitter in either control room was keyed, any video became immediately unusable. The VHF system proved to be a very good one—55-watt base stations at the Sheraton, the Everest View, and the climbers' base camp, and portables carried by the microwave sites and individual climbers. Antennas used were 5/8 wavelength groundplanes.

The transmitter side of the Everest View microwave was reestablished once with no signal degradation. It had originally been placed on the hillside down away from the building. . . not much thought was given as to its location, since we were running out of time and we were only interested in making pictures. The yaks kept using it as a back scratcher, and it was also providing the local children with a jungle gym. It was moved onto a ledge at the hotel to avoid unpleasant surprises.

Because I was basically tired, I muttered something about having a microwave pair left over and why didn't we try that out of the plane? It required the exchange of the transmitter that we had left on the ground for the one that was at the Everest View, since our spare was the 2EP, which will not run off 12 VDC. We had a car battery supplied for us to power the transmitter the camera, and the BVU110 in the plane.

Since there is typically cloud cover between the peak of Everest View, Knipe did some trig calculations and some map reconnaissance, so that we could obtain some sort of azimuth range and a fairly fixed zenith. There was no chance to test the system, since we were configuring it the night before the first summit attempt.

The morning of the first attempt, the plane trip was all academic, since the climbers in question had made it to the summit before we got the plane out of Kathmandu. It was, however, an opportunity to shoot some absolutely gorgeous tape and practice with the microwave. We made pictures without too much difficulty, but we hadn't anticipated some strategic problems of placement in the airplane. There isn't much time to practice at 30,000 feet, since it only takes about four times

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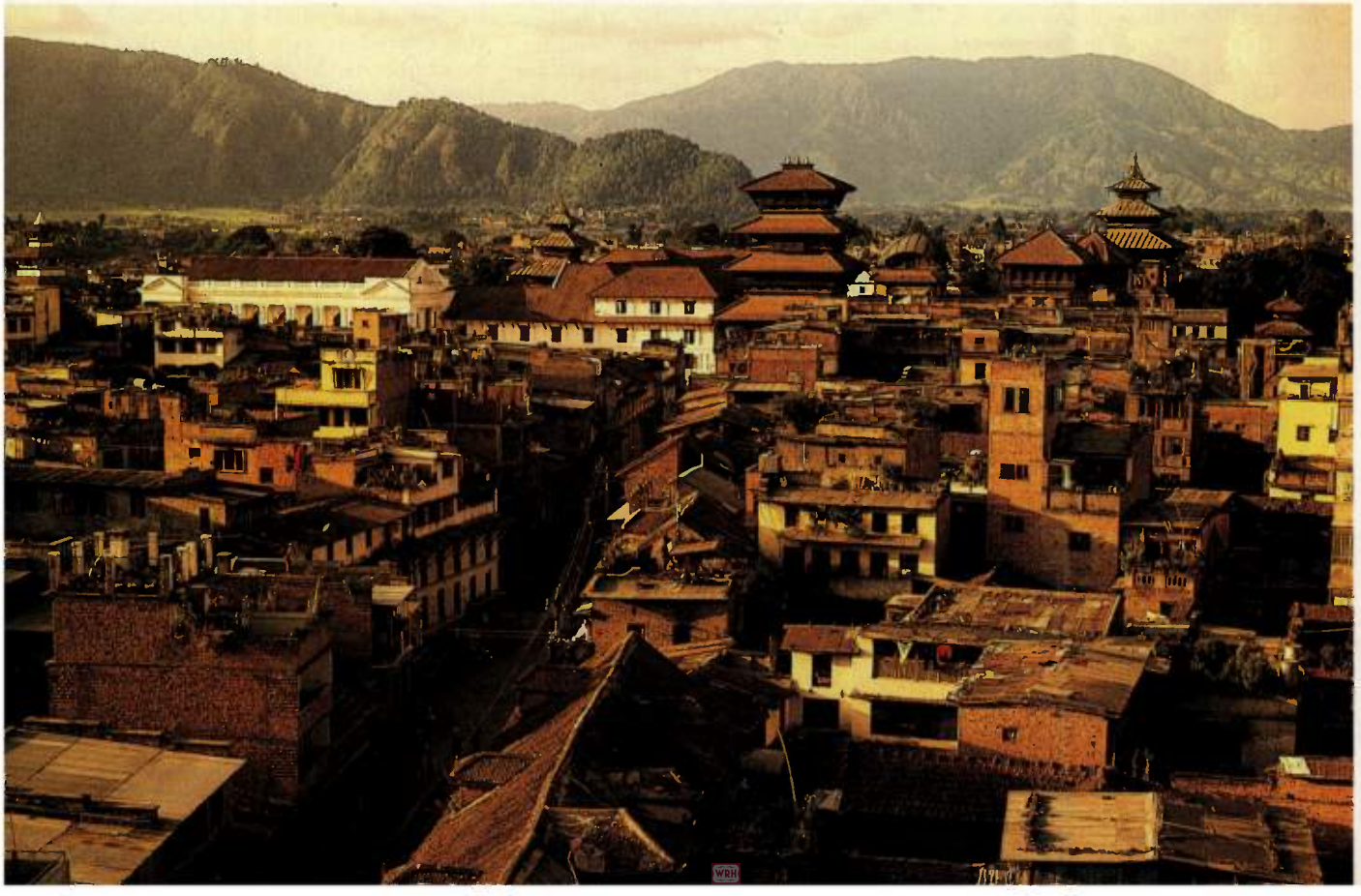

Site communications were so complicated that it was necessary to bring a full complement of equipment, which attracted daily visits from the locals.

around the peak before the plane runs out of fuel and you run out of oxygen.

The second attempt was a good deal more successful in quality than in content... the climbers had forgotten their handy-talkie, and there was no way to judge how far along they were in their ascent, so again, we misjudged the time to put the plane in the air... the plane not having obtained altitude soon enough to make air for *Nightline*. Bohrman just didn't have enough prayer flags hung up in the control room, thats all! The helical antennas on the 2 GHz pair used for the plane pickup are sufficiently wide so that tracking at the receive point wasn't necessary except at the extreme ends of the arc around the peak.

This second attempt was launched on Thursday, October 7th; and after that, it was all over but the shouting... and waiting for the climbers to all come off the mountain and assemble themselves at the Everest View for a last interview on *Nightline* on Tuesday morning.

In the lap of luxury

A word here so that you don't get the misconception that I'm wasting the company's money at some fancy resort hotel doing nothing of value: Before the CBC cameraman arrived there at the beginning of October, there had not been a paying guest at the hotel since late May (the monsoon season notwithstanding). The Everest View was built by a Japanese corporation with the help of the Royal Nepalese Development Commission. It is hand-hewn timber and hand-laid stone, and was probably beautiful before it started going downhill, which was probably right after it was built. For example, the skylight in the lobby, which is a 25-foot expanse of glass, was caved in by a heavy snowfall early last winter. It hasn't been repaired yet, so it rains and snows with regularity in the lobby.

The hotel staff—two cookboys and the caretaker—haven't been paid in four months. The $15 that I was paying the hotel per day was enough for them to feed me and find a small amount of kerosene for a space heater—I had no trouble with equipment cooling. Typical meals were oatmeal for breakfast, potatoes fried with garlic for lunch, and rice and cabbage for dinner—every day, for nine days. If this amount of money only buys two pints of kerosene, then it follows that the hotel couldn't afford to buy kerosene to operate its own generator. No electric power: no lights, no heat, no water pump—ergo, no water or sanitary facilities. We manufactured electric power about four hours a day with our own Honda 1500-watt generator which ran our equipment and a single lightbulb.

I paid two village urchins $3 a day to haul water for us for drinking (boiled *heartily* first) and washing. The generator was run as little as possible since gas is $15 per gallon. The drinking water has plenty of unidentifiable floating objects in it, which are pretty well masked when you throw instant coffee in.

There was no heat, which wasn't really a problem as long as we were warmly clothed. The only problem I had was trying to solder with mittens on, which I immediately abandoned, and just kept chemical handwarmers in my pockets. The temperatures varied from about 30° to 40° during the day, and about 10° at night.

Entertaining the locals

In addition to providing pictures for North America (I spent a lot of time with a soldering iron making perfectly natural connectors do funny things), we were able to entertain the local populus. Not being any television in Nepal, everyone, especially the hill-dwelling sherpas, were understandably amazed at all of our equipment. They figured out very quickly that when we fired up the generator each morning, we were making pictures, and within 10 minutes of firing up, we would have some 20 locals in the set-up room (which also happens to be where I was sleeping) all craning to see pictures. We could keep them entertained for hours with the bars off a Multidyne generator.

The last air day was Tuesday morning for us. Ted Koppel interviewed the two climbers who had reached the summit. The climbers had come down from the base camp the night before, so that I had a chance to meet them and talk with them over some chang (home-made fermented rice beer). The *Nightline* feed was accomplished with the climbers standing on the balcony outside the equipment room.

There were so many bystanders that the rest of the climbers had to form a ring around the cameraman so that he could operate the camera without getting molested. The climbers' ears were fed with the N.Y. IFB circuit along a four-wire cord circuit via satellite to the earth station in Kathmandu, which was then patched into the Kenwood 2-meter radio link. We came out of our receiver at the Everest View with three Holland amps (one for each of the interviewees, and one for the cameraman), and an anchor speaker so that I could monitor also.

We had a slight mishap at the beginning of the interview. The cameraman went to move his camera back a couple feet, and one of the tripod legs caught on the video cable, pulling the BNC loose out of the back of the camera. With a little gaffer's tape for strain relief, we were back on the air in 30 seconds with the video.

With the climbers help, it was only 40 minutes between the time we went off the air with *Nightline* and the time that the equipment and I were loaded into the helicopter and taking off. We were packed and at the Kathmandu airport by 4 p.m. That includes chopper time, two taxi rides, and a mercifully warm 30-minute shower. BC

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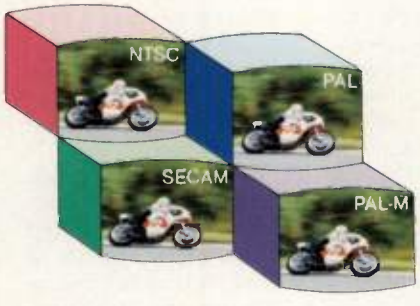

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BROADCASTERS CAN TURN LIABILITIES INTO ASSETS

BY FRANK REES

With the advent of new trends in urban development, sobering economic indicator performance, and changing tax legislation, broadcast executives responsible for the growth and development of television broadcast operations in major metropolitan centers across the nation are exploring unusual methods for financing, designing, and building new broadcast facilities.

Ironically, the economic climate which has prompted some fresh thinking along these lines is also responsible for making these new designs and construction options more practical than ever before. In the face of changing business trends, some innovative broadcasters are turning so-called economic liabilities into profitable assets.

Not long ago, the myriad concerns of the broadcaster seeking expanded, renovated, or totally new quarters for a growing television station usually led to one clear-cut course: secure a new site, plan a new facility, and initiate a comprehensive building program. Today, the changing needs of the broadcasting industry as a whole, have seen the solution to much-needed expansion grow in complexity commensurate with the intricacies fostered by recent business conditions. Increasing costs, tight financing policies, and revised tax laws have each played a part in the recent development of conventional broadcasting facilities—through some very unconventional methods.

Enter the office/ warehouse complex

Leasing "shell space" which can be completed as a television station is becoming a popular approach to securing new television broadcast facilities for a growing station in an urban market. If the management team of a station planning such a move can locate suitable space in a good location, many of the advantages associated with a freestanding building on a new site can be had at a remarkably affordable cost. Even with a less desirable location, some broadcasters have compromised the visibility and convenience of locations near a central business district in favor of other advantages which were simply too good to ignore.

The most notable advantage to completing unimproved office/warehouse space for use as a broadcast facility is the minimal cost of making the required change. Typically, these structures are of high-quality materials and sound design and construction—a good starting point for any facility. The office portions of these structures generally require little modification in order to provide working space for management, administrative, sales, and traffic operations. Since these office spaces are directly adjacent to large area spaces intended for the storage of a conventional tenant's inventory, the high-clearance, voluminous spaces required for television studios and other technical block functions also exist in a shell, or unimproved state.

As you begin to explore the advantages of converting shell space to suit your particular needs, the considerable tax advantages associated with such a program become readily apparent. Improvements made to convert office/warehouse space for broadcasting activities generally run about $45/square foot. Additional technical equipment costs and modifications to heating, ventilation, air conditioning (HVAC) equipment, and other mechanical systems must also be anticipated. However, because the station will be operating out of leased space, these costs are offset by related tax advantages.

By leasing unimproved space with a lease-renewal option, you can sometimes set the stage for impressive savings. The cost of improvements to the leased space (leasehold improvements) must generally be written off over the life of that lease—including any renewal options. However, the Internal Revenue Service will allow exceptions to this requirement if the unexpired portion of the lease in force accounts for 60 percent or more of the useful life of the improvements in question. For example, if a broadcaster holding a five-year lease with a 10-year renewal option makes improvements with an eight-year useful life, the cost of those improvements may be written off excluding the renewal option.

The high tax brackets most broadcasters find themselves in also contribute to the advantages associated with improving lease space: the cost of building improvements is usually below the annual tax savings the station accumulates under current IRS codes.

Leasing retail space

Leasing office/retail space in a city's central business district can give you many of the tax advantages of office warehouse complexes—without the disadvantages often associated with locating in an urban warehouse district. For example, one major-market television station is presently negotiating with the developers of a new of-

Continued on page 72

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fice/retail development planned for that city. Buildings designed for large retail operations generally provide the expansive spaces required for television broadcast operations. In addition, these developments offer the added advantage of placing the station in the center of urban activity. The benefits of such a location give you optimum public exposure, and enable locally-originated programming to include segments produced in nearby public areas—a decided advantage in news programming and other shows lending themselves to spontaneous interviews and other interaction with the general public.

In addition to providing you with facilities in a high-traffic area, leasing office/retail space for completion as a television station facilitates sales activities and provides station visitors and employees alike with amenities such as a wide choice in restaurants, parking options, and other conveniences of the central city. Facility design is also made simple by the ready availability of office space suited to television operations.

Additionally, the multi-story buildings common in such areas offer an excellent opportunity to negotiate agreements which eliminate the need for a station to invest in a tower. Placing an antenna on top of one of a city's taller buildings can result in substantial savings as compared to the cost of a freestanding tower.

While difficulty in finding suitable space in a desirable location is the major drawback in converting office/warehouse space for use as a television station, cost alone is probably the greatest disadvantage associated with office/retail developments. Rates for unimproved space (less building improvements and equipment costs) can sometimes exceed $35/square foot annually—nearly twice the cost of similar space outside the downtown business district!

Renovating historical buildings

If you purchase a building over 30 years old, that structure qualifies for a 15-percent investment tax credit on qualified expenditures in building renovation. Buildings older than 40 years provide the opportunity to earn a 20-percent credit. If the building under consideration is a certified historic structure, it may qualify for a 25-percent investment tax credit. Additional benefits are associated with historic structures and other old buildings, if you use the new straight-line 15-year recovery period depreciation schedule.

Buying and renovating an older building that qualifies for the tax advantages associated with an historical structure enables you to achieve the rapid depreciation schedules usually possible only through leasing agreements. While gaining the very real advantage of building ownership, the broadcaster operating out of renovated historical facilities earns an immediate investment tax credit and gains the ability to depreciate building improvements over an accelerated schedule—regardless of the useful life of the building owned.

Purchasing and renovating an older building provides other benefits in addition to those of tax benefits and attractive cash-flow conditions. Broadcasters operating out of historical structures also enhance their public image as an

Continued on page 74

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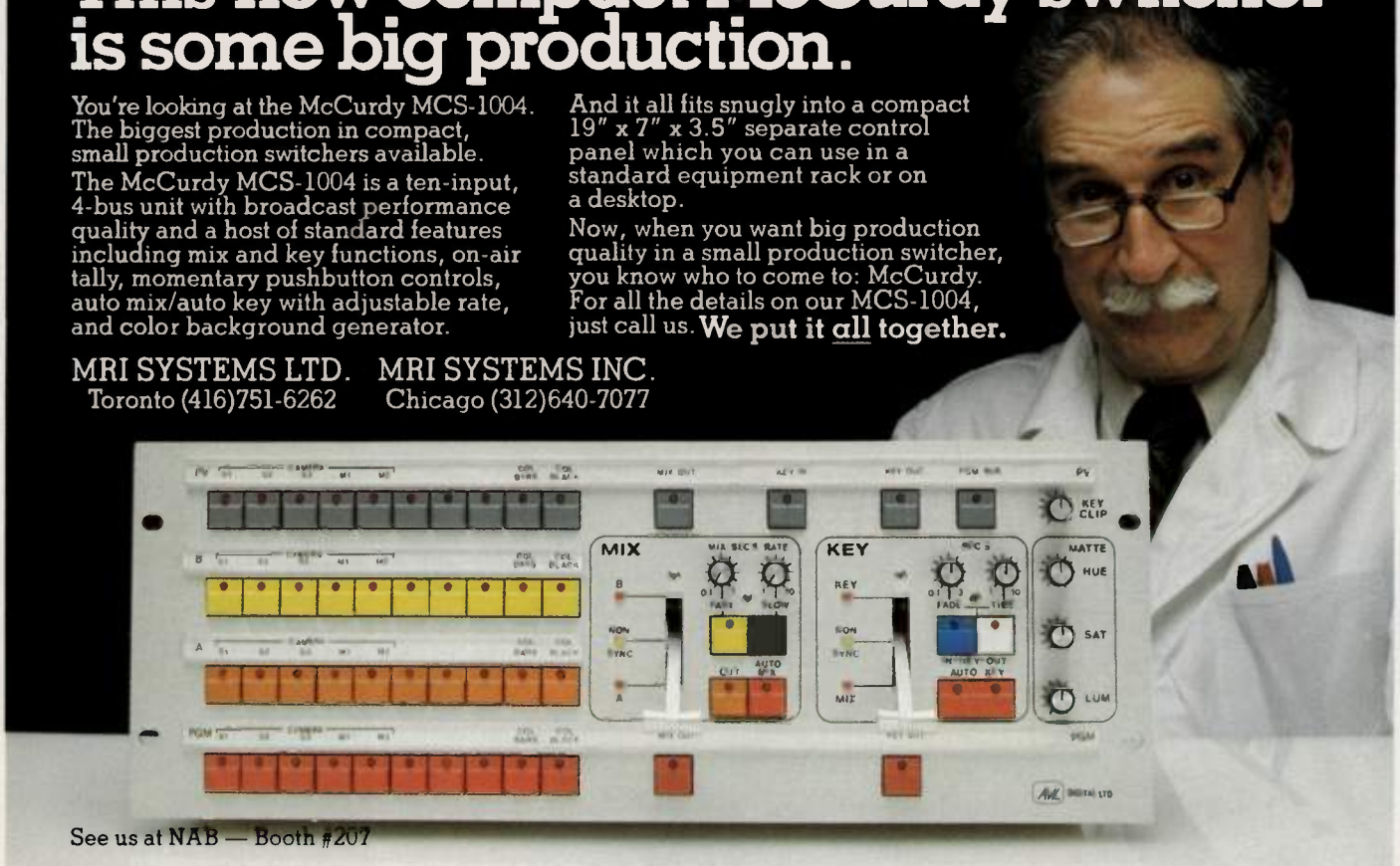

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Coming Attractions in
BROADCAST COMMUNICATIONS

MAY
NAB '83 Review
A comprehensive look at the NAB convention by the editors of BROADCAST COMMUNICATIONS. Includes overviews of the sessions and technical developments by Joe Roizen, Ruth Macy, Ed Shane, and Larry Titus. In addition, there will be a complete rundown of the major product introductions by the more than 450 NAB exhibitors.

influencing force in the preservation of the heritage and landmarks of the nation's great cities. However, older buildings are not immune to certain potential disadvantages.

Regardless of age, any building considered for possible renovation must be structurally sound and provide the minimum space requirements necessary for conversion as a television facility. Determining the availability of at least some space with the ceiling heights required for studio operations, as well as the building's structural ability to support improvements, such as modifications to studio floors, rules out many otherwise fine old buildings. Finding historical buildings which are for sale and suited to renovation as television stations is not a simple task, but it can be highly rewarding in the final analysis.

New buildings: still an option

In evaluating new and unusual options in finding a new home for a station, many broadcasters eventually discover that the more traditional approach of building a new facility on a new site makes the most sense. Admittedly, there's nothing quite as convenient as being able to move a station to a new bulding designed specifically for the operating requirements of a particular broadcast group. While certainly one of the most expensive options open to broadcasters, such a facility can offer benefits which may be worth the added cost. The ability to move into new facilities upon completion eliminates the "growing pains" associated with renovation periods and the delay sometimes encountered as a result of an independent developer's failure to keep a project moving forward on schedule. By planning and designing its own building, a station maintains optimum control over design and construction schedules.

New buldings offer you the opportunity to depreciate the new structure for a considerable return of the station's initial investment. The major drawback: the depreciation schedule spans the life of the building, limiting the extent of immediate cash-flow benefits. Other options, such as constructing a new building on land presently owned by the station, can save much of the real cost of planning for a new building. For the publicly-held company, the new building option also provides the greatest assistance with increased earnings.

The best of both worlds

In meeting the facility needs of their individual operations, many broadcasters are arriving at the solution to combine the best elements of more than one of the options previously discussed. For example, Anchorage Alaska's KIMO-TV considered several alternatives before deciding to buy the office space it was leasing for its management operations. By buying and remodeling its office facilities, KIMO-TV was able to house nontechnical operations in space obtained at very reasonable costs. This reserved a substantial amount of the station's facility budget for the design and construction of technical facilities specifically suited to the unusual needs of a television broadcast operation.

Hard work, and a little luck, enabled KIMO-TV officials to secure a building site connected to its office areas. The result: the best of both worlds—reasonable office space and associated advantages, combined with the freedom to design technical facilities answering all of the station's technical needs.

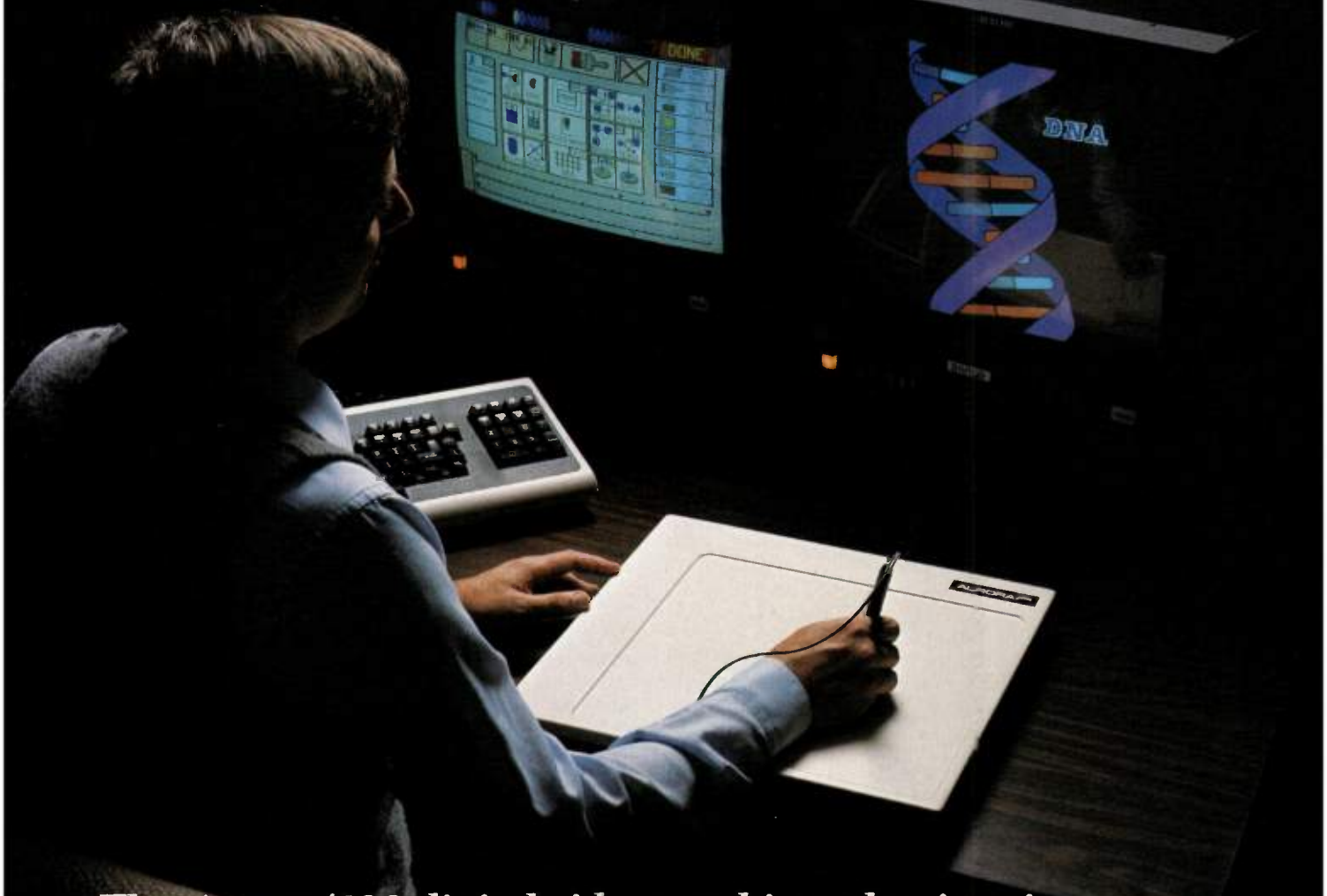
Management officials of KIMO-TV, Anchorage's ABC affiliate, combined the advantages of existing office space with constructing new technical facilities. Brought on by what less flexible executives might have seen as an imposing problem, KIMO-TV's managers turned a tight budget into an opportunity to provide a high-quality facility at the lowest overall cost.

New thoughts for a new age

With little evidence to support the belief that construction or land costs are due for any sharp decreases, broadcasters are searching a variety of new options in obtaining new television facilities. This emphasis on exploring some less traditional approaches to broadcast facility design is generating some unique solutions to the expansion needs of many stations. With more and more broadcast executives taking time to rethink the options available, an ever-increasing number of station owners and managers are beginning to welcome some tax-advantaged opportunities to secure the facilities they need—at a cost they can afford. BC

Frank Rees is president of Rees Associates, Oklahoma City, Oklahoma.

Freedom of Expression



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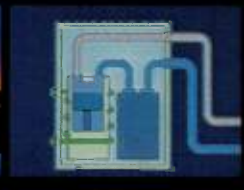

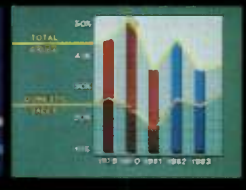

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GO FLY YOUR PATTERN

BY ROBERT A. JONES AND SCOTT STANDIFORD

There is an old expression, probably credited to Ben Franklin, which can be quoted as "go fly a kite." No doubt most of you are familiar with it. Well, sometimes this is still the best way to diagnose or solve a problem.

At WKYS-FM in Washington, D.C., we had been aware that our coverage of the metro area was not perfect; and in some neighborhoods, was less than brand "X." The usual tests of the transmitter, coax cable, and antenna revealed no electrical or mechanical problems. This was of no comfort to the other station departments, who insisted the WKYS engineers do something about it. So we did.

In September we conducted two separate engineering tests. These consisted of an aeronautical sweep of the pattern, plus a ground-level series of cluster measurements.

The FCC Rules, Section 73.314, set forth standards for the taking of FM signal measurements, but quickly disallow their use in most applications. As engineers, most of us recognize that FM (or for that matter TV) measurements are not as precise as standard broadcast measurements can be. The secret is in their taking and in their interpretation.

For WKYS we staked out a series of spot locations throughout the areas of Washington, D.C., and vicinity where the complaints of poor signal were the most prevalent. At each of these locations, we employed the TASO technique for spot readings.

To use this method, the field engineer takes a pole; elevates his dispole antenna to the height of 30 feet; then within a closely defined area, he takes a series of five or six individual measurements, averages these, and arrives at the most likely signal measurements for that location.

In our investigation of the WKYS coverage problems, we searched mainly through the Georgetown district, around the Arlington Cemetery, and to the south-southwest. The majority of our test locations were made in this area using the TASO method.

Two comparative tests were made which we would recommend to others. First, we conducted a series of WKYS signal tests at approximately the same distance in directions where the WKYS signal was felt to be strong. The terrain differences (buildings, etc.) will play some part in contributing to differences in different bearings where the antenna is circular. But, in a general way, this provides the field engineer with a basis for comparison.

In the case of WKYS, we found significant differences at six to 10 miles to the west or north, when these signals were compared to those within this same mileage span to the south. By significant we mean 15 to 20 dB.

The second test we performed was to measure three of the other Washington, D.C., stations whose power, antenna heights, and geographical locations were near that of WKYS. The general conclusions of the signal of these other three, when compared to that of WKYS, revealed that most of the stations were weaker to the south than in other quadrants. But none was as weak as WKYS.

The logical conclusion was that something must be wrong with the radiation pattern of WKYS. While surface-level tests can roughly define a pattern problem, they are prone to misleading conclusions.

Past experience has shown that to really know what an FM antenna is generating—pattern wise—you must get the field intensity meter up to an elevated position (preferably one where one can measure the direct antenna beam). To be purely accurate, this position should be one free of local ground

Continued on page 78

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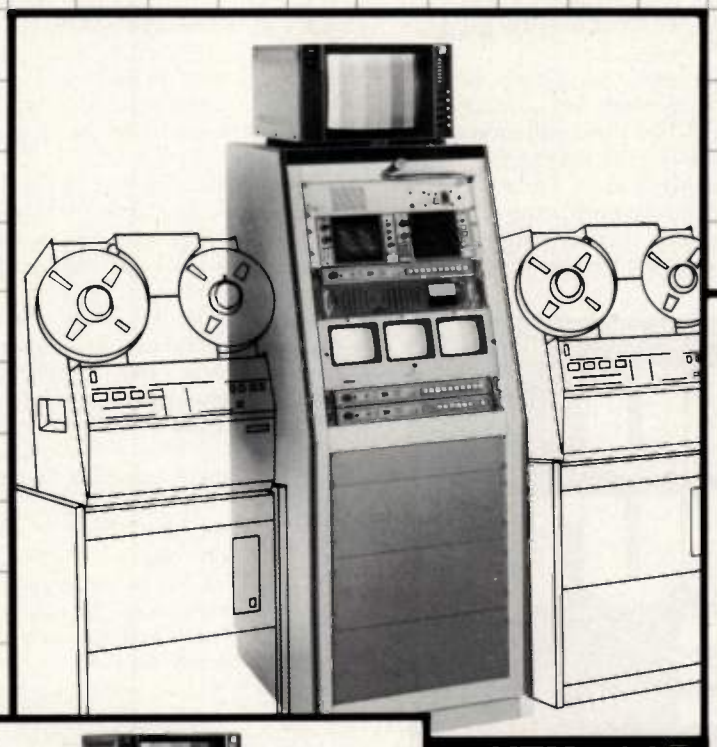

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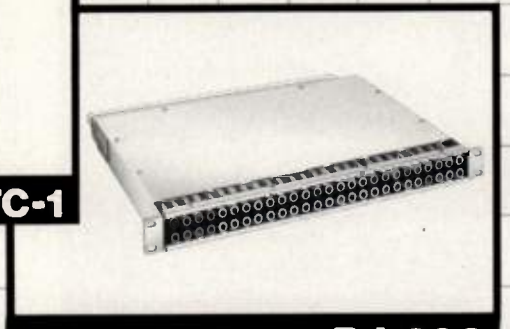

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effects. In order to meet these requirements, you need an airplane or a helicopter.

The authors have used both approaches, but recommend the helicopter. The helicopter has greater flexibility over its speed, altitude, and position. In the case of WKYS, we used a Bell Jet Ranger III.

The first results were very disappointing. The WKYS horizontal signal was quite distorted to the south. In fact, a null of -12 dB was measured to the south. The vertical pattern was even worse. Here we found a null of some -23 dB at 174° True.

The helicopter tests clearly and accurately confirmed our surface-level tests. WKYS had little radiation to the south, hence inferior coverage.

The trouble had to be in the FM antenna and/or its supporting structure.

In most cases, it is our policy to fly a circular route with a one-mile radius. In this case, we had to use a slightly smaller radius to avoid restricted airspace in Washington, D.C.

One factor to keep in mind is the antenna above ground level. The shorter the tower, the smaller this flight plan radius must be to avoid ground deflections.

Having established our flight route, we circled it two or three times seeking landmarks and reference points on the ground for the pilot and the navigator to use as checkpoints.

Logical checks are street intersections, schools, churches. In our case, the checks include the Washington Cathedral, other radio towers, etc. Only in remote rural areas have we had difficulty in finding sufficient landmarks to clearly establish a nearly perfect circle.

At WKYS we used about 14 checkpoints. Each was assigned an alphabetical letter. As we would pass over each landmark, the navigator would call it out and its code letter would be indicated on the data sheet.

Airspeed is not an important factor. It should be constant. Windy days will add in errors and they should be avoided. We experienced less than a five-knot wind for our preliminary tests. We had no wind for our final ones.

In general, the pilot sits on the inboard side of the circle. That is, if you are flying a clockwise pattern, he rides in the right seat. If a counterclockwise pattern, he rides in the left seat.

The navigator occupies the other seat. In most helicopters, the nose is glass or plexiglass, so the navigator can peer down between his feet and sight each checkpoint as the helicopter passes overhead.

The engineer responsible for taking the signal measurements should position himself in the rear seat. The only exception to this would be if we had available only a single-bench helicopter, such as a Hughes 300.

The engineer is responsible for calibrating the field intensity meter, keeping it tuned to the broadcast station being measured, for logging all data, and monitoring the dipole antenna position.

If a fourth person is available, his job is to assist the engineer with the dipole and to keep an eye out for other aircraft.

The dipole antenna was removed from the field intensity meter. It was attached to the end of a 1" x 2" piece of wood about 10 feet long.

Our experience has shown that duct

Continued on page 80

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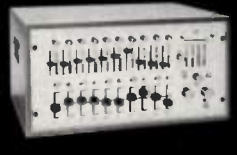

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tape is sufficient to secure the antenna to the wood. Accomplishing this took careful planning and care during the execution.

The end of the 1" x 2" was passed through the rear window of the helicopter and out the opposite side. It should be obvious that the dipole antenna should be positioned on the in-board side of the helicopter.

In order to change either vertical to horizontal or vice-versa, one merely rolls the 1" x 2" over. There is a strong drag upon this piece of wood projecting outside, and it requires a constant firm hand in the 1" x 2" to maintain a fixed antenna polarity. The distance the dipole is spaced from the hull of the ship seems to be unimportant, so long as it is constant.

We recorded the signal intensity at 10-second intervals. If you maintain an airspeed of 60 mph, these intervals will fall approximately one-tenth of a file apart. The idea is to use a convenient time interval that is tied to the ship's airspeed to make the measurement locations uniform.

In the pattern measurement chart, the first column is the time. The second is the measured signal intensity in MV/M. Our final data sheets showed the converted figures. The next column is the degree of circularity. We chose to use the strongest or highest signal measured and set it equal to 0 dB. Each of the other signals were then compared to it and expressed as negative dB's of attenuation. The last column is the bearing from the WKYS antenna to each individual test point.

Some discussion may be helpful as to how these bearings were determined. As we noted, the helicopter was flown at a constant speed and at a uniform radius; and, as we said, land-surface checkpoints were used to assist with keeping these two constant.

At our airspeed we found that a 10-second time interval caused us to travel 15° of rotation along our route. Had our circle's radius been larger, or our speed slower, these circle segments would have been smaller. Another way to obtain a larger number of points, besides a larger radius circle or slower speed, would be to lower the time intervals.

Our experience has shown the less than 10-second intervals fail to allow sufficient time between reading the meter to log all data and to verify the position of the ship and the dipole.

For best accuracy, we have also found it useful to fly the pattern more than once. That is, when you get back to the spot on the flight plan where you began, keep going. We took a minimum of two passes for each antenna polarity and sometimes three passes.

Based on all our tests, it took no super amount of intelligence to see that something had to be done to the WKYS antenna. It's important to emphasize that the electrical and mechanical integrity had been checked.

We felt certain it was the antenna positioning on its support structure and/or other antennas on the same structure which contributed to the pattern distortion. The antenna in use was an RCA BFC 6B (dual-polarized six-bay). It was mounted on one leg of a self-supporting tower. At the point of the attachment, the tower was fairly narrow.

Discussions were held with RCA antenna experts over the probable solutions and options available to WKYS. Based upon comparative tests made by

Continued on page 82

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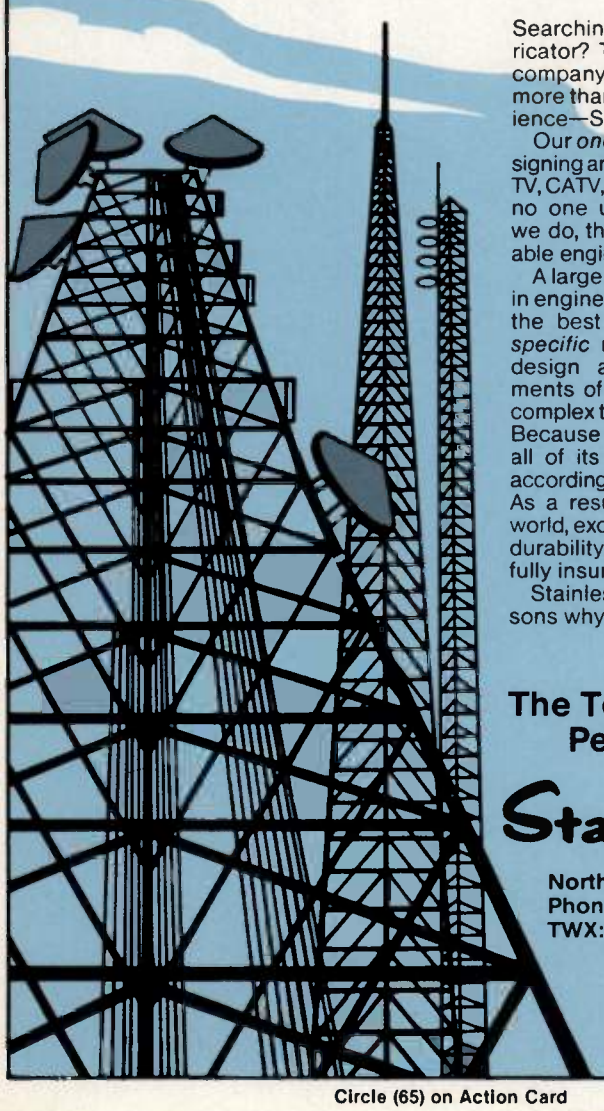

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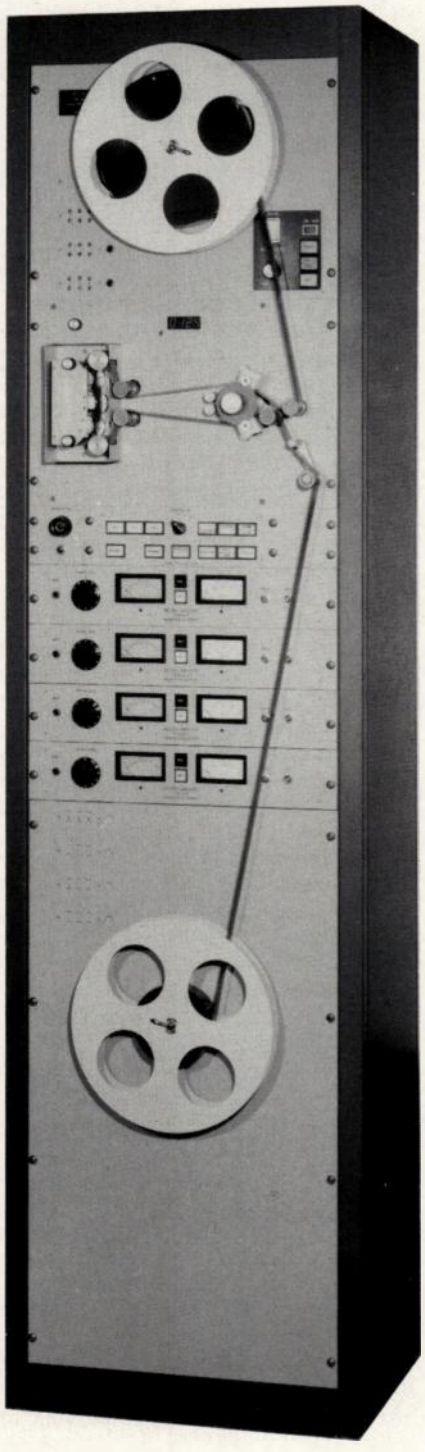

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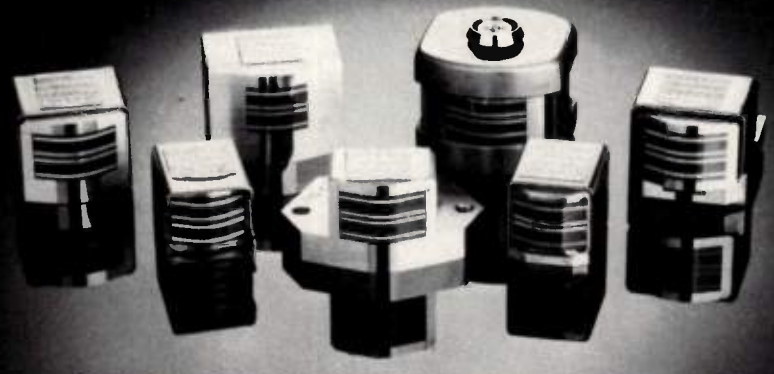

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the authors, it was our suggestion that the application of a panel antenna be studied. Talks were held with RCA engineers which led to a decision to install a BFJ4 with partial randomes.

After completion of erection of the new panel antenna and testing of the RF system, it was time to verify our efforts. We chose to repeat the "before" tests.

Ground-level tests throughout the Georgetown sections of Washington, D.C., and across the river in Arlington, Virginia, showed the average improvement, statistically to be +13 dB. Of course, the vertical signal showed even greater gains. Readings in the other directions reflected no significant changes.

The real test would come when we re-flew the pattern. This was done in October of 1982. Fortunately we had use of the same helicopter and the same pilot. Whenever possible, this is a good idea since it guarantees greater reliability and obviates re-teaching the pilot.

The horizontal pattern we plotted is probably the closest to a perfect non-directional you could expect to achieve with a panel antenna on a 10-foot tower face.

The vertical pattern reflected a series of six lobes and six nulls. The variations are in the range of ± 2 dB. Logic would explain the six nulls. The supporting tower is triangular in its configuration. Thus, at each of the four levels we have three panel dipoles. The three dipoles each will generate two lobes (or two times three equals six). And if there are an even number of lobes, there must be an even number of nulls.

It is interesting to note that as the face dimension of the tower increases, the variations increase. And as the dimension decreases the circularity improves.

The use of the panel antenna was the perfect application to resolve the pattern distortion of the WRC-TV supporting structure.

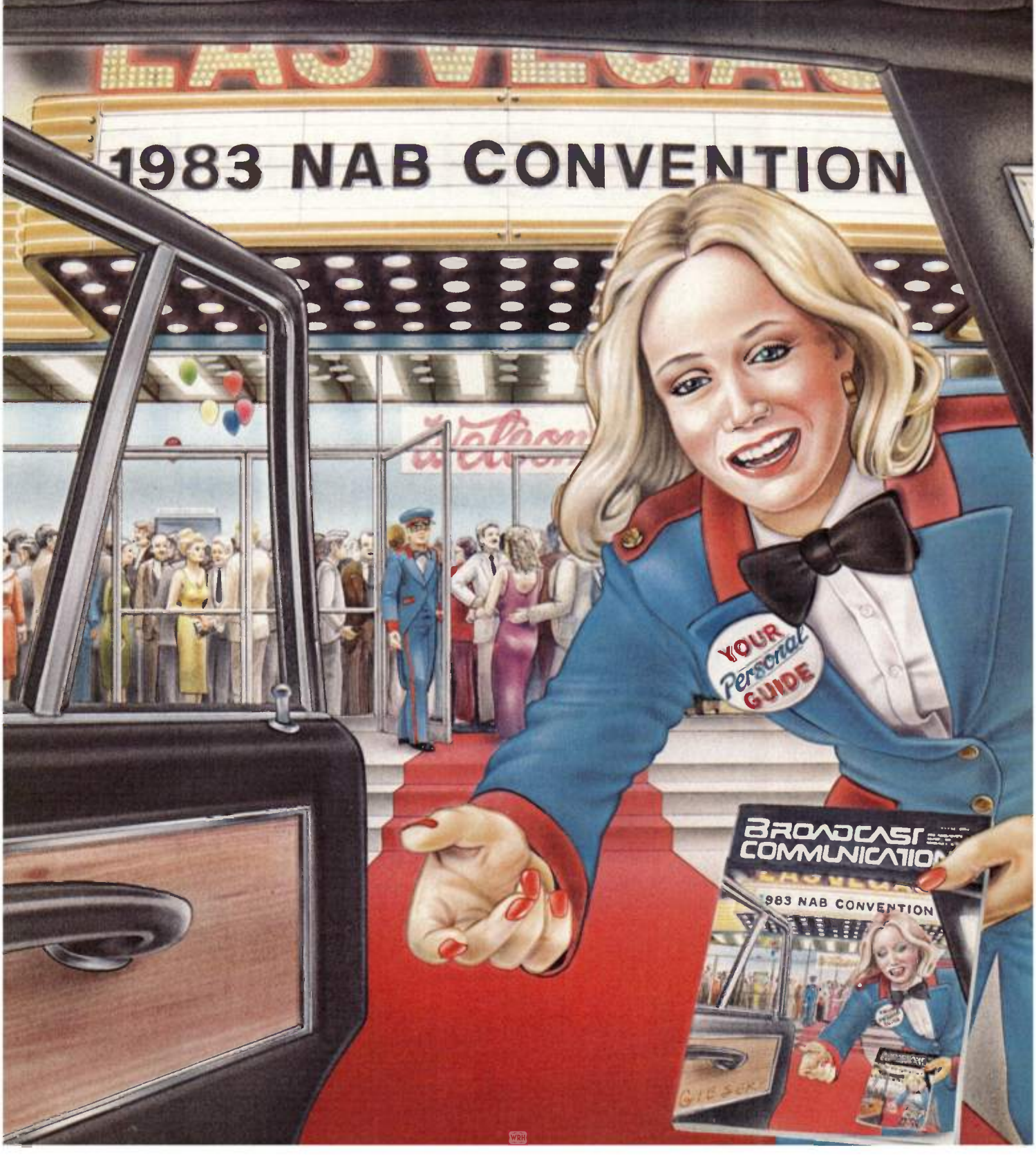
The key to solving the previous WKYS coverage problems was the ability to obtain signal measurements in the true beam of the antenna. We know of no better way than through properly taken helicopter readings. Helicopter measurements are also good insurance after intallation of a new antenna to assure that it is working the way you expect it to work.

Now that we've flown ours, we suggest all of you other engnieers, FM and television, who feel you have problems—go fly your pattern. BC

Robert A. Jones is president of Robert Jones Consultants, La Grange, Illinois. Scott Standiford is the director of engineering at WKYS.

NAB VEGAS '83

YOUR PERSONAL GUIDE TO THE '83 CONVENTION



NAB '83 LIVING UP TO THE CHALLENGE

The 1983 version of the NAB convention will be a challenge for all those attending. It will be a challenge to get a room in Las Vegas, attend key sessions, and visit all the booths to see the latest broadcast equipment.

This year, the world's largest broadcast equipment exhibition will fill the expanded Las Vegas Convention Center. That means more exhibitors than ever will be displaying their lines, making it all the more difficult to see everything between visits to the sessions.

Even in a shaky economy, the broadcast industry has been doing well. And that means more broadcasters will be attending. And they'll be attending in search of more answers than they've ever needed before.

The problems, of course, include how to deal with the new delivery systems, the new regulations, the lack of standards in the face of the industry's rush of technology—at a time when the country is trying to increase productivity. Appropriately, the theme this year is "Increasing American Productivity."

Attention also will fall on the association itself, as the industry watches for signs that the NAB is closing ranks around its new president, Eddie Fritts.

Getting started

It has never been more important to plan ahead for an NAB convention. If you haven't made hotel reservations or registration plans yet, call the NAB today at (202) 293-3570.

With your reservations and registration out of the way, turn to the various sections in this Personal Guide to the Convention for information on sessions, workshops, and special events, as well as this year's exhibitors. There will be numerous equipment introductions, so make a note of all you need to see in the exhibit area.

The No-Nonsense Map is designed to help you locate any exhibit in a matter of seconds. Mark your key stops right on the map. You'll be glad you did when you enter the crowded exhibit area.

Then turn to the Directory of Equipment and Services for a breakdown of equipment categories and broadcast services. For your convenience, each listing includes company name, booth number, and map locator number.

Now combine your "must see" exhibit list with a "must hear" sessions list, and build the two into a time schedule. And remember that several manufacturers will have hospitality suites every night of the show. These suites give you an opportunity to follow up on equipment you spotted in the exhibit area.

Over the years, NAB attendees have sauntered down the exhibit aisles and wandered in and out of the sessions. That worked well when there were just 200 exhibitors and fewer sessions. This year the sessions offer a challenge of selection all their own. There will be nearly 500 exhibitors, so the greatest challenge this year will be to complete enough up-front planning to make your time and money worth the ordeal.

Let's turn first to the sessions, and start the challenge. You can take a little time now, or waste a lot of time later.

Radio

The Golden Management Tool: Cost Cutting—Steven Silberberg (station owner, financial management consultant, attorney, and bottom-line booster) will offer dozens of gutsy, money-saving, cost-cutting tips that he has used with great success.

SCA Spells Money—Learn how to make your bottom line boom by leasing your FM SCA. There's now a new similar process for AM stations for you to learn about, too . . to give your profit margin a real boost!

Sales Motivation Techniques—Pam Lontos, back by popular demand this year, exudes enthusiasm as she shares her proven sales and management techniques. This session is not to be missed!

The Art of Buying, Financing and Selling Stations—This session will give you everything you need to know. . . from acquiring a station to analyzing net worth. Learn the ins and outs of negotiating prices, understanding the

Continued on page 86

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legal angles and tax aspects, and securing lenders.

What Does Deregulation Really Mean?—A candid discussion of the 10 most important FCC rules and policies that directly affect you. Learn what small, medium, and large stations are required to do to avoid violations.

How You Can Capture More Co-Op Dollars—In this tough-talking bottom-line session, Robert Wilcox, manager, Radio Advertising Service, Armstrong World Industries, will tell you what to do regardless of your market size to generate more co-op bucks.

The 10 Most Common Sales Training Mistakes and 10 Specific Ways to Correct Them—Chris Lytle shows you how to build your bottom line by training *you* to train your radio sales personnel. . . the right way. A super session for markets of all sizes.

Bits, Bytes and What a Computer Can do for You—These days, computers have taken a front-row seat in all areas of radio operation. Learn how to keep abreast of these new developments. It's all here—from computer-run billing services to the latest in programming procedures.

A Day in the Life of a Station Manager—George Burns, management and programming consultant from California, will be sure to entertain and teach you lots in this session. Through heavy participation, role-playing, and play-acting, Burns entertains and keeps everyone on their toes!

Cable Radio—Radio people have an important decision to make: to compete with cable radio or generate income from it. This invaluable session explains how to do both.

Sales Forum—In cooperation with the Radio Advertising Bureau, the Sales Forum will be held all day Tuesday and take you step-by-step through the entire sales game. In the afternoon, there will be split sessions for small- and large-market radio. Monday's presentation will include George Glover and his "Winning Hand for Managers." In case you can't make it to that session, it will be repeated again on Tuesday.

Spanish Language Forum—This session will give you the information on the fastest-growing minority in the country and tips on how to adapt your programming to this important market.

Daytime Radio—The daytimers will all be together to discuss the future of daytime broadcasting, share ideas, and discuss the latest developments.

The Fast Lane of New Tech—The head of the FCC's Mass Media Bureau talks with NAB president Eddie Fritts.

Minority Radio Format Clinic—A discussion of the right way and wrong way to air a minority-oriented format.

Television

TV Trends—A sample of 1500 viewers nationwide will share their thoughts and feelings on cable, pay television, new techniques, local news, and network entertainment. Become a better programmer by listening to the views of those that mean the most to your business: your audience.

The Question of Space: Effective Planning of a Broadcast Facility—This two-part session will cover all options regarding facility expansion, be it through building, leasing, or renovating. Determining your long-term options, selling ideas to your business manager, and projecting costs will be covered in the first part. The afternoon session covers every angle of construction, from choosing your designer to achieving maximum energy efficiency. So, if you're expanding or plan to do so in the future, don't miss it!

Management: Managing Organizational Performance—Jim Hooker, president, Media Sales Training Systems, will offer his insights on unlocking high levels of productivity among broadcast staffs. Employee performance is a direct reflection of management. Learn to motivate employees and commit them to achieving goals for you!

MDS/SMATV—In this session you will explore and evaluate workshop information about multipoint distribution service (MDS) and satellite master antenna television (SMATV). The relationship of these developments to the success of your station is a crucial one. Learn how to plan business strategy; estimate profits; and market and invest assets to secure financial stability.

Earth Stations: What Every GM Should Know—In this engineering session for non-engineers, you will be taught about the equipment needed to implement a TVRO or uplink satellite system.

Financial Management for the Non-Financial GM—This session is designed to give the GM a quick overview on evaluating a station's financial position and developing a sound financial plan to carry out the best possible programming objectives.

Crime and the Media—With the increasing incidence of hostage-taking, reporters are often held "hostage" because of their duty to inform the public. This session will delve into the appropriate role of the reporter during such situations.

First Amendment: Freedom Isn't Necessarily Fair—As our influence as a news media grows, broadcasters remain stepchildren under antiquated First Amendment rules. This session will ex-

Continued on page 88

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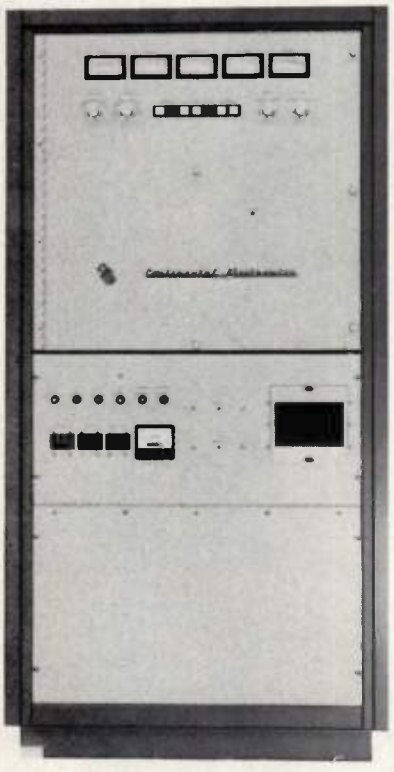

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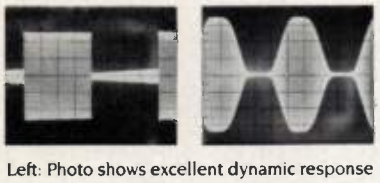

Left: Photo shows excellent dynamic response of Continental's 5 kW AM transmitter at 20Hz modulation. Right: photo of modulation wave form shows effect of Instantaneous Peak Limiter

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plore First Amendment issues and the common responsibilities shared by print and electronic media as the gap between them diminishes.

LPTV: Partner, Competitor, or New Opportunity—This session provides all attendees an opportunity to learn about the present state of the low-power television industry.

Taking Advantage of Cable—A review of the opportunities for broadcasters, including channel leasing, production of audio and video services, specialized programming, and more.

Satellite Services—A discussion of how investments in satellite technology can enhance your station's current operations, and how you can provide your viewers with additional telecommunications services.

Localism: The Key That's Being Overlooked—A back-to-basics session on the glories of local programming.

Television engineers

Advanced Television Systems (ATS)—Papers and reports on the engineering and development of production, transmission, and recording will be presented. This session will also include improved NTSC, enhanced 525-line systems, HDTV, and analog component recording systems.

New Technology—Digital recording systems, operational procedures with circular polarization, "loudness" measurement, and control equipment will be the main features of this session.

UHF Transmission System Improvements—This will feature reports on how to make your existing UHF plant more efficient by saving both power and money. Reports will cover improvements in new UHF transmitter design, diplexing two UHF signals in a single waveguide, and progress on the development of the multiple depressed collector (MDC) klystron.

Satellite Technology—At last year's convention, concentration was on satellite systems for radio broadcasters. This year's session will include case studies on satellite receiving terminal installation at TV stations, plans for TV network distribution, and other timely satellite topics.

Channel 6 and FM Interference—A series of reports on the results of a test designed to reduce FM interference to Channel 6 TV stations.

Radio engineers

AM Allocations—This session will present updates on meetings with Canada and Mexico involving increased nightime power for Class IV stations and post-sunset operation for daytimers using the diurnal curve. The Cuban interference problem will also be discussed.

FM Allocations—A series of reports and study results on several major FCC rulemakings which propose new classes of stations, closer separation of stations, and deregulation and revising FM-SCA transmissions.

New Technology—Discover the latest ideas in sound broadcasting... from improving AM transmission to digital audio systems and satellite transmission.

AM Stereo—This year, several case studies of AM stereo installation will be provided to help plan and complete the transition effectively.

All engineers

Spectrum Management—On Wednesday, prior to the general FCC forum, a special session on the problems of land mobile radio user incursions into the broadcast spectrum will be held. Discussions will also cover some ramifications on the new FCC rulemaking proposals and the deregulation process.

Non-Ionization Radiation—Many radiation problems are "perceived" rather than actual. This session will "clear the air" by presenting up-to-date information on the status of pending FCC regulations, EPA, OSHA, and individual communities along with some good hard data on the subject. Experts will be available to answer your questions.

Calling all hams

Ham Radio Operators—Don't miss the 5th Annual NAB Ham Operators Reception! Join your fellow "hams" for the ever-popular get-together presented on Monday evening after the closing of the exhibits. All card-carrying "hams" (past, present or future) will be admitted. Why don't you bring along your QSL card for posting! It will be an evening of glad-handing, back-slapping, eyeballing QSLs with plenty of fun, food, festivities, drink, and door prizes.

Special attractions

NAB president Eddie Fritts will open the convention with his State of the Industry address. This will be followed by the presentation of the Distinguished Service Award, and entertainment by The Oak Ridge Boys.

Closing sessions will begin with the FCC's Question and Answer session, followed by The War for People's Minds, an in-depth discussion of world affairs. Bill Cosby will then take over with a touch of humor to send everyone back into the real world. BC

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Anchor Systems, Booth 443 (L1)
Andrew Corporation, Booth 1202 (H,I4)
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1109 GE
1107 FREZZOLINI
1175 RUDY
1181 ROSCOR
1173 AUDIO KINETICS
1169 JENSEN
1171 LEMO
1159 ELECTRO CONTROLS
1157 CONTROL VIDEO
1155 EEG
1149 LE BLANC
1151 LEE-RAY
1153 FILM/VIDEO
1139 LEXICON
1133 NADY
1135 NYTONE
1137 SENNHEISER
1127 TENNAPLEX
1125 SIGMA
1123 STANTRON
1121 SYSTEM ASSOC.
1111 R-COLUMBIA
1113 MINOLTA
1115 KARL HEITZ

A B C

FIND ANY EXHIBIT IN 30 SECONDS

The no-nonsense MAP to help you locate any exhibitor without really trying

Nearly 500 companies are exhibiting at this year's NAB convention in Las Vegas. The exhibit area will take up more than 200,000 square feet in the expanded Las Vegas Convention Center, making it harder than ever for attendees to see all there is to see in the four short days of the convention.

The keyword at NAB '83 is "challenge." It will be a real challenge to see the latest in broadcast equipment and services spread throughout three exhibit halls in the convention center. But if you plan your time well before the trip down the aisles, you can live up to the challenge.

The exclusive No-Nonsense Map of the exhibit area is a vital part of your NAB package. The Map is designed to help you reach your destination without getting lost down some crowded aisle.

Turn to the alphabetical listing of exhibitors on the following page. You will find the company you want, the booth number, and the map locator number. This number will direct you right to the company you want to see. D2, for example. It's as easy as using a highway map. Look for the letter D along the top, then the number 3 down the side. There's your exhibitor.

This year, television exhibitors are located in the East Hall. Radio exhibitors are located in the North Hall as well as the South Hall, which has been expanded this year to accommodate the growing number of exhibitors.

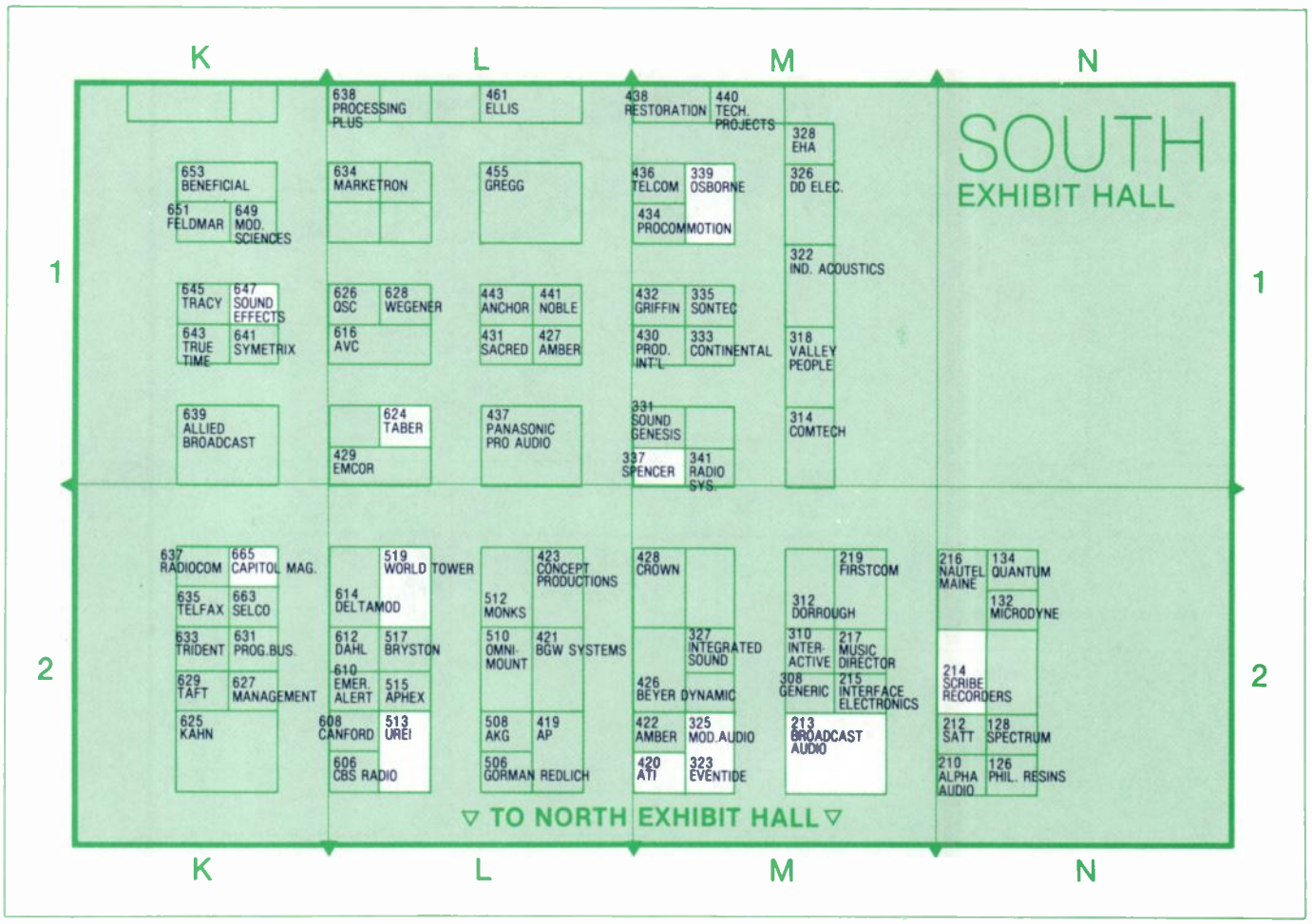
The No-Nonsense Map actually includes three comprehensive maps: one for each hall. Booths 100 through the 700s are located in the North and South Halls; booths 1000 through the 1700s are located in the East Hall.

When reading the map locator number, just remember that map key numbers A through J are in the East Hall, and K through N are in the North and South Halls. To make it easier to find a company in the North and South Halls, locator numbers 1 and 2 have been reserved for South Hall exhibitors, and numbers 3 through 8 indicate a North Hall exhibitor. For example, a company with map locator number N1 would be in the South Hall; a company located at N8 would be in the North Hall.

For more information on NAB exhibitors, be sure to use the Directory of Equipment and Services, which contains nearly 100 categories from amplifiers and animation equipment, to low-power translators and weather instruments. In addition, a complete listing of the NAB exhibitors follows the Directory, with descriptions of equipment lines, services, and product introductions.

COURTESY OF

BROADCAST COMMUNICATIONS® THE INTERNATIONAL JOURNAL OF BROADCAST TECHNOLOGY



★ **STUDER REVOX AMERICA**, Booth 201 (M,N7)
Superior Electric Company, Booth 1755 (B2)
Swintek Enterprises, Booth 1345 (A6)
Slyvania (GTE), Booth 1204 (I4,5)
Symetrix, Booth 641 (K1)
System Associates, Booth 1121 (C8)
TDK Electronics, Booth 1707 (D2)
TFT, Booth 109 (N6)
TV Cue Computer, Booth 1747 (B2)
TVI (Theatre Vision), Booth 1730 (B1)
★ **TABER MANUFACTURING**, Booth 624 (L1)
Taft (Prime Time Radio), Booth 629 (K2)
Tamron, Booth 1640 (E1)
William Tanner Company, Booth 410 (M4)
Tascom Productions, Booth 1304 (B4)
Teatronics, Booth 1786 (A1)
Teccom, Booth 1785 (A2)
Technical Projects, Booth 440 (M1)
Technology Service, Booth 1103-B (C7)
Tektronix, Booth 1601 (J2)
Telcom Services, Booth 436 (M1)
Telease, Booth 1752 (A1)
Tele-Cine, Booth 1403 (H3,4)
Tele-Com Products, Booth 1728 (B1)
★ **TELEMET**, Booth 1003 (G7)
Telescript, Booth 1407 (H3,4)
★ **TELESOURCE COMMUNICATIONS**, Booth 1616-A (I1)
★ **TELEVISION ENGINEERING**, Booth 1700 (D1)
Television Equipment Assoc., Booth 1216 (G4,5)
Telex, Booth 600 (K6,7)
Telfax, Booth 635 (K2)
Telmar, Booth 1520 (A2)
Tennaplex Systems, Booth 1127 (B8)
Tentel, Booth 1613 (G2)
Terminal Systems, Booth 1768 (A1)
Theatre Service & Supply, Booth 1513 (A3)
Theatrical Services, Booth 1759 (B2)
Thermodyne International, Booth 1637 (D1)
Thexx, Booth 1748 (A1)
Thomson-CSF Broadcast, Booth 1001 (H,I7)
Thomson-CSF Components, Booth 1145 (B7)
Tiffen Manufacturing, Booth 1422 (F2,3)
Toshiba America, Both 1631-A (G1)
★ **TOWNSEND ASSOCIATES**, Booth 1420 (F2)
Kevin Tracy Productions, Booth 645 (K1)
Trident (USA), Booth 633 (K2)
Trompeter Electronics, Booth 1211 (G5)
True Time Instruments, Booth 643 (K1)
Turner Program Services, Booth 125 (N3,4)
Tweed Audio, Booth 313 (M5)
★ **UMC ELECTRONICS**, Booth 114 (N5,6)
★ **UREI**, Booth 513 (L2)
Ultimatte, Booth 1624 (F1)
Uni-Set, Booth 1023 (D7)
United Media, Booth 1300 (B3)
United Press International, Booth 1015 (F6)
United Research Lab, Booth 406-A (M4)
★ **URSA-MAJOR**, Booth 418 (M3)
Utah Scientific, Booth 1114 (B6)
Utility Tower, Booth 703 (K7)
U.S. Tape & Label, Booth 602 (K6)
Valentino Inc., Booth 1231 (D6)
Valley People, Booth 318 (M1)
★ **VARIAN ASSOCIATES**, Booth 1605 (I2)
★ **VIA VIDEO**, Booth 1767 (A2)
Video Associates Labs, Booth 1303 (D5,6)
Video Data Systems, Booth 1506 (B2)
★ **VIDEO INTERNATIONAL**, Booth 1524 (A2)
★ **VIDEOMEDIA**, Booth 1308 (B4)
Videopro, Booth 1122-C (B4)
★ **VIDEOTEK**, Booth 1633 (D2)
Vital Industries, Booth 1212 (H4,5)
WSI Corporation, Booth 1777 (A2)
★ **WARD-BECK SYSTEMS**, Booth 1224 (F4)
Wavetek Indiana, Booth 1763 (B2)
Weathermation, Booth 1179 (A7)
Wegener Communications, Booth 628 (L1)
Western Union, Booth 1307 (C,D5)
Wilkinson/Television Technology, Booth 305 (M6,7)
★ **WINSTED**, Booth 1238 (D5)
Wireworks, Booth 1511 (A3)
Wold Communications, Booth 1515 (A3)
Wolf Coach, Booth 1317 (C5)
★ **FRANK WOOLLEY & COMPANY**, Booth 1731 (C2)
★ **WORLD TOWER**, Booth 519 (L2)
Yamaha International, Booth 1340 (A3,4)
Zenith Radio, Booth 1517-A (A3)

D E F G

548 ACHTLER
1642 GRUMMAN
644 ARRIFLEX
637 HERMODYNE
1635 KAVOURAS
633 IDEOTEK
432 UANTA
429 M BELL
236 IERLIN
238 VINSTED
235 OSCO
1229 O'CONNOR
233 ARNER
1231 VALENTINO
022 -N-G
023 NI-SET
021 EITCH VIDEO

1640 TAMRON
1631 MCI/QUANTEL
1430 CONVERGENCE
1423 CINE 60
1421 SHINTRON
1427 PORTA-PATTERN
1234 JVC COMPANY OF AMERICA
1225 HEDCO
1227 EIGEN VIDEO
1227-A GRAHAM PATTEN
1223 ADM TECHNOLOGY
1020 OLESEN
1018 CAMERA MART
1019 PANASONIC AUDIO/VIDEO

1636 QUAD-EIGHT
1632A SMPTE
1632 FLORIDA GRAPHICS
1634 ROH
1630 DUBNER
1639 CMX SYSTEMS
1428 DATATEK
1426 NURAD
1417 PRECISION ECHO
1419 LENCO
1230 MICROTIME
1232 INDUSTRIAL SCIENCES
1221 CINEMA PRODUCTS
1016 CHRISTIE
1014 DATA COMM.
1017-A DIGITAL VIDEO
1017 SCIENTIC ATLANTA

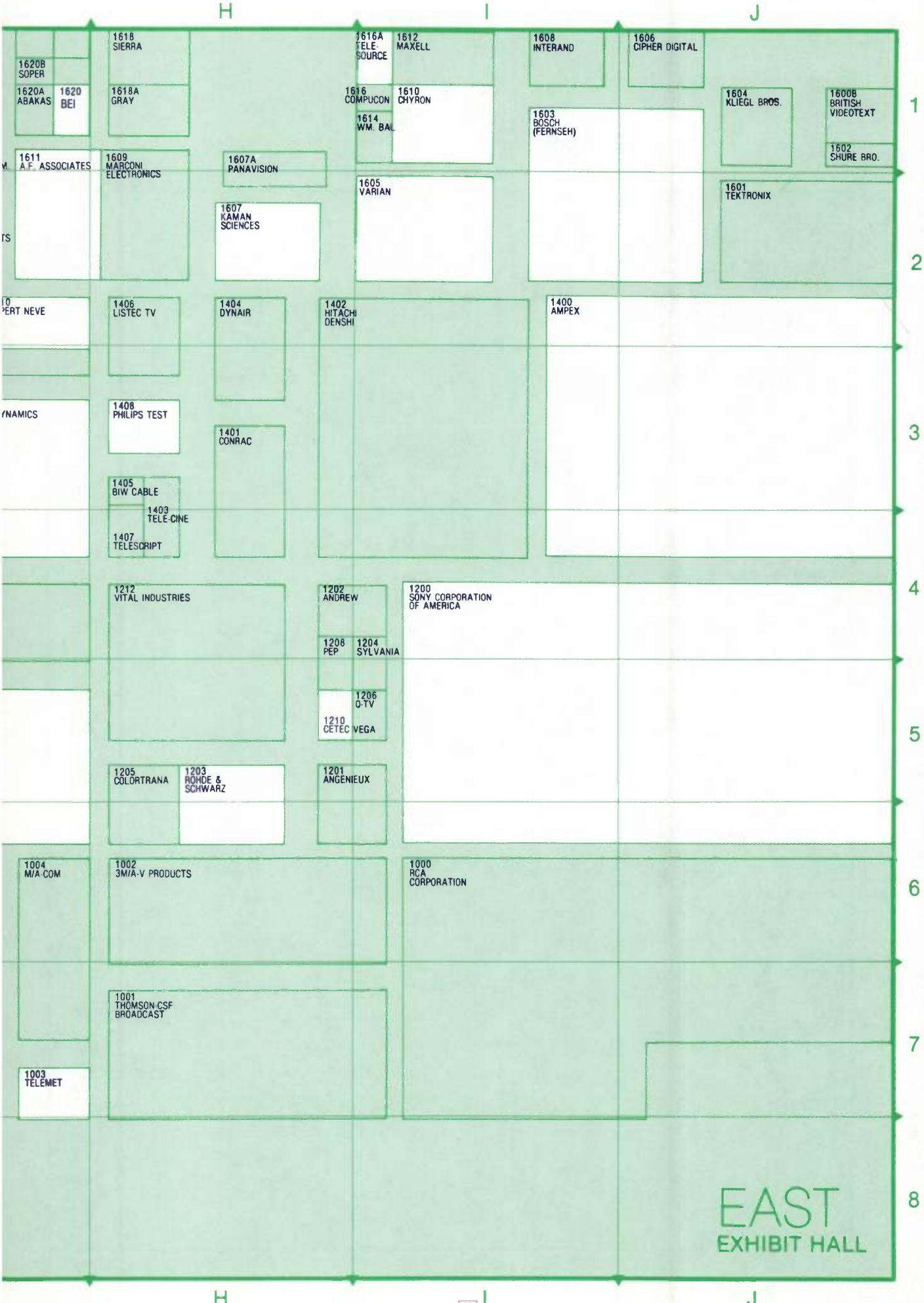
1626 RESEARCH TECH.
1628 ELECTROHOME
1629 JEFFERSON DATA
1627 ALLEN AVIONICS
1625 BIRD ELEC.
1623 KINGS
1415 NEC AMERICA
1228 ACRODYNE
1217 ASACA
1219 RANK CINTEL
1012 CANON USA
1013 IKEGAMI

1626A LARCAN
1624 ULTIMATTE
1622 INTERAND
1621 EMCEE
1420 TOWNSEND ASSOC.
1420A ADVANCED
1424 CAT
1424A DIRECT-CUE
1422 TIFFEN
1411 FUJINON
1413 FUJI PHOTO
1224 WARD-BECK SYSTEMS
1226 COMARK
1215 INNOVATIVE TV
1010 FORT WORTH
1015 UPI

1631A TOSHIBA
1631B GRUMMAN
1619 FLASH TECHNOLOGY
1418 STRAND CENTURY
1409A PHILIPS TV
1222 COLORADO VIDEO
1220 KEYLIGHT
1216 TV EQUIPMENT
1218 AMCO
1209 RECORTEC
1211 TROMPETER
1213 NAGRA
1008 STOREEL
1011 CALZONE
1009 QUICKSET

1617 MICRO
1615 MARC INSTRU
1613 TENTEL
1416 BELDEN
1414 LYON
1412 AMPEF
1409 CENTR
1214 KODAK
1207 GRASS VALLE
1006 MOLE-RICHARD
1007 PHELP DODGE
1005 DATATRON

D E F G


H
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1620B SOPER
1620A ABAKAS
1620 BEI
1618 SIERRA
1618A GRAY
1616A TELE-SOURCE
1612 MAXELL
1608 INTERAND
1606 CIPHER DIGITAL
1616 COMPUCON
1610 CHYRON
1614 WM. BAL
1604 KLIEGL BROS.
1600B BRITISH VIDEOTEXT
1603 BOSCH (FERNSEH)
1602 SHURE BRO.
1611 A.F. ASSOCIATES
1609 MARCONI ELECTRONICS
1607A PANAVISION
1605 VARIAN
1601 TEKTRONIX
1607 KAMAN SCIENCES
1406 LISTEC TV
1404 DYNAIR
1402 HITACHI DENSHI
1400 AMPEX
1408 PHILIPS TEST
1401 CONRAC
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1403 TELE-CINE
1407 TELESCRIPT
1212 VITAL INDUSTRIES
1202 ANDREW
1200 SONY CORPORATION OF AMERICA
1208 PEP
1204 SYLVANIA
1206 O-TV
1210 CETEC VEGA
1205 COLORTRANA
1203 ROHDE & SCHWARZ
1201 ANGENIEUX
1004 M/A-COM
1002 3M/A-V PRODUCTS
1000 RCA CORPORATION
1001 THOMSON-CSF BROADCAST
1003 TELEMET
EAST
EXHIBIT HALL

NORTH EXHIBIT HALL

△ TO SOUTH EXHIBIT HALL △
(South Hall Booths on back page)

K L M N

3

418 URSA MAJOR
417 DAVID GREEN
416 SAKI
321 TOBY ARNOLD
414 OTIS CONNER

4

623 SHIVELY
621 DBX
619 MICRO-TRAK
604 MICMIX
511 ELECTRO-VOICE
415 RAMKO RESEARCH
412 ELCOM-BAUER
306 MARCOM
211 DICTAPHONE
304 INOVONICS
302 LIGHTNING ELIMINATION
209 MUSICWORKS
208A HALLI-KAINEN
125 TURNER PROGRAM
208 MICRO CONTROL
123 AUDI-CORD
206A POWER PAK
124 BMI

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509 CETEC
413 RUSSCO
410 WM TANNER
317 CUSTOM BUSINESS
408 STRAIGHT WIRE
617 ATLAS TOWER
613 LOGITEK
615 JBL
207 McCURDY
206 JAM
121 ARRAKIS
204 CENTURY 21
122 BPI

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502 SOUND TECH
406-A UNITED RESEARCH
406 HOWE
315 PETERS
404 COMPUTER CONCEPTS
402 AUDIO & DESIGN
313 TWEED AUDIO
411 MOTOROLA
611 BOARD CART.
609 SNARR/CHASE
607 ORBAN ASSOCIATES
119 MAGNUM
117 ELECTRO IMPULSE
115 PROCART
120 AUTO-GRAM
118 CECO

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605 MCI/SONY
507 CSI
409 ALLIED TOWER
500 BAYLY ENGINEERING
311 STATION BUSINESS
113 PACIFIC RECORDERS
116 ESE
114 UMC ELEC.
505 AUDITRONICS
407 AMPRO/SCULLY
309 SINGER
112 SESCOM

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601 OTARI
602 US TAPE
503 GOTHAM AUDIO
600 TELEX
501 MARTI
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400 COMREX
307 QEI
300 BELAR
205 NORTRONICS
109 TFT
110 ROHN
403 IGM
305 WILKINSON/ TV TECHNOLOGY
107 ITC/3M
108 CABLE-WAVE SYS.

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703 UTILITY TOWER
701 McMARTIN
401 HARRIS CORPORATION
303 BROADCAST ELECTRONICS
203 3M/SCOTCHCART
201 STUDER REVOX
105 DELTA
202 SONO-MAG
200 UTILITY TOWER
103 FIDELIPAC
106 CIRCUIT RESEARCH
106A CLYDE

10

301 MOSELEY
101 CONTINENTAL ELECTRONICS
102 STANTON
100 POTOMAC INSTR.

K L ENTRANCE M N

PINZONE

8250

SATELLITE RECEIVER

Elegantly Sophisticated...

Remarkably Simple...

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DIRECTORY OF EQUIPMENT AND SERVICES

The NAB '83 Directory of Equipment and Services includes nearly 100 categories covering a wide range of broadcast equipment and services, from amplifiers and animation equipment, to program services and low-power TV translators. Close to 500 NAB exhibitors are listed, with references to their booth number and map location.

An index is included below to make your company search easier. Categories are listed in alphabetical order, with the page location preceding each category.

This directory is based on responses from the exhibitors. However, you can expect some companies to unveil new products and equipment lines at the convention.

If you're planning to attend the convention, and if you're seeing and evaluating specific types of equipment, this directory should help you plan your way down the aisles.

Here's how it works:

Each category includes an alphabetical listing of the companies exhibiting those products. Also included are the company's booth number and a map-location number. Once you have the map-location number, turn to *BC*'s exclusive No-Nonsense Map of the exhibit hall and you'll quickly find the booth you need.

For more information on the products to be exhibited at NAB '83, turn to the NAB Exhibitors section following the directory. This section includes a complete alphabetical listing by company, and features detailed descriptions of the major product lines being shown as well as product introductions.

The Directory of Equipment and Services, NAB Exhibitors section, No-Nonsense Map of the exhibit hall, and the preview of major sessions, provide you with the industry's most complete "personal guide to the convention."

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102 Animation/Graphics Equipment
102 Antenna Monitors
102 Antennas, Transmission Lines, Towers & Lights
102 Antennas, FM
102 Antennas, Satellite
102 Antennas, UHF, VHF
104 ATS Equipment
104 Audio Analyzers
104 Audio Monitoring, Measuring & Timing Equipment
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116 Exciters, AM, FM, TV
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136 Turntables & Accessories
136 Vans & Ladder Vehicles
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138 Video Heads & Refurbishing Services
138 Video Monitoring, Measuring & Timing Equipment
138 Video Monitors
138 Video Prompters
138 Video Signal Enhancement & Correction Equipment
138 VTRs
138 Weather Instruments, Radar & Accessories
138 Wireless Microphones & Intercoms
138 Wow & Flutter Meters

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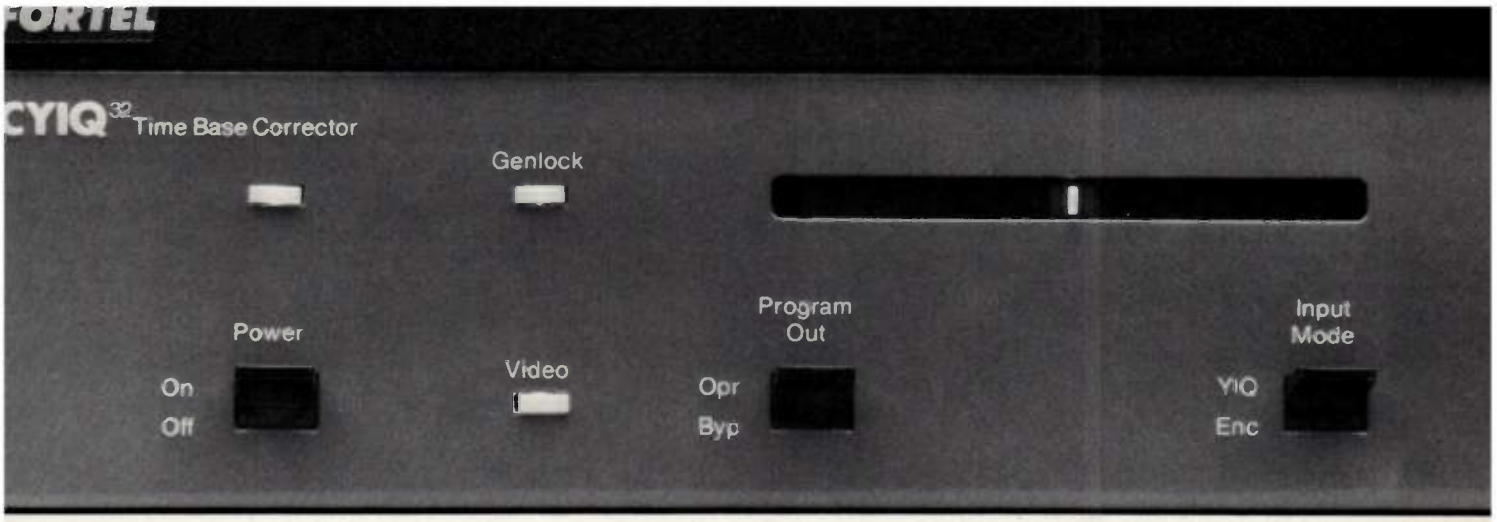

PURE POWER

"Pure" means free from adulteration; clear; clean." Pure describes the potential of new Type "M" VTR's now offered by most major manufacturers.

Pure also describes Fortel's new C-YIQ32 TBC™, specifically designed to deliver the superb, full bandwidth picture quality of Type "M".

The secret of Type "M" is YIQ baseband recording. The secret of the C-YIQ32 is that it is the only TBC that works with YIQ, without conversion and without degradation. The C-YIQ32 also processes pseudo-direct U-Matic signals.

The power of the C-YIQ32 TBC is its 32 line memory. This extra wide window is required to absorb the gyroscopic errors of light weight, shoulder mounted Type "M" VTR's.

The pure power of the C-YIQ32 is already at work. WNEV-TV in Boston selected it over every other TBC for use in the first major Type "M" installation in the U.S.

See the pure power of the C-YIQ32 deliver the picture quality promise of Type "M". Write or call Fortel today for more information or on-site demonstration.

C-YIQ32

Time Base Corrector

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Telex 804822

FORTEL

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The definition of the best color camera

No matter how you define your color camera needs, you will want to be certain you have chosen the best tube for the job. And no technical appraisal can be complete without EEV Leddicons.

Highest picture quality

Lag or smearing under low-light conditions is a common effect with most tubes – but less with EEV Leddicons! Instead of the twin-light pipe used by some competitors, Leddicons incorporate a unique light bias arrangement with a 10-hole and sintered quartz diffusing disc system for minimal shading. Differential lag is minimised by balancing the response speeds of the green, red and blue channels; so a football in flight will always look like a football – not a flying saucer! Light biasing is variable on 30mm and 25mm Leddicons. On 30mm types, biasing is integral so there is no need for a clumsy adaptor.

High resolution

EEV is the only manufacturer to make three different target layers to optimise resolution for each color channel. The advantage of this unique feature can be clearly seen in the Leddicon's much better performance.

Faithful color imagery

Faithful color imagery is all about reproducing what the eye sees. And that is exactly what Leddicons do. Extended reds have a precisely-engineered response and a matched infra-red filter is incorporated to provide cut-off where you want it.

Reduced highlight image retention

Highlight image retention can be a production team's nightmare – the wrong choice of tube and highly polished orchestra instruments can end up looking like the aftermath of an aerobatics display. With EEV Leddicons, the problem is minimised by a unique target manufacturing process. The result is you can rely on Leddicons, even in the very difficult extended red channel where other tubes are simply unable to cope.

Better tube quality – plus longer life

At long last a manufacturer who is prepared to tall about blemishes – but then we know Leddicons average less spotting than other tubes! The secret lies in the fact that all Leddicons must satisfy the most exacting manufacturing, testing and quality control standards. These not only preclude loose particles from the inside of the tube but also ensure longer tube life.

Optimised geometry and registration

The optimised electron optical design of Leddicons ensures the best possible geometry without distortion. Registration too is equally distortion free – we can, in fact, supply computer-matched sets for all three channels.

LEDDIC

Unique anti-microphonic features

Nothing tests a tube more rigorously than the range of frequencies generated by an orchestra. With EEV's unique anti-microphonic mesh assembly, Leddicons provide the cleanest pictures – even from cameras operating in areas of high ambient acoustic noise.

FOR FURTHER INFORMATION ON LEDDICONS, CALL US TODAY.
IN USA Toll free 800 431 1230 (except for NY State).
EEV Inc Corporate Office, 7 Westchester Plaza, Elmsford, NY 10523. Tel: 914 592 6050. Telex: 646180. **Mid. Western Sales Office,** 2073 Arleen Court, Schaumburg, IL 60194. Tel: 312 843 8417. **North-Eastern Sales Office,** 250 Hamilton Drive, Snyder, NY 14226. Tel: 716 839 5959. **Southern Sales Office,** Route 1, Anna, TX 75003. Tel: 214 837 2464. **South-Eastern Sales Office,** Suite 100E, 15 Dunwoody Park, Atlanta, GA 30338. Tel: 404 394 9201.
Tri-State Sales Office, 7 Westchester Plaza, Elmsford, NY 10523. Tel: 914 592 6194.
Western Sales Office, 19001 40th Place, N E Seattle, WA 98155. Tel: 206 363 2200.
IN CANADA EEV Canada Ltd, 67 Westmore Drive, Rexdale Ontario M9V 3Y6. Tel: 416 745 9494. Telex: 06 989 363.
REST OF THE WORLD English Electric Valve Co Ltd, Waterhouse Lane, Chelmsford, Essex CM1 2QU, England. Tel: 0245 61777. Telex: 99103.

tubes in the world.

First for customer service

EEV is not only concerned with manufacturing the best tubes but also ensures the best delivery and after-sales service. Our reputation in this respect, like that of our Leddicons, is second to none.

To serve the needs of our broadcast customers in the USA and Canada best, we sell direct from our centers in New York and Toronto where we maintain a large inventory as well as full test facilities.

When you add up all the facts about EEV Leddicons, there is only one conclusion – namely, the definition of the best tubes for your camera. But don't leave it at that. Next time specify Leddicons for your new equipment and as replacements. Then find out what that definition really means in practice.

Comprehensive range

EEV Leddicons are specified throughout the world for virtually every type of studio, EFP and ENG camera. The range covers 30mm ($1\frac{1}{4}$in), 25mm (1in), 18mm ($\frac{2}{3}$in) and 12mm ($\frac{1}{2}$in) sizes. And the comprehensive choice of front- and rear-loading types includes diode gun, low output capacitance (LOC) diode gun, triode gun and tetrode gun highlight overload protection (HOP).

EEV Leddicons are fully interchangeable in most types of camera including:

BCC10/20/21	HL79/81/83	MNC80	TC80/85
BVP300/330	HK312/322	MKVIII/IX	TK47
CEI310	KCU/KCK 40	SK91/96	TK76
FOTON 1	LDK5/15/25	SK110	TTV1515/1516

ONS®

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EEV Camera Tubes

See us at **NAB** on Booth **1335.**

Circle (76) on Action Card

COMPANY	BOOTH NUMBER	MAP LOCATOR NUMBER
Amplifiers, Pre-amps, DA's		
ADM Technology	1223	E5,6
ATI-Audio Technologies	420	M2
Allied Broadcast Equipment	639	K2
American Data Corp.	1409	G3,4
Aphex Systems	515	L2
Apert-Herzog	1703	D1
Arrakis Systems	121	N4
Audio & Design Recording	402	M5
Auditronics	505	K,L6
BGW Systems	421	L2
Belar Electronics Lab	300	M6
Bosch (Fernseh)	1603	I,J1,2
Broadcast Audio	213	M2
Broadcast Electronics	303	M7,8
Broadcast Technology	1701	D1
The Camera Mart	1018	E6
Central Dynamics	1409	G3,4
Cetec Broadcast Group	509	K,L4,5
Crown International	428	M2
Datatek	1428	E2
Datatronix	1504	B2
Dynair Electronics	1404	H2,3
Dynamic Technology	1719	C2
ESE	116	N5
	1757	B2
Farrtronics	1735	C2
Graham-Patten Systems	1227A	D6
David Green Broadcast Consultants	417	L3
Gregg Labs	455	L1
Harris Corp., Broadcast Products	401	K,L7
Howe Audio	406	M4
HEDCO	1225	D5
Ikegami Electronics	1013	F7
Image Video	1341	A5,6
Industrial Sciences	1232	E5
LPB Inc.	405	L6
Leitch Video of America	1021	D7
Lenco, Electronics Div.	1419	E3,4
Logitek Electronic Systems	613	K4
MRI Systems Limited	207	MN4
McInnis-Skinner	1349	A5
McMartin Industries	701	L7
Marconi Electronics	1609	H2
Marti Electronics	501	L6,7
Modular Audio Products	325	M2
Nagra Magnetic Recorders	1213	G5,6
Rupert Neve	1410	G2
Panasonic Professional Audio	437	L1
RTS Systems	1142	A6
Radio Systems	341	M1
Ramko Research	415	L3,4
Roh Corporation	1634	E1
Russco Electronics	413	L4
Sescom	112	N6
Shintron	1421	E3
Shure Brothers	1602	J1
Sigma Electronics	1125	B8
Spencer Broadcast	337	M1
Stanton Magnetics	102	N8
Straight Wire Audio	408	M4
Telemet	1003	G7
Television Equipment Associates	1216	G4,5
Telex Communications	600	K6,7
Thomson-CSF Broadcast	1001	H,I7
Tweed Audio	313	M5
UREI	513	L2
United Research Lab	406-A	M4
Utah Scientific	1114	B6
Varian Associates	1605	I2
Videotek	1633	D2
Vital Industries	1212	H4,5
Ward-Beck Systems	1224	F4

COMPANY	BOOTH NUMBER	MAP LOCATOR NUMBER
Animation/Graphics Equipment		
Aurora Systems	1312	B3
Bosch (Fernseh)	1603	I,J1,2
Colorgraphics Systems	1116	B6
Comprehensive Video Supply	1315	C6
Computer Graphics Lab	1143	B7
Dubner Computer Systems	1630	E,F1
Interand	1622	F1
International Video Corp.	1509	A,B3
Kavouras	1635	D1
Logica	1600-A	J1
Lyon Lamb Animation Systems	1414	G2
Rupert Neve	1410	G2
Spencer Broadcast	337	M1
Thomson-CSF Broadcast	1001	HI7
Via Video	1767	A2
Video Associates Labs	1303	D5,6
Video Data Systems	1506	B2
Frank Woolley & Company	1731	C2
Antenna Monitors		
Continental Electronics	101	M,N8
Delta Electronics	105	N7
Gorman Redlich	506	L2
Harris Corporation	401	K,L7
Nurad	1426	F2
Potomac Instruments	100	N8
Shively Laboratories	623	K3,4
Antennas, Transmission Lines, Towers and Lights		
Allied Tower	409	L5
Atlas Tower	617	K4
Bayly Engineering	500	L5
Cablewave Systems	108	N7
Comark Communications	1217	F5
EG&G	1327	B6
Fort Worth Tower	1010	F6
Harris Corp., Broadcast Products	401	KL7
LeBlanc & Royle Commun. Towers	1149	B8
Magnum Towers	119	N4
Micro Communications	1617	G1,2
Nurad	1426	F2
Osborne & Associates	339	M1
Phelps Dodge	1007	G6,7
R.F. Technology	1306	B4
Shively Laboratories	623	K3,4
Stainless	1347	A5
Tennaplex Systems	1127	B8
Townsend Associates	1420	F2
Utility Tower	703	K7
World Tower Company	519	L2
Antennas, FM		
Harris Corp., Broadcast Products	401	KL7
LeBlanc & Royle	1149	B8
McMartin Industries	701	L7
Marconi Electronics	1609	H2
Phelps Dodge	1007	G6,7
RCA Corporation	1000	I,J6,7
Shively Laboratories	623	K3,4
Tennaplex Systems	1127	B8
Antennas, Satellite		
Antenna Technology	1737	C2
Comtech Data	314	M1
Microdyne	1129	B8
	132	N2
Townsend Associates	1420	F2
Antennas, UHF, VHF		
Acrodyne Industries	1228	F4,5
Andrew Corporation	1202	H,I4
Bogner Broadcast Equipment	1319	C5,6

Continued on page 104

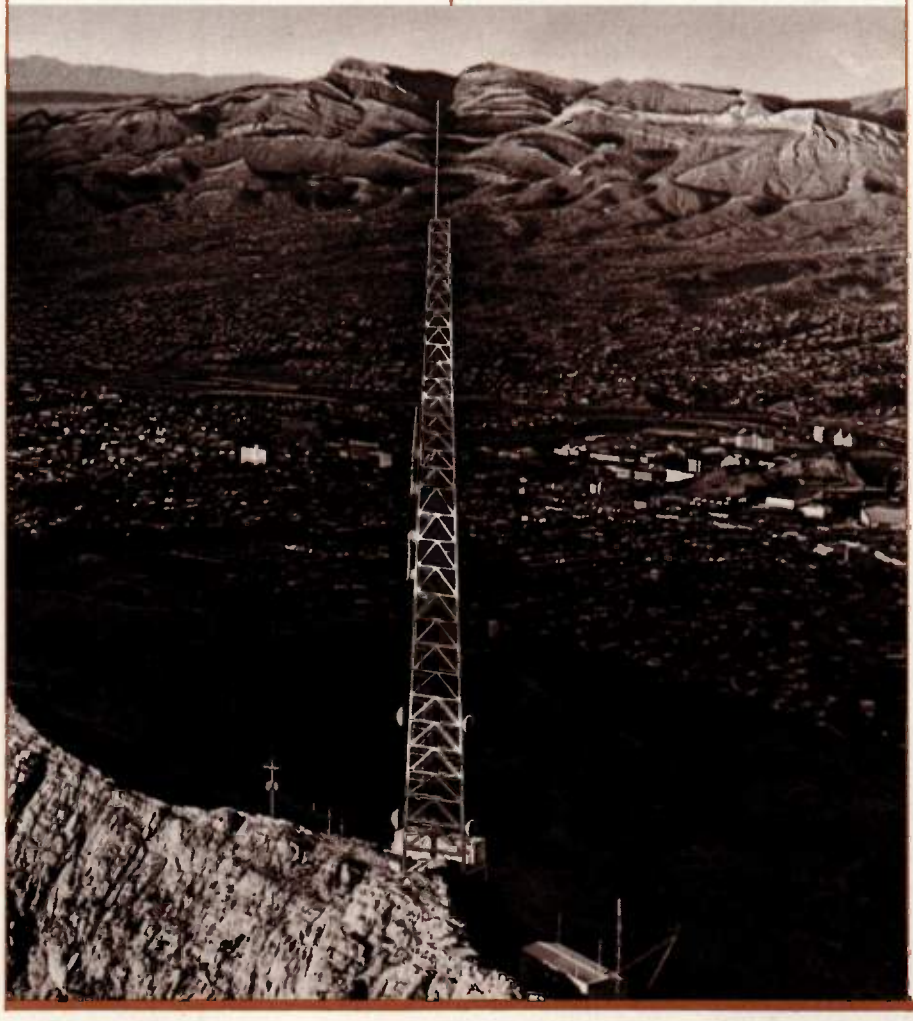
Out of 4000 stations, 1700 chose our antennas.

Phelps Dodge FM antennas were purchased for more applications from 10 watt educational to high power 25 kw class C stations.

We believe no one else even comes close to that record, and no wonder.

Performance is the overriding reason. Our antennas are less susceptible to corona. You get proper phase relationship between the vertical and horizontal components. They are available with any combination of null fill and beam tilt. And, remember, only Phelps Dodge antenna elements are fabricated of hard drawn, high conductivity copper.

Whatever your needs may be, we can probably meet them with a range of 25 different types from which to choose; low power, high power or super high power. Use an element as a single bay antenna for limited coverage or use multi-element arrays. We also have circularly and horizontally polarized stainless steel educational antennas. Directional couplers and low pass filters complete the line.



Whichever model you choose, your Phelps Dodge antenna arrives complete, ready for installation, with a tunable input transformer to match the antenna to the location. Deicer kits and radomes are optional.

Write, telephone or TWX for Catalog 779 with all the details: Phelps Dodge Communications Company, Route 79, Marlboro, NJ 07746, (201) 462-1880, TWX: 710-722-3861.

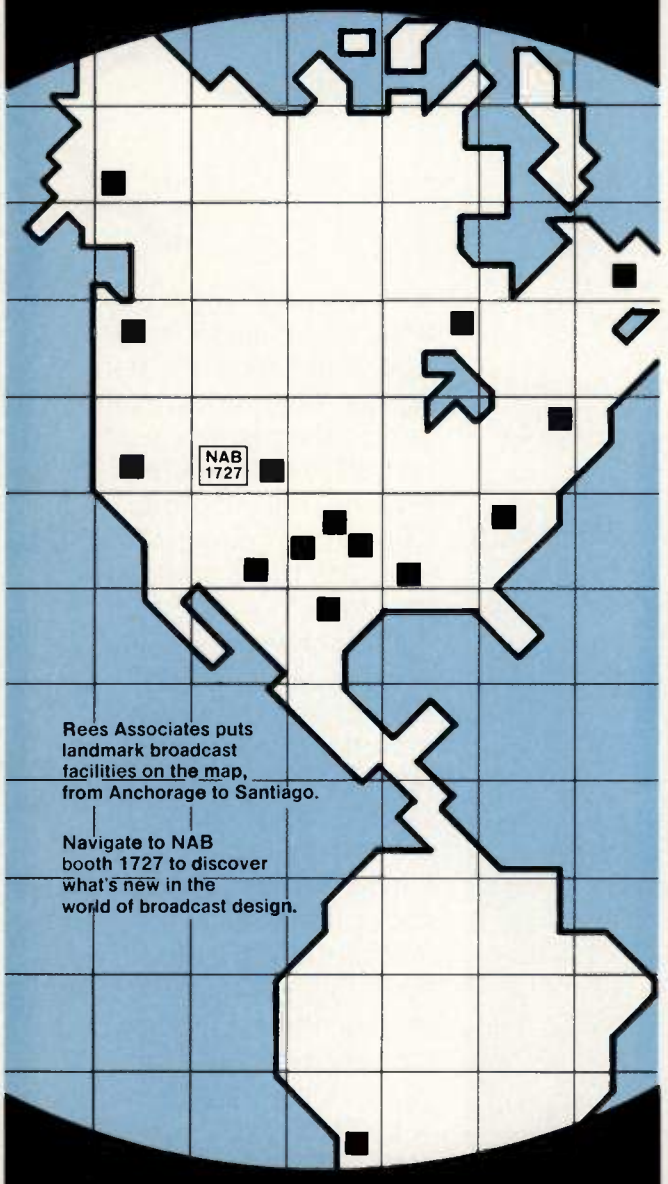
phelps dodge
Communications Company
A Division of Phelps Dodge Industries, Inc.

See Us at Booth 1007, NAB Convention

Circle (77) on Action Card

SOMEBODY UP THERE LIKES US.

(way down there, they think we're great, too.)



Rees Associates puts landmark broadcast facilities on the map, from Anchorage to Santiago.

Navigate to NAB booth 1727 to discover what's new in the world of broadcast design.

Rees Associates Inc Architects Planners Engineers

4200 Perimeter Center Drive Suite 245
Oklahoma City, Oklahoma 73112
(405) 946-9800.

Circle (78) on Action Card

Directory of Equipment and Services

COMPANY	BOOTH NUMBER	MAP LOCATOR NUMBER
Comark Communications	1217	F5
Harris Corp., Broadcast Products	401	KL7
LeBlanc & Royle	1149	B8
Marconi Electronics	1609	H2
Marti Electronics	501	L6,7
Micro Communications	1617	G1,2
RCA Corporation	1000	IJ6,7
Shively Laboratories	623	K3,4
Tennaplex Systems	1127	B8
Townsend Associates	1420	F2
ATS Equipment		
Delta Electronics	105	N7
Hallikainen & Friends	306	M3
Moseley Associates	301	M8
Potomac Instruments	100	M8
QEI Corporation	307	M6
Audio Analyzers		
Amber Electro Design	427	L1
Asaca/Shibasoku	1217	F5
Crown International	428	M2
dbx Inc.	621	K3,4
Eventide	323	M2
Inovonics	304	M4
Leader Instruments	1702	C1
Potomac Instruments	100	N8
Sound Technology	502	L5
UREI	513	L2
Audio Monitoring, Measuring & Timing Equipment		
Amber Electro Design	422	L2
Asaca/Shibasoku	1217	F5
The Camera Mart	1018	E6
Crown International	428	M2
dbx Inc.	621	K3,4
Di-tech	1301	D5,6
ESE	116	N5
	1757	B2
David Green Broadcast Consultants	417	L3
Fidelipac	103	N7,8
HEDCO	1225	D5
HM Electronics	1130	A7
Harris Corp., Broadcast Products	401	KL7
Inovonics	304	M4
Jenel	1338	A4
Leader Instruments	1702	C1
McMartin Industries	701	L7
MRI Systems Limited	207	M,N5
Merlin Engineering	1236	D4
Otari	601	K6,7
Panasonic Professional Audio	437	L1
Roh Corporation	1634	E1
Russco Electronics	413	L4
Sony Corporation of America	1200	IJ4-6
Sound Technology	502	L5
Straight Wire Audio	408	M4
Telemet	1003	G7
UREI	513	L2
Videotek	1633	D2
Ward-Beck Systems	1224	F4
Automation Systems, Audio		
Asaca/Shibasoku	1217	F5
Broadcast Electronics	303	M7,8
Cetec Broadcast Group	509	KL4,5
Crosspoint Latch	1321	B5
Harris Corp., Broadcast Products	401	K,L7
IGM Communications	403	L6,7
Inovonics	304	M4
Kavco	1706	C1
Lake Systems	1790	A1
MRI Systems Limited	207	M,N5

Continued on page 106

TOWNSEND

The Television Transmission Specialists

Running a straight course keeps Townsend a step or two ahead of the competition.

The many opportunities in television have attracted several of today's largest corporations into our industry from a variety of backgrounds. Since the beginning, Townsend Associates has been dedicated to the design, development, and manufacture of television transmission equipment exclusively. It's not a sideline with us. And we're not someone else's subsidiary. From transmitters to components, everything we develop and produce is mainstream to the transmission of television.

INNOVATIONS THROUGH SPECIALIZED R&D

High Power UHF & VHF Television Transmission

FIRST solid state exciter.

FIRST to employ emergency klystron multiplex circuitry for UHF.

Low Power UHF And VHF Transmission Systems

FIRST manufacturer of High Power transmitters for L.P.T.V.

FIRST integrated antenna and amplifier transmission system for low power UHF.

Satellite Rebroadcast Systems

FIRST transmitter manufacturer to introduce satellite system concept through a cooperative effort with a TVRO manufacturer.

FIRST to have a complete line of transmitters for satellite rebroadcast systems. We design and build rebroadcasting systems for UHF and VHF and each is available in either low or high power configurations.

Multipoint Distribution Service (MDS) And ITFS

FIRST 100% solid state transmitters in both 10 watt and 100 watt.

FIRST with intermod free external diplexing of the aural and visual carriers.

Custom Engineering

FIRST and only manufacturer with hardware and the know-how to up-power all major brands of T.V. transmitters.

Major Components

FIRST
solid state pulser.

FIRST
to introduce external cavity klystrons.

FIRST
to provide a regulated and adjustable power supply...PERVEAC.

FIRST
to manufacture and employ plug in vacuum contactors for T.V. transmitters.

The R & D Group Our "FIRST" Team,

The many transmission innovations developed by the Townsend R & D group have often involved technologies borrowed from other fields. Their singular purpose is to find ways to measurably raise the state-of-the-art in just one field...television transmission.

TOWNSEND ASSOCIATES, INC.

79 Mainline Dr., Westfield, MA 01085 Tel. 413-568-9581 TWX #710-356-1521 • West Coast: 1080 Los Molinos Way, Sacramento, CA 95825 • Bangkok: Box 11-1240, Nana, Thailand 10112 • Canada: Cornad Comm., 91 Kelfield St., Rexdale, Ontario M9W 5A3 • Australia: TBC PTY. Ltd., 6 Chilvers Rd., Thornleigh, N.S.W. 2120

Circle (79) on Action Card

NAB BOOTH #1420

COMPANY	BOOTH NUMBER	MAP LOCATOR NUMBER
The Management	627	K2
Otari	601	K6,7
Shure Brothers	1602	J1
Sono-Mag	202	N7
Stephens Electronics	1757	B2
UMC Electronics	114	N5,6
Utah Scientific	1114	B6
Vital Industries	1212	H4,5
Battery Packs, Belts & Chargers		
Alexander Manufacturing	1714	B1
Anton/Bauer	1337	A5
Arriflex	1644	D1
Bogen Photo	1705	D2
The Camera Mart	1018	E6
John Chiles	1747	B2
Christie Electric	1016	E6
Cine 60 Inc.	1423	E3
Cinema Products	1221	E5,6
Comprehensive Video Supply	1315	C6
Delcom Corporation	1507	B3
Film/Video Equipment Service	1153	B8
Frezzolini Electronics	1107	C8
Ikegami Electronics	1013	F7
LTM Corp. of America	1518	A2
Marti Electronics	501	L6,7
PEP	1208	H4,5
Perrott Engineering Labs	1729	C2
Theatre Service & Supply	1513	A3
Bulk Tape Erasers		
CMC Technology	1103	C7
Cetec Broadcast Group	509	KL4,5

COMPANY	BOOTH NUMBER	MAP LOCATOR NUMBER
Christie Electric	1016	E6
Comprehensive Video Supply	1315	C6
Dictaphone	211	N3,4
Garner Industries	1233	D6
Glentronix	1318	A3,4
Nortronics	205	N6
Research Technology Int'l (RTI)	1626	F1
Teac Corp. of America	1304	B4
UMC Electronics	114	N5,6
Cabinets & Consoles, Modular		
Amco Engineering	1218	G5
Anvil Cases	1112	B7
William Bal Corporation	1614	I1
Calzone Case Company	1011	G7
The Camera Mart	1018	E6
Comprehensive Video Supply	1315	C6
Delcom	1507	B3
Emcor	429	L1
Laird Telemedia	1721	C2
Pacific Recorders & Engr.	113	M,N5
Research Technology International	1626	F1
Shintron	1421	E3
Stantron	1123	B8
Stephens Electronics	1757	B2
Storeel	1008	G6
Teac Corp. of America	1304	B4
Uni-Set	1023	D7
Winsted Corporation	1238	D5
Cameras, Accessories		
Ampex Corporation	1400	J2,3

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GPS
GRAHAM-PATTEN SYSTEMS, INC.
P. O. BOX 1960, GRASS VALLEY, CA 95945
[916] 273-8412
Booth: 1227A

Circle (80) on Action Card

The Budget Squeezer

Precision Echo Presents The Video Compression System With One Feature All Others Lack: Affordability.

Everyone today is facing the budget squeeze one way or another. Networks, affiliates and independents. Cable companies. Production and post production houses. One curious thing about budget squeezes is that they have a way of making equipment purchase decisions both easier and harder. Easier when it's clear that a particular item costs too much for the times. But harder when you are looking at equipment you know you need, but can't find the bucks for.

The Squeezer: Meeting Your Needs With A Unique Set of Special Effects Features.

The Squeezer, from Precision Echo, is a programmable video compression and positioning system that compresses an image down to four selectable sizes, places that image anywhere within the screen on command, crops any part of it to any size, and puts a variable-sized border of any color around it on request. It can even flip the image horizontally or freeze the action. Exclusive dual joy stick controls make image manipulation simple. And the utility of its design makes The Squeezer a versatile tool whether rack mounted in a production facility or used in mobile applications.

The Squeezer: An Affordable Alternative.

There's very little that you'll find on The Squeezer that you couldn't find on an ADDA, Vital, or a Quantel system. Except the price tag. Those other systems cost anywhere from $40,000 to $200,000. The Squeezer costs under $19,000. For broadcast programming, news and sports production, cable TV, educational and industrial applications, nothing comes close to the cost efficiency of The Squeezer.

The Squeezer from Precision Echo. High on quality and cost efficiency.

PRECISION ECHO

A Name Worth Repeating

3105 Patrick Henry Drive
Santa Clara, CA 95054 (408) 988-0516, TWX: 910/338-2328

Circle (81) on Action Card

COMPANY	BOOTH NUMBER	MAP LOCATOR NUMBER
Anvil Cases	1112	B7
Arriflex	1644	D1
Bosch (Fernseh)	1603	IJ1,2
Calzone Case Company	1011	G7
The Camera Mart	1018	E6
John Chiles	1747	B2
Cine 60	1423	E3
Cinema Products	1221	E5,6
Delcom Corporation	1507	B3
Film/Video Equipment Service	1153	B8
Frezzolini	1107	C8
Harris Corp., Broadcast Products	401	KL7
Karl Heitz	1115	C8
Hitachi Denshi America	1402	I2-4
Ikegami Electronics	1013	F7
JVC Company of America	1234	D4,5
Jatex	1132	A7
Marconi Electronics	1609	H2
Midwest Corporation	1710	B,C1
NEC America	1415	F3,4
Omnimount Systems	510	L2
PEP	1208	H4,5
Panasonic Video Systems	1019	DE7
Panavision	1607A	H2
Philips Television Systems	1409-A	G3,4
RCA Corporation	1000	IJ6,7
Sharp Electronics Corporation	1102	C6
Sony Corporation of America	1200	IJ4-6
Tele-Cine	1403	H3,4
Thomson-CSF Broadcast	1001	HI7
Tiffen Manufacturing	1422	F2,3
Toshiba	1631-A	G1

COMPANY	BOOTH NUMBER	MAP LOCATOR NUMBER
Cart Machines & Accessories		
Allied Broadcast Equipment	639	K2
Ampro/Scully	407	L5,6
Audi-Cord Corporation	123	N4
Broadcast Cartridge Service	611	K5
Broadcast Electronics	303	M7,8
The Camera Mart	1018	E6
Control Video	1157	A8
Fidelipac	103	N7,8
Howe Audio	406	M4
IGM Communications	403	L6,7
International Tapetronics/3M	107	MN6
The Management	627	K2
Pacific Recorders & Engr.	113	M,N5
RCA Corporation	1000	IJ6,7
Ramko Research	415	L3,4
Sono-Mag	202	N7
Straight Wire Audio	408	M4
Telex Communications	600	K6,7
UMC Electronics	114	N5,6
United Research Lab	406-A	M4
Carts, Audio		
Anvil Cases	1112	B7
Broadcast Cartridge Service	611	K5
Broadcast Electronics	303	M7,8
The Camera Mart	1018	E6
Capitol Magnetic Products	665	K2
CeCo Communications	118	N5
Fidelipac	103	N7,8
The Management	627	K2
Procart	115	N5

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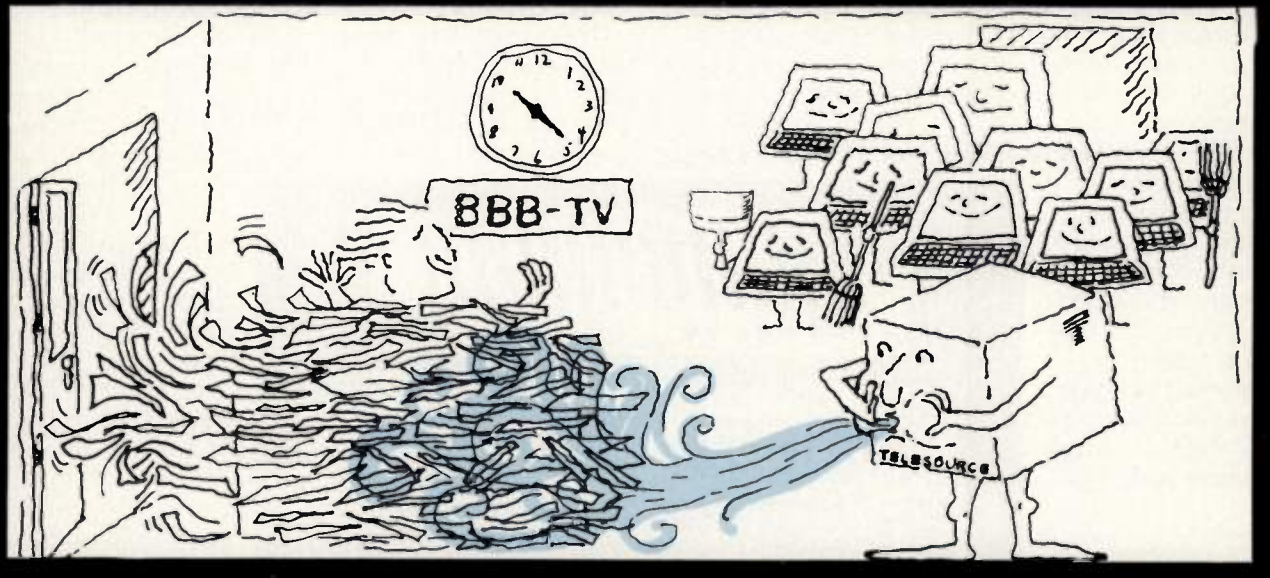


Telesource . . . What a breeze!

Telesource®

Newsroom Management and Editing Systems

TELESOURCE COMMUNICATION SERVICES, INC.
Phoenix, Arizona (602) 265-1232
Booth 1616 A

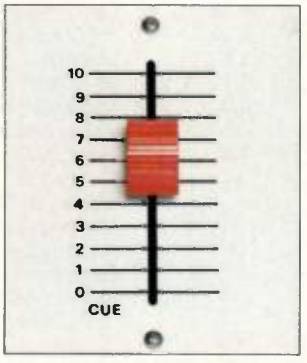
Circle (82) on Action Card

Finally. On-Air Boards Designed By Broadcasters!

The UREI Broadcast Consoles

Before we started designing the new Series 1650 and 1680 consoles, we talked to you . . . engineers, jocks, announcers and consultants. Then we went to the drawing boards to plan a line of on-air boards with the features you wanted . . . built with UREI's traditional quality and reliability.

The result is a fresh answer to the operational requirements of the broadcaster of the '80's. Six all-new on-air boards . . . choice of 5 mixers (1650 Series) or 8 mixers (1680 Series) . . . choice of Penny & Giles slide pots, Shallco or conductive plastic rotary attenuators . . . +24 dBm output . . . better than 90 dB signal to noise ratio . . . inputs from +8dB down to -10 dB . . . built-in cueing amp and speaker.



Best of all, both Series are competitively priced!

Ready to Go

You can customize the new UREI consoles, but no accessories are required to go on the air. They are supplied with full sets of input preamps. All preamps are interchangeable in all positions. We even designed a new accessory phono preamp for these new boards that mounts at the turntable and takes its power from the console. Ask about the Model 1101 Phono Stereo Preamplifier.

The Modern Ones

You've been asking for a new line of UREI on-air consoles for years. We took the time to make them "the modern ones" . . . the ones that will meet your requirements through the 80's and beyond. For more information on the UREI Broadcast Consoles, see your authorized UREI dealer, or write:

From One Pro to Another UREI

United Recording Electronics Industries
8460 San Fernando Road
Sun Valley, California 91352
(213) 767-1000 TLX 472 0889 UREI SNVY
Canada: E.S. Gould Marketing, Montreal

Circle (83) on Action Card

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COMPANY	BOOTH NUMBER	MAP LOCATOR NUMBER
Storeel	1008	G6
UMC Electronics	114	N5,6
United Research Lab	406-A	M4
Cartridges and Tone Arms		
AKG Acoustics	508	L2
Broadcast Electronics	303	M7,8
Fidelipac	103	N7,8
LPB Inc.	405	L6
Panasonic Professional Audio	437	L1
Russco Electronics	413	L4
Shure Brothers	1602	J1
Stanton Magnetics	102	N8
Cases, Custom		
Anvil Cases	1112	B7
Calzone Case Company	1011	G7
The Camera Mart	1018	E6
Comprehensive Video Supply	1315	C6
Excalibar	1106	C7
Film/Video Equipment Service	1153	B8
Thermodyne	1637	D1
Character Generators		
Aurora Systems	1312	B3
BEI (Beston Electronics Inc.)	1620	G1
Bosch (Fernseh)	1603	I,J1,2
The Camera Mart	1080	E6
Cat Systems	1424	F2,3
Chyron Corporation	1610	I1
Comprehensive Video Supply	1315	C6
Datum	1708	C1

COMPANY	BOOTH NUMBER	MAP LOCATOR NUMBER
Delcom Corporation	1057	B3
Dubner Computer Systems	1630	E,F1
EEG Enterprises	1155	A8
For-A Corporation	1306	B4
Glentronix	1318	A3,4
Harris Corp., Broadcast Products	401	K,L7
Laird Telemedia	1721	C2
3M Magnetic A/V Products	1002	H,I6
Quanta	1432	D2,3
Shintron	1421	E3
Thomson-CSF Broadcast	1001	H,I7
Video Associates Labs	1303	D5,6
Videomedia	1308	B4
Clocks & Timers, Digital		
Amtel Systems	1745	B2
Auditronics	505	K,L6
Beaveronics	1313	C6
Broadcast Audio	213	M2
Comprehensive Video Supply	1313	C6
Datum	1708	C1
ESE	116	N6
	1757	B2
For-A Corporation	1306	B4
Glentronix (U.S.)	1318	A3,4
Gregg Laboratories	455	L1
Howe Audio/BCP	406	M4
Image Video	1341	A5,6
Jatex	1132	A7
Laird Telemedia	1721	C2
Leitch Video of America	1021	D7
Logitek Electronic Systems	613	K4

Continued on page 112

ACROSS THE BOARD CAPABILITY.

Whatever your video typewriter requirements, simple to ultra-sophisticated, there's an unusually economical FOR•A system to meet them feature for feature.

Simple to use and self-contained, they provide a full range of professional features: 8 line/32 characters (4 or 8 pages) • Edge and Wipe Control • Roll and Crawl • Auto Centering • Line Skip and Word Correction • Previewing • Malfunction Detection and Alert—depending on model.

FOR•A offers interface components such as a Magnetic Card and Floppy Disc Memories (MU-300 and MU-600) and a Character Design Unit (DU-600) that lets you develop custom characters and display them with standard characters.

FOR•A VIDEO TYPEWRITERS*

Model	Dot Matrix	Pages	Price
VTW-200	7 x 9	4	$1,430
VTW-250	7 x 9	4	$2,300
VTW-300	24 x 24	8	$3,550
VTW-600	24 x 24	8	$5,450

*Full feature brochures available on all models.

Ask about the exciting new FOR•A VIDEOWRITER (FVW-910) that lets you diagram football plays, write messages or create pictures with a lightpen.

Call the nearest FOR•A Sales Office to arrange a demonstration by your FOR•A Representative or Dealer.

FOR•A®
INNOVATIONS IN VIDEO

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East Coast: **(617) 244-3223** West Coast: **(213) 467-8412**

Circle (84) on Action Card
SEE US AT NAB BOOTH #1306

We Couldn't Have Said It Any Better Ourselves.

"We selected the SatCom Technologies 7 meter antenna because this antenna meets PBS's standards for sidelobe performance and mechanical reliability."

Mr. Ralph L. Mlaska
Manager Systems Engineer
PBS Washington, D.C.

"Excellent performance and easy to install."

Mr. Bill Baker
V.P./Engineering
KAMC-TV Lubbock, TX

"We are very pleased with this quality made 9.2 meter antenna."

Mr. Ray McMillan
Chief Engineer
KENS-TV San Antonio, TX

"The technical quality of our antenna is excellent and has brought new flexibility and a more competitive edge to our programming."

Mr. Dave Frasier
Technical Operations Mgr.
WWBT-TV Richmond, VA

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Mr. Charles W. Myers
Chief Engineer
WHO-TV Des Moines, IA(Iowa)

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Dr. Hugh VanEaton
President
KVHP-TV Lake Charles, LA

SatCom Technologies, Inc.

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(404) 448-2116 Telex 70-8496

an RSi Company

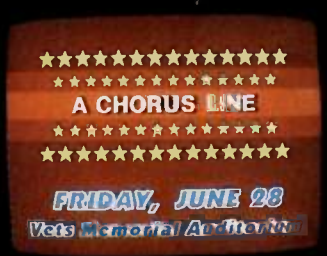
Circle (85) on Action Card

COMPANY	BOOTH NUMBER	MAP LOCATOR NUMBER
Midwest Corporation	1710	B,C1
Research Technology Int'l.	1626	F1
True Time Instruments	643	K1
Computer Systems, Business		
American Bell	1429	D3,4
Cat Systems	1424	F2,3
Cetec Broadcast Group	509	K,L4,5
Columbine Systems	1302	B4
Computer Concepts	404	M5
Custom Business Systems	317	M4
Data Communications	1014	E,F6
For-A Corporation	1306	B4
Generic Computer Systems	308	M2
Harris Corp., Broadcast Products	401	K,L7,8
Jefferson Data Systems	1629	E,F2
Kaman Sciences	1607	H2
The Management	627	K2
Media Computing	1522	H2
Research Technology International	1626	F1
Snarr/Chase Media	609	K5
Station Business Systems	311	M5,6
Computer Systems, Newsroom		
American Bell	1429	D3,4
BEI (Beston Electronics)	1620	G1
Basys	1503	B3
Cat Systems	1424	F2,3
Colorgraphic Systems	1116	B6
Data Communications	1014	E,F6
Jefferson Data Systems	1629	E,F2
Jenel Consultants	1338	A4
McInnis-Skinner & Assoc.	1349	A5
Media Computing	1522	A2

COMPANY	BOOTH NUMBER	MAP LOCATOR NUMBER
Quanta Corporation	1432	D2,3
Station Business Systems	311	M5,6
Telesource Communication Services	1616-A	I1
Terminal Systems	1768	A1
UMC Electronics	114	N5,6
Computer Systems, Weather		
Aurora Systems	1312	B3
Colorgraphics Systems	1116	B6
Dubner Computer Systems	1630	E,F1
Interand	1622	F1
Kavco	1706	C1
Kavouras	1635	D1
McInnis-Skinner & Associates	1349	A5
Weathermation	1179	A7
Consoles, Audio		
ADM Technology	1223	E5,6
Allied Broadcast Equipment	639	K2
Ampro/Scully	407	L5,6
Arrakis Systems	121	N4
Auditronics	505	K,L6
Autogram Corporation	120	N4,5
Broadcast Audio	213	M2
Broadcast Electronics	303	M7,3
The Camera Mart	1018	E6
Cetec Broadcast Group	509	KL4.5
Continental Electronics	101	M,N8
Datatronix	1504	B2
Emcor Products	429	L1
Farrtronics	1735	C2
Graham-Patten Systems	1227-A	D6

Continued on page 114

7200 COMMUNICATOR



Certainly our 7200 Communicator produces high-resolution, proportionally spaced characters from a multitude of undistorted standard and special fonts. Instant italics, font intermix, animated graphics, and auto sequence are also included. These are all features you would expect to find in any Broadcast-class Graphic Generator.

What wouldn't you expect? How about a choice of 32,768 background and character colors, a 100-line resident text memory, four 128-character resident fonts. How about a full-screen status/preview display and a basic PROM alternative to RAM/disk memories.

What you will come to appreciate the most, however, is that our imagineering has made the operation and maintenance of the 7200 sophisticated

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Communications

Fiber Optics Bring Broadcast TV To EPCOT

Walt Disney World's EPCOT Center now has broadcast video/audio capability in its extensive fiber optic communications network. Vista-United Telecommunications, which is tasked with providing communications facilities for the resort complex, has installed Artel's SL-2000 and EN-1000 systems for the long distance trunking of broadcast quality video and audio signals on the complex. Vista-United first used the Artel fiber systems in the live opening coverage of EPCOT on network TV.

SL-2000 Gets Low Cost Video/Audio Addition

A new low cost fiber optic video/audio plug-in transmission module set is now available for Artel's widely used SL-2000. Designated the T-2020/R-2020, this new transmitter/receiver module set combines broadcast quality video and audio on a single card module set. The result is a compact, economical system that, for the first time, makes fiber optics cost effective in shorter distance video/audio applications. Maximum distance of the T/R-2020 is one kilometer (3281 ft.), compared to the 7 km range of other SL-2000 module systems.

Longest F.O. System Brings Cable Network On Air

The Weather Channel, a 24-hour cable network devoted exclusively to weather forecast and reports, has begun operations through the longest studio-quality fiber optic video/audio/data installation in the country. The system employs Artel's SL-2000 fiber optic transmission system to span the 2.18 miles (3.5 km) from The Weather Channel studios to the RCA Earth Station in Atlanta.

ABC Approves, Uses Fiber Optics

The American Broadcasting Company Engineering Lab has approved the Artel EN-1000/SL-2000 fiber optic systems for use by ABC. One of ABC News' first use of these systems was in a live New York-Plains, GA, interview of former President Jimmy Carter on ABC's "Nightline" program.

Free RGB Application Note

A free application note on how to use and specify fiber optics in high resolution RGB computer graphics is available from Artel. Application Note CG-1 describes the use of the SL-2000 system in remoting RGB graphics monitors to achieve longer distance, higher resolution and elimination of interference.

See us at NAB Booth #1118

ARTEL COMMUNICATIONS CORPORATION

P.O. Box 100, West Side Station, Worcester, Mass. 01602 (617) 752-5690 - Cable: ARTEL

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ASACA/ SHIBASOKU 725 Automatic Distortion Analyzer

This versatile instrument works both as a distortion analyzer and as a high performance distortion meter. You can use it to measure distortion ratios as low as .0001% (–120 dB) and analyze the 2nd to 5th harmonic distortion.

The 725 extracts only the harmonic components from various measured signals, including noise. By obtaining fundamental frequency rejection characteristics of more than 120 dB, it measures the small distortion which noise usually covers.

Input level adjustment, selection of measuring range and tuning of measured frequency are all automatic. The 725 connects to a general purpose interface bus (IEEE-488) and may be expanded into a fully automated instrumentation system.

- **Harmonic analysis circuit measures 2nd to 5th harmonic distortion, including THD.**
- **Wide band distortion ratio measurement (5 Hz–110 kHz fundamental wave frequency).**
- **Distortion meter has 5 Hz–500 kHz frequency range and 30 uV (–90 dB) full scale.**
- **All functions are remote controlled.**

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For complete specifications, write:

ASACA

ASACA/SHIBASOKU CORP. OF AMERICA
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Sales, Service: (800) 423-6347 • (213) 827-7144

Circle (88) on Action Card

Directory of Equipment and Services

COMPANY	BOOTH NUMBER	MAP LOCATOR NUMBER
Gotham Audio	503	L6
Gregg Labs	455	L1
Hallikainen & Friends	306	M3
Harris Corp., Broadcast Products	401	K,L7
Harrison Systems	1324	A3,4
Howe Audio	406	M4
Interface Electronics	215	M2
Integrated Sound Systems	327	M2
LPB Inc.	405	L6
Listec TV Equipment	1406	H2,3
Logitek Electronic Systems	613	K4
MCI, Division of Sony	605	K5,6
MRI Systems	207	M,N4
McMartin Industries	701	L7
Rupert Neve	1410	G2
Pacific Recorders & Engineering	113	M,N5
Panasonic Professional Audio	437	L1
Quad-Eight	1636	E1
Quantum Audio	134	N2
RCA Broadcast Systems	1000	I,J6,7
Radio Systems	341	M1
Ramko Research	415	L3,4
Russco Electronics Mfg.	413	L4
SATT Electronics	212	N2
Shure Brothers	1602	J1
Solid State Logic	1723	C1,2
Soundcraft Electronics	1724	B1
Studer Revox America	201	M,N7
Teac Corp. of America	1304	B4
Trident (USA)	633	K2
Tweed Audio	313	M5
UMC Electronics	114	N5,6
UREI	513	L2
Ward-Beck Systems	1224	F4
Digital Effects Equipment		
Advanced Music Systems	1330	A4
Ampex Corporation	1400	J2,3
Dubner Computer Systems	1630	E,F1
Eigen Video	1227	D6
Eventide	323	M2
Grass Valley Group	1207	G5,6
Interand	1622	F1
Kavouras	1635	D1
Lexicon	1139	B8
MCI/Quantel	1631	E1,2
NEC America	1415	F3,4
3M Magnetic A/V Products	1002	H,I6
Sony Corporation of America	1200	I,J4-6
Thomson-CSF Broadcast	1001	H,I7
Trident (USA)	633	K2
Vital Industries	1212	H4,5
Diplexers & Combiners		
Comark Communications	1226	F4
Micro Communications	1617	G1,2
R.F. Technology	1306	B4
Shively Laboratories	623	K3,4
Tennaplex Systems	1127	B8
Townsend Associates	1420	F2
Duplex Communication Systems		
Artel Communications	1118	B6
Dyanmic Technology	1719	C2
HM Electronics	1130	A7
Marti Electronics	501	L6,7
R-Columbia	1111	C8
Tennaplex Systems	1127	B8
Earth Station Equipment & Services		
Allied Broadcast Equipment	639	K2
Andrew Corporation	1202	H,I4
California Microwave	619	K4
Cat Systems	1424	F2,3

COMPANY	BOOTH NUMBER	MAP LOCATOR NUMBER
Compact Video	1142	A6
Compucon	1616	I1
Comsearch	1136	A6
Comtech Data	314	M1
Fort Worth Tower Company	1010	F6
Harris Corp., Broadcast Products	401	K7
Jenel Consultants	1338	A4
Leitch Video of America	1021	D7
McMartin Industries	701	L7
M/A-COM Video Systems	1004	G6,7
Microdyne	132	N2
	1129	B8
Scientific-Atlanta	1017	E,F7
Thomson-CSF Broadcast	1001	H,I7
Thomson-CSF Components	1145	B7
Townsend Associates	1420	F2
Weathermation	1179	A7
Western Union	1307	C,D5
Wold Communications	1515	A3
Edit Code Generators & Receivers		
Amtel Systems	1745	B2
The BTX Corporation	1124	A6
The Camera Mart	1018	E6
Control Video	1157	A8
Datatron	1005	G7
Delcom	1507	B3
EECO	1314	B4
ESE	116	N5
	1757	B2
Jatex	1132	A7
Shintron	1421	E3
Skotel Corporation	1126	A6
Sony Corporation of America	1200	I,J4-6
United Media	1300	B3
Editors, Video		
Ampex Corporation	1400	J2,3
Bosch (Fernseh)	1603	I,J1,2
CMX/Orrox Corporation	1639	E2
Control Video	1157	A8
Convergence Corporation	1430	E2,3
Datatron Inc.	1005	G7
Delcom Corporation	1507	B3
Glentronix	1318	A3,4
International Video Corp.	1509	A,B3
JVC Company of America	1234	D4,5
Jatex	1132	A7
Merlin Engineering Works	1236	D4
Midwest Corporation	1710	B,C1
Panasonic Video Systems	1019	D,E7
RCA Corporation	1000	I,J6,7
Research Technology International	1626	F1
Singer Broadcast Products	309	M6
Sony Corp. of America	1200	I,J4-6
United Media	1300	B3
Videomedia	1308	B4
Encoders and Decoders		
Asaca/Shibasoku	1217	F5
Blonder-Tongue Labs	1134	A6
Bosch (Fernseh)	1603	I,J1,2
Broadcast Video Systems	1326	A4
The Camera Mart	1018	E6
Cinema Products	1221	E5,6
dbx Inc.	621	K3,4
Datum	1708	C1
Dynacom International	1163	A7
EEG Enterprises	1155	A8
Faroudja Laboratories	1753	B2
Glentronix	1318	A3,4
Gorman Redlich	506	L2
Lenco, Electronic Division	1419	E3,4
Marconi Electronics	1609	H2

Continued on page 116

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YOUR SUCCESS... IS OUR BUSINESS

Regardless of your pay television mode (LPTV/MDS/STV) Dynacom has a secure scrambling system for you which is low in cost and high in reliability. We have provided our scrambling system to small International markets and fully addressable systems to larger U.S. markets. Recent deliveries include an STV operator in Lima, Peru and an LPTV operator in Mullin, Texas.

Having been in the Subscription Television since 1976, we know that our success is based upon your success.

Some key features to our system are:

- Low Cost addressable head-end
- Effective secure, scrambling technique
- Multi-channel decoders covering any VHF or UHF channel
- Available in all television formats, NTSC, PAL and SECAM

Dynacom Telecommunication Systems, Inc.
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Telephone (404) 428-3100
Telex: 54-2161 DYCOMINTL MARA

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MAP AUDIO DISTRIBUTION AMPLIFIERS

Model 7833 Shown

A Complete Family of Rack Mounting Self Contained Audio Distribution Amplifiers

- OUTPUT NOISE: -90 dBm
- DISTORTION: TYP. 0.1% LINE IN
- OUTPUT LEVEL: +20 dBm PER CHANNEL
- ISOLATION: 80 db BETWEEN OUTPUTS AND OUTPUT TO INPUT

FEATURES	MODEL NOS. 7821	7822	7823	7833
Transformer coupled floating MIC input			✓	
Balanced bridging line input	✓	✓	✓	✓
8 balanced transformerless outputs	✓		✓	✓
16 balanced transformer less outputs		✓		
Adjustable gain	✓	✓	✓	✓
Metered input & output (switchable)	✓	✓	✓	✓
"Softknee" variable 30dB compressor				✓

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Visit Our Booth 325 At NAB
Circle (92) on Action Card

Directory of Equipment and Services

COMPANY	BOOTH NUMBER	MAP LOCATOR NUMBER
Oak Communications	1331	B5
TFT Inc.	109	N6
Telemet	1003	G7
Exciters, AM, FM, TV		
Broadcast Electronics	303	M7,8
CSI Electronics	507	K,L5
Comark Communications	1217	F5
Elcom/Bauer	412	M3,4
Harris Corp., Broadcast Products	401	K,L7
Kahn Communications	625	K2
LPB Inc.	405	L6
McMartin Industries	701	L7
Marconi Electronics	1609	H2
Motorola	411	L5
Microdyne	1129	B8
	132	N2
NEC America	1415	F3,4
Philips Television Systems	1409-A	G3,4
Power Pak Systems	206-A	N4
Scientific-Atlanta	1017	E,F7
Townsend Associates	1420	F2
Wilkinson Elec./TV Technology	305	M6,7
Fiber Optic Systems		
Andrew	1202	H,I4
Artel Communications	1118	B6
BIW Cable Systems	1405	H3
Bosch (Fernseh)	1603	I,J1,2
John Chiles	1747	B2
Grass Valley Group	1207	G5,6
Jenel Consultants	1338	A4
M/A-COM Video Systems	1004	G6,7
Telemet	1003	G7
Field Strength Meters		
Leader Instruments	1702	C1
Potomac Instruments	100	N8
Film Chain Equipment		
Bosch (Fernseh)	1603	I,J1,2
Delcom	1507	B3
Dubner Computer Systems	1630	E,F1
Hitachi Denshi America Ltd.	1402	I2-4
Ikegami Electronics	1013	F7
Laird Telemedia	1721	C2
Magnasync/Moviola Corp.	1147	B8
Marconi Electronics	1609	H2
Multi-Track Magnetics	1712	B1
Nytone Electronics Corp.	1135	B8
RCA Corporation	1000	I,J6,7
Rank Cintel	1219	F5,6
Frame Store Synchronizers		
ADDA Corporation	1100	C,D6
Apert-Herzog	1703	D1
Asaca/Shibasoku	1217	F5
The Camera Mart	1018	E6
Delcom Corporation	1507	B3
Digital Video Systems	1017-A	E,F7
Harris Corp., Broadcast Products	401	K,L7
International Video Corp.	1509	A,B3
MCI/Quantel	1631	E1,2
Microtime	1230	E4,5
Midwest Corporation	1017	B,C1
NEC America	1415	F3,4
Tektronix	1601	J2
Thomson-CSF Broadcast	1001	H,I7
Generators, AM Stereo		
Belar Electronics Lab	300	M6
Elcom Bauer	412	M3,4
McMartin Industries	701	L7

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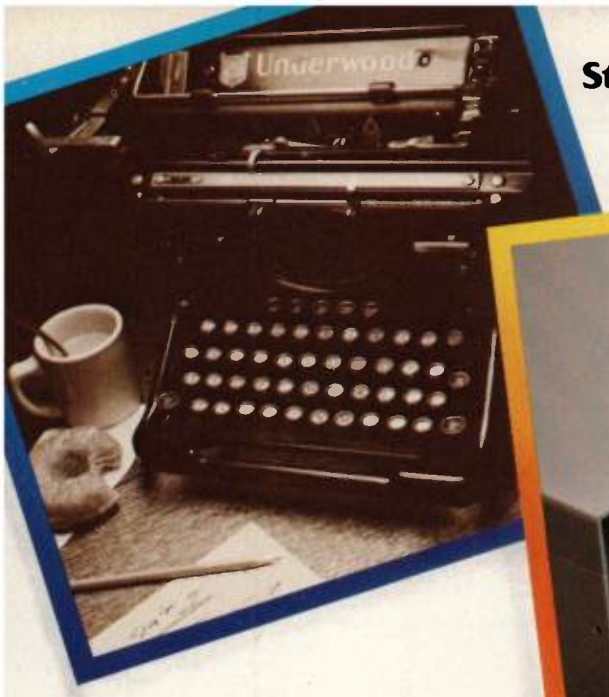
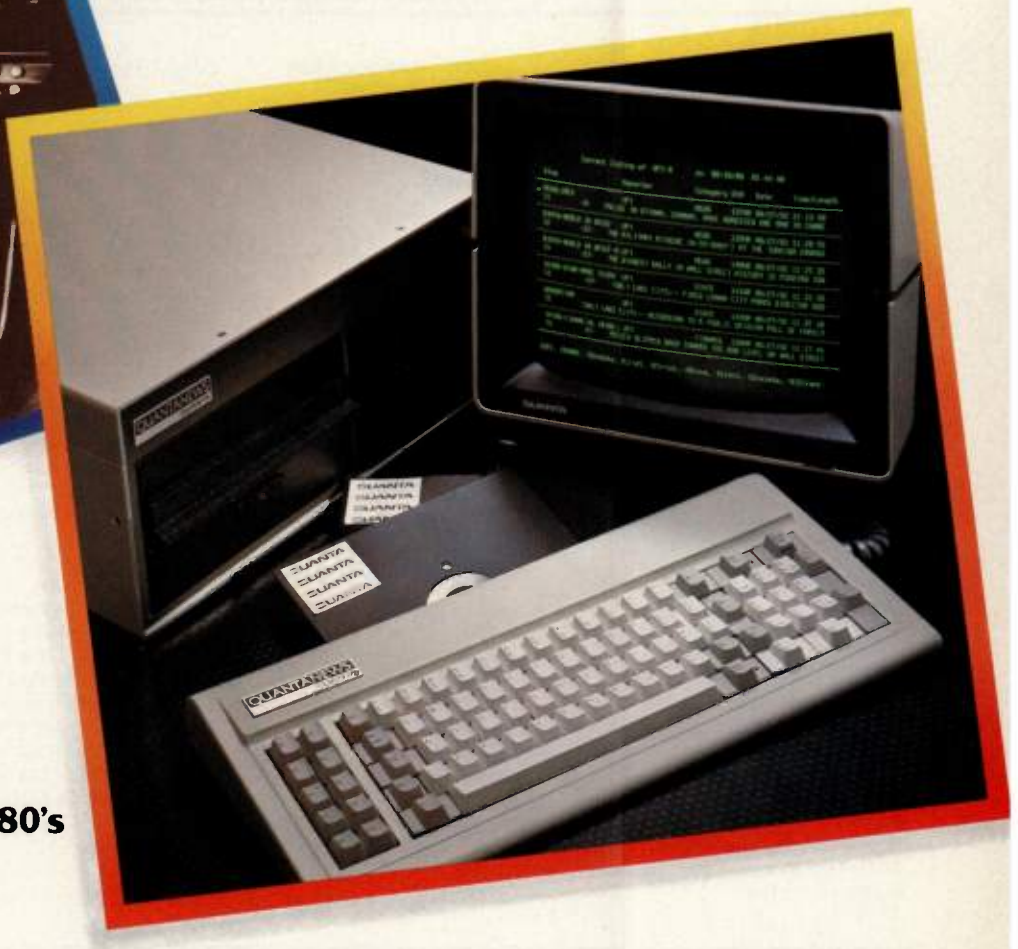


Standard for the 40's



News Standard for the 80's

QUANTANEWS—The Best of Both Worlds

We are willing to bet there is at least one person in every radio and television newsroom in America still using an old Underwood. For those people still living in the Underwood Age, Quanta™ has a message. QUANTANEWS™ makes it possible for you to keep that personal relationship with your typewriter and still move surely and confidently into the world of computer-assisted news writing and management. Relax, it's not going to be painful at all.

QUANTANEWS is designed to be as friendly as a personal computer, while remaining an important news writing and management tool for the newsroom.

QUANTANEWS features include:

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- Word processing for text editing of full screen or script format composition.
- Incoming wire service information organized, sorted, and stored by category can be searched by header, word, or word string.

QUANTANEWS will help you to be better organized, more effective, and able to produce more copy with greater accuracy in less time. All this and more starting for under $30,000.

We at Quanta are so confident QUANTANEWS can assist in the handling of your news management needs that we have a challenge for television and radio news directors, chief engineers, assignment editors and reporters. Tell us about any situation in your newsroom that results in wasted time, money, materials and manpower. If we can't show you a way to solve that problem, we'll present you with a special memento from the decade of the '40s. Call Laura Lunceford in Salt Lake City or Bill Baker in Florida at (904) 764-9934 about your newsroom situation.

QUANTA

Quanta Corporation 2440 So. Progress Drive Salt Lake City, Utah 84119 (801) 974-0992

TM Quanta

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COMPANY	BOOTH NUMBER	MAP LOCATOR NUMBER
Marcom	306	M3
Generators, FM Stereo		
Broadcast Electronics	303	M7,8
Elcom-Bauer	412	M3,4
Leader Instruments	1702	C1
McMartin Industries	701	L7
Marcom	306	M3
Marconi Electronics	1609	H2
Moseley Associates	301	M8
Orban Associates	607	K5
Power Pak Systems	206-A	N4
QEI Corporation	307	M6
Singer Broadcast Products	309	M6
Sony Corporation of America	1200	I,J4-6
Wilkinson/TV Technology	305	M6,7
Generators, Signal Pattern		
Amtron	1104	C7
Asaca/Shibasoku Corporation	1217	F5
Centro Corporation	1101	C,D7
For-A Corporation	1306	B4
Industrial Sciences	1232	E5
Leader Instruments	1702	C1
Lenco, Electronics Division	1419	E3,4
Philips Test & Measuring	1408	H3
Tektronix	1601	J2
Telemet	1003	G7
UREI	513	L2
Headphones, Speakers/Intercoms		
AKG Acoustics	508	L2
Audio-Technica	1141	B8

COMPANY	BOOTH NUMBER	MAP LOCATOR NUMBER
BGW Systems	421	L2
Beyer Dynamic	426	M2
Broadcast Audio	213	M1
The Camera Mart	1018	E6
Clear-Com Intercom Systems	1502	B2
Compact Video	1142	A6
Comprehensive Video Supply	1315	C6
Farrtronics	1735	C2
HM Electronics	1130	A7
Logitek	613	K2
MRI Systems Limited	207	M,N4
Panasonic Professional Audio	437	L1
R-Columbia	1111	C8
RTS Systems	1142	A6
Roh Corporation	1634	E1
Ramko Research	415	L3,4
Research Technology International	1626	F1
Sennheiser	1137	B8
Sescom	112	N6
Shure Brothers	1602	J1
Sony Corp. of America	1200	I,J4-6
Stanton Magnetics	102	N8
Studer ReVox America	201	M,N7
Swintek Enterprises	1345	A6
Teac Corp. of America	1304	B4
Television Equipment Associates	1216	G4,5
Telex Communications	600	K6,7
TelFax Communications	635	K2
Theatre Service & Supply	1513	A3
Tweed Audio	313	M5
UREI	513	L2
United Research Lab	406-A	M4
Ward-Beck Systems	1224	F4

Continued on page 120

Choose from two new recording electronics packages from Inovonics.

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

☐ Advanced circuitry to reduce the effects of tape compression and phase distortions.
☐ Unprecedented signal and bias headroom for full compatibility with highest-coercivity tapes.
☐ Two "workhorse" EQ and bias settings, plus an optimized mode with separate setup for best performance from "super" tapes.
☐ Compatibility with virtually any combination of transports and heads.
☐ SYNC reproduce, "pick-up" record and exclusive auto mute.
☐ Remote control of all functions.

The perfect pair.

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

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

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

Inovonics Inc.

503-B Vandell Way
Campbell, CA 95008

Telephone
(408) 374-8300

Circle (94) on Action Card

"The Electro-Voice Sentry® 500 is a monitor by design."

Greg Silsby talks about the New Sentry® 500 studio monitor...

Everyone expects a studio monitor system to provide a means of quality control over audio in production.

True, other audio test equipment can supply you with valuable data. But that data by itself is incomplete and only displayed in visual form.

Only a true studio monitor speaker system can deliver an accurate indication of audio quality in... **audio**! After all, this is the language of the trained ear and doesn't require a complex interpretation process.

I believe the Electro-Voice Sentry 500 Studio Monitor System will meet your every expectation.

What's a "studio monitor?"

The term "studio monitor" is often a misnomer. It's easy to tack a label on a box and call it a "studio monitor" without including the best precision engineering available, and careful attention to application design. Too often, these all-important considerations are traded-off for such marketing reasons as high cosmetic appeal, a particular type of popular sound, and low component manufacturing cost. While all of this may translate into high profit margins for the manufacturer it does nothing to produce a reliable standard for audio testing and evaluation.

Linear frequency response

The Sentry 500 follows the well-established Electro-Voice tradition of combining the most advanced engineering and manufacturing technology available. The Sentry 500 has been carefully thought-out and built to meet the specific needs of the audio professional. Like the smaller Sentry 100A, the Sentry 500 provides linear response throughout its range (40-18,000 Hz ± 3 dB). In fact, because the two systems share this linearity, program material may be mixed on one, sweetened on the other, with complete confidence in quality. Acoustic "Time Coherence" (the synchronous arrival of acoustic wave fronts from both high and low-frequency drivers) has been maintained through careful crossover design and driver positioning.

Constant Directivity

The Sentry 500 is a Constant Directivity System, benefitting from years of E-V experience in the design and application of constant directivity devices. Utilizing a unique E-V-exclusive high-frequency "Director", the Sentry 500 provides essentially uniform coverage over a 110° angle from 250 Hz on up to 10 kHz and 60° dispersion from 10 kHz clear out to 18,000 Hz! And it does this on both the vertical and horizontal axes. This means the "sweet spot", once a tightly restricted area large enough for only one set of ears, has been broadened to allow accurate monitoring by the engineer, producer, and talent—all at the same time. That's what we call Constant Directivity.

A monitor by design

To qualify as a truly accurate test device, a monitor speaker system must faithfully reproduce the wide dynamic range required by today's music and current digital recording techniques, and do it with low distortion. This is no problem for the Sentry 500 which combines the high efficiency of an optimally-tuned Thiele-aligned cabinet to the brute power handling of Electro-Voice Sentry components. Consider what you get with proven E-V components in the Sentry 500: the Sentry 500 will deliver 96 dB at one meter with only one watt and yet will handle 100 watts continuous program material with 6 dB of headroom. That's 400 watts on peaks! The same Super-Dome®/Director combination which maintains uniform dispersion of linear response out to 18 kHz also handles a full 25 watts of program power or 5 times the power handling capacity of most "high powered" tweeters. After all, tweeters should convert electrical energy to acoustical energy—not to smoke and fire.

The Sentry 500 is another no-nonsense Electro-Voice Sentry design with the incredible performance and credible price you've learned to expect from EV. I'd like to tell you the rest of the Sentry 500 story and send you the complete Engineering Data Sheet. Write to me: Greg Silsby, Market Development Manager/Professional Markets, Electro-Voice, Inc., 600 Cecil Street, Buchanan, Michigan 49107.

Greg Silsby

Market Development Manager, Professional Markets

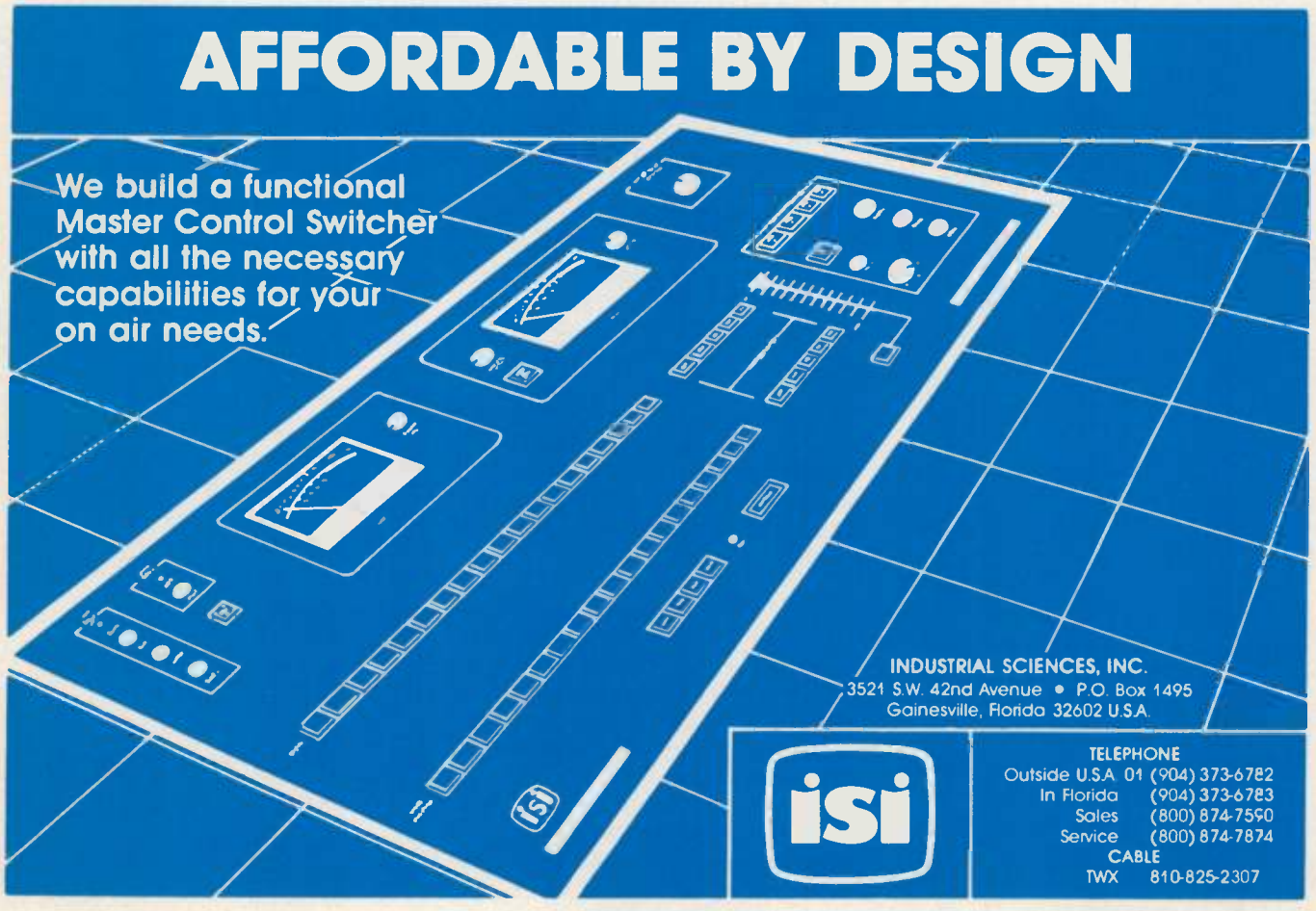
Electro-Voice®
SOUND IN ACTION™

Circle (95) on Action Card

a gulton company

COMPANY	BOOTH NUMBER	MAP LOCATOR NUMBER
Helicopters & Tracking Systems		
Bell Helicopter	1734	B2
Enstrom Helicopter	1700	D1
M/A-COM Video Systems	1004	G6,7
Lenses and Lens Services		
Angenieux	1201	H,I5,6
Arriflex	1644	D1
The Camera Mart	1018	E6
Canon U.S.A.	1012	F6
Cinema Products	1221	E5,6
Comprehensive Video Supply	1315	C6
Film/Video Equipment Service	1153	B8
Fujinon Inc.	1411	F3
Karl Heitz	1115	C8
Midwest Corporation	1710	B,C1
Research Technology International	1626	F1
Tamron	1640	E1
Tele-Cine	1403	H3,4
Lights and Lighting Accessories		
Anton/Bauer	1337	A5
Anvil Cases	1112	B7
Arriflex	1644	D1
B-W Lighting Systems	1733	C2
Belden Communications	1416	G2
Bogen Photo	1705	D2
The Camera Mart	1018	E6
John Chiles	1747	B2
Cine 60	1423	E3
Cinema Products	1221	E5,6
Cinemills	1140	A7
Colortran	1205	H5,6
Comprehensive Video Supply	1315	C6
Cool Light Company	1322	A4
Dynamic Technology	1719	C2
EG&G	1327	B6
Electro Controls	1159	A8
Film/Video Equipment Service	1153	B8
Flash Technology	1619	G2
Frezzolini Electronics	1107	C8
General Electric	1109	C8
The Great American Market	1108	C7
Karl Heitz	1115	C8
Kliegel Brothers	1604	J1
Lowel-Light	1309	C6
Matthews Studio Equipment	1775	A2
Magnum Towers	119	N4
PEP	1208	H4,5
Perrott Engineering	1729	C2
Olesen	1307	C,D5
Rosco Labs	1235	D5
Strand Century	1418	G2,3
Sylvania Lighting/GTE	1204	I4,5
Theatre Service & Supply	1513	M3
Theatrical Services	1759	B2
Lightning & Powerline Protection Systems		
The Camera Mart	1018	E6
Compact Video	1142	A6
Lightning Elimination Associates	302	M4
Wilkinson/TV Technology	305	M6,7
Limiters and Compressors		
Broadcast Electronics	303	M7,8
Circuit Research Lab	106	N7

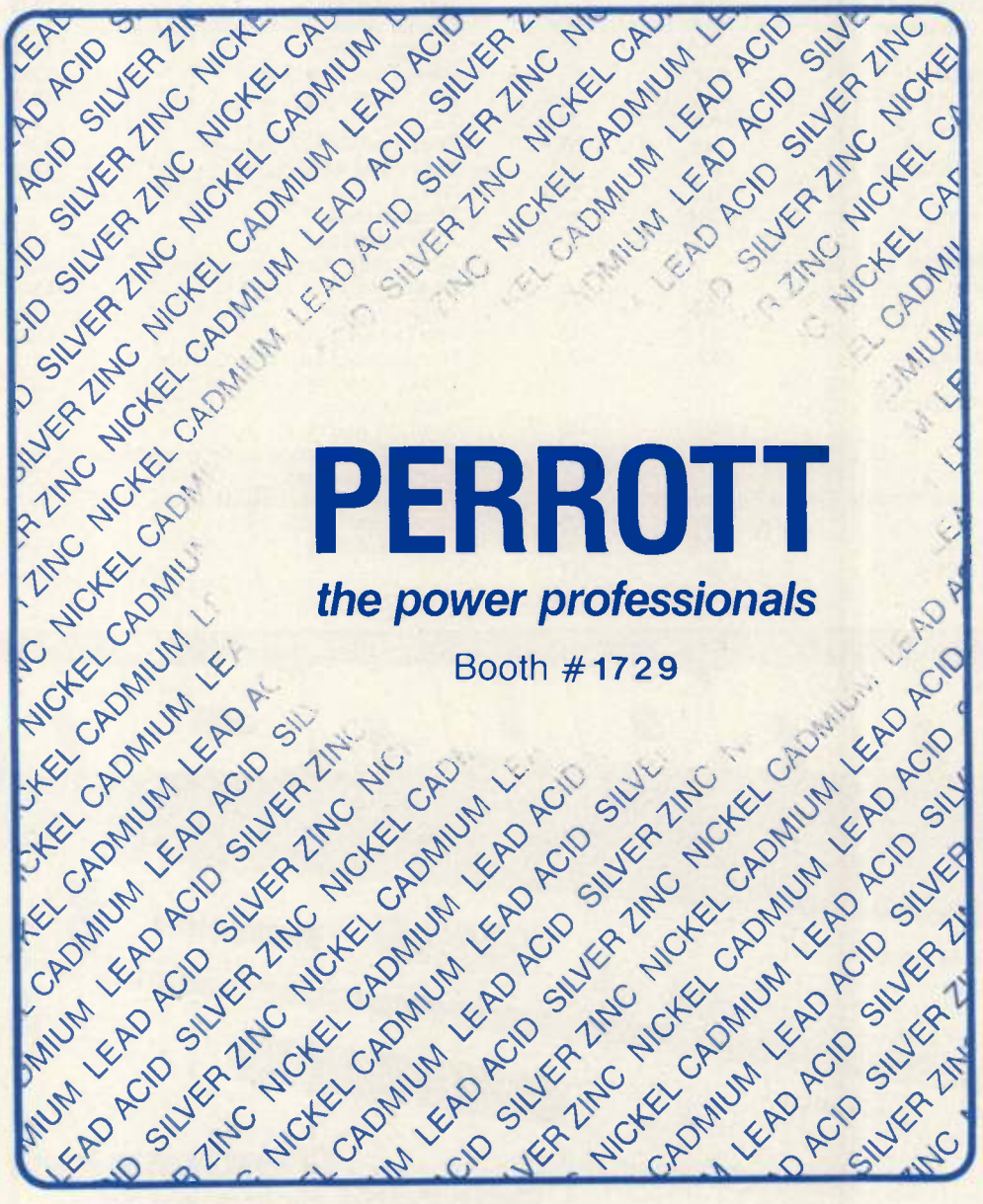
Continued on page 122



Circle (96) on Action Card

Come to **us** and see what's new in the industry

NAB **1983**



PERROTT **ENGINEERING LABS, INC.**

7201 LEE HIGHWAY, FALLS CHURCH, VIRGINIA 22046

(703) 532-0700 528-5861

Circle (97) on Action Card

COMPANY	BOOTH NUMBER	MAP LOCATOR NUMBER
Datatronix	1504	B2
Dorrough Electronics	312	M2
Elcom-Bauer	412	M3,4
Gotham Audio	503	L6
Gregg Labs	455	L1
Inovonics	304	M4
McMartin Industries	701	L7
MRI Systems Limited	207	M,N4
Marti Electronics	501	L6,7
Modular Audio Products	325	M2
Rupert Neve	1410	G2
Orban Associates	607	K5
Ramko Research	415	L3,4
Roh Corporation	1634	E1
Sescom	112	N6
Thomson-CSF Broadcast	1001	HI7
UREI	513	L2
Ward-Beck Systems	1224	F4
Loads and Wattmeters		
Bayly Engineering	500	L5
Bird Electronic	1625	F2
Electro Impulse	117	N5
Shively Laboratories	623	K3,4
Low Frequency Extenders		
Comrex	400	M6
Marcom	306	M3
Microwave, STL and Remote Pickup Equipment		
Bayly Engineering	500	L5
Andrew Corporation	1202	HI4
Cablewave Systems	108	N7

COMPANY	BOOTH NUMBER	MAP LOCATOR NUMBER
Comsearch	1136	A6
Delta Electronics	105	N7
Harris Corp., Broadcast Products	401	KL7
Ikegami Electronics	1013	F7
M/A-COM Video Systems	1004	G6,7
Marti Electronics	501	L6,7
McMartin Industries	701	L7
Moseley Associates	301	M8
NEC America	1415	F3,4
Nurad	1426	F2
Phelps Dodge	1007	G6,7
Power Pak Systems	406-A	N4
R.F. Technology	1306	B4
TFT Inc.	109	N6
Thomson-CSF Broadcast	1001	H,I7
Townsend Associates	1420	F2
Microphones		
AKG Acoustics	508	L2
Allied Broadcast Equipment	639	K2
Audio-Technica	1141	B8
Beyer Dynamic	426	M2
The Camera Mart	1018	E6
Comprehensive Video Supply	1315	C6
Crown International	428	M2
Electro-Voice	511	L3,4
Gotham Audio	503	L6
David Green Broadcast Consultants	417	L3
Marti Electronics	501	L6,7
Panasonic Professional Audio	437	L1
Sennheiser	1137	B8
Shure Brothers	1602	J1

Continued on page 124

. . . Shintron's New
Edit Code Generator
Edit Code Reader/Raster Display

The Shintron Model 646 reads SMPTE or EBU code, displays data in eight digit, half inch high LED numerals and lets you key in data on the video raster in black or reverse letters. Readable tape speed is from 1/16 to 40 X. Front panel selection switch displays user code.

The Model 647 generates SMPTE/EBU code either independently or in sync with incoming video. Time data is easily reset and user bits are set by thumb wheels on the front panel.

Circle reader service card or call (617) 491-8700 for information.

SHINTRON

144 Rogers Street, Cambridge, MA 02142 • Tel: (617) 491-8700 Telex: 921497
Shintron Europe • 198 Avenue Brugmann, 1180 Brussels, Belgium • Tel: 02-347-2629 Telex: 61202

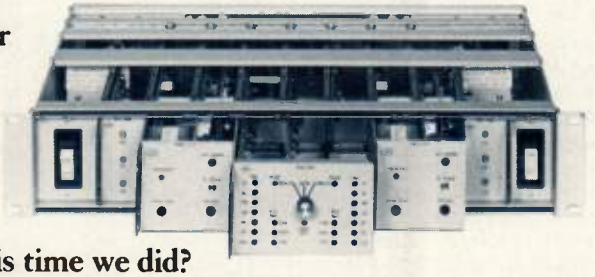
Circle (98) on Action Card

Who's Pulsing the Editors?

Convergence, CMX, Datatron, and Videomedia know something about RS-170A Sync Generators that you should know.

These and other leading manufacturers are committed to producing the ultimate in quality videotape editing equipment. How? By using the PMG-312 Master Sync Generator system to test and pulse their editing systems.

The complete dual sync system consists of a dual power supply frame, two RS-170A Generators, and an Automatic Changeover. The Automatic Changeover meters each generator pulse and DC voltage for fault indication. The PMG-312 offers chrominance subcarrier with an accuracy of .35Hz stability over a one year period. Subcarrier to horizontal phase relationship is maintained in reference to line 10, RS-170A. Black burst is optional. Professional broadcast quality at very attractive prices. Two year parts and labor warranty.



These manufacturers of editing systems know who's pulsing the system and now so do you. Is Lenco pulsing your editing equipment? Don't you think it is time we did?

Lenco, Inc., Electronics Division 300 N. Maryland St. Jackson, Missouri 63755.
Telephone: (314) 243-3147

Engineered and manufactured in the United States LENCO *The Professionals' Choice*

Circle (99) on Action Card

When YOU want
NICKEL CADMIUM

PE 52
Lighting or
Camera

28.8 volt 4 AH
or
14.4 volt 8 AH
in one unit

dual output belt

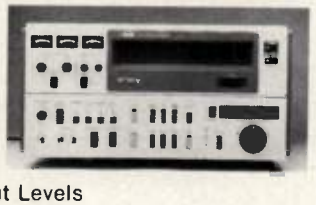
Versatile • Rugged • Economical

YOU want
PERROTT
a name you can depend on
7201 Lee Highway, Falls Church, Va. 22046 (703) 532-0700

Circle (100) on Action Card

ALPHATIZED VO-5850
FOR BROADCASTERS
AND PRODUCTION HOUSES

The features of the machines are:



- Balanced Audio In
- Balanced Audio Out
- XLR Connectors
- +4dB Audio Input
- +4dB Audio Output
- Switchable Audio Input Levels
- Switchable Input Impedance
- Increased Shuttle Speed
- Head Switch In Vertical Blanking
- Auto External Sync Lock In Playback
- Adjustable Audio Playback Level With Preset
- Adjustable Audio Record Level With Preset

ALPHA VIDEO & ELECTRONICS CO.
28 East Mall Plaza; Carnegie, Pa. 15106; (412) 923-2070

SEE US AT NAB BOOTH #1722
Circle (101) on Action Card

Directory of Equipment and Services

COMPANY	BOOTH NUMBER	MAP LOCATOR NUMBER
Sony Corp. of America	1200	IJ4-6
Teac Corp. of America	1304	B4
Television Equipment Associates	1216	G4,5
Telex Communications	600	K6,7
Modulators and Demodulators		
Artel Communications	1118	B6
Asaca/Shibasoku	1217	F5
Blonder-Tongue Labs	1134	A6
The Camera Mart	1018	E6
Comark Communications	1226	F4
Comprehensive Video Supply	1315	C6
Comtech Data	314	M1
Harris Corp., Broadcast Products	401	K,L7
McMartin Industries	701	L7
Microdyne	1129	B8
	132	N2
Moseley Associates	301	M8
Philips Test & Measuring	1408	H3
QSI Systems	1325	B5,6
R.F. Technology	1306	B4
Rhode & Schwarz Sales	1203	H5,6
Scientific-Atlanta	1017	E,F1
Tektronix	1601	J2
Telemet	1003	G7
Videotek	1633	D2
Wilkinson/TV Technology	305	M6,7
Multiplexer Systems, Digital		
Artel Communications	1118	B6
The Camera Mart	1018	E6
NEC America	1415	F3,4
Thomson-CSF Broadcast	1001	H,I7
Noise Reduction Systems		
ATI-Audio Technologies	420	M2
Aphex Systems	515	L2
dbx Inc.	621	K3,4
Dolby Laboratories	1311	D5,6
Faroudja Laboratories	1753	B2
For-A Corporation	1306	B4
Fostex Corp. of America	1739	C2
Gotham Audio	503	L6
Inovonics	304	M4
Micmix Audio Products	604	K3,4
Microtime	1230	E4,5
Philips Television Systems	1409-A	G3,4
Straight Wire Audio	408	M4
Thomson-CSF Broadcast	1001	HI7
Pedestals, Tripods & Heads		
Bogen Photo	1705	D2
The Camera Mart	1018	E6
Comprehensive Video Supply	1315	C6
Delcom	1507	B3
Karl Heitz	1115	C8
Innovative Television Equipment	1215	F5,6
Listec Television Equipment	1406	H2,3
Matthews Studio Equipment	1775	A2
O'Connor Engineering Labs	1229	D5
Quick-Set	1009	G7
Sachtler	1648	D1
Processing & Equalizing Equipment		
ATI-Audio Technologies	420	M2
Aphex Systems	515	L2
Auditronics	505	K,L6
Broadcast Technology	1701	D1
Circuit Research Labs	106	N7
Connectronics	608	L2
dbx Inc.	621	K3,4

Continued on page 126

Bob Taylor, General Manager of Wilmington's WDEL-AM and WSTW-FM says, "We've had Auditronics 200 Series consoles on-line for over six months and our sound's superiority is reflected in listener response. The psychological effect on our own on-air people was immediate and positive. They find the Auditronics boards comfortable to work with, whether it's the 212 in the news booth, the 218s in the production rooms or the 224 in AM master control.

"Best of all, when it came to price, Auditronics was affordable. I don't mean the cheapest; I mean cost/efficient. For a few extra dollars, we have future expansion capability and the customizing that we needed. To us, that's what affordable really means."

For complete product information and a report on why WDEL's Bob Taylor chose four Auditronics 200 Series consoles for his new facilities, contact:

auditronics, inc.

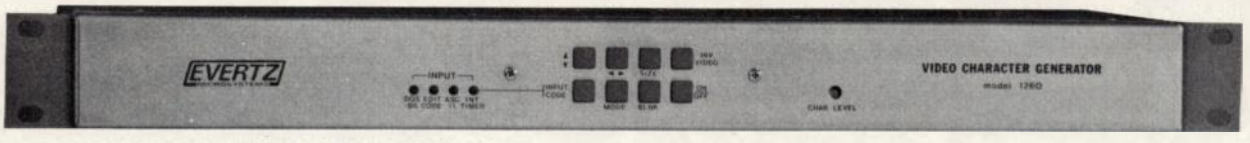
3750 Old Getwell Road
Memphis, Tennessee 38118 USA
(901) 362-1350 TELEX: 533356

Circle (102) on Action Card

COMPANY	BOOTH NUMBER	MAP LOCATOR NUMBER
Datatek	1428	E2
Datatronix	1504	B2
Di-tech	1301	D5,6
Dorrough Electronics	312	M2
Dynair Electronics	1404	H2,3
Eventide	323	M2
For-A Corporation	1306	B4
Graham-Patten Systems	1227-A	D6
Gregg Labs	455	L1
Harris Corp., Broadcast Products	401	K,L7
Inovonics	304	M4
Integrated Sound Systems	327	M2
Leitch Video of America	1021	D7
MRI Systems	207	MN4
McMartin Industries	701	L7
Micmix Audio Products	604	K3,4
Rupert Neve	1410	G2
Orban Associates	607	K5
Quad-Eight	1636	E1
Sony Corp. of America	1200	IJ4-6
Television Equipment Associates	1216	G4,5
Thomson-CSF Broadcast	1001	HI7
Tweed Audio	313	M5
UREI	513	L2
United Research Lab	406-A	M4
Vital Industries	1212	H4,5
Program Services		
Aurora Systems	1312	B3
CBS Radio News Service	606	L2
Century 21 Programming	204	N4,5
Colorgraphics Systems	1116	B6
Drake-Chenault	408	M4
Otis Conner Productions	414	M3
Music Directors Programming	217	M2
The Musicworks	209	N4
Oak Communications	1331	B5
Taft (Prime Time Radio)	629	K2
William Tanner	410	M4
Turner Program Services	125	N3,4
Valentino Inc.	1231	D6
Wold Communications	1515	A3
Recorders, Audio		
Allied Broadcast Equipment	639	K2
Ampex Corporation	1400	J2,3
Ampro/Scully	407	L5,6
Bayly Engineering	500	L5
Broadcast Audio	213	M2
Broadcast Electronics	303	M7,8
CeCo Communications	118	N5
Dictaphone	211	N3,4
Fostex Corp. of America	1739	C2
Gotham Audio	503	L6
Inovonics	304	M4
International Tapetronics/3m	107	MN6
MCI, Division of Sony	605	K5,6
Micro-Trak Corporation	619	K4
Midwest Corporation	1710	B,C1
Multi-Track Magnetics	1712	B1
Nagra Magnetic Recorders	1213	G5,6
Rupert Neve	1410	G2
Otari	601	K6,7
Panasonic Professional Audio	437	L1
Quantum Audio	134	N2

Continued on page 128

Look at what the VCG 1260 could do for you!



The Evertz Model VCG 1260 is an exceptionally versatile Video Character Generator offering so many features that it could virtually give your productions an entirely new look! Here are some of the things it can enable you to do.

- Key the time of day and/or your logo over station IDs or your morning test signal.
- Generate a production slate board complete with presettable down counter and automatic blanking at 2 seconds.
- Burn edit code into video for off-line editing (SMPTE decoder built in).
- Insert messages, subtitles or tape indexes on the leader using your keyboard or terminal.
- Insert either elapsed or lap time to 0.01 seconds resolution, or insert scores, during coverage of sports events.

With the VCG 1260 you can do it all, and more! It has a keyer and two PGM outputs, RS 232 serial input, SMPTE and DQS-B6 time code inputs, built-in sports timer with single button remote START-FREEZE-RESET, black or white characters with edging, size and position control, and a price that anyone can afford.

TIME CODE READER

SLATE BOARD

TAPE INDEX

SPORTS TIMER

ONLY

$2,480

EVERTZ MICROSYSTEMS

A Division of Dynaquip Ltd.,
3515 Mainway, Burlington, Ontario,
Canada L7M 1A9.
Telex: 061-8784 Tel: (416) 355-3700.

Circle (103) on Action Card

Now Available

3-D

For All Elicon® Systems The Revolutionary Three-Dimensional Software Package

The 3-D Software Package allows you to film both the right eye and left eye registers for three dimensional projection entirely in the camera without the need for expensive opticals. Image degrading beam splitters and lenses as well as multiple cameras are no longer necessary. This unique programming is available for the 825 Animation Stand System, the 820 Tracking Camera System and the Elicon® CCS® Boom Arm System. Call for details.

ELICON®

254 Viking Avenue • Brea, California 92621
(714) 990-6647

Circle (104) on Action Card

Our new 1983 Mobile Television Production System will be on display at the forthcoming NAB Convention in Las Vegas.

Proving again that quality is being cost effective—$160,000 puts you on the road with 2 Hitachi Cameras, Sony Recorders w/editing, full complement of audio/video and a 22-foot mobile that promises to give you years of performance.

Stop by and see what **Shook** and **Magnetic Media** have brought to the industry for 1983—Booth #1310.

See you at the show!!

Shook Electronic Enterprises, Inc.
San Antonio, Texas Phone (512) 653-6761

Circle (105) on Action Card

You'll meet your match with our

EDITING CONSOLES

No matter what VTR equipment you use, Winsted offers Editing Consoles to **match your requirements!** Our designs are based on consultations with professional users like yourself.

You've chosen your VTR equipment carefully, to meet your specific needs. Now choose the Editing Consoles that fit your equipment - quality consoles from Winsted.

For our free full-color FULL-LINE CATALOG call us toll-free:

800-328-2962

Winsted

9801 James Circle
Minneapolis, MN 55431

SEE US AT NAB BOOTH #1238
Circle (106) on Action Card

Directory of Equipment and Services

COMPANY	BOOTH NUMBER	MAP LOCATOR NUMBER
Ramko Research	415	L3,4
Rank Cintel	1219	F5,6
Scribe Recorders	214	N2
Sony Corp. of America	1200	IJ4-6
Stephens Electronics	1757	B2
Studer ReVox America	201	M,N7
Teac Corp. of America	1304	B4
Telex Communications	600	K6,7
UMC Electronics	114	N5,6
United Research Labs	406-A	M4
Remotes, Audio Equipment		
ATI-Audio Technologies	420	M2
CSI Electronics	507	K,L5
Connectronics	608	L2
Dynair Electronics	1404	H2,3
Hallikainen & Friends	306	M3
Logitek Electronic Systems	613	K4
Harrison Systems	1324	A3,4
MRI Systems	207	MN7
McMartin Industries	701	L7
Marti Electronics	501	L6,7
Micro-Trak	619	K4
Nagra Magnetic Recorders	1213	G5,6
Ramko Research	415	L3,4
Russco Electronics	413	L4
Sescom	112	N6
Shure Brothers	1602	J1
Stephens Electronics	1757	B2
Teac Corp. of America	1304	B4
Telfax Communications	635	K2
Tweed Audio	313	M5
UMC Electronics	114	N5,6
Satellite Distribution Services		
Compucon	1616	I1
Comsearch	1136	A6
Kavouras	1635	D1
M/A-COM Video Systems	1004	G6,7
Oak Communications	1331	B5
Western Union	1307	CD5
Wold Communications	1515	A3
SCA Equipment		
Belar Electronics Lab	300	M6
Circuit Research Lab	106	N7
Elcom-Bauer	412	M3,4
McMartin Industries	701	L7
Marti Electronics	501	L6,7
QEI Corporation	307	M6
TFT Inc.	109	N6
Wilkinson/TV Technology	305	M6,7
Slow-Motion Replay Equipment		
The Camera Mart	1018	E6
Datatron	1005	G7
Eigen Video	1227	D6
Hitachi Denshi America	1402	I2-4
Marconi Electronics	1609	H2
Sony Corp. of America	1200	IJ4-6
Special Effects Equipment & Generators, Audio		
ATI-Audio Technologies	420	M2
AKG Acoustics	508	L2
Advanced Music Systems	1330	A4
The Camera Mart	1018	E6
Connectronics	608	L2
Crosspoint Latch	1321	B5
Eventide	323	M2
Graham-Patten Systems	1227-A	D6
Integrated Sound Systems	327	M2
Interand	1622	F1
Lexicon	1139	B8

Continued on page 130

Every sound engineer's tool kit should have one.

The Ursa Major Space Station is one of those basic sound processing tools every sound engineer needs. It's a reverberation system. A delay line. An echo generator. A voice enhancer. A stereo simulator. An incredibly versatile special effects device.

In fact, the Space Station will let you create an almost infinite variety of acoustic spaces and time-delay effects. And this versatility doesn't come at the expense of sound quality or ease of use—both are exceptional.

The price? A very reasonable $2,195 (U.S. only).

We invite you to write us soon for detailed Space Station specifications, and for the name of an Ursa Major dealer near you who will arrange a hands-on demonstration.

Because without the Space Station, your tool kit just isn't complete.

The SPACE STATION

URSA MAJOR, Inc.

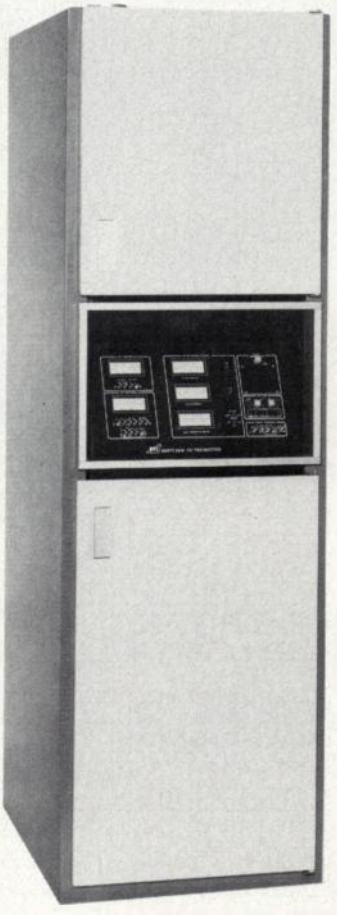
Box 18, Belmont, MA 02178 • Telephone (617) 489-0303
Telex: 921405 URSAMAJOR BELM

Circle (107) on Action Card

What's New At The NAB?

A fully remote controlled FM transmitter with features for total automation and satellite feed.

A transmitter with micro-processor based digital diagnostics, built-in alarm points, a memory, even the ability to talk to the factory's computer.



The New 695T1KW

All of this with a super-low distortion exciter, in a totally solid-state one kilowatt transmitter. Or, a single tube 3.5 kilowatt.

Get both from QEI, the FM people. For more information call John Tiedeck at 609-728-2020

See us at booth #307

QEI Corporation

Box D / Williamstown, NJ 08094
Phone (609) 728-2020
Telex II (TWX) 710 942 0100

Circle (108) on Action Card

Directory of Equipment and Services

COMPANY	BOOTH NUMBER	MAP LOCATOR NUMBER
Micmix Audio Products	604	K3,4
Orban Associates	607	K5
Quad-Eight	1636	E1
Shintron	1421	E3
Thomson-CSF Broadcast	1001	H,I7
UMC Electronics	114	N5,6
Standards Conversion		
A. F. Associates	1611	GH2
MCI/Quantel	1631	E1,2
OKI Electric Overseas	1505	B3
Shintron	1421	E3
Storage Racks & Cabinets		
Allied Broadcast Equipment	639	K2
Amco Engineering	1218	G5
Anvil Cases	1112	B7
Broadcast Cartridge Service	611	K5
The Camera Mart	1018	E6
Comprehensive Video Supply	1315	C6
Research Technology Int'l	1626	F1
Storeel	1008	G6
Winsted Corporation	1238	D5
Switchers, Routing		
American Data Corporation	1409	G3,4
Amtel Systems	1745	B2
Auditronics	505	K,L6
Bosch (Fernseh)	1603	I,J1,2
Broadcast Technology	1701	D1
The Camera Mart	1018	E6
Central Dynamics	1409	G3,4
Datatek Corporation	1428	E2
Delcom	1507	B3
Di-tech	1301	D5,6
Dynair Electronics	1404	H2,3
Glentronix	1318	A3,4
Grass Valley Group	1207	G5,6
HEDCO	1225	D5
Image Video	1341	A5,6
Industrial Sciences	1232	E5
Leitch Video of America	1021	D7
MRI Systems	207	MN4
3M Magnetic A/V Products	1002	HI6
Ramko Research	415	L3,4
Telemet	1003	G7
Utah Scientific	1114	B6
Videotek	1633	D2
Vital Industries	1212	H4,5
Ward-Beck Systems	1224	F4
Switchers, Video		
American Data Corporation	1409	G3,4
Ampex Corporation	1400	J2,3
Asaca/Shibasoku Corporation	1217	F5
Beaveronics	1313	C6
Bosch (Fernseh)	1603	I,J1,2
Broadcast Video Systems	1326	A4
The Camera Mart	1018	E6
Central Dynamics	1409	G3,4
Comprehensive Video Supply	1315	C6
Crosspoint Latch	1321	B5
Delcom Corporation	1507	B3
Dynair Electronics	1404	H2,3
Echolab	1510	A2
For-A Corporation	1306	B4
Glentronix	1318	A3,4
Grass Valley Group	1207	G5,6
HEDCO	1225	D5
Image Video	1341	A5,6
Industrial Sciences	1232	E5
Lang Video Systems	1780	A1

Continued on page 132

The only way to go.

Edward Joseph

AUDIO EDITING

Up to 12 audio or video machines may be controlled or synchronized.

As many as 999 frame accurate, automated punch in/punch outs may be recorded at a time.

The time code locations of your sound effects and theme music library can be stored in a computerized directory and easily recalled when needed.

Options include control of some of the most widely used outboard processors for time compression or scene-by-scene correction of reverb, equalization, etc.

VIDEO EDITING

Two machine record capability permits A/B roll video editing while recording basic tracks on a synchronized multi-track audio master.

Many switcher effects and audio sweetening decisions can be made on the off-line edit decision list.

Elaborate audio and video decision lists can be separately created and combined prior to final on-line assembly.

Edit lists may be alternately formated to conform to proposed SMPTE standards.

Production switcher interfaces available to order.

Together.

Yesterday's editing systems just can't meet today's demand for high quality audio. Automated Studio Technologies solves this problem by introducing electronic audio editing techniques as sophisticated as those taken for granted in video production. Bridging the gap between these two industries allows us to provide the one editing system that is truly at home in either an audio or video post-production environment.

Audio sweetening has never been easier or more accurate. Recording an entire sequence of tightly timed sound effects, for example, becomes a simple matter of finding the cue points. Making changes is no problem either. We've even provided a way to put your entire music and effects library right at your fingertips! Combining this capability with frame accurate video editing means just three things: saving time, money and your nerves.

Automated Studio Technologies will be exhibiting at the NAB Show Booth Number 1122A.

Distributed through Harvey Professional Audio/Video, 25 West 45th St., New York, N.Y. 10036 (212) 921-5920

Circle (110) on Action Card

COMPANY	BOOTH NUMBER	MAP LOCATOR NUMBER
MRI Systems	207	MN4
Midwest Corporation	1710	B,C1
Ross Video	1110	B7
Scientific-Atlanta	1017	E,F7
Shintron	1421	E3
Utah Scientific	1114	B6
Vital Industries	1212	H4,5
Syndicated Music Sales & Production Aids		
Broadcast Programming Int'l	122	N4
Century 21	204	N4,5
Concept Productions	423	L2
Continental Recording	1157	M1
DeWolfe Music Library	1120	B6
Music Director Programming	217	M2
The Musicworks	209	N4
Peters Productions	315	M4,5
William B. Tanner	410	M4
Valentino Inc.	1231	D6
Synchronizers, Audio/Video		
ADDA Corporation	1100	C,D6
Ampex Corporation	1400	J2,3
Apert-Herzog	1703	D1
Asaca/Shibasoku	1217	F5
Audio Kinetics	1173	A8
BTX Corporation	1124	A6
The Camera Mart	1018	E6
Digital Video Systems	1017-A	E,F7
Fortel	1323	B5,6
International Video Corp.	1509	A,B3
MCI/Quantel	1631	E1,2
Midwest Corporation	1710	B,C1
Multi-Track Magnetics	1712	B1
NEC America	1415	F3,4
Nagra Magnetic Recorders	1213	G5,6
Sigma Electronics	1125	B8
Thomson-CSF Broadcast	1001	HI7
United Media	1300	B3
Tape, Audio & Accessories		
Agfa-Gavaert	1334	A4
Allied Broadcast Equipment	639	K2
Ampex Corporation	1400	J2,3
Anvil Cases	1112	B7
Audico	1343	A6
Broadcast Cartridge Service	611	K5
The Camera Mart	1018	E6
Capitol Magnetic Products	665	K2
CeCo Communications	118	N5
Comprehensive Video Supply	1315	C6
Dictaphone	211	N3,4
Fidelipac	103	N7,8
Fuji Photo Film U.S.A.	1413	F3,4
Inovonics	304	M4
3M/Scotchcart	203	MN7
Maxell Corp. of America	1612	I1
Nagra Magnetic Recorders	1213	G5,6
Nortronics	205	N6
Research Technology Int'l	1626	F1
Sony Corp. of America	1200	I,J4-6
Sound Technology	502	L5
Stephens Electronics	1757	B2
TDK Electronics	1707	D2
Teac Corp. of America	1304	B4
United Research Labs	406-A	M4
Tape Degausser		
CMC Technology	1103	C7
The Camera Mart	1018	E6
Christie Electric	1016	E6
Comprehensive Video Supply	1315	C6
Garner Industries	1233	D6

COMPANY	BOOTH NUMBER	MAP LOCATOR NUMBER
Glentronix	1318	A3,4
Nagra Magnetic Recorders	1213	G5,6
Nortronics	205	N6
Research Technology Int'l	1626	F1
UMC Electronics	114	N5,6
Tape, Video & Accessories		
Agfa-Gavaert	1332	A4
Allsop	1177	A8
Ampex Corporation	1400	J2,3
Anvil Cases	1112	B7
Asaca/Shibasoku	1217	F5
Audico	1343	A6
The Camera Mart	1018	E6
CeCo Communications	118	N5
Comprehensive Video Supply	1315	C6
Delcom	1507	B3
Fuji Photo Film U.S.A.	1413	F3,4
3M/Scotchcart	203	MN7
Maxell Corp. of America	1612	I1
Midwest Corporation	1710	B,C1
Nortronics	205	N6
Research Technology Int'l	1626	F1
Sony Corp. of America	1200	I,J4-5
TDK Electronics	1707	D2
Tamron	1640	E1
Television Equipment Associates	1216	G4,5
Telecine Equipment		
Bosch (Fernseh)	1603	I,J1,2
The Camera Mart	1018	E6
Dubner Computer Systems	1630	E,F1
Ikegami Electronics	1013	F7
L-W International	1305	D5
Laird Telemedia	1425	E3,4
Magasync/Moviola	1147	B8
Marconi Electronics	1609	H2
Multi-Track Magnetics	1712	B1
Porta-Pattern	1427	E3,4
Rank Cintel	1219	E5,6
Test Generators, Audio		
Amber Electro Design	422	L2
Asaca/Shibasoku	1217	F5
The Camera Mart	1018	E6
Leader Instruments	1702	C1
MRI Systems	207	MN4
Rupert Neve	1410	G2
Potomac Instruments	100	N8
Sescom	112	N6
Sound Technology	502	L5
Spencer Broadcast	337	M1
Tektronix	1601	J2
UREI	513	L2
Test Generators, Video		
Asaca/Shibasoku Corporation	1217	F5
The Camera Mart	1018	E6
Centro Corporation	1101	C,D7
Delcom Corporation	1507	B3
For-A Corp. of America	1306	B4
Leader Instruments	1702	C1
Leitch Video of America	1021	D7
Lenco, Electronics Division	1419	E3,4
MRI Systems	207	MN4
Philips Test & Measuring	1408	H3
Rohde & Schwarz Sales	1203	H5,6
Sigma Electronics	1125	B8
Tektronix	1601	J2
Telemet	1003	G7
Test Sets, Vertical Interval		
A.F. Associates	1611	GH2

Continued on page 134

Brilliant performer.

NEW WIRELESS

Model 82
Wireless Condenser
Hand-Held

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

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

All Cetec Vega hand-held wireless microphones (including the Model 80 with the Electro-Voice EV-671 dynamic element and the Model 81 with the Shure SM58 dynamic element) have an attractively contoured black case with internal antenna.

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

Cetec Vega hand-held wireless microphones are newly redesigned for 20 to 30 percent additional battery life, using a commonly available 9-volt alkaline battery (Duracell recommended). Microphone sensitivity is easily adjustable with an audio gain control on the bottom, with an adjacent LED indicator to verify optimum setup. Power and audio on/off switches are also conveniently located on the bottom.

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

Cetec Vega
Division of Cetec Corporation

Circle (111) on Action Card

COMPANY	BOOTH NUMBER	MAP LOCATOR NUMBER
Asaca/Shibasoku	1217	F5
Leitch Video of America	1021	D7
Rohde & Schwarz	1203	H5,6
Tektronix	1601	J2
Thermal Equalizers		
Telemet	1003	G7
Time Base Correctors		
ADDA Corporation	1100	C,D6
Ampex Corporation	1400	J2,3
Apert-Herzog	1703	D1
The Camera Mart	1018	E6
Delcom Corporation	1507	B3
Digital Video Systems	1017-A	E,F7
For-A Corporation	1306	B4
Fortel	1323	B5,6
Harris Corp., Broadcast Products	401	KL7
Hitachi Denshi America	1402	I2-4
International Video Corp.	1509	A,B3
Marconi Electronics	1609	H2
Merlin Engineering	1236	D4
Microtime	1230	E4,5
Midwest Corporation	1710	B,C1
RCA Corporation	1000	IJ6,7
Sony Corp. of America	1200	IJ4-6
Thomson-CSF Broadcast	1001	HI7
Time Code Equipment		
Amtel Systems	1745	B2
The BTX Corporation	1124	A6
Control Video	1157	A8
Convergence Corporation	1430	E2,3
Datatron	1005	G7
Datum	1708	C1
Delcom Corporation	1507	B3
Dictaphone	211	N3,4
EECO	1314	B4
EEG Enterprises	1155	A8
ESE	116	N5
	1757	B2
For-A Corp. of America	1306	B4
Glentronix	1318	A3,4
International Video Corp.	1509	A,B3
Jatex	1132	A7
Nagra Magnetic Recorders	1213	G5,6
Shintron	1421	E3
Skotel Corporation	1126	A6
Sony Corporation of America	1200	IJ4-6
Studer ReVox America	201	MN7
True Time Instruments	643	K1
Towers		
Allied Towers	409	L5
Atlas Tower	617	K4
Comark Communications	1226	F4
E-N-G Corporation	1022	D6
Forth Worth Tower	1010	F6
LeBlanc & Royle Comm. Towers	1149	B8
Magnum Towers	119	N4
Osborne & Associates	339	M1
Rohn	110	N6
Stainless	1347	A5
Telex Communications	600	K6,7
Townsend Associates	1420	F2
Utility Tower	703	K7
World Tower	519	L2
Translators, Low-Power TV		
Acrodyne Industries	1228	F4,5
Comark Communications	1226	F4
Compucon	1616	I1
Comsearch	1136	A6
EMCEE Broadcast Products	1621	F2
Kavco	1706	C1

COMPANY	BOOTH NUMBER	MAP LOCATOR NUMBER
Rees Associates	1727	C2
Thomson-CSF Broadcast	1001	HI7
Townsend Associates	1420	F2
Wilkinson Elec./TV Technology	305	M6,7
Transmitters, AM & FM		
Bayly Engineering	500	L5
Broadcast Electronics	303	M7,8
CSI Electronics	507	KL5
Continental Electronics	101	MN8
Elcom-Bauer	412	M3,4
Harris, Broadcast Products	401	KL7
LPB Inc.	405	L6
Marconi Electronics	1609	H2
NEC America/Broadcast Equipment	1415	F3,4
Nautel Maine	216	N2
QEI Corporation	307	M6
RCA Corporation	1000	IJ6,7
Singer Broadcast Products	309	M6
Thomson-CSF Broadcast	1001	H,I7
Varian Associates	1605	I2
Wilkinson/TV Technology	305	M6,7
Transmitters, TV		
Acrodyne Industries	1228	F4,5
Comark Communications	1226	F4
EMCEE Broadcast Products	1621	F2
Harris, Broadcast Products	401	KL7
Larcan Communications	1626-A	F1
Marconi Electronics	1609	H2
NEC America/Broadcast Equipment	1415	F3,4
Philips Television Systems	1409-A	G3,4
RCA Corporation	1000	IJ6,7
Thomson-CSF Broadcast	1001	HI7
Townsend Associates	1420	F2
Wilkinson/TV Technology	305	M6,7
Tubes, Cameras & Transmitting		
Amperex Electronics	1412	G3
Calvert Electronics	1761	B2
The Camera Mart	1018	E6
CeCo Communications	118	N5
Comprehensive Video Supply	1315	C6
Continental Electronics	101	MN8
EEV	1335	A5,6
Harris, Broadcast Products	401	KL7,8
Ikegami Electronics	1013	F7
Thomson-CSF Components	1145	B7
Townsend Associates	1420	F2
Varian Associates	1605	I2
Turntables & Accessories		
Broadcast Electronics	303	M7,8
CeCo Communications	118	N5
Cetec Broadcast Group	509	K,L4,5
LPB Inc.	405	L6
MRI Systems	207	MN4
McMartin Industries	701	L7
Panasonic Professional Audio	437	L1
Ramko Research	415	L3,4
Russco Electronics	413	L4
Studer ReVox America	201	MN7
Vans & Ladder Vehicles		
Centro Corporation	1101	CD7
Delcom	1507	B3
E-N-G Corporation	1022	D6
Jenel Corporation	1338	A4
MZB & Associates	1507-A	B3
Midwest Corporation	1710	BC1
Philips Television Systems	1409-A	G3,4
Shook Elec. Enterprises	1310	B4
Television Engineering	1700	D1
Wolf Coach	1317	C5

COMPANY	BOOTH NUMBER	MAP LOCATOR NUMBER
Video Delay Lines & Filters		
Advanced Music Systems	1330	A4
Allen Avionics	1627	F1
Broadcast Video Systems	1326	A4
Faroudja Laboratories	1753	B2
Glentronix	1318	A3,4
Leitch Video of America	1021	D7
Television Equipment Associates	1216	G4,5
Video Heads & Refurbishing Services		
Ampex	1400	J2,3
CMC Technology	1103	C7
Glentronix	1318	A3,4
International Video Corp.	1509	A,B3
Video Monitoring, Measuring & Timing Equipment		
A.F. Associates	1611	GH2
Asaca/Shibasoku Corp.	1217	F5
Broadcast Video Systems	1326	A4
The Camera Mart	1018	E6
ESE	116	N5
	1757	B2
HEDCO	1225	D5
Jenel Corporation	1338	A4
Leader Instruments	1702	C1
Leitch Video of America	1021	D7
Lenco, Electronics Division	1419	E3,4
Midwest Corporation	1710	B,C1
Minolta Corporation	1113	C8
Porta-Pattern	1427	E3,4
Rohde & Schwarz	1203	H5,6
Tektronix	1601	J2
Videotek	1633	D2
Video Monitors		
Amtron Corporation	1104	C7
Asaca/Shibasoku Corp.	1217	F5
Bosch (Fernseh)	1603	I,J1,2
The Camera Mart	1018	E6
CeCo Communications	118	N5
Conrac	1401	A3,4
Delcom	1507	B3
Elector	1131	B7
Glentronix	1318	A3,4
Hitachi Denshi America	1402	I2-4
Ikegami Electronics	1013	F7
JVC Company of America	1234	DE4,5
Midwest Corporation	1710	B,C1
Panasonic Video Systems	1019	DE7
Philips Television Systems	1409-A	G3,4
Rohde & Schwarz	1203	H5,6
Sharp Electronics	1102	C6
Shintron	1421	E3
Sony Corp. of America	1200	IJ4-6
Tektronix	1601	J2
Videotek	1633	D2
Video Prompters		
BEI (Beston Electronics)	1620	G1
The Camera Mart	1018	E6
CeCo Communications	118	N5
Cinema Products	1221	E5,6
Listec Television Equipment	1406	H2,3
Q-TV	1206	I5
Telescript	1407	H3,4
Video Signal Enhancement & Correction Equipment		
Asaca/Shibasoku	1217	F5
Broadcast Video Systems	1326	A4
The Camera Mart	1018	E6
CeCo Communications	118	N5
Delcom	1507	B3
Faroudja Laboratories	1753	B2
For-A Corp. of America	1306	B4
Fortel	1323	B5,6
Lenco, Electronics Division	1419	E3,4
Microtime	1230	E4,5
Midwest Corporation	1710	B,C1
Philips Television Systems	1409-A	G3,4
Sony Corp. of America	1200	I,J4-6
Thomson-CSF Broadcast	1001	HI7
VTRs		
A.F. Associates	1611	GH2
Alpha Video & Electronics	1722	B1
Bosch (Fernseh)	1603	I,J1,2
The Camera Mart	1018	E6
CeCo Communications	118	N5
Comprehensive Video Supply	1315	C6
Delcom Corporation	1507	B3
Frezzolini	1107	C8
Ikegami Electronics	1013	F7
International Video Corp.	1509	A,B3
JVC Company of America	1234	DE4,5
3M Magnetic A/V Products	1004	G6,7
Marconi Electronics	1609	H2
Merlin Engineering	1236	D4
Midwest Corporation	1710	B,C1
PEP	1208	H4,5
Panasonic Video Systems	1019	DE7
RCA Corporation	1000	IJ6,7
Sharp Electronics	1102	C6
Sony Corp. of America	1200	IJ4-6
Weather Instruments, Radar & Accessories		
The Camera Mart	1018	E6
Colorgraphics Systems	1116	B6
Gorman Redlich	506	L2
Kavouras	1635	D1
Nagra Magnetic Recorders	1213	G5,6
WSI Corporation	1777	A2
Weathermation	1179	A7
Wireless Microphones & Intercoms		
The Camera Mart	1018	E6
CeCo Communications	118	N5
Cetec Vega	1210	H5
HM Electronics	1130	A7
Marti Electronics	501	L6,7
Midwest Corporation	1710	B,C1
Nady Systems	1133	B8
R-Columbia	1111	C8
R.F. Technology	1306	B4
Telex Communications	600	K6,7
Sennheiser	1137	B8
Swintek Enterprises	1345	A6
Wow & Flutter Meters		
Asaca/Shibasoku	1217	F5
Fidelipac	103	N7,8
Gotham Audio	503	L6
Leader Instruments	1702	C1
Potomac Instruments	100	N8
Sound Technology	502	L5

For the

No-Nonsense

approach to locating companies listed in the NAB '83 Directory of Equipment and Services, note the map locator number, then turn to the Exhibit Hall map on page 89.

NAB '83 EXHIBITORS

More than 450 companies will be exhibiting at NAB '83, with millions of dollars of broadcast equipment on display. In addition, there will be numerous companies offering programming services and broadcast-related consulting services. And with exhibitors spread throughout three halls in the expanded Las Vegas Convention Center, it will be a real challenge to see all there is in the exhibit area and still attend sessions.

To help you meet this challenge, BROADCAST COMMUNICATIONS has compiled a complete, alphabetical listing of 1983 NAB exhibitors (as of press time).

Included is a rundown of the product lines (and services) to be featured in each booth. Product introductions are highlighted in bold-face type.

If an NAB exhibitor has an ad in this issue, it is noted by a line at the end of each company listing which reads, "See ad on page _____." Many of the products advertised in this issue will be on exhibit for the first time at NAB.

The No-Nonsense Map of the exhibit area, the Directory of Equipment and Services, and the following list of NAB exhibitors should help you plan your way through the crowds so that at least you will know what equipment is new and where to find it.

A

ADC MAGNETIC CONTROLS—Pre-wired audio and video jackfields and accessories; pro-audio connectors, plugs, audio components, coaxial jacks, plugs, and panels. **Introducing: New concept in audio patching and interconnect systems.** BOOTH 1320.

ADDA CORPORATION—Frame store synchronizers; video synchronizers; time base correctors; digital still store; video image processor. BOOTH 1100. Hospitality Suite: Caesars Palace.

SEE AD ON PAGE 3

ADM TECHNOLOGY—Amplifiers, pre-amps, DA's; audio consoles. BOOTH 1223.

A.F. ASSOCIATES—Vertical interval test sets; video measuring and timing equipment; VTRs; complete video broadcast systems; standards conversion; reconditioned 2-inch quads. BOOTH 1611.

SEE ADS ON PAGES 21, 23, 25

AKG-ACOUSTICS—Cartridges and tone arms; headphones, speakers/intercoms; microphones; audio special effects equipment and generators. BOOTH 508.

ATI-AUDIO TECHNOLOGIES INC.—Amplifiers, pre-amps, DA's; noise reduction equipment; processing and equalizing equipment; audio remotes equipment; audio special effects equipment and generators. **Introducing: DA10,000 audio distribution system, featuring up to 10 interchangeable plug-in amplifier modules combined with dual, failsafe plug-in power supplies in one 5¼-inch rack frame.** BOOTH 420.

SEE AD ON PAGE 40

AT&T—BOOTH 1631.

AVC SYSTEMS—BOOTH 616.

ABAKAS—BOOTH 1620-A.

ACRODYNE INDUSTRIES—UHF, VHF antennas; low-power TV translators; TV transmitters. BOOTH 1228.

SEE AD ON PAGE 61

ADAMS-SMITH—BOOTH 1704.

ADVANCED MUSIC SYSTEMS—Digital effects equipment; audio special effects equipment and generators; video delay lines. BOOTH 1330.

ADVANCED VIDEO TECH—BOOTH 1420-A.

AGFA-GAVAERT—Audio tape, videotape, and accessories. BOOTH 1334.

ALEXANDER MANUFACTURING—Battery packs, belts, and chargers. BOOTH 1714.

SEE AD ON PAGE 24

ALLEN AVIONICS—Video delay lines. BOOTH 1627.

SEE AD ON PAGE 160

ALLIED BROADCAST EQUIPMENT—Amplifiers, pre-amps, DA's; cart machines and accessories; audio consoles; earth station equipment and services; microphones; audio recorders; storage racks and cabinets; audio tape and accessories. **Introducing: Line of Kustom Kraft deluxe series control-room furniture. Allied will have a complete working studio to illustrate the durability and versatility of this product.** BOOTH 639. Hospitality Suite: Hilton.

ALLIED TOWER—Towers. BOOTH 409.

ALLSOP—Videotape and accessories. BOOTH 1177.

ALPHA AUDIO—Acoustic products. **Introducing: SONEX, an open-cell foam designed to control reverberation time, eliminate stray reflections, and kill standing waves.** BOOTH 210.

ALPHA VIDEO AND ELECTRONICS—VTRs. **Introducing: Modified Sony, Type V, U-Matics to meet the specific needs of broadcasters.** BOOTH 1722.

SEE AD ON PAGE 124

AMBER ELECTRO DESIGN—Audio measuring equipment; audio test generators. **Introducing: Accessories for the model 3501 distortion and noise measuring system.** BOOTH 422.

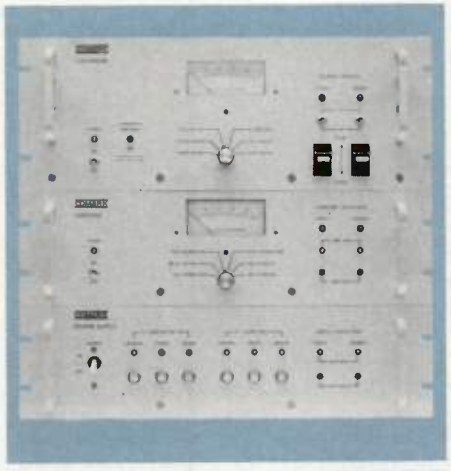
AMCO ENGINEERING—Modular cabinets and consoles; storage racks and cabinets. BOOTH 1218.

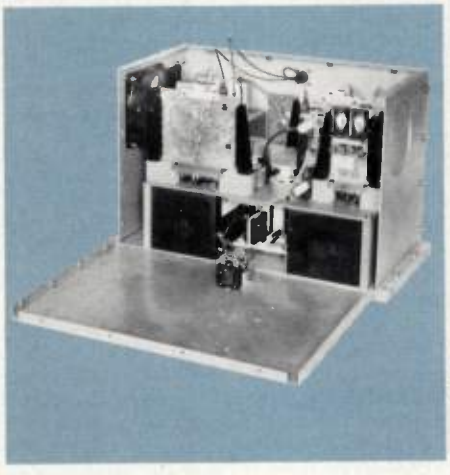
AMERICAN BELL—Business and newsroom computer systems. **Introducing: Advanced Information Systems (AIS) featuring the**

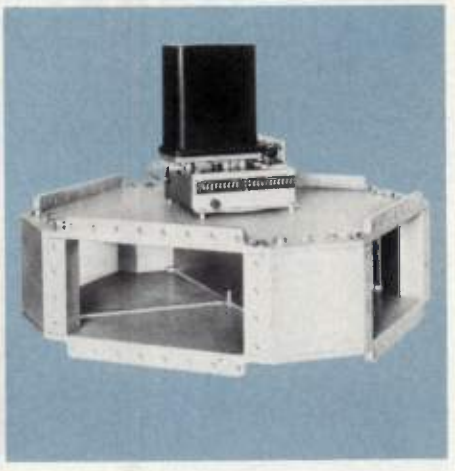
Continued on page 138

COMARK

A Worldwide Source for UHF TV Systems and Components







From Melbourne, Florida to Imo/Plateau, Nigeria, Comark supplies turnkey TV systems and components to support broadcasters throughout the world. In fact, we manufacture more of the components that make up a total UHF TV transmission system than anyone else. Our field operations capability provides turnkey services for both transmitter modernization and new station installations.

Comark-manufactured systems and components improve energy efficiency and reliability. These include **high power, fiber optic coupled Modulation Anode Pulsers,** and our **new microwave integrated circuit based, broadband no-tuning Exciter.**

Whether you need a waveguide transfer switch or a 110 kW UHF TV transmitter, Comark manufactures it—and can supply it anywhere in the world! Call or write our Marketing Department.

NEW 30/60/120 kW Transmitters
See us at NAB Booth 1217

COMARK

MAKING UHF BETTER, SOONER

Engineering and Sales Offices
Rt. 309 and Advance Lane
Colmar, PA 18915
(215) 822-0777 Telex: 846075

International Headquarters
Rt. 57, Feeding Hills Rd.
Southwick, MA 01077
(413) 569-5939

Circle (112) on Action Card

newest member of the Dimension® PBX product line, DIMENSION® AIS/System 85. System 85 is an integrated business system offering voice, high-speed data, sensor-based energy and security management, sophisticated office applications, and networking capabilities. American Bell is also introducing the AIS/Net 1000, a shared, distributed, customer-programmable, intelligent data communications network. BOOTH 1429. Hospitality Suite: MGM Grand.

AMERICAN DATA—Amplifiers, pre-amps, DA's; routing switchers; video switchers. Introducing: Routing system, microprocessor control with totally new state-of-the-art concept in packaging with over 2,000 crosspoints in six rack units; master control switcher with extremely cost-effective state-of-the-art technology; downstream keyer with four-input, master fade-to-black sync processor and edging; routing switcher, 10 x 1 video switcher with optional AFV or audio breakaway. BOOTH 1409.

SEE AD ON PAGES 46-47

NEW! Production Intercom from Clear-Com

The DLC Series*

Features:

- party-line or point-to-point ("squawk") communications with visual signalling
- 4, 8, 12, or 16 channels - (8 channel shown)
- built-in Assignment Matrix
- standard functions include Stage Announce, Priority, Call Signalling, and Channel Isolation (ISO)
- locking and momentary push-to-talk buttons
- standard electret, noise-cancelling gooseneck mic with exclusive field-adjustable length
- modular design features plug-in Control Modules
- optional IFB plug-in modules & Talent Receiver
- each Control Module monitors 4 intercom channels
- mic limiter
- programmable talk/listen functions
- balanced program input
- compatible with all Clear-Com intercoms

**Digital Logic Control: all functions are programmable*

Clear-Com® intercom systems

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See us at the NAB, Booth #1502

Circle (113) on Action Card

AMPEREX ELECTRONIC CORP.—Camera tubes. Introducing: One-inch, diode-gun, broadcast-quality Plumbicon TV camera tube; one-inch, diode-gun, low-capacitance, broadcast-quality Plumbicon TV camera tube. BOOTH 1412.

AMPEX—Cameras, accessories; digital effects equipment; video editors; audio recorders; video switchers; audio/video synchronizers; audio tape, videotape, and accessories; time base correctors; video heads and refurbishing services; VTRs. BOOTH 1400. Hospitality Suite: Las Vegas Hilton.

SEE AD ON PAGE 11

AMPRO/SCULLY—Cart machines and accessory equipment; audio consoles; audio recorders. BOOTH 407.

AMTEL SYSTEMS—Digital clocks and timers; edit code generators and receivers; routing switchers; video switchers; time code equipment. Introducing: Combination longitudinal/vertical interval time code reader/generator; line of passive and active audio-follow-video routing switchers; and a three-channel safe-area/safe-title generator. BOOTH 1745.

AMTRON—Signal pattern generators; video monitors. BOOTH 1104.

ANCHOR SYSTEMS—BOOTH 443.

ANDREW—UHF, VHF antennas; earth station equipment and services; fiber optic systems; microwave, STL and remote pickup equipment. BOOTH 1202.

ANGENIEUX—Lenses and lens services. Introducing: State-of-the-art lenses for film and television. Lenses for 1-inch, 1¼-inch, ⅔-inch, and ½-inch television cameras; retro-zoom, tele-attachments for 15X9 ENG/EFP; super wide-angle adapter, accessories, etc. BOOTH 1201.

ANTENNA TECHNOLOGY—Satellite antennas. Introducing: Simulsat, 3-meter and 7-meter comparable satellite receiving antennas. BOOTH 1737.

ANTON/BAUER—Battery packs, belts and chargers; lights and lighting accessories. Introducing: Lifesave™ chargers, offering 100% safe and reliable charging. Three models feature Anton/Bauer's logic-controlled monitor circuit and unique battery-coupled cell sensing system. The Lifesaver incorporates three automatic charge rates and will safely maintain a fully charged battery indefinitely. All Lifesaver chargers are compatible with every 4 AH Anton/Bauer battery and battery belts. BOOTH 1337. Hospitality Suite: Mardi Gras Inn.

ANVIL CASES—Cabinets and consoles; audio carts; custom cases; lighting accessories; storage racks and cabinets. BOOTH 1112.

APERT-HERZOG—Amplifiers, pre-amps, DA's; frame store synchronizers; audio/video synchronizers; time base correctors. In-

Continued on page 140

NOW YOU CAN HAVE THE BEST IN WIRELESS WITHOUT GOING PENNILESS.

When we asked sound engineers which wireless was superior for sound, quality and design, the overwhelming choice was Sony.

And now, the wireless system unequaled by any of our competitors in quality is highly competitive in price.

Which means, for about what you pay for an ordinary system, you can have the most flexible system you can buy. A modular system that can be set up and rearranged in the greatest possible number of configurations in a mere fraction of the time it takes to set up any other system. So it's suitable for any production requirement—studio or field.

Then there's the performance. The dynamic range is 96dB. The frequency response is 100-15000kHz. And signal-to-noise is greater than 60dB.

And because the wireless system is based on the Sony theory of total system technology, it's compatible with all standard professional audio and video systems on the market today. For all the facts on how you can have the state of the art in wireless without going into a state of bankruptcy, contact Sony Professional Audio Products, Sony Drive, Park Ridge, New Jersey 07656.

SONY
Professional Audio

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Circle (163) on Action Card

#1 SELLER

PCL-505 and PCL-505/C

Sound technology and time proven performance have made the PCL-505, and PCL-505/C, Aural Studio-Transmitter Links the true workhorses of the Moseley STL line. The PCL-505/C has been the world's number 1 selling composite aural STL since its introduction in late 1974. True direct FM stereo broadcast was pioneered with the PCL-505/C, enabling composite stereo to be carried over a single STL. This allows the stereo generator to be located in the studio, far from strong RF fields, and the wideband input carries both the stereo waveform plus two subcarriers as well. Two monaural PCL-505's can be operated in the "split channel" method thus ensuring virtually crosstalk-free stereo broadcasting and also transmitting remote control and SCA multiplex subcarriers.

- VIRTUALLY NO CROSSTALK WITH PCL-505
- TRUE COMPOSITE STEREO FM WITH PCL-505/C
- TRANSMITS WAVEFORM AND SUBCARRIERS

Both the PCL-505 and PCL-505/C feature on-frequency RF amplifiers and micro-strip line techniques. Excellent frequency stability is achieved by referencing the low noise, frequency modulated oscillator output to a crystal controlled reference oscillator. A carrier-operated relay is provided for external uses; and, the built-in remote connector allows remote control. Optional automatic transfer panels can switch operation to standby units.

Built for continuous duty, with extensive multimetering and excellent serviceability, Moseley's PCL-505 and PCL-505/C are rugged, economical workhorses, made to fill your STL needs.

- ON FREQUENCY RF AMPLIFIER
- EXTENSIVE MULTIMETERING
- EXCELLENT SERVICEABILITY

For further information, please contact our Marketing Department

MOSELEY ASSOCIATES, INC.
A Flow General Company . Santa Barbara Research Park
111 Castilian Drive . . . Goleta, California 93117
(805) 968-9621 . Telex: 658-448 . Cable: MOSELEY

Circle (115) on Action Card

NAB exhibitors

troducing: Traveling digital-to-analog converter; test device for troubleshooting digital video devices. BOOTH 1703.

APHEX SYSTEMS—Amplifiers, pre-amps, DA's; noise reduction systems; processing and equalizing equipment. **Introducing: CX-1S stereo rack-mount compressor/expander; EQF-2S stereo rack-mount sweep equalizer/filter; Compellor simultaneous compressor/leveler; aural exciter type "B" audio enhancer.** BOOTH 515.

ARBITRON RATINGS COMPANY—BOOTH 802.

TOBY ARNOLD & ASSOCIATES—Program services; syndicated music sales and production aids. BOOTH 321.

ARRAKIS SYSTEMS—Amplifiers, pre-amps, DA's; audio consoles. BOOTH 121.

ARRIFLEX—Chargers; camera accessories; lenses and lens service; lights and lighting accessories; film editor; camera boom. **Introducing: ARRI NiCad battery tester to test voltage and capacity of any NiCad; ARRI battery multi-charger; film editing table (six-plate, with flickerless image, 0-250 feet per second in either direction); CineJib, film/video camera jib arm featuring one-person set-up and ability to carry up to 570 pounds; 200-watt HMI fresnel, a new hand or stand HMI lighting kit.** BOOTH 1644.

ARTEL COMMUNICATIONS—Duplex communication systems; fiber optic systems; modulators and demodulators; digital multiplexer systems. **Introducing: Low-cost fiber optic video/audio plug-in transmission module set for the SL-2000 system. Applications for this broadcast-quality system include ENG/EFP, distribution, CCTV, and local area networks. Also being introduced are fiber optic systems for high-resolution video transmission, including computer graphics and HDTV.** BOOTH 1118.

SEE AD ON PAGE 113

ARVIN/DIAMOND—Weather instruments, radar & accessories. BOOTH 1608.

ASACA/SHIBASOKU—Audio analyzers; audio monitoring, measuring, and timing equipment; audio automation systems; encoders and decoders; frame store synchronizers; signal pattern generators; modulators and demodulators; video switchers; audio/video synchronizers; videotape and accessories; audio test generators; video test generators; vertical interval test sets; video monitoring, measuring, and timing equipment; video monitors; video signal enhancement and correction equipment; wow and flutter meters. **Introducing: Digital still-store system; digital color correction system; audio and video synchronizers; digital dropout counter.** BOOTH 1217.

SEE ADS ON PAGES 49 and 114

ASSOCIATED PRESS BROADCAST SERVICES—BOOTH 419.

ATLAS TOWER—Towers. BOOTH 617.

AUBURN INSTRUMENTS—Machine control systems. BOOTH 1711.

AUDICO—Audio tape, videotape, and accessories; video tape loader/reloader. **Introducing: Videocassette tape loader/reloader that now has the capability to reload and rewind VHS and Beta cassettes as well as U-Matic cassettes. System also features improved tape winding utilizing a processor-based unit to continuously monitor in-path tape tension while loading.** BOOTH 1343.

AUDI-CORD—Cart machines and accessories. BOOTH 123.

SEE AD ON PAGE 150

AUDIO DEVELOPMENTS—Audio consoles; limiters and compressors; processing and equalizing equipment. BOOTH 1709.

AUDIO & DESIGN RECORDING—Amplifiers, pre-amps, DA's. **Introducing: SCAMP S27 multi-band splitter/combiner, comprising a four-band phase coherent crossover and summing amplifier (for use with AM/FM, TV, and wherever high-quality multi-band and frequency selective processing is required—using existing SCAMP compressors, limiters, and expanders as required. Also introducing the Pro-Pak, a professional mono/stereo interface package for use with high-quality domestic equipment—in particular with digital recorders to the EIAJ standard. The Pro-Pak is AC-powered, and provides balanced inputs and outputs at levels up to +24 dBm. Input and output gain levels can be adjusted over a 20 dB range so as to establish send and return levels meeting standard studio practices.** BOOTH 402.

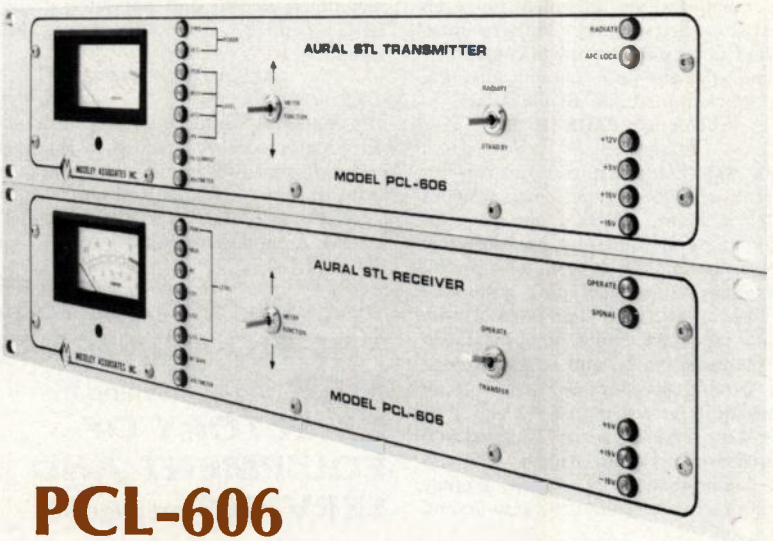
AUDIO KINETICS (UK)—Audio/video synchronizers. **Introducing: Serial interface to allow external control of the Q-Lock time code synchronizer, plus software options.** BOOTH 1173.

AUDIO-TECHNICA US—Headphones, speakers/intercom; microphones. **Introducing: AT835 short shotgun featuring 200-ohms balanced output, −44.5 dBm sensitivity, flat/roll-off switch, 1.5-volt AA battery, 3,000 hours battery life. Includes vinyl protective carrying case, cable, standard clamp, battery, and windscreen—for under $200.** BOOTH 1141.

AUDITRONICS—Amplifiers, pre-amps, DA's; digital clocks and timers; audio consoles; processing and equalizing equipment; routing switchers. **Introducing: Programmable parametric equalizer, a totally new self-contained rack-mounting unit which can contain up to four mono or stereo tracking equalizers. Each equalizer includes three bands with variable frequency, variable boost/cut, variable Q, peak/shelf selection on the high and low bands; and a separate in/out switch for each band. An overload indicator is provided, and all parameters are accessible and visually indicated on all bands at all times. Thirty-two on-board non-**

Continued on page 142

#1 PERFORMER



PCL-606 and PCL-606/C

- ULTRA LOW NOISE AND DISTORTION
- EXCELLENT SELECTIVITY
- OUTSTANDING FREQUENCY STABILITY

Topping the Moseley line of aural studio-transmitter links, the PCL-606 and PCL-606/C are tailor-made for the broadcaster who demands the very finest in performance and engineering. Extremely congested, high-density RF environments are no problem for broadcasters using these all-new, state-of-the-art systems. Either the monaural (PCL-606) or stereo composite (PCL-606/C) provide today's broadcaster with the highest quality program interconnect available in an aural STL. Both are designed for maximum performance and reliability, with easy service features to minimize maintenance down time.

The dynamic range of both systems can be optimized as a function of signal strength, by a pin diode attenuator circuit in the receiver. Superior frequency stability is achieved in the PCL-606 and PCL-606/C Transmitters by locking phase and frequency to a synthesized AFC. Ultra-phase linear I.F. filters, and a broadband, extended digital demodulator provide surprisingly low noise and distortion, while the balance between distortion and selectivity can be tailored to user needs by adjusting I.F. bandwidth. A compensated, linear, baseband response maximizes both monaural and stereo transmission. Both the PCL-606 and PCL-606/C have switch-selectable signal metering functions to measure the incoming RF signal over its entire range. Internal system performance metering functions are built into both transmitter and receiver. All normal service adjustments are easily accessible through the top cover, and brass-enclosed module construction makes PC board servicing easier than ever. Should there be a failure or abnormality shutdown; the receiver is equipped to switch internally and automatically to a standby unit for continuous performance.

- SELECTABLE IF BANDWIDTH
- BUILT-IN DIAGNOSTIC METERING

Continuing the legacy of the PCL-505, the PCL-606 and PCL-606/C are revolutionizing the state of the art in the aural STL marketplace.

For further information, please contact our Marketing Department

MOSELEY ASSOCIATES, INC.
A Flow General Company . Santa Barbara Research Park
111 Castilian Drive . . . Goleta, California 93117
(805) 968-9621 . Telex: 658-448 . Cable: MOSELEY

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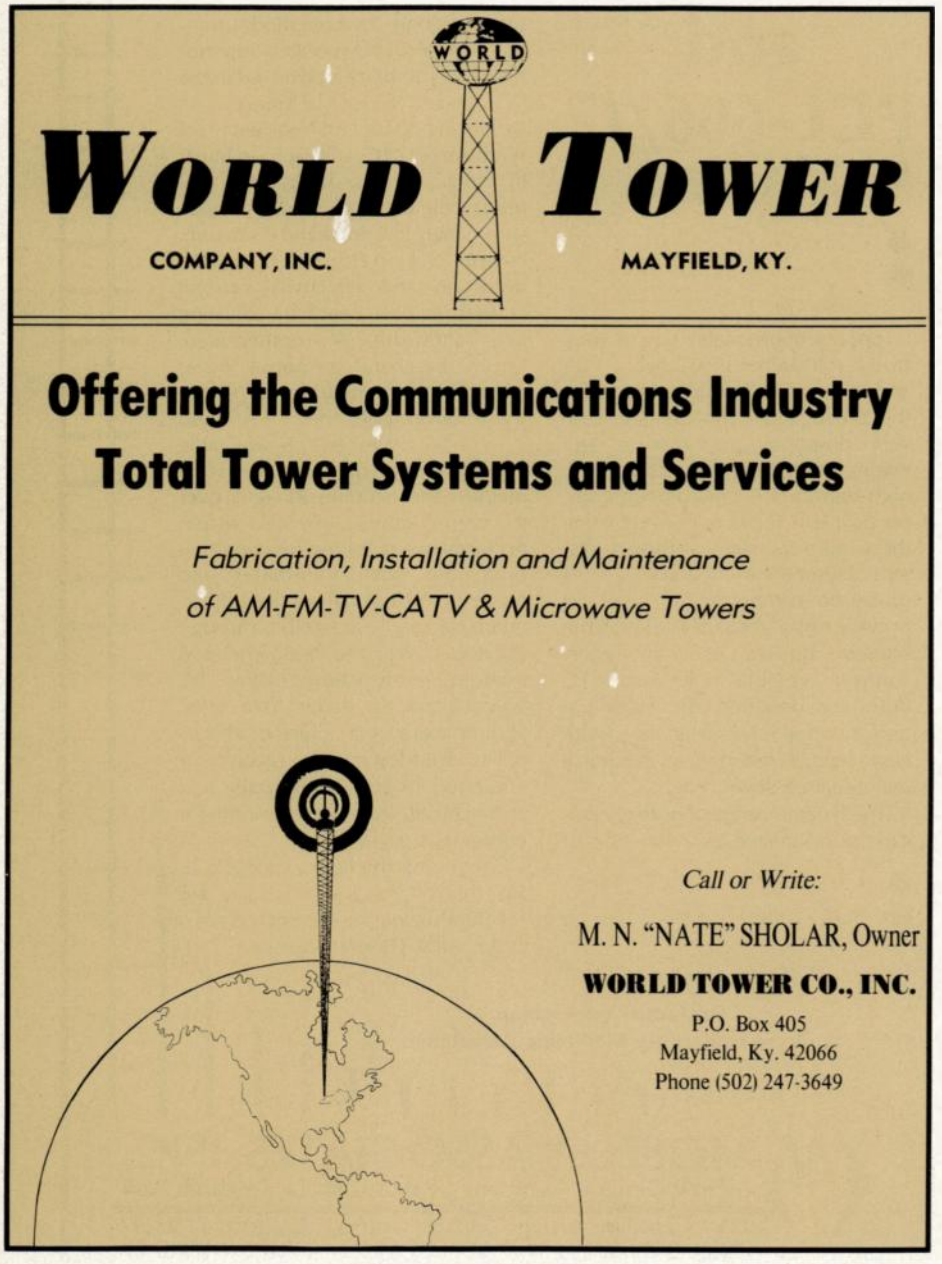
volatile memories are included for each equalizer, together with the ability to interrogate and display the complete contents of any memory, at any time, without affecting current program material. BOOTH 505.
SEE AD ON PAGE 125

AURORA SYSTEMS—Animation/graphics equipment; character generators; weather computer systems; program services. **Introducing: Several hardware and software improvements on the Aurora/100 digital videographics system, including automatic curve generation (with animated "write on"); color input; selectable, directional edging for shadows, glows, and animated edge effects; twofold speedup in picture recall time; on-line interface with ESD and WSI weather data services; newly designed and engineered work station. Aurora will also feature demonstrations by several graphic artists, displaying different artistic styles and techniques of still and animated graphics.** BOOTH 1312. Hospitality Suite: MGM Grand.
SEE AD ON PAGE 75

AUTOGRAM—Audio consoles. **Introducing: All-microprocessor-controlled audio console featuring up to 60 inputs, three stereo program outputs, one mono program output. Interfaces to Radio Shack TRS-80 model III for two automation channels with logging.** BOOTH 120.

You can find any exhibitor with **THE NO-NONSENSE MAP** on page 89 and the **DIRECTORY OF EQUIPMENT AND SERVICES** on page 98



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B

BEI (BESTON ELECTRONICS INC.)—Character generators; newsroom computer system. **Introducing: Low-priced (under $15,000) production character generator with 27-nanosecond resolution.** BOOTH 1620.
SEE AD ON PAGE 155

BGW SYSTEMS—Amplifiers; speakers. BOOTH 421.

BIAS—See listing for Data Communications. BOOTH 1014.

BIW CABLE SYSTEMS—Fiber optics systems; television camera cable assembly; VTR cable assembly; triax cable; fiber optic cable system. **Introducing: Fiber optic cable system.** BOOTH 1405.

THE BTX CORPORATION—Edit code generators and receivers; audio/video synchronizers; time code equipment. BOOTH 1124.

B-W LIGHTING SYSTEMS (formerly Panoak Lighting)—Lights and lighting accessories. BOOTH 1733.

WILLIAM BAL CORPORATION—Modular cabinets and consoles. **Introducing: Custom heavy-duty carrying and shipping cases for audio and video equipment, available in various sizes with custom or standard foam interiors.** BOOTH 1614.

BARTH ELECTRONICS—BOOTH 1122.

BASYS—Newsroom computer system. BOOTH 1503.

BAYLY ENGINEERING (AEG-TELEFUNKEN)—Antennas; loads and wattmeters; microwave, STL, and remote pickup equipment; audio recorders; FM transmitters; two-way radios. BOOTH 500.

BEAVERONICS—Digital and analog clocks and timers; video switchers; master clock systems; video keyers. BOOTH 1313.

BELAR ELECTRONICS LABS—AM stereo generators; SCA equipment; AM modulation monitors; AM frequency monitors; FM modulation monitors; FM stereo monitors; TV modulation monitors; TV frequency monitors; AM RF amplifiers; FM RF amplifiers; TV RF amplifiers. BOOTH 300.
SEE AD ON PAGE 164

BELDEN COMMUNICATIONS—Lights and lighting accessories; camera filters. BOOTH 1416.

BELL HELICOPTER—Helicopters and related equipment. BOOTH 1743.

BENEFICIAL COMMUNICATIONS—BOOTH 653.

BEYER DYNAMIC USA—Headphones, speakers/intercoms; microphones. BOOTH 426.
Continued on page 144

WHY ARE 50 RECEIVER MAKERS ASKING TO TEST MOTOROLA'S AM STEREO DECODER CHIPS?

Is it because they've seen Delco choose Motorola's system as their standard?

Is it because Motorola has a breakthrough within a breakthrough—with not only a "basic" decoder chip, but an advanced anti-microphonic chip that's suitable for mechanically tuned radios?

Is it because Motorola has an inexpensive AM stereo chip that includes a pilot tone decoder and requires no manufacturing adjustments?

In a word, yes. And if you're not sure what it all means to you, here it comes:

To the broadcaster, it means that a ton of AM stereo receivers will be out there very soon. And that makes it important to order Motorola transmitting equipment right now.

To everyone attending the NAB show in Las Vegas starting on April 10, it means go see the Motorola booth, and take a pen with you.

To the makers and shakers of the broadcasting industry, it means call Dick Harasek at 312/576-2897 or Chris Payne at 202/862-1549 before your competition does.

See and hear Motorola's AM Stereo System at Booth #*411* at the NAB.

MOTOROLA AM STEREO. THE WINNING SYSTEM.

MOTOROLA

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BIRD ELECTRONIC—Loads and wattmeters; calorimeters; RF filters. **Introducing: 1,000-watt RF calorimeter; rack-mounted THRULINE® wattmeter panels.** BOOTH 1625.

BLONDER-TONGUE—Encoders and decoders; modulators and demodulators; subscription TV systems. BOOTH 1134.

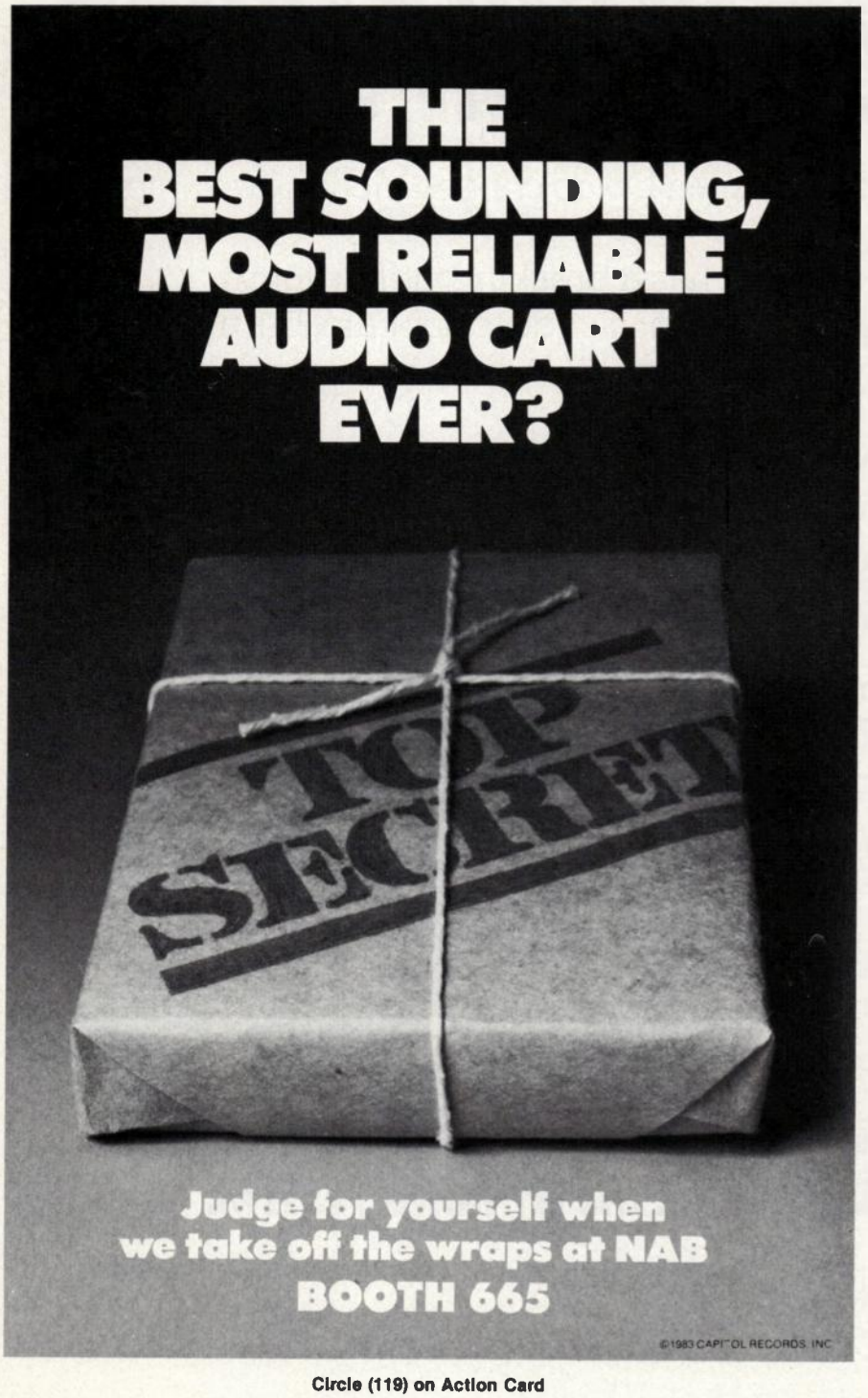
BOGEN PHOTO—Battery packs, belts, and chargers; lights and lighting accessories; pedestals, tripods, and heads. **Introducing: Video tripods, fluid heads, dollies, caddies, power packs, quartz lighting.** BOOTH 1705.

BOGNER BROADCAST EQUIPMENT—UHF and VHF antennas. BOOTH 1319.

BOSCH (FERNSEH)—Amplifiers, pre-amps, DA's; animation/graphics equipment; cameras, accessories; character generators; video editors; encoders and decoders; fiber optic systems; film chain equipment; routing switchers; video switchers; telecine equipment; video monitors; VTRs. **Introducing: Real-time graphics animation system; video production switcher.** BOOTH 1603.

SEE AD ON PAGE 56

BOWEN—BOOTH 1770.



Circle (119) on Action Card

BRITISH VIDEOTEX & TELETEXT—Teletext and videotex system. BOOTH 1600-B.

BROADCAST AUDIO—Amplifiers, pre-amps, DA's; digital clocks and timers; audio consoles; headphones, speakers/intercoms. **Introducing: Modular studio furniture; audio consoles with either digital or analog control of audio levels; panel-mounted digital timer.** BOOTH 213.

SEE AD ON PAGE 181

BROADCAST CARTRIDGE SERVICE—Carts and accessories; audio carts; storage racks; audiotape and accessories. **Introducing: Stereo phase meter; videocassette reloading service.** BOOTH 611.

BROADCAST ELECTRONICS—Amplifiers, pre-amps, DA's; audio automation systems; cart machines and accessories; audio carts; cartridge and tone arms; audio consoles; FM exciters; FM stereo generators; limiters and compressors; audio recorders; FM transmitters; turntables and accessories. **Introducing: FM-5, 5 kW FM transmitter; FM-3.5, 3.5 kW FM transmitter; FM-1.5, 1.5 kW FM transmitter.** BOOTH 303.

BROADCAST MICROWAVE SERVICES—BOOTH 1749.

BROADCAST MUSIC INC. (BMI)—BOOTH 124.

BROADCAST PROGRAMMING INTERNATIONAL (BPI)—Syndicated music. BOOTH 122.

BROADCAST SYSTEMS—Signal monitoring systems; processing equipment. **Introducing: Audio/video television transmitter input processing and signal monitoring system; second-generation pre-wired audio patch panel; pre-wired audio patch panel in one-rack unit; studio video test system; monitoring and input selection system for two VTRs.** BOOTH 1500.

SEE AD ON PAGE 77

BROADCAST TECHNOLOGY—Amplifiers, pre-amps, DA's; audio processing and equalizing equipment; routing switchers. BOOTH 1701.

SEE ADS ON PAGES 78, 155 and 163

BROADCAST VIDEO SYSTEMS—Encoders; video switchers; video delay lines and filters; video monitoring, measuring and timing equipment; video signal enhancement and correction equipment. **Introducing: Vertical interval ID and control system; color corrector with variable gamma and SMPTE time code interface.** BOOTH 1326.

BRYSTON MANUFACTURING—BOOTH 517.

BUSH & MILLIMAKI SERVICES—BOOTH 1715.

BYLINE MAGAZINE—See listing for CBS Radio Stations. BOOTH 606.

Continued on page 149

VISIT NEC AT NAB. WHERE A LITTLE SLEIGHT-OF-HAND MAKES MORE VIDEO MAGIC THAN EVER BEFORE.

Take the controls of the new NEC E-FLEX Perspective Rotational Accessory. You can add it to your E-FLEX DVE® System to get pictures that compress, enlarge, tumble, spin and split. Images that rotate into perspective. Even pictures that roll or swirl like a whirlpool. Virtually any picture manipulation you can imagine, all with absolute fidelity...and all for a price that's more than magic—it's a miracle. Plus something no other system offers at any price—future add-on flexibility.

See all the new NEC Imagination Machines, including the E-FLEX Perspective Rotational Accessory; portable 7GHz Short Range Microwave Link; and 3 Chip CCD Camera, at the NEC Imagination Theatre, Booth 1415, NAB, Las Vegas, April 10-13.

NEC

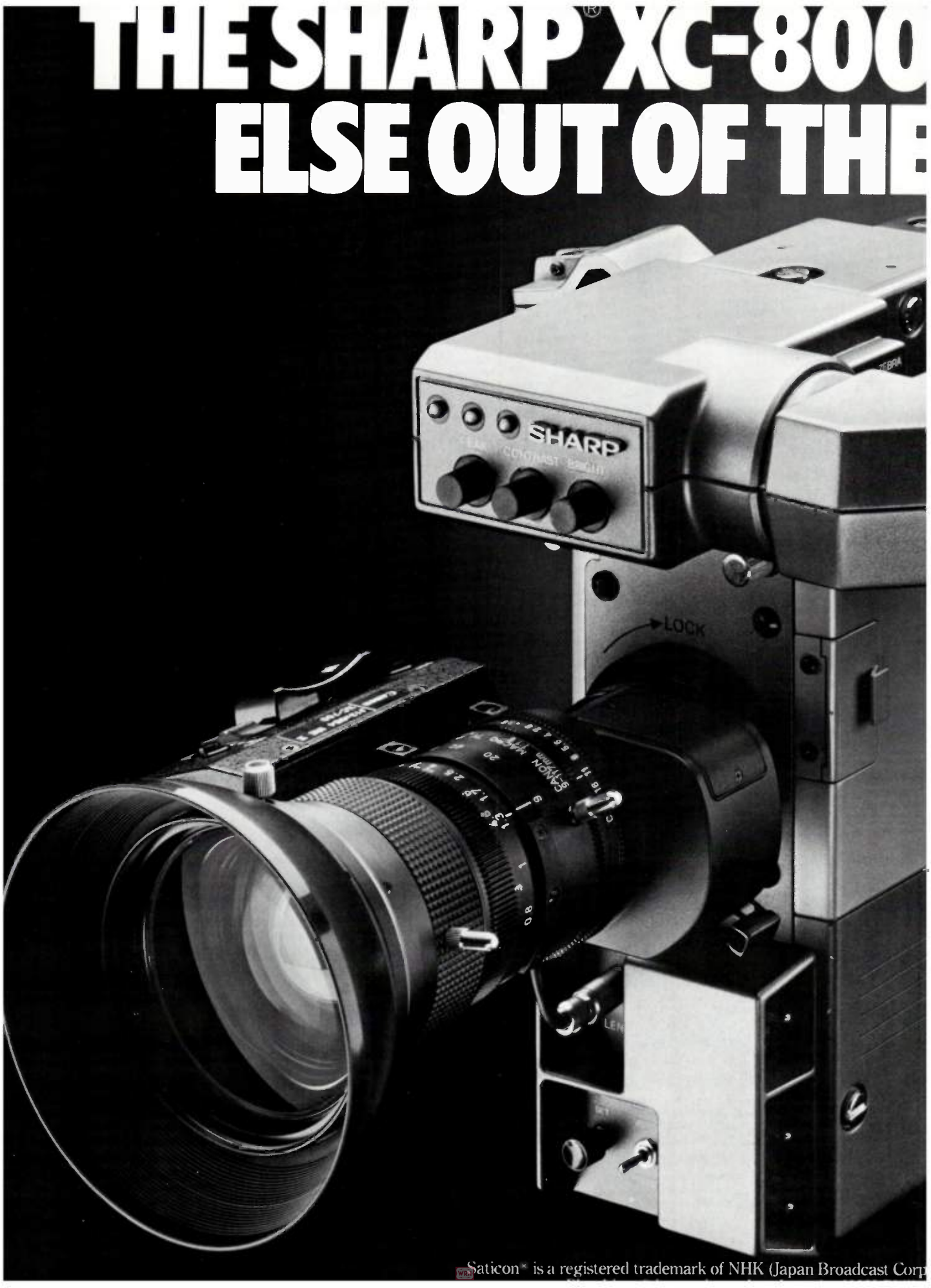
IMAGINE WHAT WE'LL DO NEXT

NEC America, Inc., Broadcast Equipment Division, 130 Martin Lane, Elk Grove Village, IL 60007 312/640-3792

VISIT BOOTH 1415 ■ FS-16 FRAME SYNCHRONIZER ■ DV-10 DIGITAL MULTIPLEX ■ TVL 807 ■ MNC-1 CCD CAMERA ■ MNC-10 CCD CAMERA ■ FBN 7000 SERIES FM TRANSMITTERS ■ E-FLEX OFFLINE EDITING SYSTEM ■ HPA-4536B FM EXCITER

Circle (45) on Action Card

THE SHARP® XC-800
ELSE OUT OF THE



Saticon® is a registered trademark of NHK (Japan Broadcast Corp

TAKES EVERYONE PICTURE. AGAIN.

While everyone else was introducing a mid-priced camera, Sharp introduced a whole new generation.

The Saticon II Generation.

The Sharp XC-800 is the first camera in its class that combines Saticon® strengths with a Plumbicon® plus.

So unlike conventional Saticons, you get substantially less highlight sticking, even when you pan across bright lights.

And you still get the higher resolution and depth of modulation Saticons are known for.

But that's just the beginning.

Pound for pound, feature for feature, nothing comes close to the new Sharp XC-800. It's lightweight and perfectly balanced.

And while we're proud of our new on-board computer, and newly designed Remote Operations Panel with serial data transmission and black stretch, the name of our game is more than just features.

It's reliability.

That's what the pros were looking for when we introduced the original XC-700, the first mid-priced camera that didn't perform like a mid-priced camera.

In fact, it performed so well, there are over a thousand of them out in the field today.

And it's been so successful, it's encouraged a rash of new mid-priced cameras.

We encourage you to compare any of them with the new Sharp XC-800.

Between the Saticon II breakthrough and everything else, nobody offers more camera for the money.

For more information, contact your local dealer, or write: Sharp Electronics Corporation, Professional Products, 10 Sharp Plaza, Paramus, New Jersey 07652.(201) 265-5548

From Sharp... the people who replaced half a million transistors and diodes with one tiny chip.

SHARP

FROM SHARP MINDS
COME SHARP PRODUCTS

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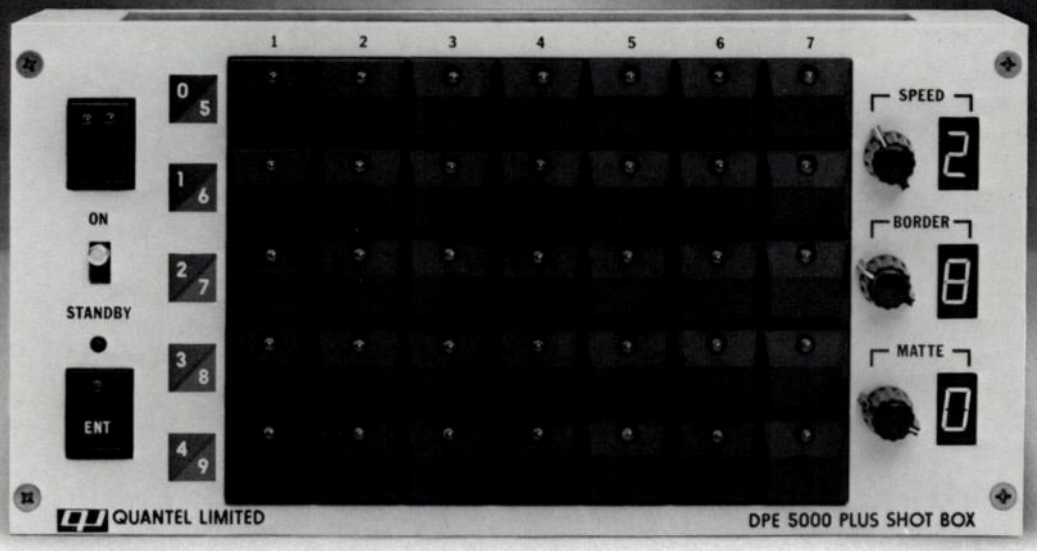
"Dimension" by Quantel.



Now you can have 3-D perspective effects at the touch of a button.

"Dimension" by Quantel. It lets you call up three-dimensional effects more dazzling and more powerful than any other system on the market. *Any* other system.

And you can do it on up to five channels of video. Simultaneously. With unsurpassed Quantel picture quality.

With our unique Shot Box control panel, you can have up to 70 move-sequences on-line. Each sequence can consist of several moves. Touch a single button and the sequence is executed. It's awesome.

You get all this with total creative freedom. You can use our standard pre-programmed catalog moves. You can modify the standard moves. Or you can create your own unique moves.

"Dimension" is a lot more than three-dimensional perspective. It also includes kaleidoscope, picture splits, trailing freeze, multi-freeze, custom shapes, "Autoflex" elastic shapes, and "Teletrack.*"

If you already own our DPE 5000, you can add all the power of "Dimension," including multiple channels.

If you don't have a DPE 5000, don't make a move until you call Quantel.

Your local MCI/Quantel office has details. Or get in touch with us directly: Micro Consultants, Inc., P.O. Box 50810, Palo Alto, California 94303, 415/856-6226.

MCI/Quantel, "Shot Box," and "Dimension" are trademarks of Micro Consultants, Inc.

*A BBC development.

MCI/QUANTEL

The digital video people.

Circle (46) on Action Card

CBS RADIO STATIONS NEWS SERVICE—Program Service. **Introducing: Byline Magazine, nationally syndicated news and information radio broadcasts produced for all CBS-owned radio stations.** BOOTH 606.

CEI-PANAVISION ELECTRONICS—CEI-Panavision Electronics is now to be known as Panavision. Panavision will be showing cameras, including the new-generation 310SP. BOOTH 1607A.

CMC TECHNOLOGY—Bulk tape erasers; tape degausser; video heads and refurbishing services. **Introducing: Automatic bulk tape demagnetizer that can bulk erase every videotape size and format, particularly the new high-energy formulations used on 1-inch VTR reels and ¾-inch videocassettes.** BOOTH 1003. Hospitality Suite: MGM Grand.

CMX SYSTEMS/ORROX—Video editors. BOOTH 1639.

SEE AD ON PAGE 71

CSI ELECTRONICS—AM, FM, TV exciters; audio remotes equipment; AM and FM trans mitters. BOOTH 507.

CABLEWAVE SYSTEMS—Antennas, transmission lines, towers, and lights; microwave, STL, and remote pickup equipment. **Introducing: Low-loss foam Wellflex cables featuring annular corrugated outer-conductor, closed-cell, low-density foam dialectric. Designed for easy flexing, is highly crush resistant, and has a positive seal for prevention of moisture migration. Cables also offer high velocity, low RF loss, and superior phase stability ideal for broadcast, microwave, radar, and land mobile applications. FLC foam cables are designed to exhibit low attenuation.** BOOTH 108.

CALVERT ELECTRONICS—Broadcast-related replacement components, including RCA camera and power tubes, Eimac and Amperex transmitting tubes, and the new Eimac replacement tube for low-power translator service. BOOTH 1761.

CALZONE CASE COMPANY—Modular cabinets and consoles; camera accessories; custom cases. **Introducing: Convoy II, lightweight yet durable case protection for around-the-town travel.** BOOTH 1011.

CAMBRIDGE PRODUCTS—UHF and RF coaxial connectors. BOOTH 1328.

THE CAMERA MART—Amplifiers, preamps, DA's; audio monitoring, measuring, and timing equipment; battery packs, belts and chargers; modular cabinets and consoles; cameras and accessories; cart machines and accessories; audio carts; custom cases; character generators; audio consoles; edit code generators and receivers; video editors; encoders and decoders; film chain equipment; frame store synchronizers; headphones, speakers/ intercoms; lenses and lens services; lights and lighting accessories; lightning and power-line protection systems; microphones; modulators and demodulators; digital multiplexer systems; processing and equalizing equipment; pedestals, tripods, and heads; audio recorders; slow-motion replay equipment; audio special-effects equipment and generators; storage racks and cabinets; routing and video switchers; audio/video synchronizers; audio tape, videotape, and accessories; tape degausser; telecine equipment; audio and video test generators; time base correctors; time code equipment; camera and transmitting tubes; video monitoring, measuring and timing equipment; video monitors; video prompters; video signal enhancement and correction equipment; VTRs; weather instruments, radar and accessories; wireless microphones and intercoms. BOOTH 1018.

SEE AD ON PAGE 26

CANARE ELECTRONICS—BOOTH 1732.

CANFORD AUDIO (NORTH AMERICA)—See Connectronics Corporation listing.

Continued on page 150

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CANON USA—Lenses and lens services. **Introducing: Studio camera lenses, including model numbers P18X15BIE, PV18X11BIE, P14X16.5BIE, and PV14X12BIE.** BOOTH 1012.

SEE AD ON PAGE 79

CAPITOL MAGNETIC PRODUCTS—Audio carts; audio tape and accessories. BOOTH 665.

SEE AD ON PAGE 144

CAT SYSTEMS (SOLL INC.)—Character generators; business computer systems; newsroom computer systems; earth station equipment and services. **Introducing: Custom computerized remote-control systems for earth stations and TV stations. All units have color graphic display and voice synthesizer, with auto logging optional.** BOOTH 1424.

CECO COMMUNICATIONS—Audio carts; audio recorders; audio tape and videotape, and accessories; camera and transmitting tubes; turntables and accessories; video monitors; video prompters; video signal enhancement and correction equipment; VTRs; wireless microphones and intercoms. **Introducing: All types of transmitting and receiving tubes; high-power transmitting tubes; camera tubes; CRT tubes. New this year are a video equipment department and semiconductor department.** BOOTH 118.

CENTRAL DYNAMICS—Amplifiers, pre-amps, DA's; routing switchers; video switchers. **Introducing: Production switcher featuring six primary buses; unique SFX processor system; program processor module with mix, wipe, cut, titling, and fade-to-black facilities. Optional modules include RGB and encoded chroma keyers; key borders on both the SFX amplifier and title keyer; extended effects generator; one bus quad; digital video effects; auto transitions; editor interface; CAP; and two auxiliary buses. Central Dynamics will also feature another production switcher featuring a second SFX processor system and two auxiliary buses which can be used as dedicated feeds to network, slo-mo's, and digital video effects.** BOOTH 1409.

SEE AD ON PAGES 46-47

CENTRO—Signal pattern generators; video test generators; vans and ladder vehicles. BOOTH 1101.

CENTURY PRECISION—BOOTH 1781.

CENTURY 21 PRODUCTIONS AND PROGRAMMING—Syndicated music sales and production aids; program services. BOOTH 204.

CETEC BROADCAST GROUP—Pre-amps; audio automation systems; bulk tape erasers; audio consoles; business computer systems; turntables and accessories. BOOTH 509.

CETEC VEGA—Wireless microphone systems; wireless intercom systems. BOOTH 1210.

SEE AD ON PAGE 133

CHASE MEDIA—See listing for Snarr/Chase Systems. BOOTH 609.

JOHN CHILES—Battery packs, belts and chargers; camera accessories; fiber optic systems; lights and lighting accessories. BOOTH 1747.

CHRISTIE ELECTRIC—Battery packs, belts and chargers; bulk tape erasers; tape degausser; AC/DC camera-mounted power supply. **Introducing: maxERASE-16 series of bulk tape/cassette degaussers for high-coercivity audio, video, and audio/video formats.** BOOTH 1016.

CHYRON CORPORATION—Character generators. **Introducing: Low-priced character generator.** BOOTH 1610.

SEE AD ON PAGE 17

CINE 60—Battery packs, belts, and chargers; lights and lighting accessories; camera mounts; shoulder braces; power supplies. BOOTH 1423.

SEE AD ON PAGE 2

CINEMA PRODUCTS—Battery packs, belts and chargers; cameras, accessories; encoders

Continued on page 152

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NEW
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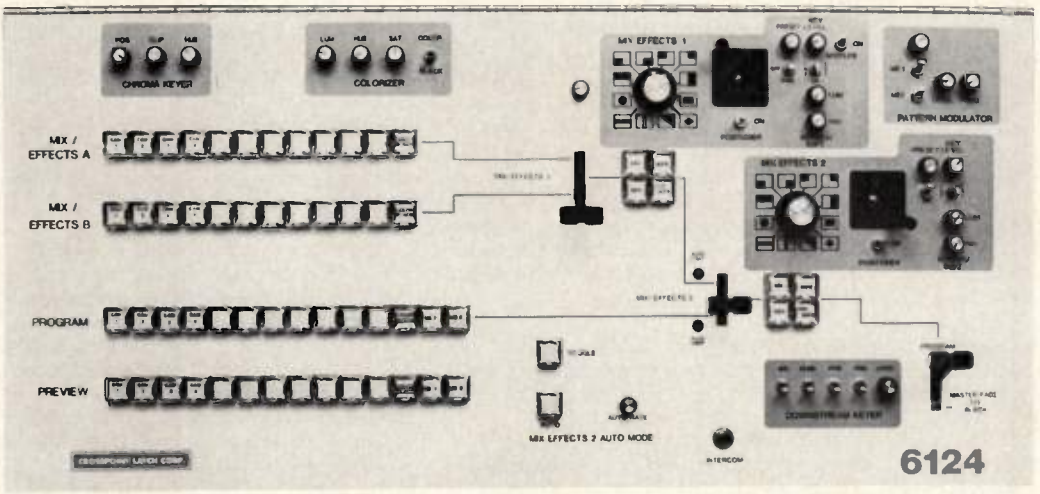
PRODUCTION SWITCHERS

THAT INTERFACE WITH THE LARGEST RANGE OF EDITORS

Enjoy the best of both worlds. A full production switcher, with all its associated ease of operation; which is at the same time, a sophisticated post-production switcher with many levels of editor control, including control directly from the editor keyboard.

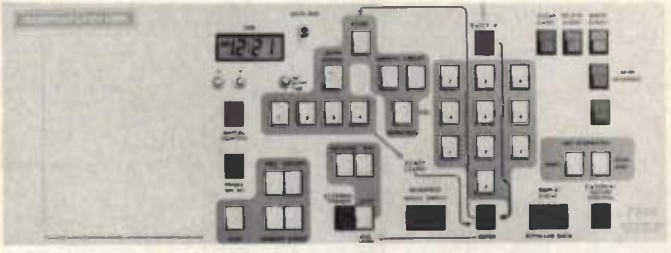


PRICES

6124	NTSC	**$13,700**
	PAL	**$14,700**
7200		**$12,500**
6800		**$3,500**
6403		**$2,750**
Editor Module		**$995**

Model 6124 Production Switcher

- TWELVE INPUTS (including colorizer)
- TWO FULLY INDEPENDENT MIX EFFECTS SYSTEMS
- CHROMA KEYER (RGB OR ENCODED)
- DOWNSTREAM KEYER (WITH MATTE KEY)
- WIPE BEHIND OR OVER CHROMA KEY
- DOUBLE RE-ENTRY FOR EACH M.E. SYSTEM
- AUTOMATIC OR MANUAL FADERS
- BLANKING PROCESSOR THAT ELIMINATES HORIZONTAL AND COLOR SHIFTS AT THE END OF A TRANSITION



You can start with the entire package, video as well as audio. Or expand gradually as the need arises. We have designed interfaces to most editors, to give you frame accurate precision for either complete or partial transitions; either video or audio separately or both combined. Your operation is not limited or hampered. Even if you own an editor that cannot control a switcher, you can still perform programmable transitions and even delayed transitions, both with our compact **6403 Programmable Editor Switcher Interface** and the more sophisticated AUTO DRIVE™, triggered automatically at the correct 'cut-in' point by the editor.

PROGRAMMABLE AUDIO MIXER Model 6800

Seven input two channel (stereo) audio mixer with tone generator. May be controlled either directly from the keyboard of most editors, or as an audio follow switcher for the 6124 and 7200 combination. Independent gain controls for each input, with the abililty to operate either manually or remotely from editors and switchers.

AUTO DRIVE™ Model 7200

Plug compatible option for 6124 switcher. It is a computer, which requires no programming knowledge to operate. Its control panel has indicator lines to show the sequence of push-button operation. Its solid state memory stores up to 255 events which can be grouped into any number of sequences. Each event consists of the entire configuration of the switcher control panel - not just a selected few functions. Storage of events is simplicity itself. Just set up the switcher controls to produce the effect you want in the conventional way - then depress the STORE button. Events may be stored on the Preview Bus and then RUN on Program. AUTO DRIVE™ can create effects that cannot possibly be reproduced manually, because of the computers simultaneous control of all functions. AUTO DRIVE™ can even store and later reproduce manual fader arm and positioner movements. A Disc Drive option will soon be introduced.

AUTO DRIVE™ has interfaces with Editors, providing either full control from the editor keyboard, or just triggering of sequences from the editor at the precise point of edit.

For details on other switchers and editor interfaces see your local dealers or call us directly.

Delivery on most of our products is under two weeks.

Write or call for our very informative booklet "Video Post Production" which will be mailed to you, free.

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and decoders; lenses and lens service; lights and lighting accessories; video prompters; camera stabilization systems. **Introduing: Steadicam Universal Model III video/film camera stabilizing system, featuring greater flexibility and operating freedom due to a versatile, lighter, more streamlined design.** BOOTH 1221.

CINEMILLS—Lights and lighting accessories. **Introducing: HMI soft lights; complete dimmer systems; complete line of Lee color correction filters; Cine 60 battery packs and belts; DMI line; HMI globes; complete line of incandescent portable lights.** BOOTH 1140.

CIPHER DIGITAL—BOOTH 1606.

CIRCUIT RESEARCH LABS—Processing and equalizing equipment; SCA equipment. **Introducing: AM stereo limiter; SCA processor/generator for sub-channel communications; TV audio processing equipment, with equipment loaned on a 15-day free trial following credit approval.** BOOTH 106.

CLEAR-COM INTERCOM SYSTEMS—Headphones, speakers/intercoms. **Introducing: Eight-channel main station supporting up to 100 headset remote stations or 20 speaker remote stations; remote intercom station with talk/listen on two channels, visual signaling, side tone adjustment, auxiliary program input, built-in speaker; remote intercom station designed for installation in console, mixing board, countertop, wall, or desk; two-channel intercom station featuring no glare, black aluminum front panel, built-in speaker.** BOOTH 1502.

SEE AD ON PAGE 138

CLYDE ELECTRONICS—BOOTH 106.

COLORADO VIDEO—Slow-scan TV. BOOTH 1222.

COLORGRAPHICS SYSTEMS —Animation/graphics equipment; weather and newsroom computer systems; program services; weather instruments, radar, and accessories. **Introducing: LiveLine Sports, automatic feed and graphics display of National Sports-Ticker scores; Digitizer; DataStor; NewStar; FLASH; Election, automated management of election results.** BOOTHS 1114-A and 1116.

COLORTRAN—Lights and lighting accessories; lighting control systems. BOOTH 1205.

COLUMBINE SYSTEMS—Business computer system. BOOTH 1302. Hospitality Suite: Riviera Hotel.

COMARK COMMUNICATIONS—Antennas, transmission lines, towers, and lights; UHF and VHF antennas; diplexers and combiners; TV exciters; modulators; towers; low-power TV translators; TV transmitters. **Introducing: Low-cost, high-efficiency UHF transmitter systems from 10 kW through 220 kW; mod anode pulser systems; solid-state "component" concept exciter systems; E.D. and ICPM correction systems; broadcast modulators; transmission line products; directional couplers; filters; power dividers; hybrids; and patch panels. Also, turnkey RF systems manufacturing capabilities and services worldwide.** BOOTH 1226.

SEE AD ON PAGE 137

COMEX—BOOTH 1508.

COMPACT VIDEO—Earth station equipment and services; headphones, speakers/intercoms; lightning and powerline protection systems. BOOTH 1142.

COMPREHENSIVE VIDEO SUPPLY—Battery packs, belts & chargers; bulk tape erasers; modular cabinets and consoles; custom cases; character generators; digital clocks and timers; headphones, speakers/intercoms; graphics equipment; lenses; lights and lighting accessories; microphones; modulators and demodulators; pedestals, tripods, and heads; storage racks and cabinets; video switchers; audio tape and videotape, and accessories; tape degausser; transmitting tubes; wireless microphones and intercoms; production music and sound effects libraries. **Introducing: QUARTZ BEAM™ location video lighting products; Comprehensive™ microphone range; production music library; character generator.** BOOTH 1315.

Continued on page 154

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Affordable remote truck installations

can now be designed and built to **your** requirements. Imagination and skill are used to produce a complete package. We start from the inside/out, selecting from the industry's finest technical equipment and uniting it with a flexible, reliable vehicle. Why not let Television Engineering Corporation build one for you?

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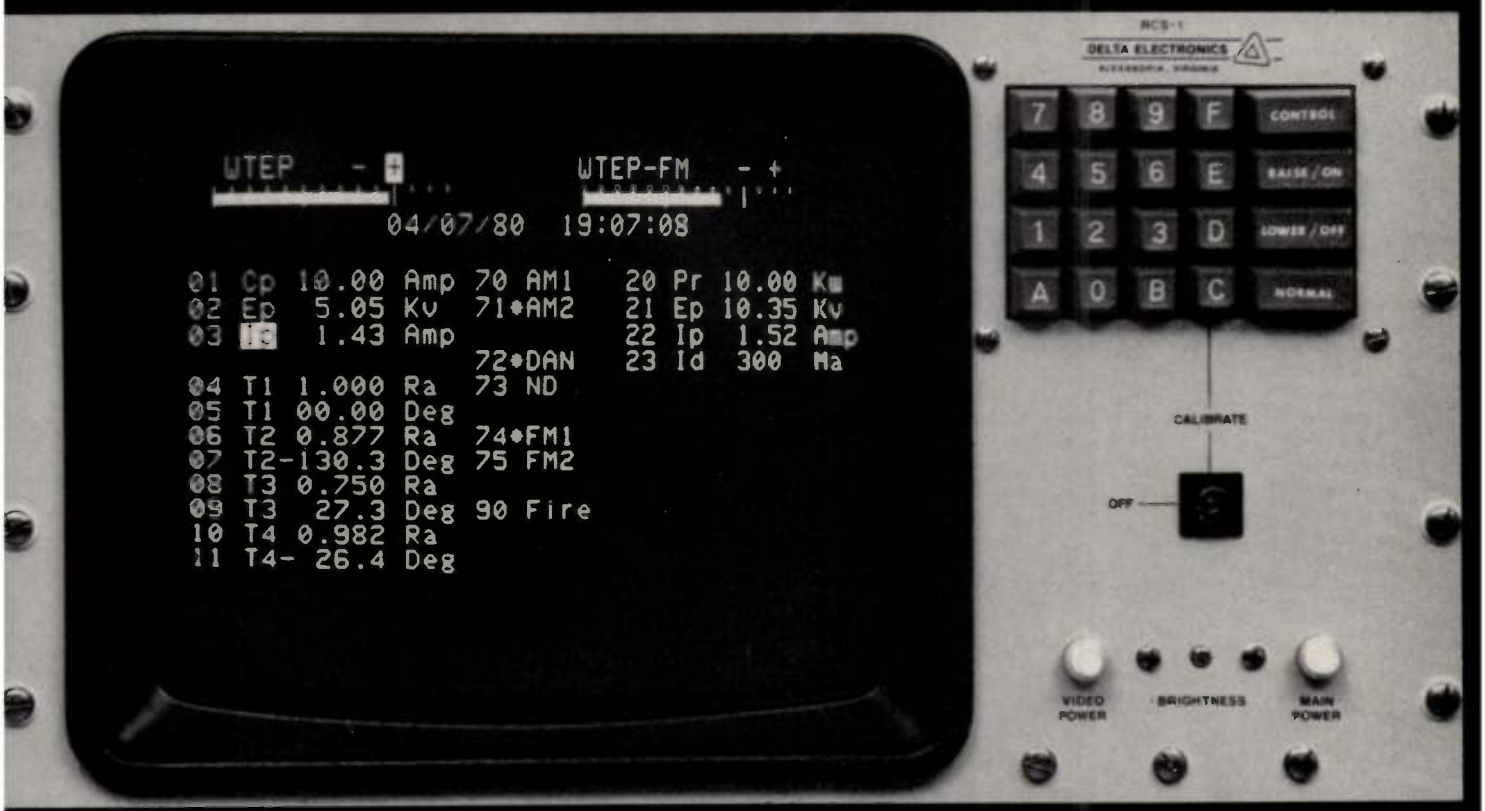

THE DELTA RCS-1 REMOTE CONTROL SYSTEM

A simple, yet sophisticated approach to AM, FM and TV Remote Control

SIMPLE.

All parameters are displayed for the operator.

- Hands-off operation until an actual control function is required.
- Automatic logging option ends the nightmare of forgotten or incorrect log entries.

SOPHISTICATED.

Features not found on other remote control systems:

- Modulation bargraph with peak flashers.
- Direct antenna monitor interface.
- Telephone coupler with speech synthesizer providing telephone interrogation.

DUAL SITE OPTION NOW AVAILABLE

The RCS-1 is designed to grow with your plant. Additional control, input, and alarm boards can be added to the systems, thereby meeting any new station requirements. In addition, the RCS-1 contains the fundamental building blocks for ATS, permitting conversion to a combination Remote Control/ATS System at a later date.

Write or call for a descriptive data sheet and pricing.

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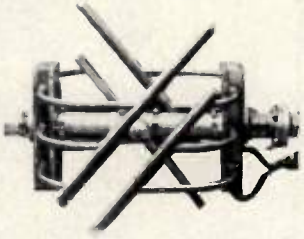
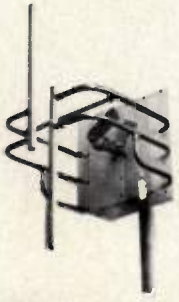
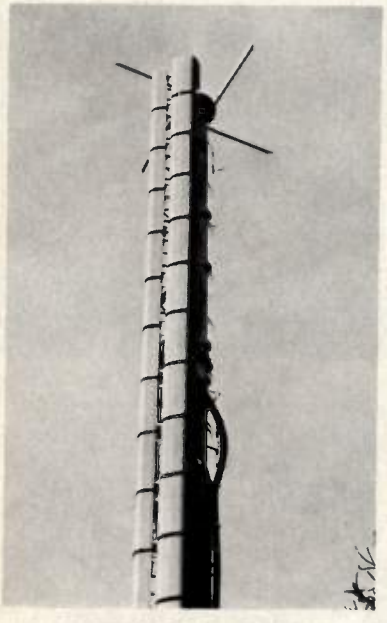


FM MODEL 6814 25KW PER BAY



FM MODEL 6810 10KW PER BAY



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COMPUCON—Engineering services for communications planning, including satellite earth station frequency analysis and coordination; transportable earth station frequency engineering; terrestrial microwave frequency planning and coordination; cellular and land mobile engineering; low-power television engineering services; multipoint distribution systems services; FCC license application preparation; ongoing frequency protection; on-site field support; communications marketing research; DTS/DEMS engineering; cable television aeronautical frequency compatibility studies; and complete systems design capabilities. **Introducing: Radiation hazard measurements designed to give clients accurate and documented levels of radiation eminating from existing common carrier, private microwave, or earth station transmitting facilities. Engineers are capable of detecting levels of radiation below those suggested as being safe for prolonged human exposure by the current OSHA and ANSI standards.** BOOTH 1616.

COMPUTER CONCEPTS—Business computer system. **Introducing: Total Station Automation (TSA), a powerful communication link between the business automation and program automation. Logs created by the Broadcast System can be loaded over a simple cable into the program automation. The Broadcast System then monitors the performance of each spot automatically, placing those spots that fail to air properly on a bumped-spot list for automatic rescheduling. The customer is automatically billed only for those spots that were successfully performed with exact times, if desired, printed on the invoice. The TSA concept will be continuously demonstrated using the Broadcast Electronics Control 16 in Booth 303.** BOOTH 404.

COMPUTER GRAPHICS LABS—Animation/graphics equipment. BOOTH 1143.

COMREX—Low frequency extenders; audio remotes equipment; wireless microphones and intercoms. BOOTH 400.

COMSEARCH—Earth station services; microwave, STL, and remote pickup services; satellite distribution services; low-power TV services. **Introducing: Paging, cellular, and mobile radio engineering services.** BOOTH 1136.

COMTECH DATA—Satellite antennas; earth-station equipment and services; modulators and demodulators. **Introducing: Single-channel-per-carrier uplinks and receiving systems for state and regional networks and industrial communication links. Transmission and reception of audio, video, and data.** BOOTH 314.

CONCEPT PRODUCTIONS—Syndicated music sales and production aids. BOOTH 423.

CONNECT-AIR—Television camera cables with custom cable assembles. BOOTH 1764.
SEE AD ON PAGE 177

CONNECTRONICS CORPORATION (formerly Canford Audio)—Amplifiers and pre-amps; processing and equalizing equipment; audio remotes equipment; audio special effects equipment and generators; wire and cable. **Introducing: ACCESSIT range of audio signal processors manufactured by Bandive Limited of the United Kingdom. This budget range of units is designed on a modular basis and can be mounted. The range includes compressor, noise gate, reverberation unit, dual sweep EQ, power amp, and 18-way normalize patch bay.** BOOTH 608.

OTIS CONNER PRODUCTIONS—Program services. BOOTH 414.

CONRAC—Video monitors. BOOTH 1401.

CONTINENTAL ELECTRONICS—FM antennas; audio consoles; AM and FM transmitters. BOOTH 101.
SEE AD ON PAGE 88

CONTINENTAL RECORDINGS—Radio station ID packages and commercial jingles. BOOTH 333.

CONTROL VIDEO—Edit code generators and receivers; video editors; time code equipment; accessories. **Introducing: Lightfinger Plus with floppy-disc memory storage. Lightfinger Plus is a multiple-machine, A/B roll tape editor with mixed effects switcher interface and expanded edit list memory. It also features a touch-active CRT used instead of a keyboard. Control Video will also introduce the Spot Editor, a low-cost, cuts-only editor for the assembly of spot reels used in satellite tone-activated playback systems and other applications.** BOOTH 1157.

CONVERGENCE CORPORATION—Video editors; time code equipment. **Introducing: Video editing products and accessories including A/B roll models, list management model, mix effects system, dual-disc drives, and other new products. In addition, EXS-90 edit controller will be introduced, including a built-in time code generator, time code reader, and edit decision lister.** BOOTH 1430. Hospitality Suite: MGM Grand.

COOL LIGHT COMPANY—Lights and lighting accessories. **Introducing: Tri-Light, complete unit consisting of three three-light strips in a common frame; Mini-Cool with new features; universal precision light framer.** BOOTH 1322.

CORPORATE COMMUNICATIONS CONSULTANTS—Computerized scene-to-scene video color correctors. **Introducing: Television digital scene-to-scene video color corrections incorporating the ABC digital command module.** BOOTH 1161.

COUNTRY MAN—BOOTH 1750.

COX DATA SERVICES—BOOTH 1165.

CROSSPOINT LATCH—Audio automation systems; audio special effects equipment and generators; video switchers. **Introducing: Three-bus, eight-input switcher for editor control; three-level, three-bus switcher (two**

chroma channels and one luminance) for use with time base correctors; downstream key edger with outline, drop shadow, and matt key, and two built-in colorizers. BOOTH 1321.

SEE AD ON PAGE 151

CROWN INTERNATIONAL—Amplifiers, pre-amps, DA's; audio analyzers; audio monitoring, measuring and timing equipment; microphones. BOOTH 428.

CUSTOM BUSINESS SYSTEMS—Business computer system. BOOTH 317.

D

dbx INC.—Audio analyzers; audio monitoring, measuring and timing equipment; encoders and decoders; limiters and compressors; noise reduction system; processing and equalizing equipment. BOOTH 621.

DD ELECTRONICS—BOOTH 326.

PETER DAHL COMPANY—Transformers. **Introducing: Heavy-duty plate, power, filament, and modulation transformers and reactors.** BOOTH 612.

DATA COMMUNICATIONS—Business and newsroom computer systems; automation master control. **Introducing: BIAS Newsroom Management System, providing an automated approach to managing resources for newsgathering. Includes news videotape morgue, cross indexing of slides, newspaper index, newscast index, contact directory, job costing, future/feature file, and parts inventory and equipment maintenance.** BOOTH 1014.

DATATEK—Amplifiers, pre-amps, DA's; processing and equalizing equipment; routing switchers. BOOTH 1428.

DATATRON—Edit code generators and receivers; video editors; slow-motion replay equipment; time code equipment. BOOTH 1005.

DATATRONIX—Amplifiers, pre-amps, DA's; limiters and compressors; processing and equalizing equipment; audio consoles. BOOTH 1504.

DATUM—Character generators; digital clocks and timers; encoders and decoders; time code equipment. BOOTH 1708.

DAVIS & SANFORD—BOOTH 1751.

DELCOM—Battery packs, belts, and chargers; modular cabinets and consoles; camera accessories; character generators; edit code generators and receivers; video editors; film chain equipment; frame store synchronizers; pedestals, tripods and heads; routing switchers; video switchers; videotape and accessories; video test generators; time base correctors; time code equipment; vans and ladder vehicles; video monitors; video signal enhancement and correction equipment; VTRs. **Introducing: Post-production system; Delcom modified and manufactured products.**]BOOTH 1507.

DELTA ELECTRONICS—Antenna monitors; ATS equipment; microwave, STL, and remote pickup equipment; RF instrumentation. **Introducing: Dual site option for the RCS-IV transmitter remote-control system. This option enhances the flexibility of this microprocessor-based, CRT display, control system. With the new dual site option, the AM/FM operator with different transmitter locations for the AM and FM facilities can combine both telemetry and control functions in a common studio control location. Additionally, control and data are available at each remote site to control the alternate site. The RCS-IV remote-control system features such popular options as telephone access via an English-language speech synthesizer, automatic logging, and remote modulation display. Accessories include external video displays, and digital data recorders for program storage.** BOOTH 105.

SEE AD ON PAGE 153

Continued on page 156

An easy switch

The BTI RS5000 routing switcher is a microcomputer based system which utilizes distributed processing to provide increased performance and reliability. Its flexibility, architecture and excellent specifications make it an ideal solution to your switching applications.

The microcomputer-based access terminals combine comprehensive control and status reporting functions with ease of operation. A two wire serial link is all that is required for connection to the mainframe, and there is provision for multiple access terminals to share the same link.

The RS5000 is compact and infinitely expandable. Because of its microcomputer control and modular add-ons, you will never again be confronted with obsolescence. The system can grow with your requirements whether your signals are analog or digital - audio, video or data - or a combination.

Beginning today, the RS5000 is the only switching system that you will ever need.

See and hear it at NAB, Las Vegas, April 10-13, Booth 1701

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DELTAMOD—BOOTH 614.

DeWOLFE MUSIC LIBRARY—Music library; sound effects library. BOOTH 1120.

DICTAPHONE—Bulk tape erasers; audio recorders; audio tape and accessories; time code equipment. BOOTH 211.

DIGITAL VIDEO SYSTEMS—Frame store synchronizers; video synchronizers; time code equipment. **Introducing: Satellite transmission system which is a refinement of MAC (multiplexed analog components) technology and provides secure scrambling, high data channel capacity, virtually unlimited addressing, multichannel digital audio, and hard encryption; single-clock component TBC with freeze field for heterodyne VTRs; special-effects mixer which has a 3-bus structure x 8 inputs, internal bars and black, master fade-to-black, plus many other features (designed for on/off-line editing and post-production use).** BOOTH 1017-A.

DIRECT-CUE—BOOTH 1424-A.

DI-TECH—Audio monitoring, measuring, and timing equipment; processing and equalizing equipment; routing switchers. BOOTH 1301.

SEE AD ON PAGE 1

DOLBY LABORATORIES—Noise reduction systems. BOOTH 1311.

DORROUGH ELECTRONICS—Limiters and compressors; processing and equalizing equipment; loudness-level metering. **Introducing: Discriminate audio processor model 610, a digitally designed tri-band audio processor with attach and release times a function of a programmable Eprom. LED metering is provided for each channel plus an LED output meter designed for precise setting of the modulation to the relative loudness level desired. A unique peak clipping circuit is also included. Entry portals are available for interfacing with any of the AM stereo systems. Units track with digital perfection. Models are available for FM and television.** BOOTH 312.

DRUMMEX—BOOTH 1760.

DUBNER COMPUTER SYSTEMS—Animation/graphics equipment; character generators; weather computer systems; digital effects equipment; film chain equipment; telecine equipment; color correctors. **Introducing: Upgraded version of the Emmy award-winning CBG-2 videographics generator. The new CBG-2 features an expanded color palette option (4,096 colors); an added fade/dissolve/translucence capability between both display planes; a faster, larger-capacity high-speed disc; and a bulk memory option that allows real-time digital playback at field rate (60/sec) for virtually all CBG animations. Dubner will also be showing its color corrector computer model CCC-12 for the first time. The CCC-12 controls scene-by-scene correction of video information as it is transferred to videotape. It can be used to control a combination of any telecine, film chain, color matrix, color corrector, or video switcher. A color-corrected videotape, including switcher effects (fades, wipes, etc.) and film chain effects (pans) can be produced in a single operation.** BOOTH 1630.

DYNACOM ELECTRONICS LIMITED—Encoders and decoders, including addressable encode/decode system for STV; multichannel decoder; MDS system. BOOTH 1163.

SEE AD ON PAGE 116

DYNAIR ELECTRONICS—Amplifiers and DA's; equalizing equipment; audio equipment; routing switchers; video switchers. **Introducing: 20 x 20 audio/video routing switcher, single frame; 16 x 1 switching modules; 5 x 1 RGB switch for chroma-key; audio and pulse DA modules; analog "shuttle" function for machine control.** BOOTH 1404.

DYNAMIC TECHNOLOGY—Amplifiers, pre-amps, DA's; duplex communication systems; lights and lighting accessories; video switchers. **Introducing: Studio lighting control and dimming equipment; remote machine control and data transmission equipment; distribution equipment.** BOOTH 1719.

E

EECO—Time code equipment; edit code generators and readers. BOOTH 1314.

EEG ENTERPRISES—Character generators; encoders and decoders; time code equipment. BOOTH 1155.

EEV—Camera and transmitting tubes. **Introducing: Electron tubes for the broadcast industry, including 5 kW-55 kW high-efficiency UHF-TV Klystrons with beam control device; 30 kW high-efficiency UHF-TV Klystrons; ½-inch diode gun Leddicon with high resolution and low lag; 30mm diode gun Leddicon with an ultra-high-resolution target; ⅔-inch HOP/ACT Leddicon; liquid crystal displays for static or multiplex operation.** BOOTH 1335.

SEE ADS ON PAGES 27 and 100-101

EG&G—Antennas, transmission lines, towers, and lights; lights and lighting accessories. BOOTH 1327.

EHA—BOOTH 328.

E-N-G CORPORATION—Towers; vans and ladder vehicles. BOOTH 1022.

E.R.A.—BOOTH 1711-A.

ESE—Amplifiers, pre-amps, DA's; audio measuring and timing equipment; digital clocks and timers; edit code generators and receivers; time code equipment; video monitoring, measuring, and timing equipment. **Introducing: Video distribution amplifier (1X4); time calculator that adds**

and subtracts hours, minutes, seconds, frames, and includes an up/down timer; "Smart" SMPTE reader that reads code even when code is bad. BOOTHS 116 and 1757.

SEE AD ON PAGE 115

EASTMAN KODAK—Film projectors; complete line of Eastman motion-picture products for program origination, post-production, and distribution of television programming. BOOTH 1214.

ECHOLAB—Video switchers. BOOTH 1510.

EIGEN VIDEO—Digital effects equipment; slow-motion replay equipment. BOOTH 1227.

ELCOM-BAUER—AM, FM and TV exciters; AM stereo generators; FM stereo generators; limiters and compressors; SCA equipment; AM and FM transmitters. BOOTH 412.

ELECTOR—Video monitors. Elector, the exclusive U.S. distributor for Barco products, will be featuring the Barco line of broadcast monitors, including the CTVM master broadcast monitor and CM Series multipurpose monitors. BOOTH 1131.

ELECTRO CONTROLS—Lights and lighting accessories. BOOTH 1159.

ELECTRO IMPULSE LABORATORY—Loads and wattmeters; RF calorimeters; attenuators; baluns. BOOTH 117.

ELECTRO-VOICE—Monitor loudspeakers; microphones. BOOTH 511.

SEE AD ON PAGE 119

ELECTROHOME—BOOTH 1628.

ELLIS TOWER—BOOTH 461.

EMCEE BROADCAST PRODUCTS—Low-power TV translators; TV transmitters. Introducing: Solid-state 10-watt MDS transmitter with separate visual and aural amplification to offer better linearity for the use of scrambling systems; single-bay 1 kW UHF amplifier for low-power television, offering superior performance, greater efficiency, and lighter weight for ease of installation. BOOTH 1621.

EMCOR PRODUCTS (G.F. BUSINESS EQUIPMENT)—Modular cabinets and consoles; audio consoles. BOOTH 429.

EMERGENCY ALERT RECEIVER—BOOTH 610.

ENSTROM HELICOPTER—Helicopters and related equipment. BOOTH 1700.

ENTERPRISE ELECTRONICS—BOOTH 1329.

ENVIRONMENTAL SATELLITE DATA—BOOTH 1766.

EVENTIDE CLOCKWORKS—Audio analyzers; digital effects equipment; processing and equalizing equipment; audio special effects equipment and generators; time compression systems. Introducing: Digital reverb unit, a signal processor with a wide variety of user-programmable effects including room and plate reverb, delay, musical combs, flanging, and more. BOOTH 323.

EXCALIBAR INDUSTRIES—Custom cases. BOOTH 1106.

FAROUDJA LABORATORIES—Encoders and decoders; noise reduction systems; video filters; video signal enhancement and correction equipment. Introducing: NTSC decoder with outstanding performances. The use of

Continued on page 158

You can find any exhibitor with **THE NO-NONSENSE MAP** on page 89

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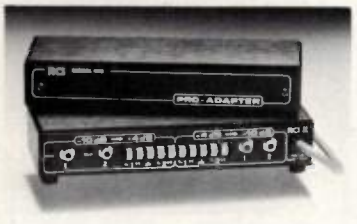

A complete two channel amplifier system providing proper interface of pro and semi-pro gear. Its balanced output drives 600 ohm lines at +4 or +8 dBm, keeps on going to +24 dBm before clipping. Dual fixed attenuators provide -10 dB nominal return. A tight ±¼ dB response in a 20-20 KHz bandwidth provides remarkably transparent sound. A super tool at an affordable price. Just **$219.95** at better Pro Audio Dealers.

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chroma and luminance enhancement, combined with active comb filtering technology, gives to the user a set of RGB outputs which are virtually undistinguishable from non-encoded direct signals. BOOTH 1753.

FARRTRONICS—Amplifiers and DA's; audio consoles; intercoms; pre-wired audio patchfields. **Introducing: Video patchfields; beltpack intercom system; intercom system with tally lights.** BOOTH 1735.

FELDMAR WATCH COMPANY—BOOTH 651.

FERNSEH—See listing for Bosch.

FIDELIPAC—Audio monitoring, measuring and timing equipment; cart machines and accessory equipment; audio carts; phono cartridges; audio tape and accessories; wow and flutter meter; studio warning lights. BOOTH 103.

FILM/VIDEO EQUIPMENT SERVICE—Battery packs, belts and chargers; cameras, accessories; cases; lenses and lens services; lights and lighting accessories. **Introducing: Wide Eye I and II wide-angle attachments for ENG/EFP lenses; video camera and recorder cases from Kangaroo Video Products.** BOOTH 1153.

FIRSTCOM BROADCAST SERVICES—Commercial sales and production libraries and IDs. **Introducing: Direct-mail promotion for radio stations titled "The Winning Check."** BOOTH 219.

FITZCO SOUND—A wide range of broadcast equipment by Sennheiser, Wireworks, Hannay Reels, Lexicon, Eventide, Vega, AKG Acoustics, Technics, Neutrik, Ampex, and others. BOOTH 1514.

SEE AD ON PAGE 41

FLASH TECHNOLOGY—Lights; high-intensity beams. BOOTH 1619.

FLORIDA COMPUTER GRAPHICS—BOOTH 1632.

FOR-A CORP. OF AMERICA—Character generators; digital clocks and timers; business computer systems; edit code generators and receivers; signal pattern generators; noise reduction systems; processing and equalizing equipment; video switchers; video test generators; time base correctors; time code equipment; video signal enhancement and correction equipment. **Introducing: Multiple-input title keyer; low-cost video writer; time code reader with video display function; color interface module for For-A's video typewriter equipment line; low-cost, versatile video typewriter; computer video display synchronizer; and PAL TBC with image enhancement, color correction, and noise reduction.** BOOTH 1306.

SEE AD ON PAGE 110

FORTEL—Audio and video synchronizers; time base correctors; video signal enhancement and correction equipment. **Introducing: New feature for the Y-688[32] Total Error Corrector called DYNA-TRAC™. DYNA-TRAC allows the Y-688[32] to work the new Sony BVU-820 slow-motion U-Matic VTR to deliver virtually perfect full reverse play speed to 3X forward, including stop action.** BOOTH 1323.

SEE AD ON PAGE 99

FORT WORTH TOWER COMPANY—Towers; earth station equipment and services. BOOTH 1010.

FOSTEX CORP. OF AMERICA—Noise reduction system; audio recorders. **Introducing: Multitrack recording products for the broadcast industry.** BOOTH 1739.

FREZZOLINI ELECTRONICS—Battery packs, belts and chargers; camera accessories; lights and lighting accessories; VTRs. **Introducing: Two-channel regulated power supply and fast charger; on-camera ½-inch VHS-format VTR; portable car charger in carrying case, which charges up to four FBP-90 or Sony BP-90 battery packs; low-cost mini "Frezzi" light for professional and consumer applications.** BOOTH 1107.

SEE AD ON PAGE 158

FUJI PHOTO FILM USA—Videotape, audio tape, and accessories. BOOTH 1413.

SEE AD ON PAGE 35

FUJINON INC.—Lenses and lens services; full line of television lenses and optical systems for 1¼-inch, 1-inch, ⅔-inch, and ½-inch formats. BOOTH 1411.

SEE AD ON PAGE 73

G

GEC McMICHAEL—BOOTH 1772.

GAGNON LAFOREST—BOOTH 1717.

GARNER INDUSTRIES—Bulk tape erasers; tape degausser. BOOTH 1223.

GENERAL ELECTRIC—Lights and lighting accessories. BOOTH 1109.

GENERIC COMPUTER SYSTEMS—Business computer systems; traffic and billing software. **Introducing: Applelog, automation for traffic and billing on the Apple II computer with a hard disc.** BOOTH 308.

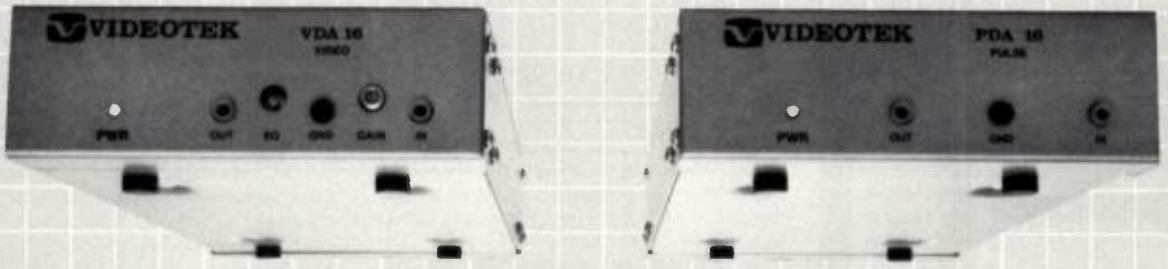
GLENTRONIX—Bulk tape erasers; character generators; digital clocks and timers; video editors; encoders and decoders; routing switchers; video switchers; tape degausser; time code equipment; video delay lines and filters; video heads and refurbishing services; video monitors. BOOTH 1318.

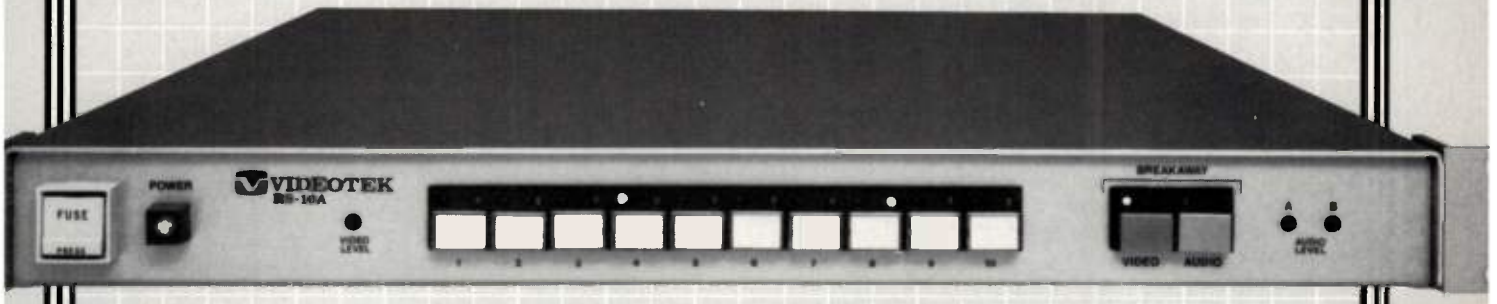
ALAN GORDON—BOOTH 1726.

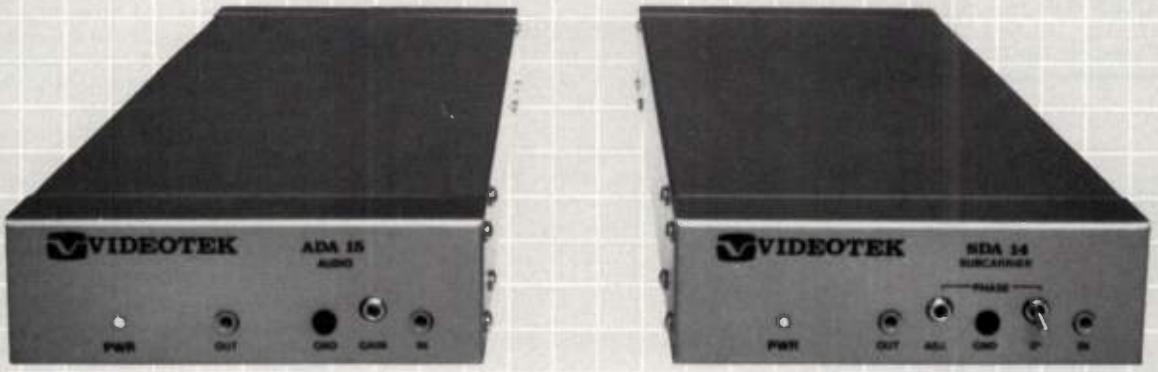
GORMAN REDLICH—Antenna monitors; encoders and decoders; weather instruments and accessories. **Introducing: Dual-channel stereo EBS encoder.** BOOTH 506.

Continued on page 160

PROGRESS







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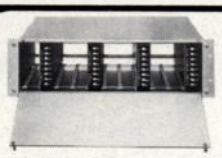

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GOTHAM AUDIO—Audio consoles; limiters and compressors; microphones; noise reduction systems; audio recorders; wow and flutter meters. **Introducing: Telefunken M21 analog audio tape machine with microprocessor control of all transport and audio functions.** BOOTH 503.

GRAHAM PATTEN SYSTEMS—Amplifiers and DA's; audio consoles; processing and equalizing equipment; special effects equipment and generators. **Introducing: Multiple-input, downstream keyer with bordering capability; post-production audio mixer with capability of interfacing with most editing systems.** BOOTH 1227-A.

SEE AD ON PAGE 106

GRASS VALLEY GROUP—Digital effects equipment; fiber optic systems; routing switchers; video switchers. BOOTH 1207.

SEE AD ON PAGE 5

GRAY COMMUNICATIONS CONSULTANTS—BOOTH 1618-A.

GRAY ENGINEERING LABS—BOOTH 1755.

THE GREAT AMERICAN MARKET—Custom cases; lights and lighting accessories. BOOTH 1108.

DAVID GREEN, BROADCAST CONSULTANT—Amplifiers, pre-amps, DA's; audio monitoring, measuring and timing equipment; microphones. BOOTH 417.

GREGG LABORATORIES—Pre-amps; digital clocks and timers; audio consoles; limiters and compressors; processing and equalizing equipment; studio/telephone interface equipment. BOOTH 455.

BOBBY GRIFFIN—BOOTH 432.

GRUMMAN AEROSPACE—BOOTH 1631-B.

HEDCO (HUGHES ELECTRONIC DEVICES)—Amplifiers and DA's; audio monitoring; routing switchers; video switchers; video monitoring. **Introducing: 16-input, 1-output stereo AFV monitoring switcher; self-powered audio and video distribution amplifiers in a 1 RU frame; intermediate-sized AFV routing switcher configured as 48 inputs by 48 outputs.** BOOTH 1225.

HM ELECTRONICS—Audio monitoring, measuring, and timing equipment; duplex communication system; headphones, speakers/intercoms; wireless microphones and intercoms. **Introducing: Cable intercom systems for broadcast, theater, and industrial communications; second-generation wireless microphone systems; wireless precision audio link for remote sound measurement applications.** BOOTH 1130.

HALLIKAINEN & FRIENDS—ATS equipment; audio consoles; audio remotes equipment; remote-control equipment. **Introducing: An inexpensive yet expandable digital remote-control system. Expansion capabilities include up to 100 sites with 100 metering channels per site, automatic transmitter logging and control, and test-equipment interface at each site.** BOOTH 306.

HARRIS CORPORATION—Amplifiers, pre-amps, DA's; antenna monitors; antennas, transmission lines, towers and lights; FM antennas; UHF/VHF antennas; audio monitoring, measuring and timing equipment; audio automation systems; cameras and accessories; character generators; business computer systems; audio consoles; earth station equipment and services; AM, FM, TV exciters; frame store synchronizers; microwave, STL and remote pickup equipment; modulators and demodulators; processing and equalizing equipment; time base correctors; AM, FM, TV transmitters; camera and transmitting tubes. **Introducing: The Harris Broadcast Division will introduce a 6.1-meter delta gain satellite antenna offering performance capabilities of larger antennas; UHF-TV transmitting slot antenna; TC-90 EFP camera; 10-channel audio console; Micro Mac with new features. Harris Video Systems will introduce the Digifont character generator for the IRIS II digital still-store system, and a time base corrector. Harris Broadcast Microwave will show a new 7 GHz microwave television relay transmitter/receive system.** BOOTH 401.

HARRISON SYSTEMS—Audio consoles; audio remotes equipment. **Introducing: Cost-effective stereo production and post-production audio console.** BOOTH 1324.

HARVEY PRO AUDIO/VIDEO (AUTOMATED STUDIO TECHNOLOGIES)—Audio and video editing systems. **Introducing: A new electronic audio and video editing system, demonstrated in the booth made up to simulate a small studio environment.** BOOTH 1122-A

SEE AD ON PAGE 131

KARL HEITZ—Camera accessories; lenses and lens services; lights and lighting accessories. **Introducing: Gitzo fluid head with 100% fluid front and rear tilt, 100% 360° panning, with quick release, for cameras up to 20 pounds; Gitzo quick release to be mounted on any video head, for rapid attaching and detaching of cameras up to 50 pounds; Gitzo video combi tripods with spring-balanced head; Alpa Roto 70/60 70mm reflex panoramic camera 360°.** BOOTH 1115.

HIPOTRONICS—BOOTH 1779.

HITACHI DENSHI AMERICA—Studio and ENG cameras and accessories; film chain equipment; slow-motion replay equipment; time base correctors; video monitors. BOOTH 1402.

HOLADAY INDUSTRIES—BOOTH 1517-B.

HOTRONIC—BOOTH 1782.

HOWE AUDIO PRODUCTIONS—Amplifiers, pre-amps, DA's; audio consoles; phase error correction unit. **Introducing: 7500 Series console; 7000 Series console with Daven step attenuators; 2100 Series phase chaser.** BOOTH 406.

IGM COMMUNICATIONS—Audio automation systems; cart machines and accessories. **Introducing: MARC (Manual Assist Remote Control) for Instacart for live studio and manual assist operation. IGM will also announce a new Custom Design Group for those broadcasters wishing custom-designed systems for live assist or up to full automation.** BOOTH 403.

IKEGAMI ELECTRONICS (USA)—Amplifiers, pre-amps, DA's; battery packs, belts and chargers; cameras and accessories; film chain equipment; microwave, STL and remote pickup equipment; telecine equipment; video monitors; VTRs. **Introducing: ITC-730, ⅔-inch Saticon II prism optics camera system with 2-H detail corrector and 300-meter CCU capability, for ENG/EFP; HL-79E, ultra-high-performance ⅔-inch format ENG/EFP camera system with auto set-up capability; ML-79/83, portable ENG microwave system for both HL-79 and HL-83 cameras; HK-322, production version of Ikegami's most highly advanced studio/field auto set-up camera system; latest HDTV camera and monitor systems; Series 9 9-inch, high-resolution, in-line gun CRT, color broadcast monitor; Series 3 broadcast-quality, high-resolution monochrome monitors.** BOOTH 1013.

IMAGE VIDEO—Amplifiers, pre-amps, DA's; digital clocks and timers; routing switchers; video switchers; master control switchers. **Introducing: 9100 routing switcher; 7001 dual video mix amp; 8200 master control switcher; various routing switcher control panels. The 9100 series is a new generation of routing switcher designed for medium to large routing systems with full modular construction to facilitate easy expansion up to 256 inputs with an unlimited number of outputs. Any combination of video, audio, and time code matrices are available.** BOOTH 1341.

INDUSTRIAL ACOUSTICS—BOOTH 322.

INDUSTRIAL SCIENCES INC. (ISI)—Amplifiers, pre-amps, DA's; character generators; signal pattern generators; routing switchers; video switchers. **Introducing: Video production switcher featuring dual mix/effects amplifiers each with soft/hard/bordered wipes with reentry; shared pattern generator with individual size and bordered wipes; microprocessor control with self-test diagnostics; 10 composite videos, 4 bus; 14 patterns including circle, square, corners, diagonals, and diamonds; preset bus to program bus variable mix or cut; master fade-to-black with blanking processor; RS232 editor interface, optional.** BOOTH 1232.

SEE AD ON PAGE 120

INFLIGHT SERVICES—BOOTH 1316.

INFORMATION TRANSMISSION SYSTEMS (ITS)—BOOTH 1765.

INNOVATIVE TELEVISION EQUIPMENT (ITE)—Pedestals, tripods, and heads. **Introducing: ITE-T3 ENG-type tripod; ITE-T14 remote-type tripod; ITE-P2 studio pedestal; ITE-H3A cam head; ITE-H17 hydro head.** BOOTH 1215. Hospitality Suite: Hilton.

INOVONICS—Audio analyzers; audio monitoring, measuring, and timing equipment; audio automation systems; limiters and compressors; noise reduction systems; processing and equalizing equipment; audio recorders; audio tape and accessories. **Introducing: Latest addition to a line of audio processing equipment for broadcast; computer-controlled processor for AM, FM or TV.** BOOTH 304.

SEE AD ON PAGE 118

INTEGRATED SOUND SYSTEMS—Audio consoles; processing and equalizing equipment; audio special-effects equipment and generators. BOOTH 327.

INTEGRATED TECHNOLOGY—BOOTH 1114-A.

INTERACTIVE MARKET SYSTEMS—BOOTH 310.

INTERACTIVE SYSTEMS—BOOTH 1167.

INTERAND—Animation/graphics equipment; weather computer system; digital effects equipment; special effects equipment and generators. BOOTH 1622.

INTERFACE DATA SYSTEMS—BOOTH 1517.

INTERFACE ELECTRONICS—Audio consoles. **Introducing: An updated version of the model 200B 8-input stereo battery/AC professional audio mixer; updated version of the model 550 broadcast/TV audio console.** BOOTH 215.

INTERNATIONAL TAPETRONICS/3M—Cart machines and accessory equipment; cartridge machines and reel-to-reel audio recorders. **Introducing: The Delta Series, a new line of audio tape cartridge reproducers and recorder/reproducers. The Delta Series replaces the premium line of SP, RP and 3D machines by giving the same or better audio quality and dependability in a one-third rack-width size.** BOOTH 107.

INTERNATIONAL VIDEO CORPORATION—Animation/graphics equipment; video editors; frame store synchronizers; audio/video synchronizers; time base correctors; time code equipment; video heads and refurbishing services; VTRs; video changer; NTSC frame store. **Introducing: Video changer (complete station automator); NTSC frame store.** BOOTH 1509. Hospitality Suite: MGM Grand.

Continued on page 162

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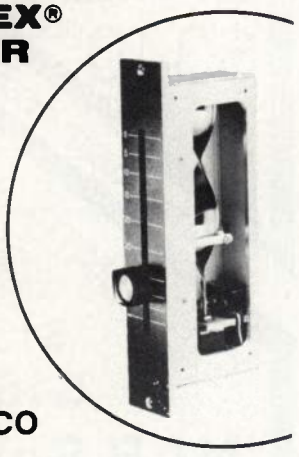

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J-K

JBL (JAMES B. LANSING SOUND)—Studio monitors; microphone mixer. **Introducing: Model 4401 studio monitor.** BOOTH 615.

JVC COMPANY OF AMERICA—Studio and ENG cameras and accessories; video editors; VTRs; video monitors. BOOTH 1234.

JAM CREATIVE PRODUCTIONS—BOOTH 206.

JAMIESON & ASSOCIATES—BOOTH 1718.

JATEX—Accessories; digital timers; edit code generators and services; video editors; time code equipment; video and audio editing systems. **Introducing: Type C 1-inch and quad interfaces for the Jatex VSEC 62TMX A/B roll editing controllers; custom design and consulting for computerized editing systems; search control interface (VDAPT) for Sony Type V and 383 to the Jatex VSEC 42T series editing controllers.** BOOTH 1132.

JEFFERSON DATA SYSTEMS—Business and newsroom computer systems. **Introducing: Program Management System, offering complete inventory and control for all syndicated program materials; Electronic News Processing (ENP) system, offering increased cost performance.** BOOTH 1629.

JENEL CORPORATION—Audio monitoring, measuring and timing equipment; newsroom computer systems; earth station equipment and services; fiber-optic systems; vans and ladder vehicles; video monitoring, measuring and timing equipment; consulting and design. BOOTH 1338.

JENSEN TOOLS—Tools and test equipment. **Introducing: Tool kits for both installation and service engineers—either in the field or on-site; specialized test equipment and hand tools for broadcast and cable operations.** BOOTH 1169.

K & H PRODUCTS—BOOTH 1746.

KAHN COMMUNICATIONS—AM stereo exciters to produce the Kahn/Hazeltine independent sideband stereo signal. BOOTH 625. Hospitality Suite: Las Vegas Hilton.

KAMAN SCIENCES/KAMAN BROADCASTING SYSTEMS—Business computer systems. **Introducing: The KBS computer system, a completely new, completely in-house system for traffic, accounting, films, and news. Features interfaces for hardware and word processing. In-house computer is an IBM System 38.** BOOTH 1607. Hospitality Suite: MGM Grand.

SEE AD ON PAGES 28-29

KAVCO—Television automation systems; on-air computer systems; low-power television equipment. **Introducing: KAVCART™ cassette automation system using KAVTROL™ computer controller and CRT readout of all data. KAVCART controls multiple ½-inch or ¾-inch playback units, automatic cassette cue-up, automatic or manual on-air play and sequencing.** BOOTH 1706.

KAVOURAS—Animation/graphics equipment; weather computer systems; digital effects equipment; satellite distribution services; weather instruments, radar and accessories. **Introducing: Triton X graphics and animation system. The Triton X is a third-generation computer system with the graphics resolution of 640 X 480 X 6. It offers full color and intensities (32,000 color choices), animation which for the first time is true animation, and has the storage capability of a macro-computer to open a whole new era of a truly computerized weather station. The Triton X is the only computer system offered in the commercial field which has the potential to expand into a weather system comparable to the National Weather Service AFOS program (and beyond). Also to be introduced is the Radac Satellite Data Acquisition System, a new satellite image acquisition system for the Radac Color Weather Radar Remoting System. Designed to allow the Radac system to function as a radar and satellite display service, the new feature makes the Radac unit twice as valuable to the broadcast meteorologist.** BOOTH 1635.

SEE AD ON PAGE 20

KEYLIGHT RENTAL—BOOTH 1220.

KING INSTRUMENT—BOOTH 1794.

KINGS ELECTRONICS—RF coaxial and triaxial connectors; video patch panels; video patch cords. BOOTH 1623.

KLIEGL BROTHERS—Lights and lighting accessories; lighting control systems. BOOTH 1604.

KNOWLEDGE INDUSTRY PUBLICATIONS—TESS, Television Equipment Specification Service. BOOTH 1720.

KOBOLD OF AMERICA (KOBOLD LICHT)—BOOTH 1725.

L

LPB INC.—Amplifiers, pre-amps, DA's; cartridges and tone arms; audio consoles; AM, FM, TV exciters; AM and FM transmitters; turntables and accessories. **Introducing: Highway-advisory radio and travelers' information service transmission systems.** BOOTH 405.

LTM CORP. OF AMERICA—Battery packs, belts and chargers. BOOTH 1518.

L-W INTERNATIONAL—Telecine equipment. BOOTH 1305.

LAIRD TELEMEDIA—Modular cabinets and consoles; character generators; digital clocks and timers; film chain equipment; telecine equipment; security system. **Introducing: High-resolution, proportionally-spaced character generator; medium-resolution,**

proportionally-spaced character generator; medium-resolution time-date and fixed-message generator; medium-resolution, fixed-format character generator with computer interface designed to meet security-system requirements; Telop, a telecine input source utilizing opaque photos or cards. BOOTH 1721.

SEE AD ON PAGE 112

LAKE SYSTEMS—Radio automation systems. **Introducing: La-Kart station-break automation system for commercial insertion.** BOOTH 1790.

SEE AD ON PAGE 185

LANDY ASSOCIATES—BOOTH 1747-A.

LANG VIDEO SYSTEMS—Video switchers; video source identifier. BOOTH 1780.

SEE AD ON PAGE 2

JAMES B. LANSING SOUND—See JBL listing.

LARCAN COMMUNICATIONS EQUIPMENT—TV transmitters. **Introducing: 12 kW high-channel VHF television transmitter. The transmitter uses only one tube for the visual output; the aural is completely solid-state. The transmitter is used with an external diplexer. Larcan is also introducing an input rack for paralleling two transmitters designed with all solid-state relays.** BOOTH 1626-A.

LAUMIC COMPANY—BOOTH 1771.

LEADER INSTRUMENTS—Audio analyzers; audio monitoring, measuring and timing equipment; field strength meters; FM stereo generators; signal pattern generators; audio test generators; video test generators; video monitoring, measuring and timing equipment; wow and flutter meters. BOOTH 1702.

TONY LEASE—BOOTH 1511.

LeBLANC & ROYLE COMMUNICATIONS—Antennas, transmission lines, towers, and lights; FM, UHF, VHF antennas. BOOTH 1149.

LEE-RAY INDUSTRIES—BOOTH 1151.

LEITCH VIDEO OF AMERICA—Amplifiers, pre-amps, DA's; digital clocks and timers; earth station equipment and services; processing and equalizing equipment; routing switchers; video test generators; vertical interval test sets; video delay lines and filters; video monitoring, measuring, and timing equipment. **Introducing: NTSC vertical interval processor (deleter adder); SCH and horizontal timing monitor; digital television video and multi-audio scrambler/descrambler; video equalizing distribution amplifier.** BOOTH 1021.

LEMO USA—Audio components and hardware; video components and hardware. BOOTH 1171.

LENCO—Amplifiers, pre-amps, DA's; encoders and decoders; signal pattern generators; video test generators; video monitoring, measuring and timing equipment; video signal enhancement and correction equipment. BOOTH 1419.

SEE AD ON PAGE 123

LEXICON—Digital effects equipment; audio special effects equipment and generators; time compression equipment. BOOTH 1139.

LIGHTNING ELIMINATION ASSOCIATES—Lightning and powerline protection systems. **Introducing: Continuous power source; perfect power source providing voltage regulation and surge protection from lightning and switching transients, filtering for a wide spectrum of RFI, EMI, and EMP noise, plus protection from induced transients.** BOOTH 302.

SEE AD ON PAGE 179

LISTEC TELEVISION EQUIPMENT—Audio consoles; pedestals, tripods and heads; video prompters. BOOTH 1406.

LOGICA—Animation/graphics equipment; teletext system. BOOTH 1600-A.

LOGITEK ELECTRONIC SYSTEMS—Amplifiers, pre-amps, DA's; digital timers; audio consoles; speakers; audio remotes equipment. **Introducing: Modular, rack-mounted distribution/monitor amplifier system; studio monitor speakers. Logitek's new amplifier system is a high-performance, high-density means for amplifying and distributing audio signals.** BOOTH 613.

LOWEL-LIGHT—Lights and lighting accessories. BOOTH 1309.

LYON LAMB VIDEO ANIMATION SYSTEMS—Animation equipment. BOOTH 1414.

McCURDY RADIO INDUSTRIES—See listing for MRI Systems Limited.

McINNIS-SKINNER & ASSOCIATES—Animation/graphics equipment; newsroom and weather computer systems. **Introducing: High-quality graphic-arts computer system for broadcast news and production graphics. Available as a stand-alone system or as a module of the Newscan automated newsroom computer, the unit features high resolution, large color selection, and new software functions designed specifically for graphic-arts uses. Also being introduced are enhancements to the Newscan computer system and Weathergraphics system products.** BOOTH 1349.

McMARTIN INDUSTRIES—Amplifiers, pre-amps, DA's; AM stereo generators; FM antennas; audio monitoring, measuring and timing equipment; audio consoles; earth station equipment and services; encoders and decoders; AM, FM, TV exciters; FM stereo generators; limiters and compressors; microwave, STL and remote pickup equipment; modulators and demodulators; processing and equalizing equipment; audio remotes equipment; SCA equipment; turntables and accessories. BOOTH 701.

3M COMPANY/MAGNETIC A/V PRODUCTS—Digital effects equipment; character generators; video special effects equipment and generators; routing switchers; VTRs; digital audio mastering system. BOOTH 1002.

3M/SCOTCHCART—Tape and accessories. BOOTH 203.

Continued on page 164

Go from 1 to 10 in 30 seconds.

BTI's DA 7111 distribution amplifier guarantees you high performance and fast starts. Plug it in and you're in business, no soldering iron, no screwdriver. Adapts to all types of equipment.

1 ON THE FLOOR*

Unique in its class, the DA 7111 features:

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M/A-COM VIDEO SYSTEMS—Earth station equipment and services; fiber optic systems; helicopter tracking systems; microwave, STL and remote pickup equipment; satellite distribution services. **Introducing: Skypod high-gain helicopter ENG system; super 2MX/2MR ENG transmitter/receiver.** BOOTH 1004.

MBB HELICOPTERS—BOOTH 1784.

MCI (DIVISION OF SONY CORPORATION OF AMERICA)—Audio consoles. **Introducing: JH-800 compact portable console. This is a 12-input unit with four VCA groups and comprehensive equalization and filtering capabilities. This is the first MCI/Sony product for use outside the recording studio. Individual access to each channel fader VCA enables easy interface to computer-controlled "audio follow video" editing systems, and user-programmable "broadcast logic" functions make the new board ideal for location use at sports events or concerts where an on-air feed is required.** BOOTH 605.

SEE AD ON PAGE 87

MCI/QUANTEL—Digital effects equipment; frame store synchronizers; special effects equipment and generators; standards conversion; audio/video synchronizers. BOOTH 1631.

SEE AD ON PAGE 148

MRI SYSTEMS LIMITED (formerly McCurdy Radio Industries)—Amplifiers, pre-amps, DA's; audio monitoring, measuring, and timing equipment; audio automation equipment; audio consoles; headphones, speakers/intercoms; limiters and compressors; processing and equalizing equipment; audio remotes equipment; routing switchers; video switchers; audio test generators; video test generators; turntables and accessories. **Introducing: Digitally controlled intercom system; program routing switcher system; alphanumeric routing switcher control.** BOOTH 207.

SEE ADS ON INSIDE FRONT COVER and PAGE 72

MZB & ASSOCIATES—Vans and ladder vehicles. BOOTH 1507-A.

MAGNASYNC/MOVIOLA—Film chain equipment; telecine equipment. **Introducing: Videola® V-400 Compact, the smallest 16mm telecine in the world, retaining all of the quality performance of its larger brothers, the V-500 and V-1000. Designed to replace 16mm film chains in broadcast studios, the V-400 will be available in low-cost pairs, making reel changes and switching easier than ever before. Uses the same film transport as do the V-500 and V-1000, with identical optics and the same smooth, quiet movement. All-new illumination source design provides 3,000-hour lamp life for direct on-air operation or for transfer to tape.** BOOTH 1147.

MAGNAVOX AM STEREO—BOOTH 603.

MAGNUM TOWERS–Antennas, transmission lines, towers, and lights; lights and lighting accessories. BOOTH 119.

THE MANAGEMENT—Audio automation system; cart machines and accessories; audio carts; business computer systems. **Introducing: SimpleLog, a low-cost, full-computer, traffic and billing system; the Electric Log traffic and billing system for radio/TV; Superlog for radio and TV; new software for broadcast applications.** BOOTH 627.

MARCOM—AM stereo and FM stereo generators; low-frequency extenders. **Introducing: Telephone-line bandwidth expander (BAX); Motorola/Magnavox-compatible AM stereo generator; FM stereo generator with digital overshoot corrector.** BOOTH 306.

MARCONI ELECTRONICS—Amplifiers, pre-amps, DA's; FM, UHF and VHF antennas; cameras, accessories; encoders and decoders; AM, FM, TV exciters; film chain equipment; FM stereo generators; slow-motion replay equipment; telecine equipment; time base correctors; AM, FM, TV transmitters; VTRs. **Introducing: Line-array telecine Type B3410, featuring full pan scan operation including facilities for such varying aspect ratios as Cinemascope, 1.85:1 and 1.66:1 film.** BOOTH 1609.

MARCONI ELECTRONIC-INSTRUMENTS DIVISION—BOOTH 1615.

MARKETRON—BOOTH 634.

MARTI ELECTRONICS—Amplifiers, pre-amps, DA's; UHF and VHF antennas; battery packs, belts, and chargers; duplex communication systems; limiters and compressors; microwave, STL, and remote pick-up equipment; microphones; audio remotes equipment; SCA equipment; wireless microphones and intercoms. **Introducing: Full back-up telemetry link with automatic switching for use by remote-controlled television and radio stations; automatic transmitter switcher using pin diode RF switching for STL transmitters.** BOOTH 501.

SEE AD ON PAGE 175

MATTHEWS STUDIO EQUIPMENT—Lights and lighting accessories; pedestals, tripods and heads. **Introducing: Tulip crane and all accessories; Video Matth Pak; Sky-Cam; junior tulip crane; Cam-remote; Modulight Systems lighting and light systems.** BOOTH 1775.

MAXELL CORP. OF AMERICA—Audio tape, videotape, and accessories. BOOTH 1612. Hospitality Suite: Caesars Palace.

MEDIA COMPUTING—Business and newsroom computer systems. **Introducing: Computer Assisted Broadcasting (CAB), a system of programs designed to utilize an Apple microcomputer, at a micro price. The CAB system includes a micro version of an automated newsroom with prompter-script word processor and assignments/archives modules. It also has personnel roster maintenance program, inventory and parts control systems, and an advertiser accounts maintenance module.** BOOTH 1522.

MEDIA CONCEPTS—BOOTH 1122-B.

MERLIN ENGINEERING—Audio monitoring; video editors; time base correctors; VTRs. BOOTH 1236.

MICMIX AUDIO PRODUCTS—Noise reduction system; processing equipment; audio special effects equipment and generators. **Introducing: Dynafex noise reduction system, a card-cage version that will fit the MC Series card-cage manufactured by Micmix as well as the dbx 900 series; Plate Synthesizer, a reverb system that actually synthesizes the reverberation qualities and properties of a platetype reverberator.** BOOTH 604.

MICRO COMMUNICATIONS—Antennas and transmission lines; UHF and VHF antennas; diplexers and combiners; transmission line; spring hangers. **Introducing: Low-power TV antennas; MDS combiners.** BOOTH 1617.

MICRO CONTROL ASSOCIATES—See Power Pak Systems.

MICRODYNE—Satellite antennas; earth station equipment and services; AM, FM, TV exciters; modulators and demodulators. **Introducing: Single-channel-per-carrier (SCPC) and multiple-channel-per-carrier (MCPC) demodulator, used in narrowband satellite systems.** BOOTHS 132 and 1129.

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AM MODULATION MONITOR

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MICROTIME—Frame store synchronizers; noise reduction system; time base correctors; video signal enhancement and correction equipment. BOOTH 1230.

MICRO-TRAK—Amplifiers, pre-amps, DA's; cartridges & tone arms; audio consoles; remote pickup equipment; audio remotes equipment; storage racks; tape accessories; turntables & accessories. BOOTH 619.

MIDWEST CORPORATION—Cameras, accessories; digital clocks and timers; video editors; frame store synchronizers; lenses; audio recorders; video switchers; video synthesizers; videotape and accessories; time base correctors; vans; video monitoring, measuring, and timing equipment; video monitors; video signal enhancement and correction equipment; VTRs; wireless intercoms. **Introducing: Small video production mobile units; 30-foot complete production unit.** BOOTH 1710. Hospitality Suite: MGM Grand.

SEE AD ON PAGE 9

MINOLTA—Video monitoring equipment; TV color analyzer; luminance meter; chroma meter. BOOTH 1113.

MODULAR AUDIO PRODUCTS—Rack-mount, self-powered audio distribution amplifiers; retro-fit compressor/limiter equalizer; oscillator modules; IMPAC modules. **Introducing: Stereo compressor/limiter with unique rms to DC compressor control; rack-mount, self-powered newsroom switcher; card mounting frame 5¼ inches high for standard size cards and DIN connectors; distribution amplifier modular with eight output splits and featuring high input and output handling capability, plus low distortion and noise; line/mix amplifier module with balanced inputs and outputs and excellent noise, distortion, and dynamic range specifications; modular plug-in power supply that plugs into 4950 rack frame.** BOOTH 325.

SEE AD ON PAGE 116

MODULATION SCIENCES—BOOTH 649.

MODULIGHT SYSTEMS—BOOTH 1103-A.

MOLE-RICHARDSON—BOOTH 1006.

KEITH MONKS AUDIO—Record cleaning machines; microphone studs; cable reels. BOOTH 512.

MOSELEY ASSOCIATES—ATS equipment; FM stereo generators; microwave, STL and remote pickup equipment; modulators and demodulators; remote control systems. **Introducing: Microprocessor-based transmitter remote-control system for AM, FM, and TV where television telemetry failsafe is not required.** BOOTH 301.

SEE ADS ON PAGES 140 and 141

MOTOROLA COMMUNICATIONS & ELECTRONICS—AM exciters; communications systems. **Introducing: Two-way FM communications system; AM stereo exciters and monitors.** BOOTH 411.

SEE AD ON PAGE 143

Continued on page 166

THE ONLY NEW AM & FM TRANSMITTER LINE AT NAB WILL BE SINGER BROADCAST

Completely new, inside and out. Quietly, we've been developing transmitters that benefit from 40 years' manufacturing experience. We've improved on technology already trusted by more than 2,000 customers.

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- Locates splice automatically
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- Automatic Cartridge ejector
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- No adjustments to make

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MULTI-TRACK MAGNETICS—Film chain equipment; film recorders; video synchronizers. BOOTH 1712.

MUSIC DIRECTOR PROGRAMMING SERVICE—Program services; syndicated music. BOOTH 217.

THE MUSICWORKS—Program services; syndicated music sales. BOOTH 209.

MYCROTEK—BOOTH 1776.

NEC AMERICA—Cameras and accessories; digital effects equipment; FM and TV exciters; frame synchronizers; microwave, STL, and remote pickup equipment; digital multiplexer systems; video synchronizers; FM transmitters; TV transmitters; audio disc player. **Introducing: 7 GHz field pick-up microwave; digital audio disc player and audio equalizer; E-Flex off-line editing system; rotation/perspective adapter and chroma-key generator; 3-chip CCD color camera; FM exciter; FM transmitter; and anode pulser.** BOOTH 1415.

SEE AD ON PAGE 145

NTI AMERICA—BOOTH 1105.

NADY SYSTEMS—Wireless microphones and intercoms. **Introducing: Free-standing base station for Nady PRC-3 wireless communicator; free-standing base station for Nady RT-201A wireless communicator; easy-talk PRC-3 wireless personal radio communicator.** BOOTH 1133.

NAGRA MAGNETIC RECORDERS—Amplifiers, pre-amps; audio recorders; audio remotes equipment; audio synchronizers; audio tape and accessories; tape degausser; time code equipment; weather instruments. BOOTH 1213.

NAUTEL MAINE—AM transmitters. **Introducing: Totally solid-state, fully modular, 1 kW AM broadcast transmitter.** BOOTH 216.

NEILSON-HORDELL—BOOTH 1744.

NETWORK PRODUCTION MUSIC—Music library. BOOTH 1138.

RUPERT NEVE—Amplifiers, pre-amps, DA's; audio automation systems; audio consoles; limiters and compressors; processing and equalizing equipment; audio test generators; microprocessor-controlled communications system. BOOTH 1410.

SEE AD ON PAGE 167

NEWSCAN/McINNIS-SKINNER—See listing under McInnis-Skinner & Associates.

NOBLE BROADCAST CONSULTANTS—BOOTH 441.

NORTRONICS—Bulk tape erasers; audio tape and videotape accessories; tape degausser; magnetic recording heads (audio). BOOTH 205.

NURAD—Antenna monitors; antennas, transmission lines, towers, and lights; microwave, STL, and remote pickup equipment. **Introducing: 2 GHz 21-channel microwave receiver; 7 GHz 30-channel microwave receiver; STL/1CR transmitters and receivers; 2 GHz 21-channel portable transmitter; ITFS/MDS transmitter and receiver; MC4 digital remote control; Silhouette™ receive antenna system; Silhouette™ transmit antenna with built-in power amplifier; 7 GHz power amplifier.** BOOTH 1426.

NYTONE ELECTRONICS—Film chain equipment. BOOTH 1135.

OAK COMMUNICATIONS—Encoders and decoders; program services; satellite distribution encoders and decoders. BOOTH 1331.

O'CONNOR ENGINEERING—Pedestals, tripods and heads. BOOTH 1229.

OKI ELECTRIC OVERSEAS—Standards conversion. **Introducing: Digital TV standards converter.** BOOTH 1505. Hospitality Suite: MGM Grand Hotel.

SEE AD ON PAGE 69

OLESEN—Lights and lighting accessories; lighting control systems; rigging, track, studio layout; cyc and studio drapery. BOOTH 1307.

OMNIMOUNT SYSTEMS—Camera accessories; equipment mounting assemblies. **Introducing: 36-percent, scaled-down Series 50 mounting system with a maximum load rated at 40 pounds; Series 200 Omnimount, a heavy-dute mounting system designed especially for use with 19-inch and 25-inch television monitors, monitor speakers, and other devices weighing up to 125 pounds; pop-on, pop-off tripod head assembly.** BOOTH 510.

ORBAN ASSOCIATES—FM stereo generators; limiters and compressors; processing and equalizing equipment; audio special effects equipment and generators. **Introducing: Multi-band OPTIMOD-FM; OPTIMOD-TV with loudness controller; programmable parametric equalizer; two-channel de-esser; stereo synthesizer.** BOOTH 607.

SEE ADS ON PAGES 59 and 85

ORROX/CMX SYSTEMS—BOOTH 1639. (See CMX Systems listing.)

SEE AD ON PAGE 71

J. OSAWA & COMPANY LTD.—BOOTH 1716.

OSBORNE ASSOCIATES—Antennas, transmission lines, towers and lights; towers; fixed or mobile radio communications; camera or microphone support; temporary floodlighting; environmental sensors; field strength measurement. BOOTH 339.

SEE AD ON PAGE 169

OTARI CORPORATION—Audio monitoring equipment; audio automation systems; audio recorders; audio duplicators; videotape loaders. BOOTH 601. Hospitality Suite: Hilton.

PACE—BOOTH 430.

PACIFIC RECORDERS & ENGINEERING—Modular cabinets and consoles; cart machines and accessories; audio consoles. BOOTH 113.

PANASONIC, PROFESSIONAL AUDIO DIVISION—Amplifiers, pre-amps, DA's; audio components; audio monitoring equipment; cartridges and tone arms; audio consoles; headphones and speakers; audio recorders; turntables and accessories. BOOTH 437.

PANASONIC, AUDIO/VIDEO SYSTEMS DIVISION—Studio and ENG cameras and accessories; video editors; microphones; video special effects equipment and generators; video switchers; video monitors; VTRs. BOOTH 1019.

PATCH BAY DESIGNATION COMPANY—BOOTH 1773.

PEP INC.—Battery packs, belts and chargers; camera accessories; lights and lighting accessories; VTRs. **Introducing: ON-CAM, a five-pound VTR that snaps onto an ENG camera to convert it to a convenient camera/recorder. The ON-CAM records 20 minutes on a ½-inch newscassette the size of a deck of cards. PEP is also introducing the newscassette Playback, a plug-to-plug compatible playback source for integration of ON-CAM recordings with existing ¾-inch editing facilities.** BOOTH 1208.

PERROTT ENGINEERING—Battery packs, belts and chargers; lights and lighting accessories. **Introducing: Dual NiCad belt for camera or lighting (14.4-volt 8AH or 28.8-volt 4AH); lightweight, compact 12-volt mini light; Red Baron series Kwik-Klip belts.** BOOTH 1729.

SEE ADS ON PAGES 121 and 124

PETERS PRODUCTIONS—Syndicated music sales and production aids; total image concepts, including video animation for radio, TV, and cable system promotions. BOOTH 315.

PHELPS DODGE COMMUNICATIONS—Antennas, transmission lines, towers and lights; FM antennas; STL and remote pickup equipment. BOOTH 1007.

SEE AD ON PAGE 103

PHILADELPHIA RESINS—Tower guys. **Introducing: Complete synthetic tower guy systems for the broadcast industry. These systems include proper electrical protection against corona as well as mechanically optimized end fittings.** BOOTH 126.

PHILIPS TELEVISION SYSTEMS—Cameras, accessories; AM, FM, TV exciters; noise reduction systems; TV transmitters; vans and ladder vehicles; video monitors; video signal enhancement and correction equipment; remote control and telemetry system; high-efficiency Klystron system. **Introducing: LDK-6 production model of automatic studio and field camera (25mm and 30mm configurations); 25 kW UHF transmitter; mobile television production van (displayed in outside van area).** BOOTH 1409-A. Hospitality Suite: Director Suite, Hilton.

SEE AD ON PAGE 51

PHILIPS TEST & MEASURING INSTRUMENTS—Signal pattern generators; modulators and demodulators; video test generators; vectorscopes; waveform monitors. BOOTH 1408.

SEE AD ON PAGE 39

PORTA-PATTERN—Telecine equipment; video measuring equipment; camera test charts. **Introducing: Duochart series of lightweight, low-cost test chart systems; BBC #62P high-saturation color bar chart; color calibration chart system containing BBC #62P color bar chart and log gray scale chart; series of totally waterproof test chart systems for camera set-up under adverse environment conditions; pocket test chart system.** BOOTH 1427.

POTOMAC INSTRUMENTS—Antenna monitors; ATS equipment; audio analyzers; field strength meters; audio test generators; wow and flutter meters. **Introducing: Automatic modulation and power controller for AM broadcast stations. This unit continuously monitors modulation and power levels; and, if either parameter exceeds user-specified tolerances, it will automatically adjust audio levels or activate transmitter raise and lower (power) controls as necessary to maintain operation within the desired limits. This device will accommodate up to three different antenna patterns and/or power levels. Two separate audio attenuators are controlled simultaneously for AM stereo application or separate transmitter requirements. The audio attenuators exhibit a flat frequency response to approximately 100 kHz, and will not alter station audio processing. Failsafe design prevents "hunting" of power control relays, provides self-diagnosis and protection against controller failure, and provides status alarms in the event of abnormal operation. Front-panel meters are provided to indicate the trend and amount of correction being applied to both modulation and power-control circuits.** BOOTH 100.

SEE AD ON PAGE 82

POWER PAK SYSTEMS (formerly Micro Control)—AM, FM and TV exciters; FM stereo generators; microwave, STL and remote pickup equipment; FM translators. **Introducing: New products in all Power Pak lines.** BOOTH 206-A.

PRECISION ECHO—Video compression system. **Introducing: The Squeezer, an affordable video compression system. The Squeezer is a programmable video compression and positioning system that compresses an image down to four selectable sizes, places that image anywhere within the screen on command, crops any part of it to any size, and puts a variable-sized border of any color around it on request.** BOOTH 1417.

SEE AD ON PAGE 107

PROCART—Audio carts. BOOTH 115.

PROCESSING PLUS—Audio processing equipment. BOOTH 638

PROCOMMOTION—BOOTH 434.

PRODUCTION SOURCE—BOOTH 1740.

PROGRESSIVE BUSINESS SYSTEMS—BOOTH 631.

QEI—ATS equipment; FM stereo generators; SCA equipment; FM transmitters; FM stereo monitors. **Introducing: low-distortion exciter; 1 kW solid-state FM transmitter; 3.5 kW single-tube FM transmitter; remote control unit.** BOOTH 307.

SEE AD ON PAGE 130

QSC—BOOTH 626.

QSI SYSTEMS—Color bar generators; modulators and demodulators. **Introducing: 105-channel TV demodulator that is one-rack high and features direct-access keypad in standard telephone layout, built-in speaker, 600-ohm balanced audio line output, sync and burst regeneration, and optional wired remote channel selection; low-cost color bar generator that produces standard full bars with an eight-character ID positionable anywhere on the screen; SMPTE color bar generators allowing continuous ID of live video signal by inserting the ID into the vertical interval of the live video.** BOOTH 1325.

Q-TV/TELESYNC—Video prompters. BOOTH 1206.

QUAD EIGHT ELECTRONICS—Audio consoles; processing and equalizing equipment; audio special-effects equipment and generators. **Introducing: Audio reverberation system featuring local control of reverb time, high-frequency reverb time, and predelay for a cost-effective solution to fixed installations (expandable with optional remote control unit). The resident echo program, capable of simulation tape loop or delay, augments four reverb programs to provide a versatile reverberation unit.** BOOTH 1636.

QUANTA CORPORATION—Character generators; newsroom computer systems. **Introducing: QUANTAFONT teleproduction graphic titler series with totally modular 3-stage update design in both table-top and**

Continued on page 168

DA'S FOR AUDIO

Highest Performance • Excellent Reliability • Low Cost

Select Neve's DA-90 Audio Distribution Amplifier Range as your DA standard and get peace of mind. Rack cage is 3.5" tall and can take up to ten (10) DA Output Cards and/or Input Mixing Cards, plus PSU module. Each output card has nine (9) resistive split outputs. Specify 75, 150 or 600 ohms.

Delivery is generally stock to 30 days.

Model		Price
PL70426	19" Rack Cage, Empty	$ 465
BA-569	Power Supply Module	$ 490
BA-567	DA Card - 9 Outputs	$ 220
BA-568	Input Mixing Card - 4 Inputs	$ 195

(Prices subject to change)

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rack-mount units from sizeable upper- and lower-case font to proportionally spaced fonts of two resident type faces up to full resident font pack of multiple type faces. BOOTH 1432.

SEE ADS ON PAGES 12-13 and 117

QUANTUM AUDIO LABS—Broadcast production consoles. BOOTH 134.

QUICKSCAN SYSTEMS—BOOTH 1516.

QUICK-SET—Pedestals, tripods & heads. BOOTH 1009.

R

R-COLUMBIA PRODUCTS—Duplex communication systems; headphones and intercoms; wireless intercoms and headphones. Introducing: "Instant Hook-Up" intercom headphones, providing two-way intercommunication without the need for technical installation skills. Powered by a 120-volt supply, the model TP/IC provides crystal-clear two-way voice communication utilizing up to 10 similar headphones which can be separated by distances of up to one mile. System is compatible with universally available modular telephone cords and accessories. BOOTH 1111.

RCA CORPORATION—FM antennas; VHF, UHF antennas; studio and ENG cameras and accessories; film cameras and projectors; cart machines and accessory equipment; audio consoles; video editors; film chain equipment; time base correctors; AM, FM, TV transmitters; VTRs. BOOTH 1000.

RF TECHNOLOGY—Antennas; diplexers and combiners; microwave, STL and remote pickup equipment; modulators and demodulators; wireless microphones. BOOTH 1306.

RTNDA—BOOTH 1501.

RTS SYSTEMS—Amplifiers, pre-amps, DA's; headphones, speakers/intercoms. BOOTH 1142.

RADIOCOM—BOOTH 637.

RADIO SYSTEMS—Amplifiers, pre-amps, DA's; audio consoles. Introducing: Audio broadcast consoles; audio-metrics line of amps and timers. BOOTH 341.

RAMKO RESEARCH—Amplifiers, pre-amps, DA's; cart machines and accessory equipment; audio consoles; speakers; limiters; audio recorders; audio remotes equipment; routing switchers; turntables and accessories. BOOTH 415.

RANK CINTEL LIMITED—Film chain equipment; audio recorders; telecine equipment. Introducing: Amigo, a new generation programming system for all Cintel MK III Series telecines, and featuring simplified installation, faster response, easier operation, and three levels of editing. Rank Cintel is also introducing a compact, digital still-picture store with its own processor and integral Winchester disc drive. Ideal for studio or outside broadcast vehicles. BOOTH 1219.

RECORTEC—Video insertion generator; cassette rewinder. Introducing: Low-cost studio date-time video insertion generator; ¾-inch cassette rewinder. BOOTH 1209.

REES ASSOCIATES—Low-power TV translators; architectural and engineering planning/design services. Introducing: Low-power television standardized small community building package, developed in association with Star Manufacturing Company. BOOTH 1727.

SEE AD ON PAGE 104

RELIABLE MEASUREMENT SYSTEMS—BOOTH 1762.

RESEARCH TECHNOLOGY INTERNATIONAL (RTI)—Bulk tape erasers; cabinets and consoles; business computer systems; video editors and accessories; audio tape and accessories; lenses and lens services; storage racks and cabinets. Introducing: New ultrasonic film cleaning system. BOOTH 1626.

SEE AD ON PAGE 175

RESTORATION—BOOTH 438.

RICHARDSON—BOOTH 1715-A.

ROCKWELL INTERNATIONAL—BOOTH 1512.

ROH CORPORATION—Amplifiers, pre-amps, DA's; audio monitoring, measuring and timing equipment; headphones, speakers/ intercoms; limiters and compressors. BOOTH 1634.

ROHDE & SCHWARZ—Modulators and demodulators; video test generators; test sets, vertical interval; video monitoring, measuring and timing equipment; video monitors. BOOTH 1203.

SEE AD ON PAGE 115 (foreign edition)

ROHN—Towers. Introducing: Modular fiberglass equipment shelters for any communications equipment need. Standard design or custom built to specifications. Delivered on-site completely assembled, ready to use. Highest quality materials used (polyester resin and chopped fiberglass). Protected against water, air, and dust. BOOTH 110.

ROSCO LABS—Lights and lighting accessories. BOOTH 1235.

ROSCOR—BOOTH 1181.

ROSS AMERICAN LOGIC SYSTEMS—BOOTH 1332.

ROSS VIDEO—Video switchers. Introducing: Compact and affordable four-bus 12- or 20-input video production switcher featuring the Ross Multi-Level Effects system. The new model, the 524, can manipulate up to four video sources at one time without locking up the switcher. The display model will include such options as chroma keyer, editor and digital interfaces, rotary wipes, analog borders, and auto transition. BOOTH 1110.

JOHN B. RUDY COMPANY—BOOTH 1175.

RUSSCO ELECTRONICS—Amplifiers, pre-amps, DA's; audio monitoring, measuring, and timing equipment; cartridges and tone arms; audio consoles; audio remotes equipment; turntables and accessories. Introducing: Direct-drive turntable; phono preamp. BOOTH 413.

S

SMPTE—BOOTH 1632-A.

SACHTLER CORPORATION OF AMERICA—Tripods and heads. BOOTH 1648.

SACRED HEART PROGRAM—BOOTH 431.

SAKI MAGNETICS—Magnetic tape heads. Introducing: Long-life ferrite heads for Ampex, MCI, Mincom, Otari, Revox, Scully, Studer, and Technics; ferrite audio posts for 1-inch Sony video recorders; line of long-life metal heads for cart machines constructed of a new core material known as Amorphous, which offers head life similar to Sendust or Alphasil construction, but superior sound characteristics due to the high coreacivity of this new material. BOOTH 416.

SEE AD ON PAGE 82

HOWARD W. SAMS & COMPANY—BOOTH 1751.

SATT ELECTRONICS AB—Audio consoles. Introducing: Studio audio mixer, the SAM 42, with four main inputs and two main outputs. SAM 42 is very well suited for OB and ENG productions. BOOTH 212.

SCIENTIFIC-ATLANTA—Earth station equipment and services; AM, FM, TV exciters; modulators and demodulators; video switchers. BOOTH 1017.

SCRIBE RECORDERS—Audio recorders. Introducing: Lightweight, industry-strength audio cassette recorder, custom-designed for spot news applications in the field, at a price competitive with existing models. BOOTH 214.

SEE AD ON PAGE 34

SELCO—BOOTH 663.

SENNHEISER ELECTRONICS—Headphones, speakers/intercoms; microphones; wireless microphones and intercoms. Introducing: Ultra miniature lavalier microphone. BOOTH 1137.

SESCOM—Amplifiers, pre-amps, DA's; headphones; intercoms; limiters and compressors; audio remotes equipment; audio test generators. Introducing: the MB-1, featuring transformer isolated for all outputs, 600-ohm balanced auxiliary output, and internal 120VAC power supply; two-

wire, two-channel belt-pack intercom and power supply which is compatible with the RTS TW intercom system; Mic-Line Driver System. BOOTH 112.

SHARP ELECTRONICS—Cameras and accessories; video monitors. **Introducing: Technologically advanced broadcast products.** BOOTH 1102.

SEE AD ON PAGES 146-147

SHINTRON—Amplifiers, pre-amps, DA's; modular cabinets and consoles; character generators; edit code generators and receivers; video editors; audio special effects equipment and generators; standards conversion; video switchers; time code equipment; video monitors. BOOTH 1421.

SEE AD ON PAGE 122

SHIVELY LABORATORIES—Antenna monitors; antennas, transmission lines, towers, and lights; FM antennas; UHF/VHF antennas; diplexers and combiners; loads and wattmeters. **Introducing: Complete line of TV broadcast antennas. Both UHF and VHF models will be shown covering both full-power and low-power requirements.** BOOTH 623.

SEE AD ON PAGE 154

SHOOK ELECTRONIC ENTERPRISES—Vans and ladder vehicles; mobile TV systems. **Introducing: Newly-designed 22-foot mobile television production system featuring rear-door entrance to the production area. The versatile mobile unit is equipped with Hitachi cameras and a full complement of audio/video equipment. This new product remains within the top line of Shook quality-built vehicles, and is extremely cost-effective ($160,000).** BOOTH 1310.

SEE AD ON PAGE 128

SHURE BROTHERS—Amplifiers and pre-amps; audio automation systems; cartridges; audio consoles; headsets; microphones; audio remotes equipment. **Introducing: Automatic Microphone System (AMS), a totally integrated sound system where microphones and mixer operate as one; SM63L, an omnidirectional, dynamic broadcast microphone.** BOOTH 1602.

SIERRA AUDIO—BOOTH 1618.

SIGMA ELECTRONICS—Amplifiers, pre-amps, DA's; audio/video synchronizers; video test generators. **Introducing: Color synchronizing generator, featuring RS-170A standard pulses, SC/H lock, SMPTE bars, and more; blackburst timing module.** BOOTH 1125.

SINGER BROADCAST PRODUCTS—AM, FM, TV exciters; FM stereo generators; AM and FM transmitters. **Introducing: 30-watt direct FM exciter featuring digital phase-lock AFC system, transformerless audio inputs, on-frequency phase-locked FET oscillator; stereo generator with direct-coupled, transformerless audio stages, matrix-type signal generation; 25 kW FM transmitter with pentode IPA and grounded grid PA (3C x 15000); 3 kW FM transmitter with grounded grid IPA (8874) and grounded grid PA (3C x 3000 A7); 5 kW AM transmitter with solid-state low-level circuitry on plug-in cards and high-level plate-modulated output stage (4C x 5000).** BOOTH 309.

SEE AD ON PAGE 165

SKIRPAN—BOOTH 1783.

SKOTEL—Edit code generators and receivers; time code equipment; time code synchronizer; digital metronome. BOOTH 1126.

SOLID STATE LOGIC—Production consoles. BOOTH 1723.

SNARR/CHASE SYSTEMS—Business computer systems. BOOTH 609.

SONO-MAG—Audio automation systems; cart machines and accessories. **Introducing: Bi-directional carousel.** BOOTH 202.

SONTEC ELECTRONICS—BOOTH 335.

SONY CORP. OF AMERICA—Audio monitoring, measuring and timing equipment; studio and ENG cameras and accessories; digital effects equipment; edit code generators and receivers; video ¾-inch and 1-inch recoders; FM stereo generators; microphones; headphones, speakers/intercoms; processing and equalizing equipment; audio recorders; slow-motion replay equipment; video special effects equipment; audio and videotape and accessories; time base correctors; time code equipment; video monitors; video signal enhancement and correction equipment; VTRs. BOOTH 1200.

SEE ADS ON PAGES 6-7, 18-19, and 139

SOPER SOUND MUSIC LIBRARY—BOOTH 1620-B.

SOUND EFFECTS—BOOTH 647.

SOUND GENESIS—BOOTH 331.

SOUND IDEAS—Sound-effects music library. BOOTH 647.

SEE AD ON PAGE 185

SOUND TECHNOLOGY—Audio analyzers; audio measuring equipment; audio test tapes; audio test generators; wow and flutter meters. **Introducing: Professional Tape Recorder/Audio Test System; test tapes for the Tape Recorder Test System series of instrumentation.** BOOTH 502.

SEE AD ON PAGE 33

SOUND WORKSHOP PROFESSIONAL AUDIO PRODUCTS—BOOTH 1734.

SOUNDCRAFT ELECTRONICS USA— Audio consoles; audio recorders. **Introducing: 16/24-channel audio consoles for production, on-air, and post-production.** BOOTH 1724.

SPECTRUM PLANNING—BOOTH 128.

SPENCER BROADCAST—Power-line suppression networks; Audio Path Engineering separation optimizer and unique stereo

Continued on page 170

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BROADCAST COMMUNICATIONS is sponsoring its first annual Cable-Radio Conference exploring new opportunities for radio broadcasters and cable operators in an era of rapid technological change.

This two-day conference will explore the critical questions that face radio broadcasters and cablecasters concerning cable radio and cable audio services, including:

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  An overview of the new technologies affecting radio and cable.
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- **Cable Audio Technology**
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- **Audio programming for Cable**
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- **Radio-Cable Joint Ventures**
  An exploration of radio-cable joint ventures.

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- Joshua Koenig, consultant to National Public Radio and director of the NPR Cable Audio Project.
- Bob Pates, vice president of CNN Radio.
- William Rasmussen, vice president, corporate development, Satellite Syndicated Systems.
- Ed Shane, radio programming editor of BROADCAST COMMUNICATIONS and an independent radio consultant.
- Ned Mountain, marketing manager of Wegener Communications.
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Who Should Attend?

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- Radio and Cable Consultants
- Program Syndicators

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phono preamplifiers; calibration standard instruments line of monitor speakers; new Audio Path line of audio power amplifiers. Spencer will also be demonstrating EFI networks. BOOTH 337.
SEE AD ON PAGE 58

STAGE LIGHTING DISTRIBUTORS—BOOTH 1128.

STAINLESS—Towers. BOOTH 1347.
SEE AD ON PAGE 80

STANTON MAGNETICS—Amplifiers, preamps, DA's; cartridges and tone arms; headphones, speakers/intercoms. **Introducing: Announcer's Earset, a new addition to the line of Stanton professional products. This earset can be used by all major TV networks and stations. It is designed for inconspicuous listening on-camera.** BOOTH 102.

STANTRON—Modular cabinets and consoles. **Introducing: Modular video center desk cabinets; modular video center cabinets; modular video center racks; modular video center sloping-front consoles; monitor bridge cabinets. All products are designed for video production and post-production editing and dubbing.** BOOTH 1123.

STATION BUSINESS SYSTEMS—Business and newsroom computer systems. BOOTH 311.

STEENBECK—BOOTH 1769.

STEPHENS ELECTRONICS—Audio automation systems; modular cabinets; audio recorders; remotes, audio equipment; audio tape and accessories. BOOTH 1757.

STOREEL—Modular cabinets and consoles; audio carts; cartridges and tone arms; storage racks and cabinets. **Introducing: Instant-access and modular rapid transit storage for videotapes, cassettes, or film; room stretcher, high-density storage for RCA carts and Ampex cassettes; set-up trucks for transporting tape or film; high-density audio cart storage for FM and AM.** BOOTH 1008.

STRAIGHT WIRE AUDIO—Amplifiers, preamps, DA's; audio monitoring, measuring, and timing equipment; cart machines and accessories; noise reduction systems. **Introducing: Highcom noise reduction system for tape, with the stereo unit on a card the same size as Straight Wire's other card products; playback preamp card to retrofit the ITC 30, RP, SP-type cart machines.** BOOTH 408.
SEE AD ON PAGE 74

STRAND CENTURY—Lights and lighting accessories. **Introducing: 1,000-watt 6-inch fresnel; 2,000-watt 8-inch fresnel; 4½-inch variable focus ellipsoidal spotlight (pattern projector).** BOOTH 1418.

STUDER REVOX AMERICA—Audio consoles; headphones, speakers; STL and remote pickup equipment; audio recorders; audio/video synchronizers; time code equipment; turntables and accessories. BOOTH 201.
SEE AD ON PAGE 31

THE SUPERIOR ELECTRIC COMPANY —BOOTH 1755.

SWINTEK ENTERPRISES—Headphones, speakers/intercoms; wireless microphones and intercoms. **Introducing: RFSD multi-antenna "RF Switching Diversity System" for use with most VHF/UHF production wireless receivers. In addition, the all-weather QAC VHF/UHF receivers will be on display together with the full line of Swintek dBS wireless microphones, including the SM85 hand-held. A private showing of the all-weather "hard" full-duplex wireless headset will be held at the Swintek hospitality suite. Reservations can be made at the Swintek booth.** BOOTH 1345.

SYLVANIA LIGHTING (GTE SYLVANIA)—Lights and lighting accessories. BOOTH 1204.

SYMETRIX—BOOTH 641.

SYSTEM ASSOCIATES—Brokers for used broadcast equipment. Service includes free listing of equipment. BOOTH 1121.

....T-Z....

TDK ELECTRONICS—Audio tape and videotape, and accessories. **Introducing: TC-20 extra-high-grade compact videocassette. The TC-20 features improved video and chroma signal-to-noise levels, as well as technological developments in coating and dispersion techniques. The TC-20 is designed for the new compact portable VCR system and is compatible with all VHS recorders when used with a special collar adapter.** BOOTH 1707.

TFT INC.—Encoders and decoders; microwave, STL and remote pickup equipment; SCA equipment. **Introducing: Model 8300 STL, a second-generation STL. TFT will also feature its wide line of STL links for FM, AM (stereo), and intercity relay service; TSL links for remote control; microprocessor remote control and data acquisition systems; automatic logging systems; TV frequency and aural modulation monitors; AM, FM, stereo, SCA modulation, and frequency monitors; and more.** BOOTH 109.

TTC (TELEVISION TECHNOLOGY)—See listing under Wilkinson.

TV CUE COMPUTER—BOOTH 1747.

TVI (THEATRE VISION INC.)—Lights and lighting accessories. **Introducing: Lighting and lighting control equipment; lighting kits; chroma-key curtains.** BOOTH 1730.

TABER MANUFACTURING—Bulk tape erasers; and cart machines and accessories. BOOTH 624.

SEE AD ON PAGE 180

TAFT BROADCASTING (PRIME TIME RADIO)—BOOTH 629.

TAMRON—Lenses and lens services; videotape and accessories. BOOTH 1640.

WILLIAM B. TANNER COMPANY—Program services; syndicated music sales and production aids. **Introducing: Station identifier packages for radio and television; commercials for radio and TV.** BOOTH 410.

TASCOM PRODUCTION PRODUCTS (DIVISION OF TEAC)—Bulk tape erasers; modular cabinets and consoles; audio consoles; headphones, speakers/intercoms; microphones; audio recorders; audio remotes equipment; audio tape and accessories. **Introducing: ½-inch 8-track recorder/reproducer for broadcast applications; ¼-inch 2-track master recorder/reproducer for broadcast applications.** BOOTH 1304.

TEATRONICS—BOOTH 1786.

TECCOM—BOOTH 1785.

TECHNICAL PROJECTS—BOOTH 440.

TECHNOLOGY SERVICE CORPORATION—BOOTH 1103-B.

TEKTRONIX—Audio monitoring, measuring, and timing equipment; frame store synchronizers; signal pattern generators; modulators and demodulators; audio and video test generators; vertical interval test sets; video monitoring, measuring, and timing equipment; video monitors. **Introducing: A frame synchronizer with both 10 bits of resolution and accuracy; a state-of-the-art digital generator/inserter; NTSC video monitoring software; line of four new portable oscilloscopes. Tektronix's new frame synchronizer marks the first time the company has entered the studio-operations side of television.** BOOTH 1601.

TELE-CINE—Camera accessories; Schneider lenses; accessories. BOOTH 1403.

TELCOM PRODUCTS—BOOTH 436.

TELEASE—BOOTH 1752.

TELECOM SERVICES—BOOTH 1728.

TELEMET—Amplifiers, pre-amps, DA's; audio monitoring, measuring and timing equipment; encoders and decoders; fiber optic systems; signal pattern generators; modulators and demodulators; routing switchers; video test generators. **Introducing: Computer-controlled routing switcher with new software options; stand-alone multiburst generator.** BOOTH 1003.

SEE AD ON PAGE 157

TELESCRIPT—Video prompters. **Introducing: MPS-E, electronic prompting that provides complete test processing facilities for writing, editing, and storing scripts.** BOOTH 1407.

TELESOURCE COMMUNICATION SERVICES —Newsroom management and editing systems. BOOTH 1616-A.

SEE AD ON PAGE 108

TELEVISION ENGINEERING—The latest design in ENG vans as well as complete systems, studios, and remote outside broadcast vans. Television Engineering offers sales and service of equipment, including Ikegami, Conrac, Grass Valley, and Auditronics. BOOTH 1700.

SEE AD ON PAGE 152

TELEVISION EQUIPMENT ASSOCIATES —Amplifiers, pre-amps, DA's; headphones, speakers/intercoms; microphones; processing and equalizing equipment; videotape & accessories; video delay lines & filters. **Introducing: Matthey D.I.P. video delays and rack units; Link audio and video DA; Matthey passive cable equalizer; VG teletext system starter kit; Elcom tape cleaner/evaluator; headset.** BOOTH 1216.

TELEX COMMUNICATIONS—Amplifiers, pre-amps, DA's; cart machines and accessories; headphones, speakers/intercoms; microphones; audio recorders; towers; wireless microphones and intercoms. **Introducing: High-speed audio tape duplicating systems; wireless headset intercom; film/slide projectors.** BOOTH 600.

TELFAX COMMUNICATIONS—Headphones; audio remotes equipment. BOOTH 635.

TELMAR—BOOTH 1520.

TENNAPLEX SYSTEMS—Antennas, transmission lines, towers, and lights; FM, UHF, VHF antennas; diplexers and combiners; duplex communication systems. BOOTH 1127.

TENTEL—Video maintenance gauges; audio maintenance gauges. **Introducing: HPGI, a new universal head protrusion gauge for measuring tip penetration of Beta, VHS, and U-Matic videocassette recorders. Unit shows head protrusion in both microns and 1/10,000th of an inch.** BOOTH 1613.

TERMINAL SYSTEMS—Newsroom computer systems. BOOTH 1768.

TESS (KNOWLEDGE INDUSTRY PUBLICATIONS)—BOOTH 1720.

THEATRE SERVICE & SUPPLY—Battery packs, belts, and chargers; headphones, speakers/intercoms; lights and lighting accessories. BOOTH 1513.

THEATRICAL SERVICES—Lights and lighting accessories; studio cyclorama and tracks. **Introducing: Studio cycloramas and scrims.** BOOTH 1759.

THERMODYNE INTERNATIONAL—Shipping cases. BOOTH 1637.

THEXX—BOOTH 1748.

THOMSON-CSF BROADCAST—Amplifiers, pre-amps, DA's; animation/graphics equipment; cameras, accessories; character generators; digital effects equipment; earth station equipment and services; frame store synchronizers; limiters and compressors;

Continued on page 172

3/4" VIDEO CASSETTES LTS* RETRIEVABLE

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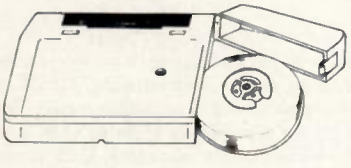

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microwave, STL and remote pickup equipment; digital multiplexer systems; noise reduction systems; processing and equalizing equipment; special effects equipment and generators; video synchronizers; time base correctors; low-power TV translators; AM, FM, and TV transmitters; video signal enhancement and correction equipment. **Introducing: the Betacam System, consiting of Microcam (one-tube with ½-inch VTR), Microcam (three-tube with ½-inch VTR), and videotape player and editing system; digital special effects generator (a keyboard-controlled unit with operating features consisting of freeze frame, viditrace, zoom in/out, jamdiss (image dissolve by jamming), and complex-effects memory for 32 combinations of effects; Vidifont Graphics V, character/graphics system with new software for news, weather, and sports interface, plus a new animation package; Sub-Titler (shown in conjunction with the Vidifont IVA character generator).** BOOTH 1001. Hospitality Suite: Las Vegas Hilton.

THOMSON-CSF COMPONENTS—Earth station equipment; camera and transmitting tubes. **Introducing: Power grid tubes and cavities for low-power television, VHF, and higher-power UHF (high gain and high efficiency); TWTs for broadcasting satellites; TWTs and Klystrons for satellite ground stations.** BOOTH 1145.

TIFFEN—Camera accessories; special effects; synchronizers; filters for lenses and TV cameras. BOOTH 1422.

TOSHIBA AMERICA—Studio and ENG cameras and accessories. BOOTH 1631-A.

TOWNSEND ASSOCIATES—Antennas, transmission lines, towers, and lights; satellite antennas; UHF and VHF antennas; diplexers and combiners; earth station equipment and services; TV exciters; microwave, STL, and remote pickup equipment; towers; low-power TV transmitters; TV transmitters; transmitting tubes. **Introducing: Low-power television turnkey transmitter system. This system includes Townsend transmitter; pre-wired and assembled building to house transmitting equipment; tower; transmitting antenna; transmission line; and satellite receiver and dish.** BOOTH 1420.

SEE AD ON PAGE 105

KEVIN TRACY PRODUCTIONS—BOOTH 645.

TRIDENT (USA)—Audio consoles; digital effects equipment. **Introducing: VFM, a budget-priced modular mixing console; broadcast console.** BOOTH 633.

TROMPETER ELECTRONICS—Audio components & hardware; video components and hardware. BOOTH 1211.

TRUE TIME INSTRUMENTS—Digital clocks and timers; time code equipment. **Introducing: Synchronized analog clocks providing sub-second accuracy.** BOOTH 643.

TURNER PROGRAM SERVICES—Program services. BOOTH 125.

TWEED AUDIO—Amplifiers, pre-amps, DA's; audio consoles; intercoms; processing and equalizing equipment; audio remotes equipment. **Introducing: Custom-designed systems for radio and television broadcast studios.** BOOTH 313.

UMC ELECTRONICS—Audio automation systems; bulk tape erasers; cart machines and accessories; audio carts; newsroom computer system; audio consoles; audio recorders; audio remotes equipment; audio special effects equipment and generators; tape degausser. **Introducing: Splice finder and bulk eraser.** BOOTH 114.

SEE AD ON PAGE 165

UREI (UNITED RECORDING ELECTRONICS INDUSTRIES)—Amplifiers, pre-amps, DA's; audio analyzers; audio monitoring, measuring and timing equipment; audio consoles; signal pattern generators; headphones, speakers/intercoms; limiters and compressers; processing and equalizing equipment; audio test generators. BOOTH 513.

SEE AD ON PAGE 109

ULTIMATTE—Compositing equipment. **Introducing: Postmatte, a video compositing device for post-production.** BOOTH 1624.

UNI-SET—Modular cabinets and consoles; staging systems. BOOTH 1023.

UNITED MEDIA—Edit code generators and receivers; video editors; audio/video synchronizers. **Introducing: Model 500 Sequencer, a computer-controlled coincidence comparater designed to assure precise switch closure for up to 16 channels.** BOOTH 1300.

UNITED PRESS INTERNATIONAL—BOOTH 1015.

UNITED RESEARCH LABS—Amplifiers, pre-amps; cart machines and accessories; audio carts; speakers; processing and equalizing equipment; audio recorders; audio tape and accessories. **Introducing: Solid-state microphone preamplifier.** BOOTH 406-A.

URSA MAJOR—Digital reverberation systems. BOOTH 418.

SEE AD ON PAGE 129

U.S. TAPE & LABEL—Bumper strips, window labels for broadcast industry. **Introducing: Concert patches for the broadcast industry.** BOOTH 602.

UTAH SCIENTIFIC—DA's; audio automation systems; routing switchers; video switchers. **Introducing: Line of software-based master control switchers featuring numerous innovations designed to provide greater flexibility and reduced errors on air; station automation system (demonstrated in conjunction with the master control switcher); line of high-performance 8-output video and audio distrituion amplifiers.** BOOTH 1114.

UTILITY TOWER—Antennas, transmission lines, towers, and lights. BOOTH 703.

VSC CORPORATION (INTEGRATED SOUND SYSTEMS)—BOOTH 327.

VALENTINO INC. —Program and music services; music production aids. BOOTH 1231.

VALLEY PEOPLE—BOOTH 318.

VARIAN ASSOCIATES—Amplifiers, pre-amps, DA's; AM and FM transmitters; power supplies; satellite communications equipment; vacuum tubes. **Introducing: Varian EIMAC will introduce several new tubes, including the X2251 Klystrode with hardware, 4CX20000B Tetrode, 4CX20000C tetrode, 4CW25000 Tetrode, and 3C X 800 A7 hi-mu Triode HF and VHF. Varian Microwave Equipment will introduce a VKU-27016 GEN II Klystron, VZS-2700G GEN II Klystron high-power amplifier with wide-bandwidth VKC-7980 Klystron (5.925-6.425 GHz), and VZU-695A2 14-14.5 GHz 500-watt power combined TWT HPA. The Varian Tube Division will introduce the VTU-6393 C1 14.0-14.5 GHz 300 CW communications uplink traveling wave tube, and the VKC-7936 24-channel C-band satellite uplink Klystron.** BOOTH 1605.

SEE ADS ON PAGES 15, 37 and 65

VIA VIDEO—Animation/graphics equipment. BOOTH 1767.

SEE AD ON PAGE 63

VIDEO ASSOCIATES LABS—Animation/graphics equipment; character generators. **Introducing: MicroKeyer, which turns an Apple microcomputer into a stand-alone, fully broadcastable, titler and graphics generator. With its use, Apple graphics can be keyed over any interlaced video signal. The software provided allows a person with no technical knowledge of video or computers to take full advantage of the broadcast features built into the MicroKey System.** BOOTH 1303.

VIDEO DATA SYSTEMS—Graphics equipment; character generators. BOOTH 1506.

VIDEO INTERNATIONAL—Digital TV standard converter. BOOTH 1524.

SEE AD ON PAGE 176

VIDEOMEDIA—Character geneators; video editors; automation control system; control system for duplicating video. **Introducing: Eagle, a low-cost editor; serial transport control.** BOOTH 1308.

SEE AD ON INSIDE BACK COVER

VIDEOPRO—BOOTH 1122-C.

VIDEOTEK—DA's; audio monitoring equipment; demodulators; routing switchers; video monitoring and measuring equipment; video monitors. **Introducing: Series of distribution amplifiers (video DA, audio DA, pulse DA, subcarrier DA); 10X1 audio-follow-video routing switcher with audio breakaway; 12-inch broadcast color monitor.** BOOTH 1633.

SEE AD ON PAGE 159

VITAL INDUSTRIES—Amplifiers, pre-amps, DA's; audio automation systems; digital effects equipment; processing and equalizing equipment; routing switchers; video switchers. **Introducing: SAM (Station Automation Manager), which automates the various pieces of equipment in a television station or production house; SANDI, general-purpose data communications system for TV stations or production houses that can transmit information to an automation system such as SAM, to audio/video routing switchers; to character generators; and among others, to still-store projects; the latest digital effects for SqueeZoom.** BOOTH 1212.

WSI CORPORATION—BOOTH 1777.

WARD-BECK SYSTEMS LTD.—Amplifiers, pre-amps, DA's; audio monitoring, measuring and timing equipment; audio consoles; intercom systems; limiters and compressors; routing switchers. BOOTH 1224.

SEE AD ON BACK COVER

WAVETEK INDIANA—BOOTH 1763.

WEATHERMATION/SBN—Earth station equipment and services; weather instruments, radar and accessories; satellite receivers. BOOTH 1179.

WEGENER COMMUNICATIONS—BOOTH 628.

WESTERN UNION—Earth station services; satellite distribution services. BOOTH 1307.

WILKINSON ELECTRONICS/TELEVISION TECHNOLOGY—AM, FM, TV exciters; FM stereo generators; lightning and powerline protection systems; modulators; SCA equipment; low-power television translatrors; AM, FM and TV transmitters. **Introducing: FM exciter; 1 kW solid-state FM transmitter.** BOOTH 305. Hospitality Suite: La Concha.

WINSTED—Modular cabinets and consoles; storage racks and cabinets. **Introducing: System/85 editing console corner units and double-bay adjustable editor shelf; ½-inch broadcast editing console.** BOOTH 1238.

SEE AD ON PAGE 128

WIREWORKS—Cable and connectors. BOOTH 1511.

WOLD COMMUNICATIONS—Earth station equipment and services; program services; satellite distribution services. BOOTH 1515.

WOLF COACH—Vans and ladder vehicles. **Introducing: Expanded, full-service body-building capability. Wolf Coach is now accepting orders on ENG/EFP conversions completed in Wolf Coach-manufactured vehicle shells.** BOOTH 1317.

FRANK WOOLLEY & COMPANY—Animation/graphics equipment. BOOTH 1731.

SEE AD ON PAGE 14

WORLD TOWER—Towers and lights. BOOTH 519.

SEE AD ON PAGE 142

YAMAHA INTERNATIONAL—BOOTH 1340.

ZENITH RADIO—BOOTH 1517-A.

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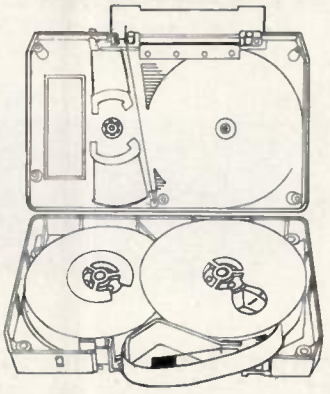

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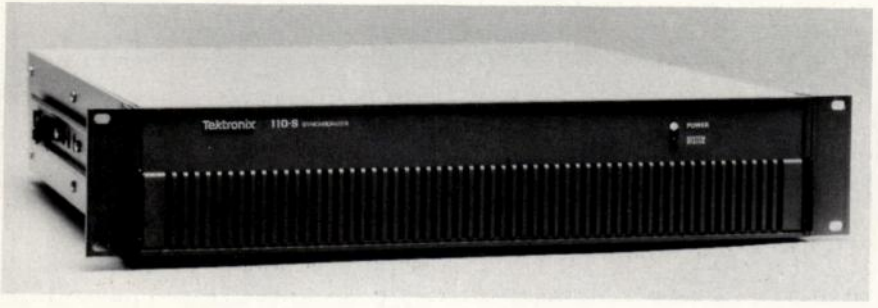


Frame synchronizer (Circle 206)

TEKTRONIX—Tektronix has entered the studio-operations side of television for the first time in its history by introducing a frame synchronizer with both 10 bits of resolution and accuracy. The new 110-S synchronizer will be competitive in the NTSC market because of its quality and reliability.

The new Tektronix frame synchronizers allow broadcasters to secure a variety of video choices as standard on all units, including signal pass-through or creation of RS-170A sync burst; and, for noisy signals, field or frame freeze, go-to-black, or pass-on-through.

Adaptive or notch decoding, and two-field or four-field memory are available as options. Including quantizing effects, the 110-S features 1 percent differential gain; 1 degree differential phase; 60 dB signal-to-noise; 1 percent frequency response; and 0.5 percent 2 T K-Factor.

To fulfill a variety of operational needs, Tektronix is introducing a series of frame synchronizers ranging in price from about $13,000 to about $18,000. The 110-S synchronizer series, bringing greater benefits to the marketplace thanks to its 10-bit architecture, measures 89mm (3.5 inches) high by 480mm (19 inches) wide by 510mm (20.1 inches) deep; and it weighs 32.7 pounds. Availability for these instruments will be about 12 weeks after first public showing at the NAB convention in Las Vegas.

The 10-bit architecture introduces negligible quantization error, especially important when the signal will be passed through several frame synchronizers. The 110-S will also track noisy signals such as those which result during a microwave fade. The benefit to users is that important picture segments will not be lost during these periods of operational difficulties.

A key element within the new 110-S synchronizer is its memory. Tektronix's frame synchronizer uses two separate clocks to control "writing to" and "reading from" memory. The "write clock" is gen-locked to the program input signal, and the "read clock" is gen-locked to an external reference signal.

Random-access cart system (Circle 207)

LAKE SYSTEMS—The new La Kart™ is a random-access video cart system designed to handle station breaks and programming. It's a cost-effective, reliable system that allows you to insert commercials, promotions, and animated IDs with on-air quality at affordable prices.

Capable of handling up to 30 machines, the La Kart system includes a touch terminal display. A choice of formats is available for U-Matic, type M, and type C machines.

The system features total redundancy, automatic frame-accurate switching, and state-of-the-art modular construction. It is easy to program, simple to install, and will reduce your tape costs.

Time base corrector (Circle 208)

FORTEL—Designed especially for use with the newest professional-grade U-Matic VTRs, the Fortel CCDHPS features noise reduction; enhancement; preset and manual proc amp control; and full sync drive capability. It provides the same high performance and picture quality as the well-known CCDHP.

Among the CCDHPS features is a new Y/C separator, developed by Faroudja Laboratories. Unit specs include 60 dB signal-to-noise ratio; 0.5 degree differential phase; 1.5 percent differential gain; 1 percent K factor; and 2.8 MHz bandwidth.

The CCDHPS is available at under $7,000.

High-efficiency klystrons (Circle 209)

EEV INC.—EEV has a new range of high-efficiency klystrons with a beam control device utilizing new compact magnetics for greater energy savings. The new klystrons include K3270 BCD, 5 to 15 kW; K3271 BCD, 15 to 30 kW; and K3272 BCD, 40 to 55 kW.

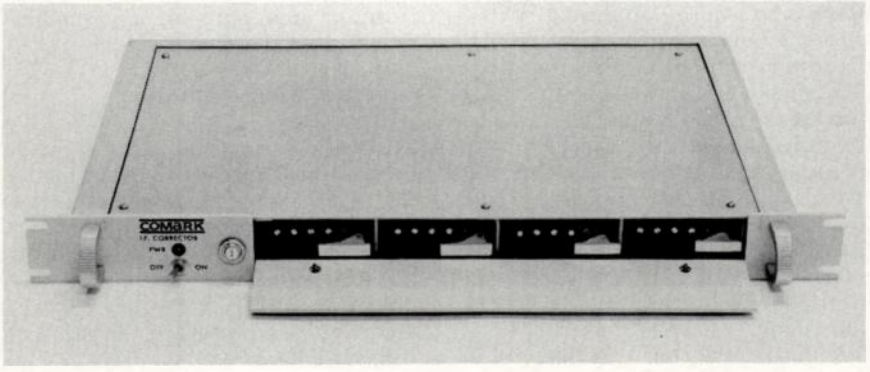
Each tube covers all UHF channels. These water- or vapor-cooled klystrons have an efficiency rating of 42 percent minimum and 47 percent maximum; and they contain no Berylium oxide ceramics.

Due to the versatility of water or vapor cooling, these tubes are potential replacements for either existing external or integral-cavity klystron transmitters.

VTR battery pack (Circle 211)

ALEXANDER MANUFACTURING—Alexander has a new rechargeable NiCad battery pack for video recording equipment.

The new BP90 pack, which can replace either a Sony BP90 or an Alexander BP40, features a taped case to provide easy access for on-the-spot repairs. There is an internal fuse; a greatly improved, rugged plug and cord; and a pull tab for quick removal from the equipment.



IF transmitter corrector (Circle 210)

COMARK COMMUNICATIONS—Comark has introduced the first product specifically intended to permit operator adjustment of system envelope delay (ED) and incidental carrier phase modulation (ICPM) at the transmitter's IF frequency.

Unlike previously available products that operate at video frequencies and only correct ED, the model CCP-145 IF corrector provides individual control of envelope delay over up to four band segments of the video-modulated IF carrier. With the CCP-145, the operator can improve signal transient response, and correct for diplexer or system-inserted ED error as well as sync spiking caused by ICPM.

The CCP-145 can be custom configured by specifying the number of plug-in ED and ICPM sections. The boards insert through the front panel with adjustments accessible behind a fold-down protection cover.

The ICPM board provides correction for up to five IRE units of sync spiking. Each ED board provides up to 350ns of ED in any frequency segment in the IF passband. Individual board adjustments control ED center frequency, ED bandwidth, amplitude vs. frequency response, and output signal level.

The CCP-145 is housed in a standard 19-inch rack-mountable panel, 1¾ inches high, with 50-ohm input and output BNC connectors. The unit provides unity gain from input to output, and can be stacked for additional capability. Each CCP-145 corrector will accept four plug-in boards.

ENG camera mount recorder (Circle 212)

FREZZOLINI—Frezzolini has demonstrated an extremely lightweight color videotape recorder with a VTR/camera battery holder that mounts directly on the battery brackets of most professional portable video cameras to create a unique combo-

Continued on page 176

Live Remotes

Marti's 2.5 watt RPT2 battery powered RPU Transmitter brings difficult remotes back **LIVE**. Equally important, Marti delivers clean broadcast-quality audio and continuous-duty operation. The RPT2 will operate with Marti Mobile Repeaters and Automatic Repeaters to form a wide coverage system.

RPT2 FEATURES:

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- ★ Sub-audible encoder
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- ★ Internal ni-cad battery
- ★ Internal charger and AC supply
- ★ FM Compressor-Limiter
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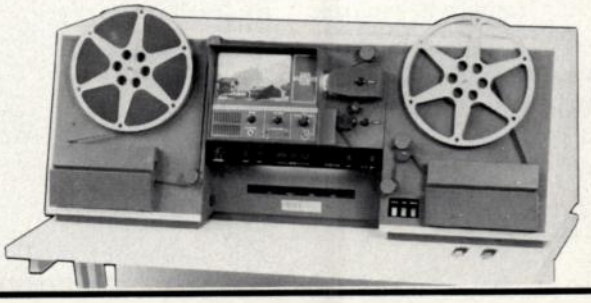

Circle (154) on Action Card

camera arrangement.

No camera modifications are needed. The unit is instantly interchangeable from one camera model to another. What's more, as assignments change, you can put the recorder on the camera or take it off without affecting its operation.

The recording time for the new recorder is 20 minutes on a TC-20 ½-inch cassette, VHS-C format. By using an adapter, the cassette can be played back through any standard VHS recorder/player. Cassette output is compatible with any new or existing professional ¾-inch U-Matic or ½-inch VHS editing system.

Typial specs include 45 dB video signal-to-noise; two microphone inputs; video out/line out (BNC/RCA); and a VTR power consumption of 8 watts.

Low-price standards converter (Circle 214)

A.F. ASSOCIATES—AFA has been awarded distribution rights to the AVS6000 low-price standards converter manufactured by Applied Video Systems of Sutton, England. These rights cover North and South America. APS is a subsidiary of Cooltherm Ltd., a major British defense electronics producer. The announcement was made by Louis H. Siracusano of A.F. Associates.

The AVS6000 contains its own frame store and video processing system. Richard Lunniss, manager of the AFA Products Division, stated that, "Originally we believed that the market for the AVS6000 would be limited to ¾-inch and ½-inch users. But the superior quality of the AVS6000's 1-inch and 2-inch conversions is such that it became obvious that it has enormous potential for the broadcast market, particularly for producers and distributors of sports and news programming."

Lunniss points out that many of the features of the AVS6000 are offered only as separate items in the higher-priced systems. He added that a complete service and spare-parts facility is being organized by the Products Division in Norwood, New Jersey. They can be reached at 201-767-6666. On the West Coast, the number is 213-466-5066.

Videocassette cleaner/evaluator (Circle 215)

RESEARCH TECHNOLOGY INTERNATIONAL—The new RTI videocassette evaluator/cleaners thoroughly inspect, clean, polish, and rewind videotapes at 25 times normal playback speed, and feature an optional erase capability.

In addition, you can select inspect, clean, or erase only—or any combination of the three simultaneously.

Computerized animation (Circle 213)

ELICON—Elicon has announced a breakthrough in computerized motion control for animation stands and optical printers. The Elicon CCS model 825 is designed with the budget-conscious house in mind. Using stepper motors, proven control electronics, and a unique software package, the 825 is a very versatile system.

Smear, streak, stop-action, simulated shutter, and slitscan are all standard features. The 825 has virtually unlimited frame storage because each floppy disc stores up to 500 separate and complete shots, each 2200 frames long. Due to its modular design, the system can be expanded at any time, one axis at a time, to a maximum of 64.

Using the flexibility of the FORTH® software package, Elicon has included a built-in teacher to aid the new employee in learning how to use the 825.

Continued on page 178

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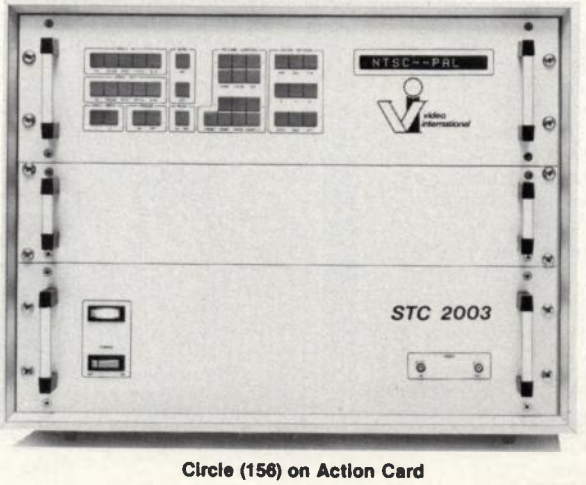

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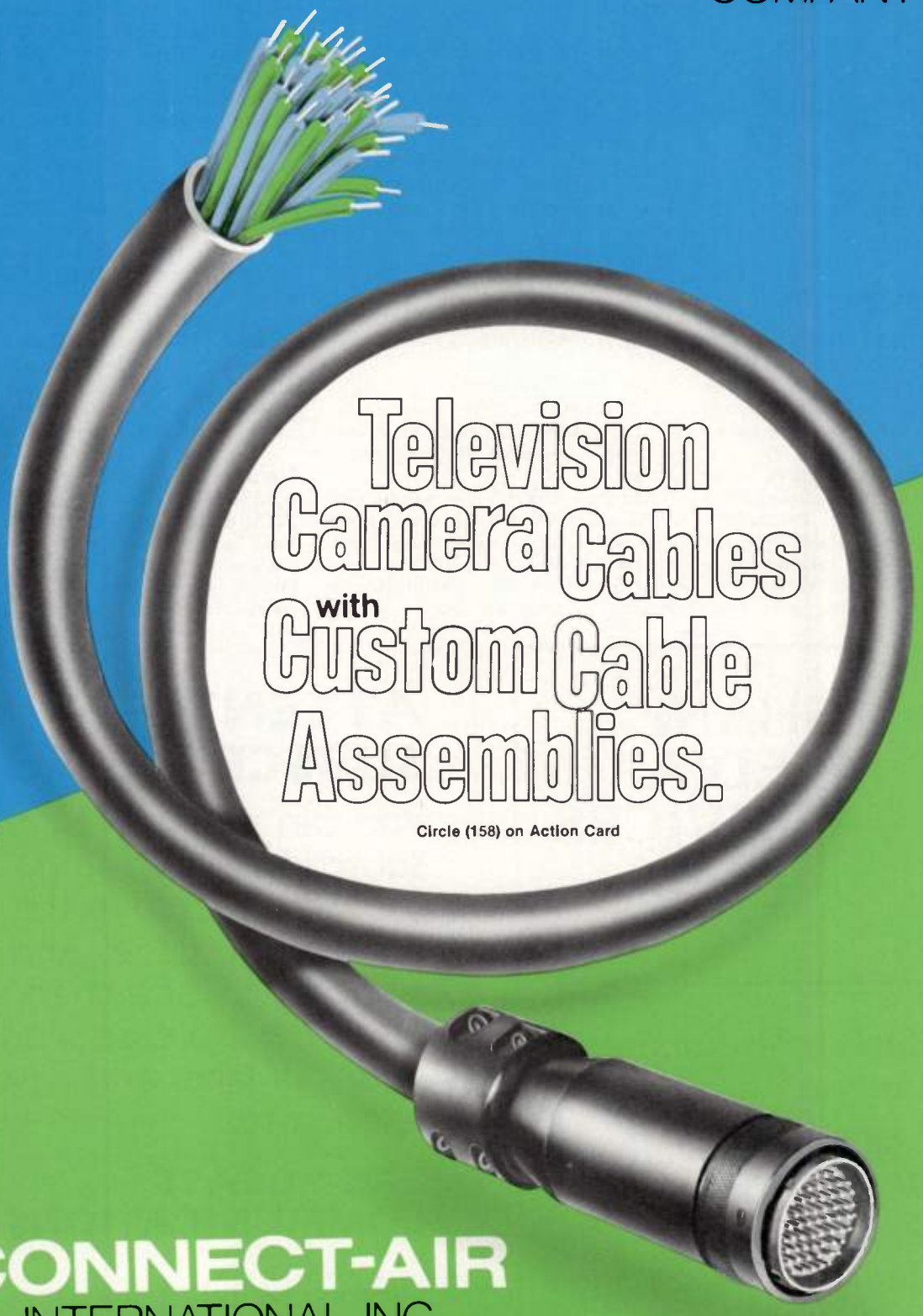

Television Camera Cables with Custom Cable Assemblies.

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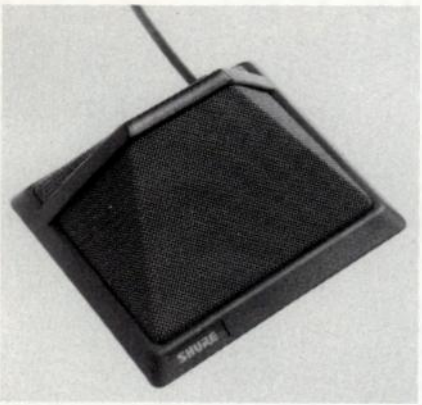

Automatic microphone system (Circle 202)

SHURE BROTHERS—Now available from Shure is the Automatic Microphone System (AMS) consisting of an AMS8000 mixer, AMS22 low-profile microphone, and AMS26 probe microphone.

This is a totally integrated sound system where the microphones and mixer operate as one. Each microphone and mixer channel contains logic circuitry, enabling every microphone to act independently in the system when turning on or turning off. Each microphone continually analyzes its own local acoustic environment, allowing each channel to adjust itself independently as audio conditions change.

Special features include privacy or cough button, chairman muting, channel priority, filibuster capability, zone loudspeaker muting, and remote channel indicators.

AMS mixers are available in both 4-and 8-channel, and can be easily linked to effectively control over 200 individual microphones. In addition, when connected with an optional microcomputer-based Shure AMS880 video switcher interface component, the AMS will control commercially available video switchers.

Cartridges (Circle 203)

STANTON MAGNETICS—Stanton is introducing a new item to its line of professional products, the Announcers Earset.

The Announcers Earset can be used by all major TV networks and stations. It is designed for inconspicuous listening on camera. Stanton also has a complete line of magnetic cartridges, professional preamps, and headsets.

Digital audio processor (Circle 204)

dbx INC.—The dbx model 700 is a low-cost digital audio processor for the professional market. At under $5,000, the 700 is one-fifth the price of other professional processors; and, when used with a professional-quality videocassete recorder as a storage medium, the 700 creates a two-channel digital recording system that most broadcast and production studios can afford.

The 700 utilizes a new digital audio conversion technique called Companded Predictive Delta Modulation (CPDM). Two technical innovations called "linear prediction" and "precision companding," coupled with a sample rate of 700 kHz, provide the CPDM system with a dynamic range of more than 110 dB and a sound quality as good as (if not better than) that of a 16-bit linear PCM.

Data communications system (Circle 205)

VITAL INDUSTRIES—Brand new from Vital Industries is SANDI, a general-purpose data communications system for TV stations and TV production houses. SANDI can transmit informa-

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tion to an automation system such as Vital's SAM (Station Automation Manager), to audio/video switchers, to character generators, or to still store projectors. Data includes command and control signals, as well as informative messages.

Equipment used within a SANDI system includes a SANDI controller; data entry/machine control panels; parallel-to-serial encoders for linking switchers or pushbutton control panels with SANDI; serial-to-parallel decoders and latches for providing tally to pushbutton control panels; lighting pushbutton control panels; bar code wands and processors; parallel and serial machine interfaces; coaxial cable communications busses (maximum 8 per SANDI controller); optional hot standby, automatically switcher, controller.

Computer audio processor (Circle 217)

INOVONICS—The newest addition to the Inovonics line of professional broadcast audio processing equipment for AM, FM, and TV, is the digitally-programmable model 250.

The 250 is one of the first implementations of computer control over a station's sound, and the programming versatility makes it an ideal processor to fit an audience profile that invariably changes during the broadcast day. The processor is statically programmable with various processing presets which may be selected remotely; alternately, a low-cost computer interface option card links the 250 with any of several inexpensive microcomputers with RS-232C serial data interface for continuous, on-line control of program spectrum dynamics.

Designed for stereo (or mono) program signal processing, the model 250 incorporates a gain-riding A.G.C., five-band compressor and either a split-band peak limiter for FM and TV or a full-matrix AM stereo peak limiter. The 250 also features L/R correlation to perserve stereo image, flat frequency and phase response, and feedforward PWM gain control for colorless, drift-free performance.

Still store option (Circle 216)

CHYRON—In a joint announcement issued by Chyron Corp., Melville, N.Y., and Harris Video Systems, Sunnyvale, Calif., it was stated that the new Chyron high resolution character and graphics generator will be available as a new option with the Harris IRIS II digital still storage system.

The addition of the Chyron unit is a significant step in bridging the gap between still storage systems and sophisticated graphic-generation technologies.

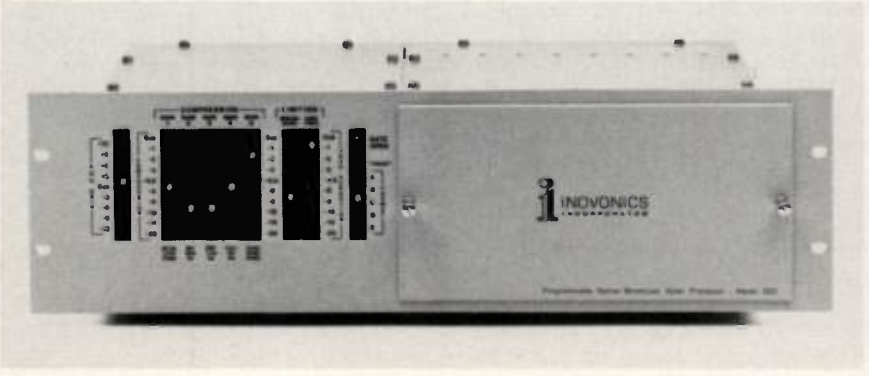
The titling system will utilize IRIS II's computer to access Chyron high resolution graphics and titling electronics. The floppy disk drive, which is standard equipment with the IRIS II, stores the retrieves titles and graphics supplied by the Chyron, permitting editing before storage. Formats for use in news, sports or any standardized series of graphics can also be stored. Titling and graphics functions will be accomplished through the IRIS II's standard keyboard. The system will also be capable of titling live video, as well as still images.

Orders for the new system, which will be available in the spring of 1983, have already been placed by major networks, as well as individual operators.

Low-priced video editor (Circle 218)

EECO—EECO has introduced its Intelligent Video Editing System (IVES-I), a new low-priced complete SMPTE time code videotape editing system. Designed as a self-contained package, the new editing system provides turnkey post-production capabilities, performing precision single-source/single-record SMPTE or control track editing as well as all the necessary pre- and post-edit functions.

Continued on page 180



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Human engineered for easy operating, the EECO IVES-I is ideal for any network, production house or electronic news gathering operation, or cable or corporate video facility.

The new editing system offers a number of standard features unique to any system currently available, including: AUTO-DUB, a one-button command that performs a direct dub from the play VTR to the record VTR, or from the record VTR to the play VTR; PRE-STRIPE, a one-button command that automatically stripes the record tape with continuous SMPTE time code, control track pulses and video black; and an internal audio mixer which can blend audio inputs from a microphone jack or an auxiliary audio line jack with the audio track of the play VTR recording onto the record VTR audio track.

A single shuttle knob provides all functions necessary to search either VTR at variable speeds, mark "soft loaded" edit points and initiate edit preview, allowing an entire edited master to be built using only the shuttle knob and the PERFORM key. "Hard loaded" edit points may be marked on-the-fly or designated using a numerical keyboard.

Additionally, the new EECO IVES-I offers a split audio/video edit capability, programmable preroll and postroll times, separate video and audio autotag function for making back-to-back matched edits, and variable rate video fade to/from black and audio fade to/from silence.

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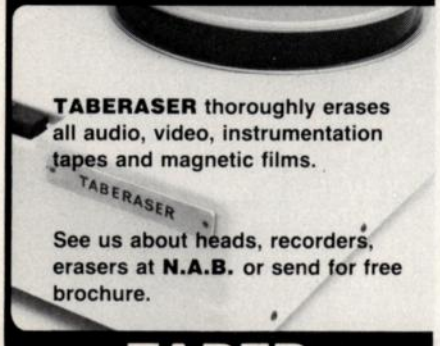

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VTR (Circle 219)

PEP—The PEP 'ON-CAM VTR' is a clip-on unit for the ENG camera which consists of the VTR plus a battery holder. A 4AH nicad battery capable of operating both camera and recorder for well over one hour fits into the battery holder. The standard battery for the BVU50/110 portable broadcast VTRs is used.

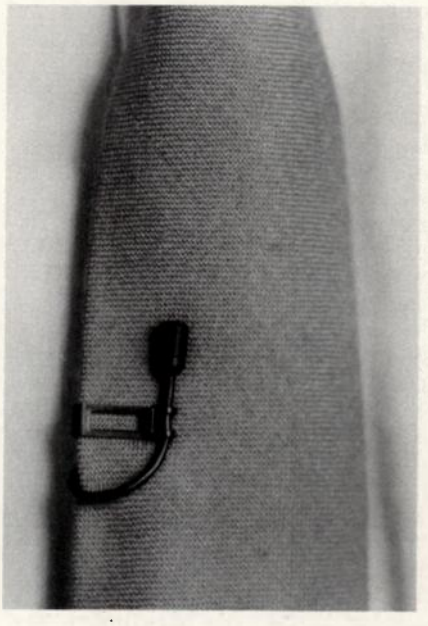
The 'ON-CAM VTR' weighs in at five pounds for the VTR and battery holder, plus four pounds for the battery. This replaces the usual five pound ON-BOARD camera battery for a net increase in camera burden of only four pounds. By attaching the unit directly on the battery mounting bracket on the rear of the camera, a well-balanced camera/recorder results.

Simple integration of the 2¼-inch by 3-inch cassettes recorded in the field into a studio playback unit for use as a source with existing ¾-inch editing bays is possible.

EEC Video Group is the video systems and hardware division of educational electronics corporation, the national distributor of Sony learning center equipment. The EEC video group is a key dealer for PEP ENG products. PEP is a leading supplier of ENG battery systems and accessories to the TV industry for news and EFP operations.

Lavalier microphone (Circle 201)

SENNHEISER—Sennheiser has introduced the MKE 2 miniature electret lavalier microphone. The MKE 2, measuring just .24 inches in diameter and .43 inches in length, can be attached to clothing with an alligator clip or safety pin.



The exceedingly small size of the MKE 2, its matte-black finish, and the multitude of mounting options provide the motion picture, video, and theatrical professions with an abundance of inconspicuous or concealed microphone placement possibilities.

Edit code reader/raster display (Circle 220)

SHINTRON—Shintron has announced a new, low-cost edit code reader/raster display designed for both studio and mobile applications. Designed to withstand hostile environments, the model 646 reads either SMPTE or EBU code and displays data on the front panel in eight digit, ½-inch LED numerals. The

unit also allows the user to key in the data on video raster in either black letters on a white background or in reverse.

Readable tape speed is from 1/16 to 40X. User code can be displayed by a front panel selection switch. The model 646 is rack-mountable and measures 19 inches wide by 16 inches deep and 1.75 inches high. List price is $1500 FOB Cambridge, Massachusetts, with delivery off the shelf.

TV automation programmer (Circle 222)

INTERNATIONAL VIDEO CORP.—IVC has announced the introduction of an automated, random access, video cassette programmer, designed for commercial, industrial, cable and educational telvision.

The system consists of stand-alone modules with dedicated Microprocessor-based controller and cassette player and the capability to hold 16, 24, or 32 video cassettes.

A central microcomputer unit with a 5-inch floppy disk operating system is used to program the sequence and time of day that segments in every cassette will be aired, providing back-to-back commercial insertion capability and unattended program operation.

Video switching is performed at the front end of an IVC-8002 digital framestore to insure maximum signal stability and compliance with broadcast regulations.

The significance of the IVC video cassette programmer in terms of increased profitability to any television operation can be best explained by the flexibility, accuracy and time saving attributes afforded by the use of state-of-the-art microprocessor technology, and a clear understanding of the needs of a growing segment of the television industry.

Rack Audio Devices (Circle 223)

TASCAM—TASCAM has unveiled a new series of rack mountable auxiliary devices for enhancement of professional recording, broadcast and sound reinforcement audio. Leading off this new series are the MX-80 microphone mixer, the MH-40 multi-headphone amplifier, the PE-40 parametric equalizer, and the RS-20 dual reverb.

The MX-80 is a very compact microphone mixer, providing eight identical input channels and a stereo output on a 3½-inch high by 19-inch wide front panel. The mike inputs are balanced, low-impedance XLRs. In addition to concentric gain and pan controls, each channel has a trim control and a 30 dB pad so the XLRs actually will handle from -70 dB (0.28 mV) mic levels to +28 dB (25V) line levels.

The MH-40 muilti-headphone amplifier accepts any line level mono or stereo signal via front panel phone jacks or rear panel RCA jacks. The input sensitivity is switchable for -20 dBV to +4 dBu sources, and a front panel input control permits overall level adjustments. The signal is then distributed to four stereo phone jacks via independent output amplifiers. Concentric, friction-coupled output controls permit each headphone to be balanced as desired. The MH-40 is ideal when you need more performer headphone cues than the mixer or tape machine phone jack alone can drive. Other applications include trade show, museum and tour displays.

The PE-40 is a four-channel, four-band fully parametric equalizer. Each channel has four sets of continuously variable Q, gain, and frequency controls. The four bands overlap for greater control: 40-800 Hz, 200-4,000 Hz, 500-10,000 Hz, and 800-16,000 Hz. Two or more PE-40 channels can be cascaded when maximum control is needed, for example, in precisely "tuning out" multiple room modes.

Recording Mixer (Circle 221)

YAMAHA—Yamaha Combo Products' anticipated entry in the recording mixer business has been confirmed with the introduction of the RM1608, a mixer specifically designed by Yamaha, for recording and recording-studio applications. The RM 1608 has 16 input channels, each with an electronically balanced XLR mic input and an unbalanced RCA jack tape input. Two switch-selectable banks of output jacks are provided for the eight main program mixing busses, numbered 1—8 and 9—16. This enables 16 track recordings to be built-up in successive overdubs without re-patching. Separate 2-track tape inputs and outputs are provided for mixdown and monitoring of the stereo master tape.

The RM 1608 includes many convenience features usually found on more expensive recording mixers. For example, in "Multitrack" mode, individual inputs may be switched to tape or mike. Another button, "Mixdown," not only selects tape return on all channels, it simultaneously assigns these channel outputs to the stereo mixing bus. This allows for instantaneous changeover

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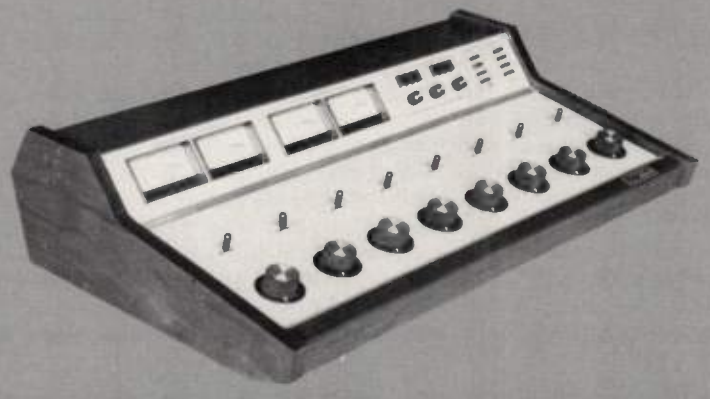
INTRODUCING SYSTEM R



Our newest stereo audio console features Penny & Giles* newest fader, a remarkable rotary which you'll have to feel to believe. Measuring a compact 32 inches wide, SYSTEM R combines conventional controls with the advanced audio technology and superb styling you'd expect from Broadcast Audio Corporation. If you need rotary faders, compact size, superb audio quality, and a modest price - we've just designed *your* audio console - SYSTEM R!

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Circle (160) on Action Card

from overdubbing to mixdown of multitrack tapes. This is typical of the RM 1608's flexibility and translates to the speed which is essential to serious multitrack recording work.

Unlike mixers with external (or no) phantom power, the RM1608 has built-in phantom power for condenser microphones, including indiyidual switches for each channel. A switchable pad and a separate gain trim control enable mike sensitivity to be optimized for levels from -70 to -20 dB, covering virtually all mikes and electric instruments as well as many line level sources. For optimum signal quality, the three-band, multi-frequency channel EQ and high pass filter each have bypass switches, so the direct outputs can be used for one input to one track to record with the fewest line amps.

Digital TBC (Circle 224)

FOR-A CORP.—Using digital encoding of analog signal components, the new time base corrector from For-A provides significantly better signal-to-noise ratio for both chrominance and luminance as well as greater signal stability. Advanced signal processing technology in the model FA-410 TBC results in a more forgiving system with gentler handling and better response to poor signals.

Price of the For-A NTSC digital time base corrector of $7,950 with immediate availability. Both NTSC and PAL TV standard models are offered.

Both ¾-inch and ½-inch VTR formats are handled by the model FA-410. Designed for use in studio and post-production operations, the TBC operates in both standalone and SC VTR modes. It provides a 16 H correction window, black burst outputs and proc amp pre-set function. The FA-410 corrects either capstan-servoed or non-servoed (non-V-locked) VTRs for time base errors which cause picture disturbances, poor edits and dubs.

Other performance benefits resulting from the signal component encoding technology are consistent H and V blanking, optimized dropout compensation performance (DOC is standard on the FA-410), and lower differential phase and gain. For added economy and functionality, the For-A digital TBC includes built-in sync generator.

Audio processors (Circle 226)

HARRIS—Two Harris audio processors, the MSP-90 and the MSP-95, will be displayed at the 1983 NAB Convention in Las Vegas.

The MSP-90 audio processor offers maximum modulation and minimum distortion levels in many configurations; as a mono or stereo AGC amplifier; an AM limiter; a mono or stereo FM limiter; an AGC amplifier/AM limiter; or an AGC amplifier/FM limiter. This flexibility permits stations to tailor the sound to their individual format. RFI protection has been achieved through the use of special shielding, filtering, grounding and special circuit design.

The MSP-95 FM audio CPU features an integrated stereo limiter/generator specifically suited for FM stations using an STL link. The MSP-95 delivers studio program fidelity to remote FM transmitters and matches high performance studio equipment to an STL link.

AFV switcher (Circle 227)

HEDCO—HEDCO is introducing a small switcher into the broadcast and professional video market. Model AVM-100 switcher provides one bus selection from 16 video inputs and 16 stereo AFV audio inputs in a one RU package. The switchers front panel incorporates 16 illuminated and relegendable pushbuttons and separate audio monitoring controlls.

The AVM-100 is a broadcast quality three-channel switcher with an audio plus. The basic audio section offers bridging balanced inputs, stereo switching and line level outputs up to +18 dBm. The unique audio monitoring section has front panel balance/gain adjustments, headphone jack and separate left/right speaker amplifiers capable of 4 watts into 2 ohms.

The video section features transparent buffers, T-style isolation crosspoints, front panel accessible gain and response adjustments in the ouput amplifier. Switching is referenced to the vertical interval of last video.

An optical RCP-131 remote control panel provides parallel control of input selection at distances up to 500 feet from the AVM-100. Remote panel switches are also illuminated and relegendable.

Programmable clock (Circle 225)

ESE—ESE has introduced the ES 790, a micro-processor-based programmable clock. As many as 1,000 events can be programmed into memory, through the front panel keyboard.

Outputs occur as latching or momentary reed relay contact closures on any of 32 channels. A battery, charger, and crystal timebase are provided for uninterrupted operation.

ES 790 uses only 5¼ inches of rack space, and finds uses in energy management systems, broadcast systems, process control, or anywhere hands-off operation is desired.

Fiber optic audio/video (Circle 229)

GRASS VALLEY GROUP—The WAVELINK™ family of fiber optic communication products has added two-channnel audio with video capability, using a unique FM-on-FM modulation scheme.

The system modulates two pre-emphasized base band audio signals in 100 kHz oscillators which in turn frequency modulate two oscillators at 8.0 and 9.8 MHz. The signal is then summed with video and transmitted using an LED. The transmitter module can provide for equalization of incoming cable, adjustable gain, and separate output monitor amplifier.

The receiver utilizes an avalanche photo diode and features AGC and squelch function. Delay timing adjustment is available for precise timing of signals. The FM signal is demodulated and passed through a base band filter to restore the original signal.

Performance specifications are designed around broadcast requirements and include unweighted signal-to-noise better than 58 dB output and 65 dB for audio over a 2 km fiber. The maximum output is 20 dBm into 600 ohms. The transmitted wavelength of the LED is 820 nm, and 10 u of optical power is coupled into the fiber.

WAVELINK™ fiber optic systems

Continued on page 184

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are already used in diverse applications at television production companies, government security installations, educational installations, the Epcot Center, and in both corporate and telephone communication facilities. Grass Valley Group is a subsidiary of Tektronix.

Wireless mike (Circle 230)

SONY—Sony has introduced a newly developed UHF tramsmitter combination that greatly expands the service area in field applications. The heart of the system is the WRT-27A UHF transmitter with an RF output power of 30 mW. Should it become necessary to cover a range of more than 100m, two performance-expanding options can be added; the WP-27 power amplifier and the AN-17 sleeve antenna. Power can be increased to 500 mW, and excellent transmission will be assured with maximum reliability and distance.

The tramsmitter and amplifier units are designed to be worn around the waist, while the antenna is so lightweight that it can be fixed to a headphone band, affording complete mobility. For size, weight, sound quality, stability and transmission distance, Sony's technological achievement is unmatched by any other portable transmitting system.

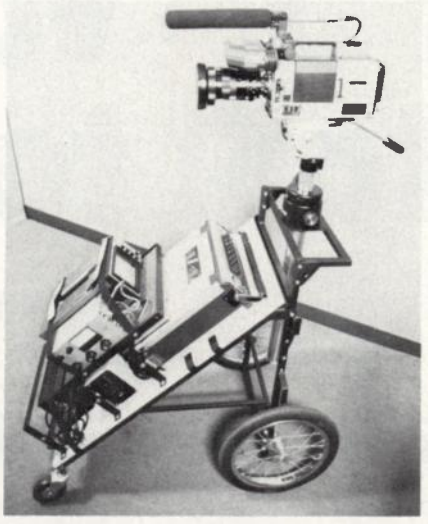
The compact, lightweight WRT-27A UHF transmitter is designed exclusively for operation in the 947-952 MHz UHF band. It incorporates advanced circuits comprising a crystal-controlled oscillator and a double-tuned coaxial filter for stable, powerful transmission.

The unit is powered by a small 9V battery or by a 12V external power supply through an adaptor which can be fitted to the microphone connector. With the compact SMC-type microphone connector, any microphone can be connected instead of the supplied lavalier microphone, using the supplied adaptor cable.

Video Equipment Cart (Circle 241)

LEE-RAY—The next time you're on an ENG or EFP assignment, you'll wish you had an equipment cart. Instead of equipment strung out on the scene or an umbilical tied to a portable VTR, the Lee-Ray model 6000 allows you to mount your key equipment so you can roll it ready-to-go right on the scene.

The model 6000's 36 pounds helps keep the load light, still it is sturdy enough to protect your equipment on location. It even has a camera mount so rock steady shots can be made right off the cart. The 6000 has locking ball-bearing front casters and the rear wheels are special wheelchair hubs with



ball bearings. It comes with a padded monitor tray and five nylon straps.

This attractive cart has a special baked on non-glare finish and enough options to make it ideal for any assignment. When the shoot is finished, the 6000 folds up with all equipment in place, ready for your next assignment.

The Lee-Ray cart checks in at under $300. You can see it ready to roll in the Lee-Ray Industries booth at the NAB convention.

Nine-inch monitor (Circle 234)

JVC COMPANY OF AMERICA—Suitable for computer display and video monitoring, JVC's new 9-inch TM-900 color monitor ranks as the trimmest in its class. Fitted in a sleek, shielded metal cabinet, the unit measures just 9.9"by 8.9" by 14.2." The monitor's ultracompact size and RGB input terminals make it a practical display monitor for most personal and microcomputers. The flat-face screen displays up to 1,000 characters at a time and accommodates 40 columns of characters and 25 lines of type. Each character consists of a five-by-seven dot matrix.

Marketed by JVC Company of America, the TM-900 can double as a video field monitor and as an editing monitor in the studio. For video input versatility, dual terminals are provided. One accepts BNC connectors while the other accomodates an EIAJ eight-pin connector. Both video output connectors are BNC-type.

Convenient front-panel switches control power and skew (AFC), and let the operator select the video input line. Other sitches, hidden by a detachable door, control volume, contrast, brightness, tint, color and vertical hold. Rear panel controls include degaussing and selectable impedance.

The TM 90U requires 120V 60 Hz and the AC power cord is grounded. Power consumption averages 33 W. Weight is just 20.1 pounds, including the convenient carrying handle and detachable, smoked-acrylic face plate.

Low-cost editor (Circle 231)

VIDEOMEDIA—Videomedia has announced a breakthrough in low cost post production technology. The price/performance barrier has been broken with the unveiling of the Videomedia "Eagle" series of editing systems. Carrying over much of the technology that has made the Z6000 series of editing systems the largest selling editing systems in the U.S., the Eagle is the most powerful low-cost ¾-inch editing system on the market.

The Eagle is available as the Eagle I or the Eagle II, both of which are frame accurate using micro-loc. The "I" can be field upgraded to the "II" or expanded to a three-VTR A/B roll system at any time by the end user. Both systems have, as standard features; distributed intelligence, 250-event memory, a printer output, a CRT status display generator, a built-in black burst generator with two outputs, dual shuttle arms, and transition entries. The Eagle I and II has full list management functions in addition.

Both systems can accept, as options, a dual micro-floppy disk operating system and/or the communications package offered by Videomedia that allows transfer of edit decision lists between any Videomedia-manufactured editor (equipped with the same option) via telephone, direct connect or cassette tape. An edit decision list made on an Eagle system is fully compatible with the Z6000 series.

The price of the Eagle I is $6,500, and the Eagle II is $8,500.

Image compression (Circle 232)

PRECISION ECHO—This company has introduced a low cost video image compression system to the professional video industry. Called the SQUEEZER, this system will be shown at the NAB Convention in Las Vegas.

The SQUEEZER can compress a video image to any of four selectable sizes, from 1/4 to 1/25 of the full frame size, and place it anywhere in the raster area. In addition, the squeezed image can be cropped horizontally and vertically and bordered in any color with an adjustable border thickness. The SQUEEZER can compress live action or freeze the image. For additional effects, the SQUEEZER can also horizontally invert the image. All functions can be preset to four programmable configurations and can be recalled at the

push of a button, even after powering down.

What is most remarkable about the SQUEEZER is its price. When image compressors and special effects generatorsare ranging from $45,000 to $20,000 the SQUEEZER is priced at $18,700, making it affordable to all TV stations and production facilities, regardless of their size.

Compact audio console (Circle 233)

MCI/SONY—MCI/Sony, a division of Sony Corporation of America has entered the compact recording console market. The JH-800, a portable 12-input mixing console with four VCA-controlled sub-groups, is MCI/Sony's first product for use outside the recording or broadcast studio.

The JH-800 is intended for location recording where the highest quality reproduction and full professional features are demanded. The compact mixer also fits into video production work and will have applications in remote broadcasting.

The range of features of the JH-800 is exceptional for a unit of its size. These include stereo mix buses, flourescent bar graph metering, balanced transformerless line and microphone inputs, three-band equalizer on each input, multi-way and XLX connectors and two built-in stereo compressor/limitors. The unit also includes four sends for fold-back and effects in recording situations or for feeding stage minotors in sound reinforcement. The dimensions of the JH-800 are 9.5 inches high by 23 inches wide by 24 inches deep.

ENG/EFP camera (Circle 235)

PANASONIC—Incorporating Panasonic's latest video technology, the shoulder-mount WV-777 ENG/EFP color video camera offers advanced performance at a competitive price. The new camera incoirporates three ⅔-inch Saticon image pick-up tubes and an efecient prism optics system for clean and crisp pictures, even under low light conditions.

Available now, the WV-777 offers a full range of sophisticated operating features. The technologically advanced optics system produces a high resolution image of 550 lines video output, (600 lines green channel), with signal-to-noise-ratio of 53 dB, plus accurate color fidelity. Feedback beam control eliminates comet tailing and blooming, while built-in vertical and horizontal image enhancers produce sharp, clear images. Digital auto white and auto black balance circuits with memory capability speed up color adjustment for optimum picture quality.

The camera, which is supplied complete with rechargeable ni-cad battery pack, charger, and AC adaptor, featurs a powerful 12:1, f1.6 servo-controlled zoom lens and a unidirectional microphone. Incorporated into the 1.5-inch viewfinder is a warning indication facility to alert the user to incorrect color balance, low battery power, and high gain flash. Also, when the WV-777 is in use with a videotape recorder, there is a start/stop check indication.

In addition to the body-integrated ni-cad battery and the AC power supply, the WV-777 can also use an optional remote control unit or a portable VTR as its power source. A stand-by switch for reduced electricity consumption during idle modes increases the economy of the WV-777.

Designed for comfortable use, the new camera features a low profile, permitting unobstructed vision for the user. It is attractively styled and weighs around 7 kilos in ENG configuration, with its weight evenly distributed to facilitate balancing. The WV-777 is housed in a metal case for extra strength. A low-weight magnesium die-cast chassis protects the internal components and guarantees long-term alignment of the optical system.

Two channel recorder (Circle 236)

OTARI—Otari Corporation has introduced a new 5050 series two-channel recorder, model 5050B-II. The new machine, which replaces the former model 5050B, is a compact recorder in the ¼-inch, two-channel format. An integral microprocessor controls a real-time electronic counter that features an LED real-time display and memory rewind function.

The capstan is under servo control and speeds are switchable between 15, 7.5 and 3.75 ips. The true, three-head design machine also has variable speed control, selective reproduce for over-dubbing, a built-in dual frequency test oscillator and easy-access electronics adjustments.

It additionally features: reel size compensation control, 10½-inch reel capability; integral tape splicing block; active, balanced mike inputs; active, balanced line inputs and outputs; mike/line mixing for each channel; switchable +4 or -10 dBm input and output reference level and variable low frequency reproduce equalization.

The 5050B-II is capable of interface to tape machine controllers and synchronizers and is compatible with dbx's noise reduction products. A transport remote control (CB-102) is available.

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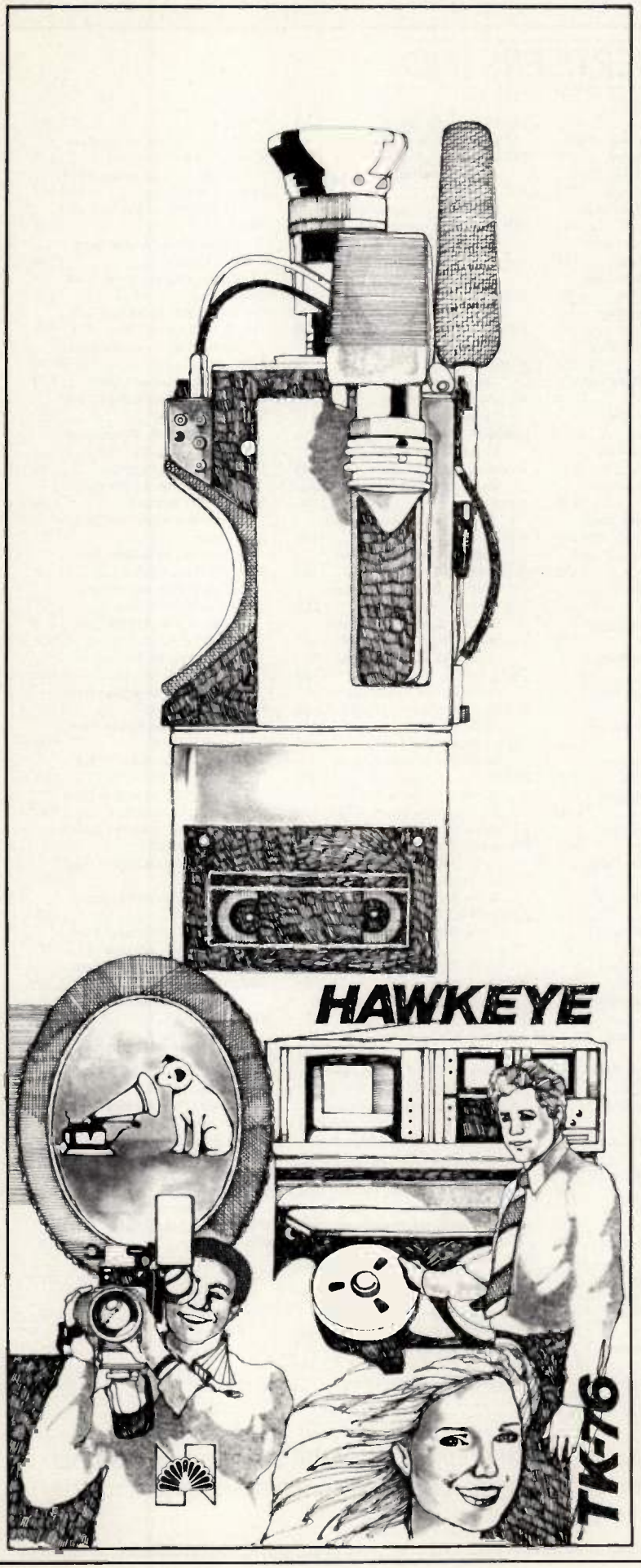

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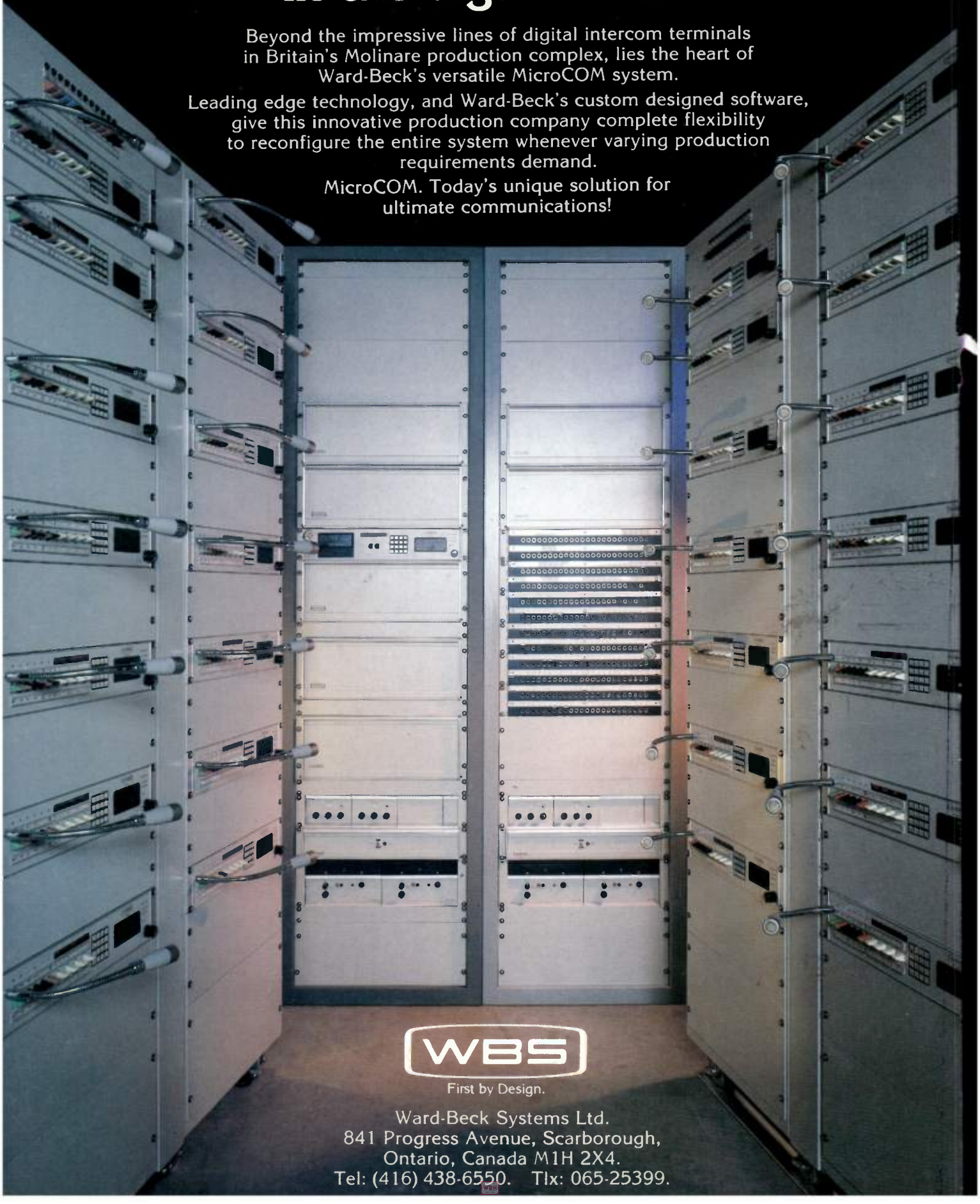

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