Montreux Symposium Legislative TV Coverage Digital Workshop

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BROADCAST COMMUNICATIONS

THE INTERNATIONAL JOURNAL OF BROADCAST TECHNOLOGY

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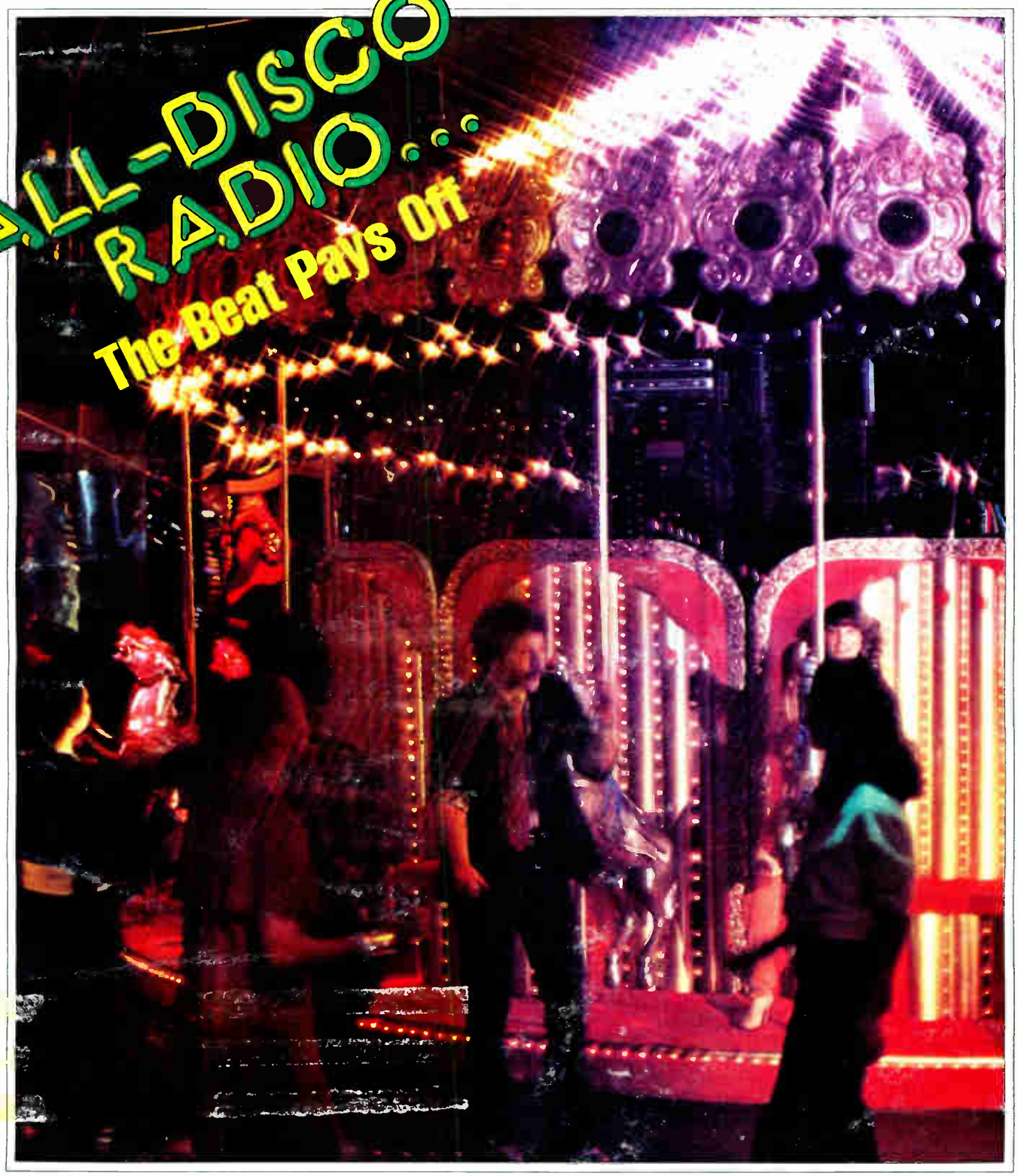

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JULY 1979 VOLUME 2/NUMBER 7

BROADCAST COMMUNICATIONS

THE INTERNATIONAL JOURNAL OF BROADCAST TECHNOLOGY

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Disco Isn't A Fad
Marlin Taylor

Although some stations have not achieved instant success with this new format, disco is here to stay. And the station that does a professional job in presenting a disco format will find the new sound profitable as well as danceable.

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Ratings Heat Up With All-Disco Fever
Bob Marich

KIIS-FM, Los Angeles, recently made the changeover from rock to all-disco . . . with a dramatic move up in the ratings. Here's an in-depth look at how they did it.

Cover — New York's Electric Circus, a one-time warehouse, is one of the more famous discos in the U.S. with an award-winning lighting system designed by Imero Fiorentino Associates, Consultants to the Performing Arts. The design allows various lighting effects to build in intensity, or momentarily stop or vary, for seconds of change and visual relief. *(Photo by Jackie Curtis, courtesy of Imero Fiorentino Associates)*

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Donna Moore

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Joe Roizen

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Constructing new transmitting facilities requires careful research and planning. But it also requires working closely with city officials. A chief engineer gives a step-by-step explanation of how his station planned their new building.

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Harold Ennes

Digital Sight and Sound continues with *BC*'s digital editor discussing the basic principles of an 8-bit encoder used in digital video systems.

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The use and abuse of ENG by television news departments is the subject of this month's close-up. Bill Avery, news director, KEVN-TV, Rapid City, South Dakota, outlines the problem areas, and details how to correct certain abuses to make better use of ENG technology.

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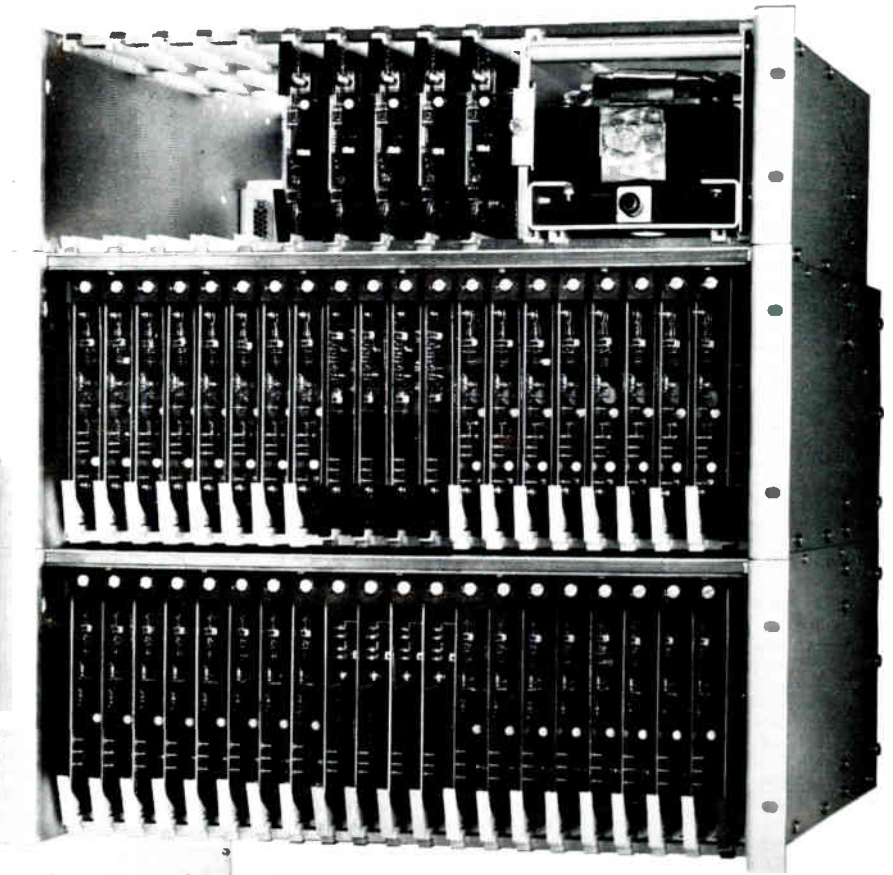

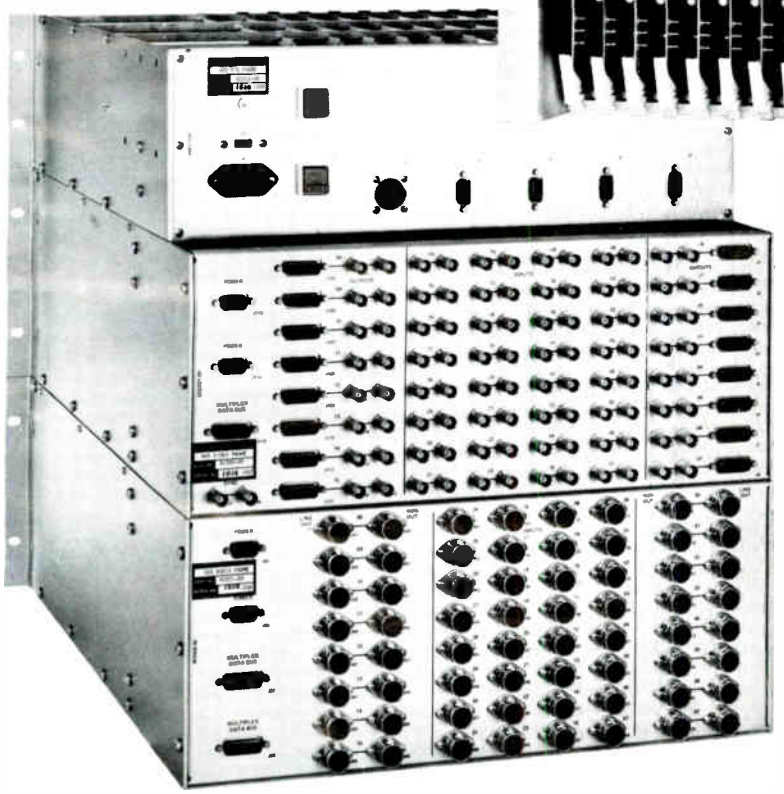

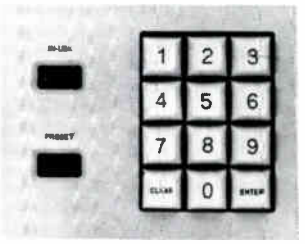

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Deregulation proposals:

The price we pay is that they all sound bad

By James J. Gabbert, *President*
National Radio Broadcasters Association

Deregulation of radio is a must, and it will happen! The question now is how much deregulation, and at what price? Currently, there are three bills in Congress: one in the House (HR 3333) and two in the Senate (S611 and S622). All propose to deregulate broadcasting in general, and radio in particular. The FCC, the NTIA, and Congress all agree that radio is over-regulated and that it would be in the public interest to deregulate. However, there is a misunderstanding among broadcasters that in order to obtain deregulation, there has to be a trade-off in the form of a spectrum fee and/or the creation of thousands of new radio stations.

These two issues, though they are related to deregulation in general, are really separate and should be addressed as such. In the matter of the spectrum fee, what we are talking about is a tax on the broadcasters' right to operate a communications medium — that tax, of course, in addition to all the other taxes applicable to all businesses. What is notable about the spectrum fee issue is that there is no provision to keep future governing bodies from increasing these extra taxes against broadcasters, to any amount, at will, and for this reason, the NRBA is unalterably opposed to the spectrum fee.

The NTIA is already pressing for 9 kHz on AM, and revised FM rules including 150 kHz spacing, which in effect would create new classes of stations and slide them in on the dial between the already existing ones. What this petition does not take into account is that the data that was used to prepare the petition, namely the FCC's 1963 Table of Allocations and the mileage separations, were based on mono performance. Not stereo! The difference is immense.

In other words, the FM station that was broadcasting in mono when the FCC contour map was prepared would not be able to deliver the same interference-free service today in 1979, because it's not the same radio station.

What we end up with is: yes . . . more radio stations . . . and the price we pay is that they *all* sound bad. If we sacrifice quality for quantity, is that not an injustice to the American broadcast consumer? The NRBA's position on this is obvious. We want them to take another look using relevant data.

But let's not confuse more stations or spectrum fees as the price we have to pay for deregulation, because as I stated before, they are separate and complex issues that must be dealt with separately. Let's for a minute talk about what deregulation will mean for us, and address a few of the major points.

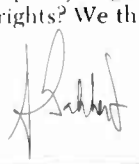
Should the FCC be involved in EEO? Why? The NRBA feels that there are other government agencies such as the EEOC, as well as many local agencies already handling equal employment problems. The FCC's regulation of EEO is a duplication of effort on behalf of multiple government agencies and only generates more paper. The EEO part of the FCC should be abolished.

Another area which should be eliminated from the licensing process is ascertainment. This is completely non-productive and it uses up a great deal of time which could be spent creating better radio. All ascertainment does is generate huge amounts of paper, which no one ever reads. The broadcaster should not have to live in fear of non-renewal of license if the station has done a good job. For this reason alone legislation is needed.

There are over 8,000 radio stations in existence today. Even single-station markets get a multiplicity of signals from outlying areas. Diversity exists today. There would be more if broadcasters weren't so fearful of format changes and of creating unique formats which may end up only mildly successful. After all, a "self-interest" group might challenge the change. The NRBA's position is simple: with the great fragmentation of radio audiences today, let the American people choose what they want. Don't let Washington dictate what they think America should hear. The people do not need the FCC to protect them. In today's competitive market, the American radio consumer has the ultimate weapon: a dial!

We could go on . . . double billing, spot charges, fairness doctrines, lowest unit rate, contest rules, etc. The Justice Department, the FTC, or the appropriate government agency should handle these issues if any improprieties have been committed. The FCC should not concern itself in these areas. The NRBA believes that the FCC, or a regulatory agency, should handle power, frequency allocations, and basically act as a technical traffic cop.

All these injustices against broadcasting would be eliminated in the light of deregulation, and broadcasting would have the same rights as all other American businesses. After all, that's just what we are. No more, no less. Should we be forced to accept extra taxes and quality degeneration to attain these rights? We think not!



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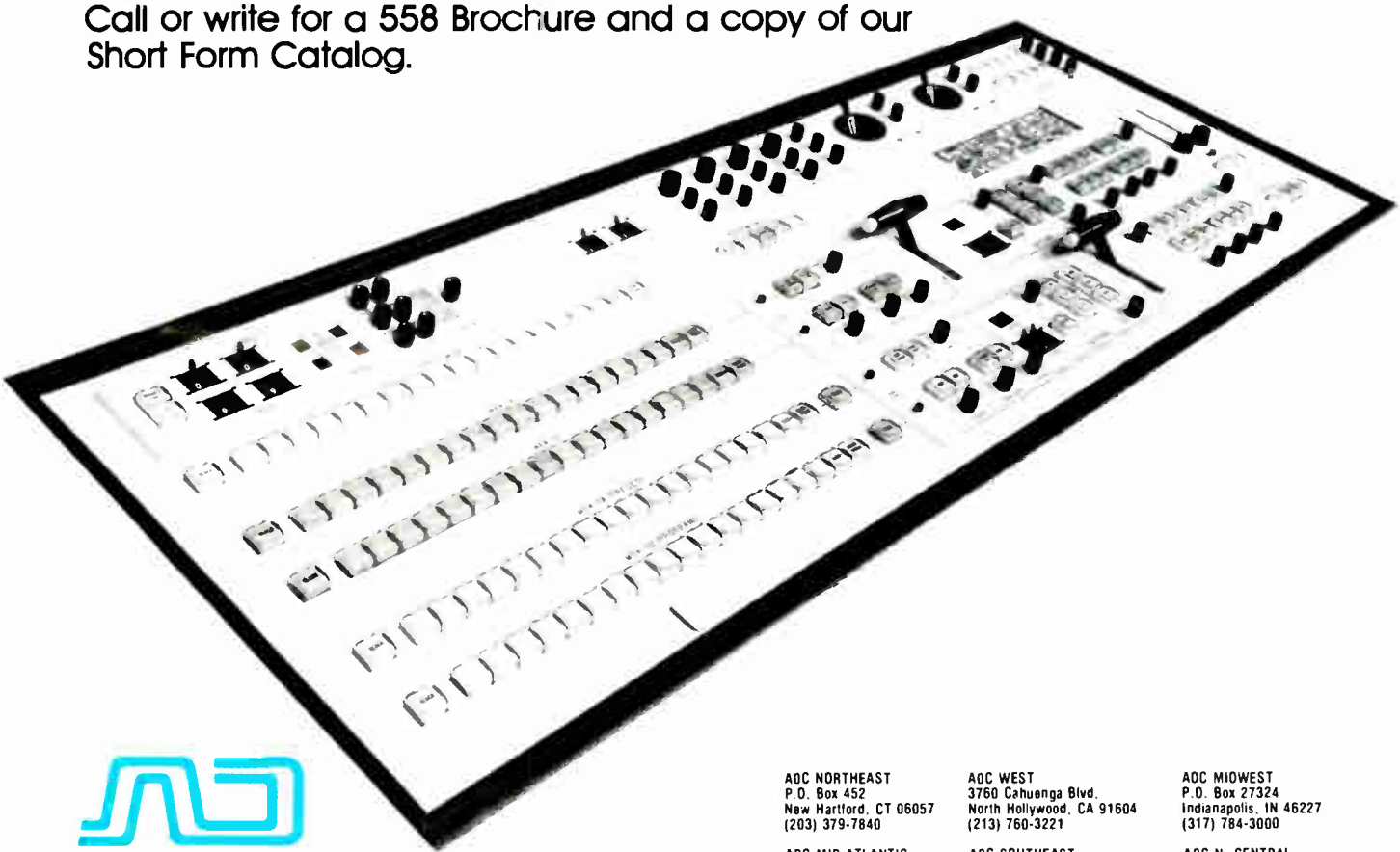

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PEOPLE'S REPUBLIC
OF CHINA

Government hosts SMPTE delegation

Standardization of broadcast equipment was a major topic during talks between Chinese and SMPTE officials.

Fred Remley (right), SMPTE television affairs vice president, is shown some video recording equipment by the head engineer of Central Television in Peking and two technicians.

The People's Republic of China, in its continuing effort to close the technology gap between itself and the rest of the world, recently hosted a three-man delegation from the Society of Motion Picture and Television Engineers (SMPTE) to discuss a range of technical issues, including standardization of broadcast equipment.

The SMPTE delegation, invited by the Ministry of Culture as part of a scientific and cultural exchange, were guests of the government during the three-week visit. Seto Waiman,Vice Minister of Culture, served as official host. Ti Shih-Chieh, technical director of the Film Bureau of the Ministry of Culture, also accompanied the delegation throughout its visit.

The delegation consisted of SMPTE President Robert M. Smith, Du Art Film Labs; SMPTE Past President William D. Hedden, Calvin Communications; and Frederick M. Remley, SMPTE vice president for televisions affairs, University of Michigan.

The primary purpose of the visit was to exchange information on the technol-

Continued on page 12

Business Hotline

GLENTRONIX LIMITED of Canada has opened a West Coast office under the name of Broadcast Video Systems Inc. The new office is located at 1050 East Dominquez Street, Carson City, CA 90746. John Spiker heads up the new office.

ADDA CORPORATION has announced the delivery of its 100th VW-1 frame synchronizer to NBC, New York. Marking the occasion for the Campbell, California, company are (from left) Michael W. Tallent, vice president, engineering; Jesse Blount Jr., vice president, marketing; Aman Khawaja, manufacturing manager; and William B. Hendershot III, president. Checking out the VW-1 is David Reeder, final test technician. ADDA has shipped more than $3 million in products since its founding in early 1977.

SONY recently announced the sale of more than $4 million in broadcast video equipment to Compact Video Systems of Burbank, California. Robert E. Seidenglanz, president of Compact Video Systems, and Arnold Taylor, vice president and general manager of Sony Broadcast, said jointly that Compact Video had chosen Sony equipment exclusively for one-inch helical scan video recorders, broadcast-quality video cameras, editing equipment, and ¾-inch U-matic videocassette units. The contract calls for delivery of the equipment over a two-year period.

SOFRATEV, the French company charged with the promotion in the U.S. of the French Teletext system, has announced the creation of a subsidiary in the United States to be known as AVS Inc., namely Antiope Videotex Systems. Teletext and Viewdata systems transfer digital data via broadcast, microwave, or telephone lines from large-capacity computer data bases to terminals located in offices, institutions, stores, or individual homes. The information may then be displayed on standard television sets (its initial and primary application), reproduced through word-processing units or high-speed printers, or fed to a facsimile. Sofratev is actively participating in the Electronic Industries Association Subcommittee on Teletext and is engaged in various tests, including the CBS-sponsored broadcast test in St. Louis to make field measurements which are now being conducted.

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ogy of motion pictures and television. During their visit, the delegates toured motion picture laboratories in Peking and Shanghai, several television stations in both cities, production and animation studios, a motion picture equipment manufacturing plant, and a television receiver factory.

A significant aspect of the visit was the bringing together of PROC motion picture and television officials at the request of the SMPTE group. This was important because the motion picture industry is under the jurisdiction of the Ministry of Culture, and television broadcasting is under the jurisdiction of the Department of State.

However, because the SMPTE is involved in both disciplines, the delegates felt it was imperative for the two sides to meet together to review mutual problems.

A major goal of the visit, according to Smith, was to encourage the Chinese to work with the SMPTE, the International Standardization Organization (ISO), and the International Electrotechnical Commission (IEC). It is hoped that by becoming a vital part of these standardization groups, the PROC will be able to accept products manufactured in other countries and to export their own products to other parts of the world.

Indications are that the PROC is interested in developing closer ties with the SMPTE. Budgets have been approved that will make it possible for many of the Chinese to become SMPTE members. And, according to Smith, there is also the possibility of establishing local section (chapter) activities in the PROC.

Traveling with the SMPTE delegation, though not an official part of it, were SMPTE members Sidney Solow, president of Consolidated Film Industries, and Milton Forman, an expert on stage and lighting design. Both men participated in the many technical meetings and seminars that were held during the tour.

UNITED STATES

More studies into 9 kHz spacing

The NTIA plans to continue its investigation into the possible effects of reducing channel spacing.

In response to adverse industry reaction to its proposal for 9 kHz spacing, the National Telecommunications and Information Administration (NTIA) has told the Federal Communications Commission it intends to conduct further studies into the effects of such a move.

The three main objections to 9 kHz spacing are that reduction of channel spacing will result in intolerable adjacent channel interference as well as reduce the service area of currently operating stations; the cost of adjusting existing directional arrays to operate at the new frequencies will be excessive; and the possible inter-region interference if Region II stays with 10 kHz spacing.

In a letter to FCC Chairman Charles Ferris, Henry Geller, head of the NTIA, said his agency intends to investigate the engineering aspects of these potential problems.

Concerning the effect on existing protection ratios, the NTIA intends to determine the number of current adjacent channel assignments which would have a significant reduction in protection if 9 kHz spacing were implemented. (The key word here is "signifi-

Continued on page 14

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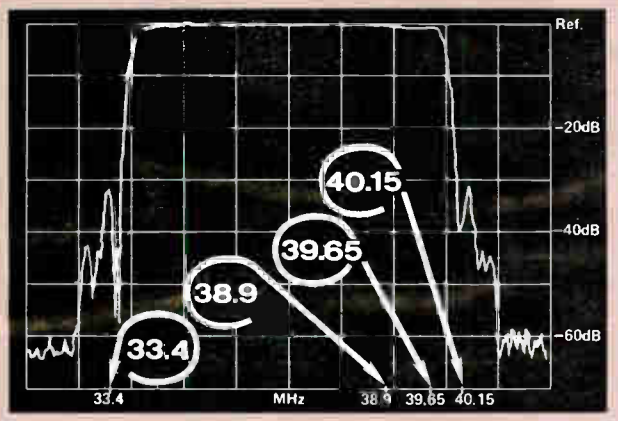

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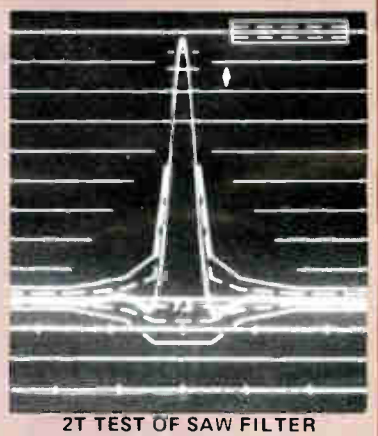

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cant.") Also, the NTIA will measure the decrease in adjacent channel protection afforded 50 contemporary receivers when spacing is reduced from 10 kHz to 9 kHz.

To determine the cost of adjusting directional antenna arrays, Geller said the NTIA intends to do the following:

- Evaluate theoretically the change of radiation pattern resulting from a change of operating frequency; and
- Seek the assistance of station owners to make voluntary measurements of the effects of a 1 to 4 kHz change of operating frequency (with the approval of and in conjunction with the FCC) on the pattern of their antennas, for comparison with theoretical calculations.

The NTIA also feels there is a possibility of inter-regional interference. In fact, according to Geller, "there is evidence that nighttime signals from Region III transmitters have been received in the U.S. at levels which are greater than would be expected on theoretical grounds. . . . With stations operating on the same frequencies, interference originating from great distances may be less objectionable than if the interference arises from signals offset by 1 to 4 kHz. The latter situation will occur if Region II channelization differs from that of Regions I and III."

Because of these factors, Geller said the NTIA intends to make "a thorough analysis of available data on MF nighttime propagation over very long paths at various phases of the sunspot cycle and make a more comprehensive evaluation than the NTIA did previously to determine the validity of the available methods of predicting signal strengths for those conditions. Associated with this effort will be a quick survey of stations in Region I and III which may affect Region II stations and vice versa."

If this proves inconclusive, the NTIA has proposed doing a longer-term study to measure signal strengths from remote AM transmitters in order to obtain "a better prediction model."

Geller indicated that these additional studies should be completed by the fall of this year.

UNITED STATES

Technical exhibit slated for October

With booth reservations coming in at a record pace, this year's exhibit will be the largest ever.

The 121st Technical Conference and Equipment Exhibit of the Society of Motion Picture and Television Engineers (SMPTE) will feature a five-day program of sessions on the newest developments in motion-picture and television technology.

The SMPTE Conference and Exhibit are set for the Century Plaza Hotel in Los Angeles October 21-26, 1979.

According to Jeffrey Friedman, exhibit manager, more than twice as many companies have signed up for booths this year than had signed up during comparable periods of time for either of the previous two conferences. More than three times as much space has been requested. Friedman said he expects to have approximately 300 booths at the 1979 exhibit, which will be attended by more than 7,000 persons.

Companies wishing to participate in this exhibit should contact SMPTE Exhibit, 862 Scarsdale Avenue, Scarsdale, NY 10583; (914) 472-6606. BC

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Horizontal and vertical blanking are both adjustable to meet a variety of recording or playback requirements. And your picture is always crisp and clear thanks to horizontal aperture correction and 1-line vertical aperture correction built right into the camera head.

Not only do you get a long list of standard features with the AK-750, there's also a long list of camera options available. Such as 2-line vertical aperture correction, a chroma key unit, and more.

So if you're pricing both studio cameras and portable cameras, price one camera that can do both. The Panasonic AK-750.

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NEWSMAKERS

Joe Flaherty, vice president for engineering and development at CBS-TV, has received the highest international honor for technological contributions, the International Achievement Gold Medal. Flaherty, who received the Gold Medal at last month's Montreux Symposium, was honored for his contributions in the development of electronic news gathering (ENG) equipment. Flaherty's early work in the development of a miniature color camera (the first step toward ENG) resulted in a 1969 Emmy award. He was again honored with an Emmy in 1975, also for his work in ENG.

Dick Smyth, news director of CHUM-AM/FM, Toronto, has been re-elected president of the Radio-Television News Directors Association of Canada. The voting, which took place at last month's RTNDA national convention in Halifax, also renamed **Sidney Margles** to the board of directors of the RTNDA international organization. Margles is vice president and general manager of Standard Broadcast News, Ottawa.

Bob Keeshan, better known as Captain Kangaroo to millions of U.S. television viewers, has been named "Broadcaster of the Year" by the International Radio and Television Society (IRTS). Keeshan, who has portrayed "the captain" on CBS-TV for the past 25 years, told IRTS members that the questions regarding children's TV advertising and programming are complex, with the real solutions in the hands of the programmers and parents.

Robert Tschudin-Lucheme of WLUK-TV, Green Bay, Wisconsin, has been named recipient of the $500 Michele Clark Award, offered for the first time by the Radio-Television News Directors Association (RTNDA). The award, named for a CBS correspondent killed in a plane crash in 1972, is to be given annually to broadcast journalists with less than three years' experience in public or commercial TV. BC

Moving Up

ROBERT HARRIS has been appointed manager of manufacturing for International Tapetronics. Harris, who joined the company in 1978, was named manager of manufacturing engineering in January 1979.

JOHN ABDNOUR, formerly sales manager of International Tapetronics Corp., has joined Rockwell/Collins Broadcast Products as district sales manager. His territory includes Illinois, Indiana, Ohio, and Michigan.

GENE BIDUN has left Harris Corporation, where he was district sales manager, to form his own company to sell and service broadcast equipment. The new firm will be responsible for sales of Cetec Broadcast equipment in Maryland, Delaware, West Virginia, New Jersey, Pennsylvania, and Washington, D.C.

ROBERT J. ANDERMAN is the new director of marketing at Microtime. Anderman came to Microtime from McMartin Industries, where he was broadcast sales manager.

AES/United States

Digital impact felt at AES

The new wave of digital audio equipment was on display at the AES convention, as the exhibit and sessions focused on the new technology.

At the AES convention in Los Angeles, it became even more evident that digital is completing its sweep of the industry. Sony made it difficult to miss, with three demo rooms running full tilt. And this came at a time when 3M demonstrated their digital machinery and anounced new lease arrangement plans.

According to Bob Brown, Mincom Division marketing director, 3M is well along in the process of gearing up its Camarillo plant for continuous production of the digital systems. Some delays have been encountered, however, due to the long lead time required to develop production versions of certain sophisticated components created specifically for this technology. Despite the interruptions and the inevitable refinements, Brown said that at least four more systems will be installed this year. While they're taking signups now, individual machines probably will not be available before the end of the year.

Sony's demonstrations were aimed at closing the gap on digital editing and mixing. Actually, at the AES convention in New York last year Sony introduced their first digital mixer, the DMX-800.

A host of other companies showed a wide variety of audio products at the show, and they will be covered in the Product Premier section of upcoming issues. The rapidly changing state-of-the-art and the crossover of products from professional sound studios keeps the flow of products moving.

C. R. Guarino, an independent consultant from Englishtown, New Jersey, presented a paper on audio equalization using digital signal processing. In it he described a method, using digital signal processing techniques for automatically equalizing the frequency response of an audio system. The method has several advantages, one of which is the fact that only one filter is required, no matter how many frequency bands are of interest. In addition, the filter is implemented in software, which increases the systems's flexibility.

The system presented uses a digital feedback loop to determine the amount of equalization necessary in octave frequency bands. According to Guarino, most of the system can be fabricated from off-the-shelf components, greatly simplifying the design process.

Can the VU meter and the peak program meter peacefully coexist? That was the question Stephen Temmer's paper asked, because as Temmer explained, "There never was any problem with this as long as each country stayed with its traditional instrument. Part of the reason lies in the introduction of PPMs by U.S. manufacturers on consoles, tape machines, or the meters themselves, while several European manufacturers (in traditionally PPM-oriented countries) have put VU meters on their tape recorders. The result is that many studios now have a mixture of VU and PPM meters alongside one another."

Temmer outlined the operation of studio equipment using either or both of these meters, but he concluded that " . . . it is virtually impossible to glean the alignment disparity between the VU meter and another faster meter of other than standard ballistics. There is no formula which will provide you with the number of dB. The same holds true for quasi-VU meters with strange ballistics."

"It's anyone's guess," Temmer said, "and yet the signal-to-noise and overload distortion depend on this number. Incidentally, our European friends have given this 6 dB alignment disparity a name. An English name at that. They call it the 'lead.' It's the number of dB by which the VU alignment leads the PPM. Perhaps that a good name for it."

A method of measuring transient intermodulation distortion was covered in a paper by Susumu Takahashi and Susumu Tanaka of the R&D Department of Sansui. This measurement uses a signal asymmetric in time domain, such as sawtooth. When applied to an amplifier, internal overshoot current occurs at either the signal's rise or fall. If it clips or is in the non-linear region of the amplifier, DC voltage appears at the amplifier's output, indicating the amount of TIM-D.

According to the authors, in order to isolate TIM-D from the DC offset voltage and achieve an accurate measurement, it is recommended that the sawtooth waves be switched with an audio frequency. In other words, by alternating sawtooth waves with those in reverse phase and applying the alternating waves to the input of a test amplifier, an AC voltage twice the DC voltage will appear at the amplifier's output. This indicates the amount of TIM-D. This would allow you to measure the TIM-D down to 0.002% using this method.

Their paper also presented the results of using this method to test five new consumer-use amplifiers. Among a number of applications it offers is a method to find the exact amount of slew-limiting inside an amplifier and to improve the transient distortion. The authors have found that discrepancies between calculated and measured values is closely related to the slew rate waveform of an amplifier. The design of a low TIM amplifier should include an optimally designed two-pole compensation, an improved slew-limiting circuit, and an optimum input filter time constant.

Apart from their satisfactory frequency response, a poor waveform reproduction, which is peculiar to magnetic recordings, is a well-known phenomenon to recording engineers. In their paper on group delay analysis, Teruo Muraoka, Susumu Saitoh, and Hiroshi Imao of the Victor Company of Japan related the subject to magnetic recording systems.

Engaged in the operation of music tape duplication, it raised a question in their mind as to whether there is any tone difference between side A and side B programs when one is recorded reversely in the duplication process. The authors set out to measure the characteristics of magnetic recordings using the pulse train method in order to track down the origin of its phase nonlinearity.

They concluded that magnetic recording/reproducing characteristics exhibit a remarkable increase of group delay in the low frequency range, and that the origin of group delay is around the reproducing heads. In normal circumstances, the effects of group delay to sound quality is considered entirely imperceptible. However, the authors said that it may be evident when reproducing a high (or at least more than 4th) generation copy. It was their conclusion that forward and backward are preferable when producing high generation copies.

A number of other interesting papers were presented at this 63rd convention. And doubtless, the subject of digital audio processing will increasingly find its way into papers addressed to future meetings as well as equipment exhibited in the booths.

Continued on page 18

RTNDA/United States

Howard K. Smith to open convention

This year's convention will feature the presentation of special awards, the installation of officers, and an exhibition.

Howard K. Smith, veteran network correspondent and commentator, will give the keynote address at the 34th annual International Conference of the Radio-Television News Directors Association (RTNDA), which is scheduled for September 6-8 in Las Vegas.

Other featured speakers include CBS commentator Walter Cronkite and NBC's new vice chairman, Richard S. Salant, who retired recently after 16 years as president of CBS News.

Salant is to receive the RTNDA's highest honor, the Paul White Award for distinguished service to broadcast journalism. Cronkite will present the first annual Michele Clark Memorial Award to Robert Tschudin-Lucheme, a Wisconsin lawyer-turned-broadcaster who produces a weekly series at WLUK-TV, Green Bay.

Also on the agenda is the presentation of the association's annual achievement awards to television and radio stations, as well as five scholarships worth up to $1,000 each. Workshops and panel sessions will include a session on coverage of a nuclear reactor accident (such as the one which occurred at Three Mile Island), and others on management training for news directors.

Other activities will include the election and installation of officers. A new RTNDA vice president will be chosen who will automatically succeed to the presidency in 1980, plus two directors-at-large to be members of the national board. At the convention, Curtis Beckman, news director of WCCO-AM, Minneapolis, will succeed Paul Davis of WCIA-TV, Champaign-Urbana, Illinois, who is currently serving as president.

Indications point to a record turnout of convention exhibitors who will display goods and services of interest to radio and television news directors.

Pre-registration for the convention is underway. Those wishing to attend may obtain registration forms and applications for room reservations at the convention hotel (Caesars Palace) by contacting RTNDA, 1735 DeSales Street, N.W., Washington, DC 20036; (202) 737-8657.

SBE/United States

New publication helps engineers

The SBE sets dates for fall recertification exams and issues brochure designed to help engineers in their preparation.

The SBE Certification Committee has designed a "Recertification" brochure to help engineers prepare for recertification. The brochure has a record section that's handy for logging meetings, seminars, and conventions where attendance applies to recertification requirements.

SBE certification is awarded for five-year periods. During that five-year period, certified engineers must

Continued on page 22

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accumulate professional credits. This is done in order to keep the standards of those certified consistently current with the state of the art. Those who do not accumulate professional credits will require retesting at the end of the five-year period in order to remain certified.

The different categories in which professional credits may be earned are listed in the brochure, along with the procedure for recertification. Copies are available by writing to: Certification Secretary, SBE, PO Box 50844, Indianapolis, IN 46250.

The SBE also has announced that the fall certification exams will be given from November 17 through December 8. Applications must be received in the SBE national office by October 8. Applications are available through the Certification Secretary.

In other SBE actions, Becky Arendall has been selected as the new editor of the *Signal*. The *Signal* phone number is 317-848-1441, and the *Signal* office is now located at 1251 East 91st Street, Indianapolis, IN 46240.

BPA/United States

Rights threatened, Wasilewski warns

Promotion directors and designers gather in Louisville for the 23rd annual seminar conducted by the Broadcasters Promotion Association.

If the public's right to broadcasting freedom is not fully recognized by the courts and Congress, then, truly, all the First Amendment rights are going down the drain."

That was the message from NAB president Vincent Wasilewski to attendees at the 23rd annual seminar of the Broadcasters Promotion Association (BPA), held recently in Nashville, Tennessee.

Wasilewski went on to say, "More people get their ideas from broadcasting than any other media, and if the foremost of the media is not beneficiary of constitutional protections against abridgements of speech and press, then none will be."

He added, "People in government will, in the nature of things, always be seeking to subjugate the press. . . . It will be a little chipping away here, a little expansion there, a little intimidation someplace else. It will happen — a law which Congress passes restricting us from covering the news or an extension of the fairness doctrine by the FCC intruding into some particular case."

But, he said, the right of broadcasters to communicate freely with the public in truthful and accurate terms will be upheld, "even if we must see it through to the Supreme Court."

Wasilewski spoke at a general session during the seminar, which was held in conjunction with the recently-formed Broadcast Designers Association (BDA).

Attendees at this year's event were also able to attend several sessions dealing with various aspects of station promotion and advertising, from con-

Continued on page 24

SBE MONTHLY LOG

CHAPTER 9 — Phoenix, Arizona. Rick Kukulies of Tangent Systems, Phoenix, demonstrated and discussed his company's line of audio consoles and other audio projects currently under development by Tangent.

CHAPTER 11 — Boston, Massachusetts. Dr. Ira Jacobs, director of Wideband Transmission Facilities Laboratory at Bell Labs in Holmdel, New Jersey, was guest speaker. Dr. Jacobs was responsible for the experiments in Atlanta on digital information transmission via fiber optic lines, and the subsequent trial installation being evaluated in Chicago. He discussed these experiments as well as new experiments and developments at Bell Labs.

CHAPTER 21 — Spokane, Washington. New chapter officers for the coming year are David Green, chairman; Robert Wyatt, vice chairman; and T. O. Jorgenson, secretary. Ron Valley and Vincent Hoffart presented a program on the design of satellite antennas.

CHAPTER 25 — Indianapolis, Indiana. The program for the evening was "Satellite Television." Indiana University School of Dentistry is setting up to televise their second satellite program through the Public Service Satellite Consortium. NASA Portable Earth Transmitter (PET) Mobile Satellite Television Equipment Vehicle will be receiving programs from University of Maryland Dental School and University of Mississippi Dental School combining the two programs in Indiana University Dental Television Studios with live and tape. The program will then be transmitted up to CTS Satellite, down to WRLK-TV (SECA) in Columbia, S.C., which will rebroadcast it up to Westar I. Westar I will then rebroadcast it to PBS Stations across the country and Hawaii for closed-circuit viewing.

CHAPTER 34 — Albuquerque, New Mexico. John Pierce, sales engineer for Sencore, discussed and demonstrated several Sencore test instruments. Following the program, Fern Bibeau, chief engineer of KOB-TV, guided the group on a tour of the station's TV production and broadcast facilities.

CHAPTER 41 — Central Pennsylvania. John Bozak, chief engineer of WITF, provided a dissertation on the WITF/PBS satellite earth station. This program was interesting for both radio and television engineers since more emphasis is being placed on satellite transmission of network program material.

CHAPTER 45 — Charlotte, North Carolina. This month's program was a tour of the new remote-controlled TV and FM transmitter installation at WSOC.

CHAPTER 46 — Baltimore, Maryland. Seminar presented by Dave Grimes of Harris/Gates Radio on their program automation system using microprocessor control. The actual controller and source switcher with all of its parts and power supply occupied about a half rack. This was programmed and controlled by a separate keyboard with video display. The event memory has about a 10,000 event memory — a far cry from the old "800" with reel-to-reel spotters.

CHAPTER 49 — Central Illinois. Chuck Smiley of the Harris Corporation presented a program on the five proposed AM stereo systems at the meeting this month in Champaign-Urbana. Officers for the coming year are Jim Newbanks, chairman; George Yazell, vice chairman; and Tom Brock, secretary/treasurer.

CHAPTER 53 — South Florida. Dick Wheeler, regional sales manager for Hitachi, demonstrated the FP-20-S ENG camera; and Steve Rogers, vice president of engineering at WPBT, conducted a tour of the station facilities.

CHAPTER 59 — Kansas City, Missouri. James Dailey, engineer in charge of the local FCC, and one of his staff members answered various questions ranging from station inspections to types of technical violations most commonly found at stations. They also gave out a recent checklist of items that are inspected when an inspection occurs at an AM, FM or TV station.

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ducting contests and using on-air graphics, to promoting radio with TV ads.

George Fischer, program director for WSB Radio, Atlanta, and Ray McCarthy, promotion director for KRNT/KRNQ, Des Moines, offered several suggestions for developing successful contests in a panel discussion moderated by Art Metzler, promotion manager, WAVE-TV, Louisville.

Fischer explained that knowing the audience you are trying to reach, scheduling appropriately, controlling the judges, and avoiding "cuteness" are vital parts of any successful contest. Fischer pointed out that contest announcements should be checked on the air; they should be heard often; and they should sound effective. Response to the contest should also be monitored constantly.

During a session on using TV to promote radio, William Schrank, KATZ Research, New York, gave the results of a survey taken by KATZ on radio stations using television to advertise their stations.

Schrank said the majority of stations surveyed focused on the 18 to 49 demographics. Most stations used TV to reinforce their call letters; other uses were reach, exposure, low cost, and effectiveness. Forty-five percent of the radio stations felt their TV spots were run in poor time slots, partially because the cost for the spots was handled via trade-offs.

One of the highlights of this year's seminar was the presentation of the BPA/MSU (Broadcasters Promotion Association/Michigan State University) Awards, given annually to honor the best in broadcsat station advertising and promotion.

KRON-TV, San Francisco, was the Total Campaign award for a large-market television station. Other winners in this category included WSOC-TV (Charlotte, N.C.), medium-market TV; KOLN-TV (Lincoln, Nebraska), small-market TV; WBBM (Chicago), large-market radio; WCKY (Cincinnati), medium-market radio; WOWO (Ft. Wayne, Indiana), small market radio.

NAB/United States

Call for inquiry into NTIA proposal

Both the NAB and NRBA are objecting to the NTIA's proposal to revise FM broadcast standards.

The National Association of Broadcasters (NAB) and the National Radio Broadcasters Association (NRBA) have asked the FCC to initiate an inquiry rather than a rulemaking proceeding into the National Telecommunications and Information Administration (NTIA) petition calling for the revision of FM broadcast rules.

In its comments, the NAB noted that the matters covered in the NTIA's petition are more complicated than the NTIA has indicated and could affect all radio broadcasting.

The NRBA comments pointed out that NTIA has not performed any field testing on the proposed use of terrain shielding to demonstrate the reliability of its prediction method. Proper testing and evaluation must be completed to prevent losses in existing stations' service areas and the resulting chaos on the FM band, the NRBA said.

As a result of these objections, and because a rulemaking proceeding puts restrictions on discussion and information presentations, both associations want the FCC to consider the revision of FM rules in the more informal, free, and open context of an inquiry. BC

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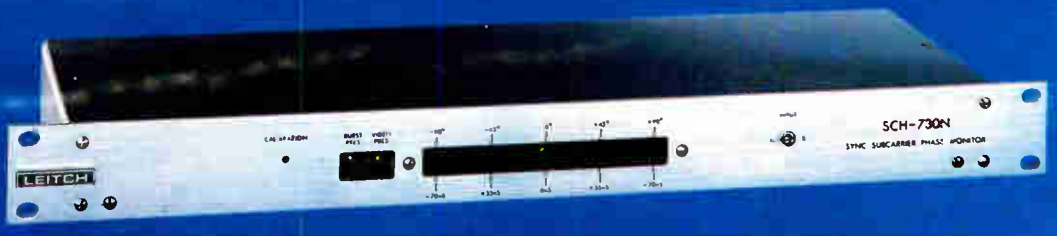

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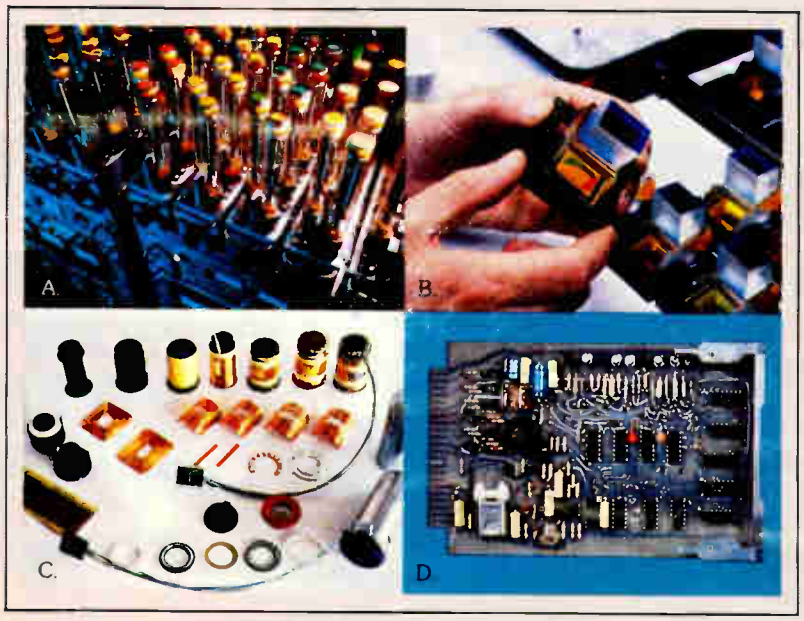

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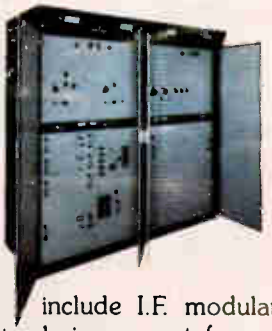

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MARLIN TAYLOR

Like it or not...
Disco isn't a fad

Whether one particularly likes the music or not, it's difficult not to acknowledge disco and the impact it is having upon the nation. There's no question it has crashed full force upon the American scene. The discotheque is now a familiar sight in many communities. It's been called a fad . . . a flash in the pan. Will it be?

Discotheques and the disco lifestyle were sweeping the country before radio "discovered" disco music. Or, should we say had its eyes opened to the opportunities to be reaped from it? There were three or four stations playing it in places like Baltimore, Washington, D.C. and Memphis. They were getting some numbers in the ratings, but these were markets with heavy black populations and this music was deemed to be attuned to the black person. Plus, these people who frequented discos were looked upon as some kind of subculture and really didn't amount to very large numbers. This wasn't the kind of people most broadcasters wanted as an audience for their stations.

Oh boy, are we broadcasters a fickle bunch! Last summer an old-timer in this business named Eddie Cossman, who learned the radio trade selling it in the streets of Newark, New Jersey, saw what was happening on the streets of New York. The rest is history. His New York FM station, WKTU, was playing mellow rock and going nowhere. He had nothing to lose, so ordered a switch to full disco music. Within 60 days the Mediatrend ratings service showed the move to WKTU was on. Last fall's Arbitron showed WKTU a dominate number one in the nation's largest market, the first for an FM and the first time in anyone's recollection that any radio station in New York has ever achieved a double-digit share in the Arbitron ratings. And, the race to jump on the disco bandwagon was on!

What happened? Stations in markets all around the U.S. jumped into the format, many without any forethought or true understanding of what they were getting into how to do it or what was needed to make it work. Of course most of them have not achieved the kind of instant success that WKTU saw, bringing out the doubters and doomsayers saying "I told you so" and "disco is unique to New York." Some have even been heard to say, "It's definitely a fad See, it's already beginning to fade."

While WKTU is riding high, there appears to be minor panic in the executive suite at WABC, the dominate New York music station for nearly two decades. It starts playing disco cuts en masse, but secs further erosion in the next Arbitron. The heavy emphasis on disco continues at this writing and for the first time since WABC found success as a contemporary music station has it deviated from its "all hit music" policy. Did they over-react? Many think so. But, they are a shrewd bunch at ABC. They know that ratings for youth-oriented formats are won or lost in the five boroughs of New York City . . . not in the total survey area. And, disco is now the music of the streets of New York. We'll have an indication shortly as to whether the move was a good one, but probably won't know the true outcome for a long time. The results here will likely be considered a guideline for many others.

Meanwhile, radio has fueled the news media's interest in the disco phenomenon. After all, it's big news. A new kind of music. New musical artists, new fashions, and a totally new industry involving millions of dollars has opened up. It makes good journalism in a time when much of the news surrounds rising oil prices, relations with China and a new regime in Iran . . . not things that exactly turn on the average American. *Newsweek*, *Life* and even *Nation's Business*, the national Chamber of Commerce magazine, have done feature articles on disco. My company, Bonneville Broadcast Consultants, has seen its first disco-consulted station. WWOM (FM) in Albany, New York, be the subject of two major newspaper articles and feature news reports by two television stations within its first two weeks of operation.

Until recently, the negative vibes toward disco within the broadcast industry outshone the positive ones. We believe they were generated primarily by the management and programmers of successful rock stations. Why? Isn't disco really a form of rock music? Isn't disco the popular music of the day? Yes, but because album-oriented rock and disco come from opposite ends of the

Marlin Taylor is president of Bonneville Broadcast Consultants, Tenafly, New Jersey.

rock spectrum, disco is not easily integrated into a typical rock format. Rock programmers didn't know how to deal with this new star of the musical world, so naturally were afraid of it. "Maybe if we ignore it, it will go away," was the attitude.

Basically, problems arose because programmers felt an obligation to deal with disco, to try to protect their flanks by playing disco cuts, hoping to appease listeners who might want some of this popular new style of music. That was their mistake. They started playing disco tracks for the sake of playing them, not because they fit or were a logical extension or modification of the format. A Philadelphia top-40 station has now dropped all disco cuts except those that are bona-fide hits, which is what they should have been doing all along!

Is disco a fad? Where is it headed? I predict that those who are declaring disco to be a fad are deceiving themselves and others. It's likely that some of the novelty of all-disco radio will wear off after music lovers have gotten their fill of it. But, it will not fade away until a new music form with equal dynamics comes along to supplant it. Yes, I anticipate that the ratings of WKTU will level off and drop back to a normal level for the market. Yet, the station will still be a leader among the dozens of stations competing for the audience.

After all, this is history repeating itself. The world needs music to dance to. It has for many generations past, it most likely will for many to come. Regular rock had evolved into a very non-danceable sound, opening the door for music that was suitable . . . offering the rhythmic texture, motivating bodies into action. There's a saying, "as go the record companies, so goes trends in music." The record companies are behind disco with some of the biggies just now getting their disco A & R machinery moving full tilt. These are two of the major factors that support my belief in a long life for disco. Another is the simple fact that pop music has been stagnating, losing the excitement and vitality that is so important to the human psyche. On comes the beat and rhythm that is the essence of disco, luring the masses just as rock 'n roll itself had done 25 years earlier.

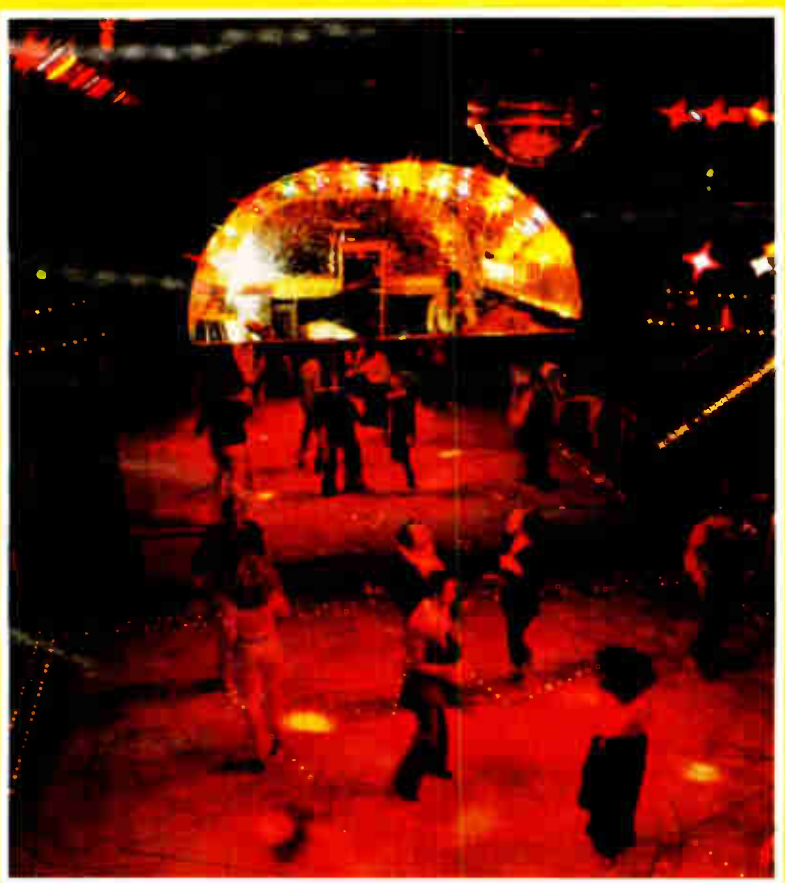
Eventually it will assimilate itself into the total rock picture, just as other variations of rock have over the years. Or, as the contemporary music newsletter *Goodphone* suggested a few weeks ago, disco is the frozen yogurt of rock. When frozen yogurt took the country by storm a few years back, stores and street-corner stands selling it popped up everywhere. Today it is just one item among many found in ice cream stores. Disco will not depart soon. Certainly not so quickly as to be termed a fad.

Listenership makeup is proving to be far different and much broader than most broadcasters ever thought. It was thought to be a highly ethnic audience and probably quite young in age. This is only partly correct. The white population is accounting for a good half of the audience at most stations and the demographics pulling meaningful shares is running up to 35 to 49. Detroit's first full-time disco station, WDRQ, is reporting heavy telephone response from women who are obviously well into their 30's and 40's. The reason is, simply, the music makes a person feel good.

As we enter the 1980s, we are experiencing a period of accelerated changes in lifestyles, music and musical tastes . . . of which disco is only a part . . . making traditional radio formats more fragile. Add to this increasing audience fragmentation due to the ever-growing number of radio stations competing for a significant share of listening. Disco is just the beginning of the challenges that will face many broadcasters and station programmers in the new decade.

Joe Capobianco of Bonneville Broadcast Consultants suggests that "today, only beautiful music remains inviolate as a music format. In many ways, the lesson of disco emulates the lesson of beautiful music — a distinct, consistent musical environment can be downright addictive to radio listeners. Both envelop the listener in a sea of energy; both are instantly identifiable; with both, the 'medium is the message' theorem applies."

The true potential in disco for any station lies in the one factor that impacts far more than any other — regardless of format — on its ability to succeed: the commitment to doing a top-notch professional job in assembling, presenting and promoting the product. Disco's own dramatic ascension or another station's success with it is no guarantee that you will reap the same harvest. BC



Osko's Discotheque, Beverly Hills, California. *(Photo by Bob Marich)*

BOB MARICH

DISCO

Ratings heat up with all-disco fever

Keeping in step with the disco beat is a way of life for many radio stations. The approaches taken by two Los Angeles disco stations demonstrate the different forms the format can take. The pure disco sound of KIIS-FM is the focus of this first of a two-part series. The blending of pure disco music with complementary contemporary music and slower disco ballads by KUTE-FM will be examined in next month's article.

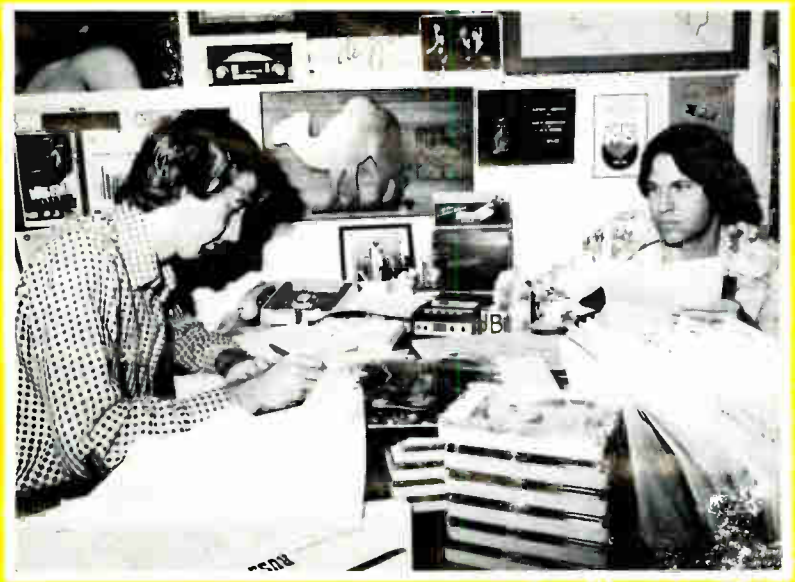
Can the phenomenal popularity surrounding disco music in the U.S. be expected to continue? Asking disco radio programmers that question gets a straightforward answer: "Of course not. It's silly to believe that any one trendy type of music will be in high fashion forever."

Bob Marich is a free-lance writer covering the Hollywood entertainment industries.

That kind of thinking tends to undermine confidence in disco as a viable radio format . . . right? Not so, say the same radio programmers. Though it once played to a narrow audience, disco music is now being recorded by an astonishing range of artists.

A disco cut on Rod Stewart's latest rock album topped disco *and* pop charts. Country music superstar Dolly Parton has cut a disco tune.

The advertising campaign for KIIS-FM's disco format centers around a photo of a youthful couple dancing in a disco atmosphere. Billboards, print advertisements, and give-away wall posters feature the artwork. *(Photo courtesy of KIIS-FM)*



Evaluating lists of records is a Tuesday morning ritual for program director Mike Wagner (left) and music director Sherman Cohen. Spinners at discotheques are polled at the end of a week. *(Photos by Bob Marich)*

Nostalgic songs are even being re-recorded in disco versions. Putting it in a nutshell, disco has crossed many music frontiers and is moving into the mainstream.

Even with its wider acceptance among listeners, disco is still looked upon with distrust by many in the radio industry because the format is associated with either spectacular successes or failures.

The most visible success has been WKTU-FM in New York, which dropped its mellow music format a year ago for disco, and jumped from an 0.9 share to 4.2 and 11.0 in successive monthly Mediatrend surveys. It toppled the market's perennial leader, AM rocker WABC, and though it has declined in recent months WKTU-FM still commanded a 7.4 percentage in the April 1979 Mediatrend. In Philadelphia, WCAU-FM adopted a disco format in 1975 and continues to show well in ratings. On the flip side, stations that tried disco with forgettable results can be found in many markets.

Booms and busts aside, disco offers another alternative in the contemporary music spectrum that is served by 10, 15, 20 or more stations in larger markets. The rise of crossover artists is particulary encouraging for stations in medium and small markets. Rather than gamble on pure disco music, stations can blend disco with crossover coming from other contemporary music forms.

Two stations with marginally-rated contemporary music formats in Los Angeles plunged into disco formats: and although they use opposing philosophies for programming disco music, both have succeeded in boosting their ratings. KIIS-FM, which abruptly dropped its blend of album rock and top 40 for disco in November 1978, aims to sound "like the peak hour of a discotheque," in the words of its music director. The move to disco was evolutionary for KUTE-FM, formerly an album-oriented rhythm and blues station, and its disco sound combines R & B and rock music. (The KUTE-FM approach to the format will be featured in part two of this series appearing next month)

There's a note of irony in the Los Angeles market too. New York's WKTU-FM is advised by programming consultant Kent Burkhart, who performs the same function for KIIS-FM. Disco music was introduced in New York by WBLS-FM, owned by Inner City Broadcasting, which recently acquired KUTE-FM. So the Los Angeles disco battle involves many of the same combatants that are found in New York.

One difficulty in programming disco for any city is keeping up with fast-changing tastes of audiences. Disco music charts are as volatile as any in contemporary music, but KIIS-FM finds it has an excellent proving grounds.

"The whole business about everybody being afraid to add new music is really that they are afraid to add *untested* music," noted Sherman Cohen, KIIS-FM music director. "With

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Deejay Paul Freeman (standing) carts a promo with production head Don Elliot. When recording disco music, Elliot finds that VU meters — which read average levels of program material — do not indicate true peaks of transients such as crisp drum beats. For that reason, he prefers to record at low levels to capture greater dynamic range.

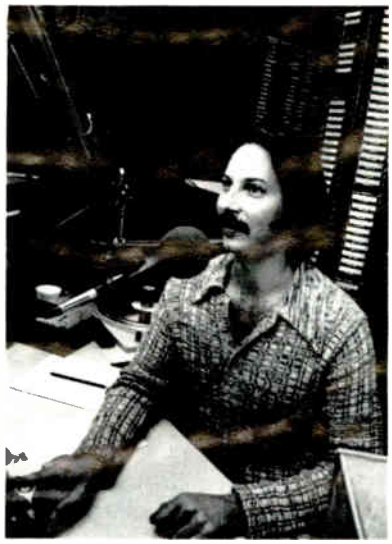
the discotheques, we have a source of testing music and knowing what is or isn't a hit within a week or two of release. A record can be very hot in the discos and when we add it, to the record companies and to most of the listening audience, it's like a brand new record. But it's been tested already."

Each week, KIIS-FM asks record spinners at 15 selected discotheques to evaluate 60 records.

"They rate them as far as audience response," explained Mike Wagner, program director. "We find out if a record is starting to burn out, if it's starting to happen, or if it's very big. They give us the feedback that we need."

Research is carried out in other areas. About 12 record stores, selected on a rotating basis from a pool of 40 retail outlets, are surveyed for trends and sales. Requests received by callers are also tallied. Research information and personal evaluations of Wagner and Cohen are then used to rank records tentatively.

A three-way conference call each week between Wagner, Cohen, and Wanda Ramos at WKTU-FM concludes research efforts. (Ramos works for Burkhart's consulting firm at the New York station.) Data is exchanged in what Wagner called "a give-and-take situation." The final decision for compiling KIIS-FM's 30-40 tune playlist rests with Wagner and Cohen, who fine tune the music for the Los Angeles market.



Turntables replaced cart machines as music sources when KIIS-FM dropped a pop music format for disco, which meant that deejays like Joe Daniels had to cue records manually instead of pressing buttons on cartridge machines.

KIIS-FM finds that West Coast music tastes differ sharply from those of the East Coast. Noting that Latino groups are a core group of disco listeners, Wagner said that Los Angeles has a large Mexican-American community (official estimates put it at about one-fifth of the total population) while Latinos of Puerto Rican origins are a major segment in New York.

"Both groups have different tastes in music," he explained. "Disco music out here is a little more commercial, a little more pop sounding. While in New York, it's more ethnic. More hard-core disco music makes it really big in New York."

He added that Los Angeles favors crossover disco music, which has broad appeal. In New York, European imports and disco with salsa (music with distinctive Latin rhythms) are very popular.

Air sound is one of several areas

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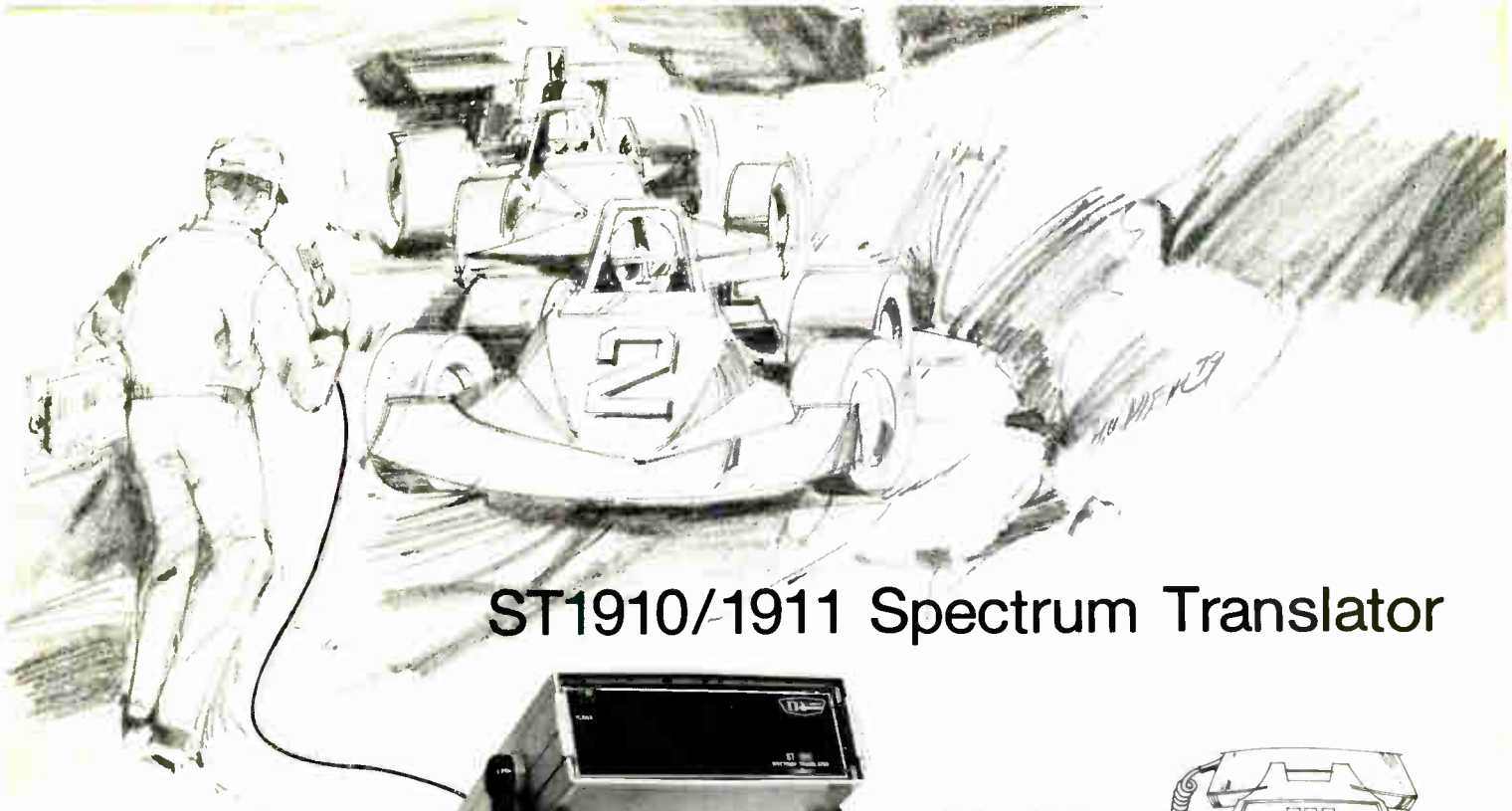

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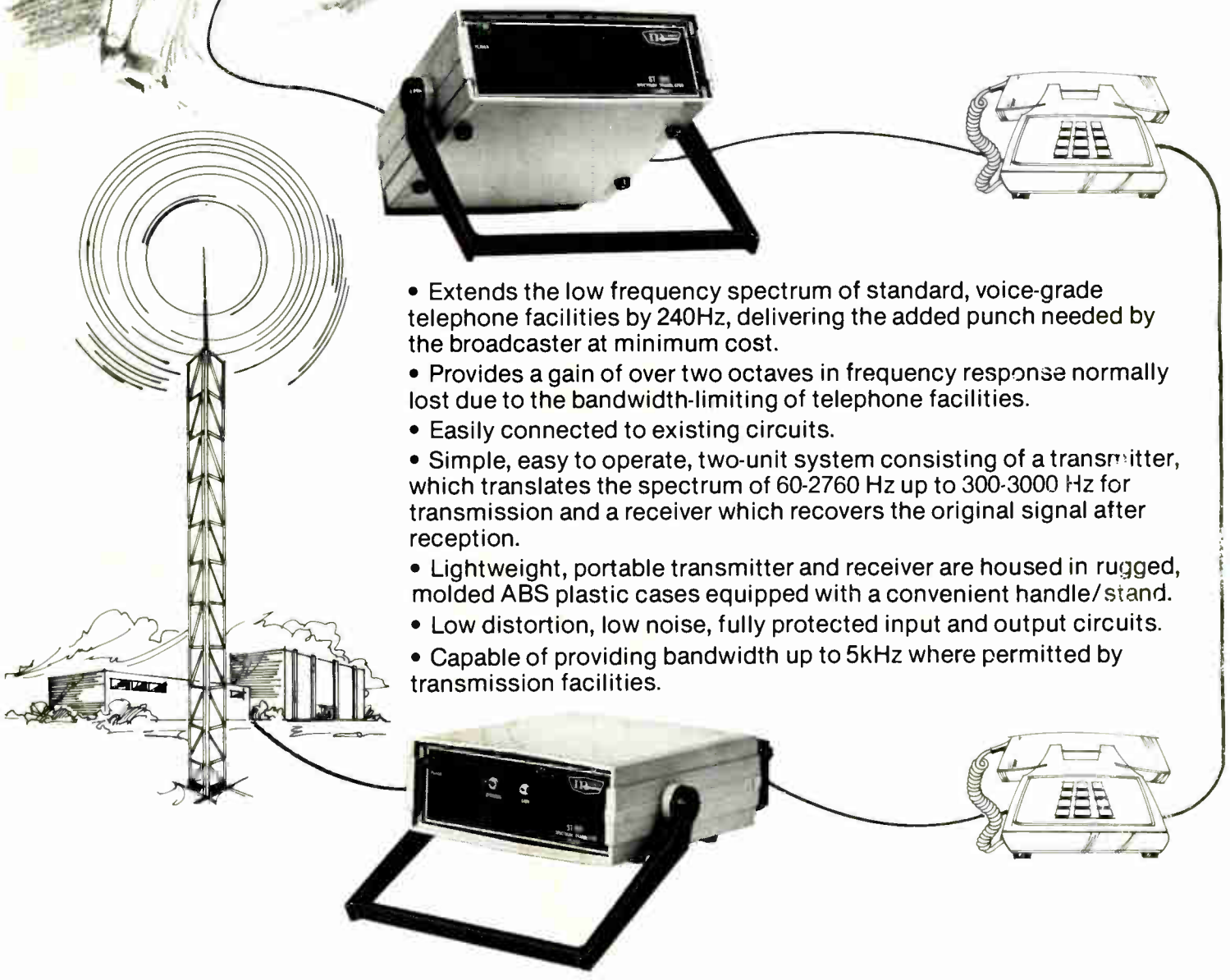

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that has been revamped at KHS-FM under disco. With its previous pop music format, the station opted for a heavily-compressed signal to achieve a "loud" sound. But when disco was adopted, consultant Burkhart feared that the compressed signal would punctuate disco music's throbbing bass to the irritation of listeners.

The station "curved down the bass and went down to something like 2 dBs of compression, which made the station sound very flat," Cohen said. "We sounded very clean; there were a lot more highs and less lows, so the station was not irritating to listen to."

"At the same time, it was not very exciting to listen to," Wagner added. "So we found a happy medium in between where we have enough so we sparkle a little bit. Some compressing adds a little to your air sound."

The tone of air personalities also has undergone change. Consultant Burkhart instituted the concept that deejays should sound "laid back" and do little talking. This was in line with KHS-FM's attempt to duplicate the sound of a discotheque — danceable, hard-driving music played by spinners that do not project much personality on the few occasions they address the audience.

"But at first I had wondered why the jocks weren't coming on like, '*Hey, let's boogie*,'" said Wagner, raising his voice momentarily for emphasis. "Well, that's a real irritant. Because the music is so 'up' and you hear the jock coming on the same way every couple of minutes, it really burns you out. So the deejays are just communicators, very one-on-one."

After four months, a decision was made to bring energy levels of deejays up a touch, but the overall tone remains very subdued.

"The deejays keep it moving," Wagner explained. "The reason that he is low key, rather than real up, is because the momentum is in the music. Once in a while you have to break that momentum just to say, 'Everything is fine . . . here's the time, traffic and weather.' The deejay is more of a reassuring human being, which is why we use first names most of the time. Once an hour he can use his full name."

Initially, KHS-FM faded out records, but this practice was soon discontinued because it interrupted momentum between cuts. Though execution was modified after the format had been in operation, Wagner felt that the first task was to establish KHS-FM musically and then "work the bugs out."

It is interesting to note that the station's deejay staff has remained intact. Wagner and Cohen said it took the one-time pop deejays only a few months to become fully acquainted with the music. The key to making a transition is putting together a playlist that will find acceptance among listeners, said Cohen, who worked as a spinner at mobile discotheques for several years.

When spinners from discotheques are contacted each week in music research efforts, Wagner and Cohen also find out what combination of records is well received by audiences. KHS-FM will often arrange cuts in the same order. The club spinners enthusiastically share information on a voluntary basis because "we're

Conferring on artwork for a promotional event are (from left) program director Mike Wagner, promotion director Meridith May, and general manager Edward Boyd.

exhibitionists. They usually buy the popular records and practice dancing to them at home to learn their routine."

A musical, documentary-style program is being produced by KHS-FM that will trace the roots of disco. A theme of the program will be that disco is a dance trend not unlike the "flappers" of the Roaring '20s. Produced in two 12-hour segments, the show will probably be presented as a weekend event.

As for news, short newscasts aired hourly dominate the schedule, except for morning drive time when five-minute reports are scheduled. Wagner said that news is "just very to the point. There's momentum in everything and the news moves along. In our news, because we're disco now, we are getting into disco lifestyle reports, interviews with celebrities and that kind of thing. That's what the disco audiences are interested in."

In the January/February Arbitron rating book, KHS-FM's first as a disco station, it posted a 2.6, which is respectable for Los Angeles with 40 rated stations. Previously, ratings were in the 1.5 to 2.0 range.

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working toward a common goal," Wagner said. "And that is to make disco as big in Los Angeles as it is in New York."

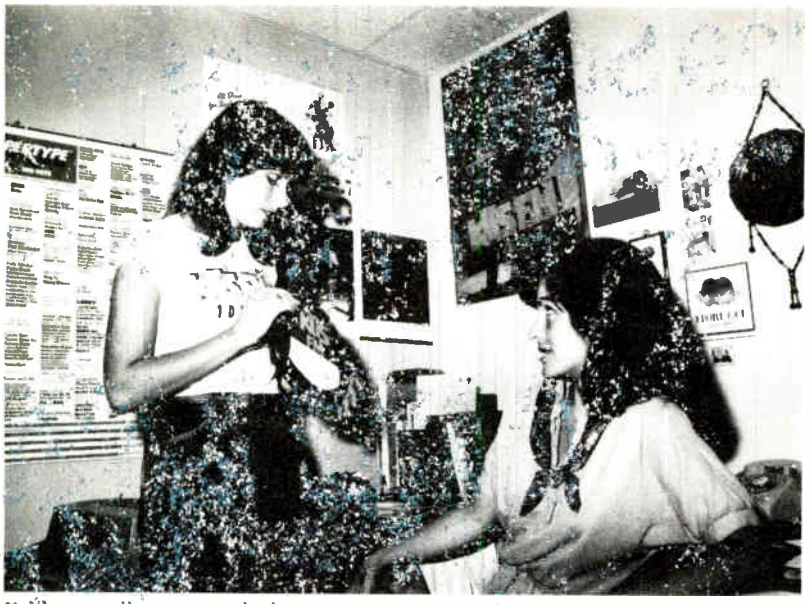
Regarding segues, research done by KHS-FM's consultant indicates women find a constant beat unpleasant and prefer to hear subtle changes in tempo. The danceable disco music which the station programs typically ranges from 120 to 140 beats-per-minute. (Record companies usually supply beats-per-minute for each disco cut.)

To achieve satisfactory segues, club spinners will speed up or slow down their turntables. KHS-FM would like to do the same but its turntables have no variable speed control.

One special program that gets strong listener support is a weekly countdown of the top 20 disco records. KHS-FM finds a Monday night slot ideal for the countdown.

"It's an off disco night," Cohen explained. "People stay home to listen to the top 20 records so they can practice dancing to them, learn their routine or whatever. A lot of people who get out to dance are

KHS-FM program director Mike Wagner and recording artist Charo mingle with the crowd at the station's disco fair promotion event. *(Photo courtesy of KHS-FM)*



Freebees, wall posters, and other give-away items are distributed by promotion director Meridith May (left) and assistant Marie Buzanis.

General manager Edward Boyd noted that the half-point increase was achieved with very little promotion. In fact, KHS-FM did not even label itself as a disco station until four months into the new format. The promotion slogan "All Disco For Southern California" was adopted in March.

The delay in identifying with disco was a result of several factors. The station fine tuned the format as the deejays became more familiar with the music. Boyd also took a wait-and-see attitude initially and wanted to see how pure disco would position itself against competitors. "Right now, we are disco and whatever other avenues that we have to go down to keep our lead, we will do it," he said.

Boyd takes that position because he sees changes for disco in the years ahead.

"It will go through the same renaissance, if you will, that rock went through, and go through many stages," Boyd explained. "This is just the breaking of the ice for disco."

In the decision to change formats, Boyd was intrigued by two discoveries. On a trip to New York, he was impressed that WKTU-FM was played at many fashionable shops. This indicated that affluent listeners were attracted to the music. Research from consultant Burkhart showed that there is a segment of audience that keeps disco stations tuned in constantly. This listening pattern is similar to that of beautiful music stations.

There was resistance among a few

Continued on page 38

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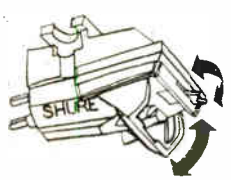

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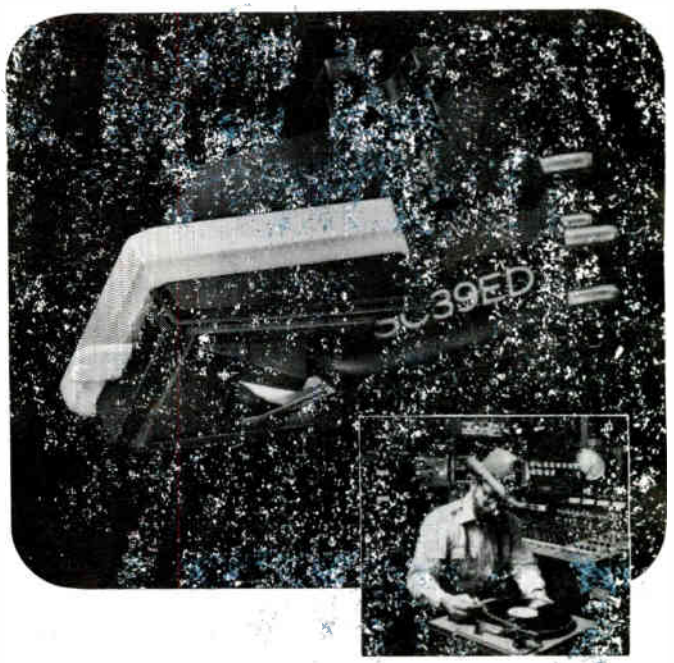

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advertisers when the change to disco was made, according to Boyd. Since then, the ability of KHS-FM to generate response to advertisers' events (discount specials, premium offerings, etc.) has checked objections, according to Boyd. He feels that recent self-advertising/promotion done by the station will deliver even higher ratings, which would boost the station's advertising position even more.

For the April/May rating period, KHS-FM has rented 60 billboards and purchased space in a handful of area print outlets. A photo of a young couple dancing accompanied by the station's call letters and slogan serve as the focal point of the advertising campaign. The handsome, well-groomed couple gives the station a "classy, sophisticated image," said Meridith May, director of public affairs and publicity. KHS-FM intends to feature the art work for at least a year and probably longer.

"If you keep on changing your image, people get confused," she noted. "When they think of KHS-FM, I want them to think of the silver logo and those two kids dancing. I want them to think of All Disco For Southern California . . . That's what advertising is all about. You've got to repeat that message."

Though the current advertising campaign is the first big-budget effort, modest promotion activity has been on-going. KHS-FM deejays troop out to local discotheques for special events once a month. Tradeouts gave the station prizes for giveaways. Record companies supported the station's largest promotion, the KHS-FM Disco Fair.

"Every record label had a booth there," May said. "There was a disco fashion show, a disco makeup and hair exhibition, disco fingernail painting, dance instruction, and seven hours of continuous dancing. We packed in over 2,500 people."

While the KHS-FM experience programming disco has been upbeat, the format still has many critics in the radio industry. One common complaint is that disco garners high cumulative audiences as it is sampled frequently, but its quarter-hour averages are not spectacular. Disco proponents point out that any new format is likely to get heavy audience sampling. Retaining listeners depends on a station's execution and audience tastes in a particular market. And this state of affairs is nothing new.

"To me, it's like some of the growing stages contemporary music went through," said John Bayliss, president of Combined Communications Radio Group, whose holdings include KHS-FM. "People don't understand it as it was developing and the same thing is true of disco today."

Disco does depart from other kinds of contemporary music on several points. The distinctive dancing it inspires adds a new dimension . . . it is not simply a listening experience for most. Then too, disco seems to have appeal over a wide range of age groups, as KHS-FM's Wagner noted.

"People of all ages like to dance," he explained. "When songs like 'The Chattanooga Choo Choo' come out in a disco version, the older people remember it and they like it. And because of the instrumentation in disco music, it's good music. It's like beautiful music with a beat." BC

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WGBH engineers talk about the Ikegami HK-312

WGBH covers Boston Pops Orchestra concerts with Ikegami HK-312 cameras from Symphony Hall, Boston.

Eight Ikegami HK-312 studio color cameras are in service at WGBH, Boston, some dating back to October 1977 – long enough for intelligence on their performance. From recent interviews with key WGBH people, read these excerpts.

Pops without noise
Tom Keller, Director of Engineering:

"The HK-312s have such high sensitivity that we were able to reduce significantly our light levels at the Boston Pops and Symphony telecasts. Yet, despite the major light reduction, we experienced no visible noise with the HK-312s . . . With their remarkable reliability record, we can depend on 6 cameras for 6-camera coverage, and not 7 for 6 as in the past. After all, you can't stop a live orchestra performance for a retake if you've lost a camera."

2 IRE, but a complaint
Ken Hori, Senior Engineer for Advanced Development:

"We tested several camera makes for RFI within a quarter-mile of a 50 KW radio transmitter. The HK-312 measured 2 IRE, whereas most others were in the 5 to 7 IRE area, and some as high as 20 IRE . . . For symphony remotes we'd need 2 to 5 hours for warm-up, but nowadays we're set up in less than an hour . . . We like its straightforward design – example, its truly high signal-to-noise ratio as compared to other cameras that resort to reduced bandwidth to attain a comparable ratio but wind up delivering noise too . . ."

We did get one complaint from the maintenance crew. They said that because they rarely found the problem of a down HK-312, they would never get to know the HK-312 well enough to fix it.

Washouts and dropouts
Bill Fairweather,
Video Control Engineer:

"During a lighting seminar staged here by Imero Fiorentino Associates, an actor in a normally lighted scene held up a sheet of white paper with printing on it to show loss of detail in the case of more than 60 percent tv white reflectance. The HK-312, however, was able to retain enough detail for the printing to be readable on the monitor.

Next came a demonstration of the dangers of too much or too little light on a chroma-key background. The HK-312 held the key to such a low light level on the blank background that the lecturer grinned and said, "I guess WGBH has pretty good cameras!" and went on to the next subject."

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In daily use, their HK-312s and HL-53s are interfaced with microprocessor-computer control units that automatically cycle them through all set-up adjustments, including black-and-white balance, flare and gamma correction, video gain, and eight registration functions, then recheck all those adjustments – all within 45 seconds. The cameras can also operate independently of the set-up computers, a feature that is an Ikegami exclusive.

If all of this suggests that the HK-312 is probably the best studio/field color camera in the industry, consider this: camera, set-up computer, and triax adaptor are not only operational, they are deliverable. For details or a demonstration, contact **Ikegami Electronics (USA) Inc.**, 37 Brook Ave., Maywood, NJ 07607, (201) 368-9171 / West Coast: 19164 Van Ness Ave., Torrance, CA 90501, (213) 328-2814 / Southwest: 330 North Belt East, Houston TX 77060, (713) 445-0100.

Ikegami HK-312

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DONNA MOORE

TV earns a vote of

Kentucky's state capitol is a 60-year-old replica of Les Invalides, Napoleon's tomb in Paris. It was never designed to be a television studio.

So, when Kentucky Educational Television set out to cover the sessions of the Kentucky General Assembly, locating a control room was a major problem.

Every available nook and cranny in the building was in use, even those closet-like areas where you couldn't stand to your height without banging your head on the ceiling. The fourth-floor boiler room, avoided by everyone else, became our home for the duration of the Legislature.

After installing a room air conditioner to lower the 90-plus temperature, a 1600 1L Grass Valley switcher, a PM 700 Yamaha audio board, and shelves for the four Ampex VPR-1 editing machines, there was little room to turn around in the eight-foot by twenty-foot area. But a minimum of five persons managed to work there for 90 days.

An adjoining boiler room, somewhat larger than the one used for the control room, was our crew headquarters and offices. A telephone, coffee pot, refrigerator, and bottle of aspirin provided the *comforts of home* for about 30 KET personnel assigned to the coverage.

Our production plan called for taping at least three committee meetings each morning, two of which were done simultaneously, and gavel-to-gavel House and Senate sessions in the afternoon, also simultaneously. The approximately eight hours of tape were edited to 90 minutes for air that evening, beginning at 7:30. The program itself was sent live from the state capitol in Frankfort via microwave to our network center in Lexington, a distance of 30 miles. Openings, closes, and transitions between taped segments also were done live from Frankfort.

The project would have been impossible with our studio cameras used on previous capitol remotes, but recently acquired Ikegami HL-77 cameras used in the field with ENG crews provided us with all the mobility we needed. The tremendous lighting problems of past capitol remotes were also minimized with these cameras.

Other logistical obstacles were considerable. Cables were run in the House and Senate chambers, two committee rooms in the Capitol building, and three rooms in the Capitol Annex (a structure across the road connected by an underground tunnel). One extra task for our engineers was to provide closed-circuit two-channel feeds to about 10 locations in the capitol so that administrative and legislative leadership could keep abreast of that moment's activity.

Five Yamaha audio consoles were hussed together in various configurations for committee coverage, giving us a maximum of 18 mike feeds in any of the five committee rooms. Two or three cameras were used in a committee, depending upon the importance and size of that particular meeting.

As mentioned earlier, many committees met in the Capitol Annex, and since we had no Annex control room, the director and engineer set up a secondary mobile switcher and VTR in the hall. The director, at his mobile station, often

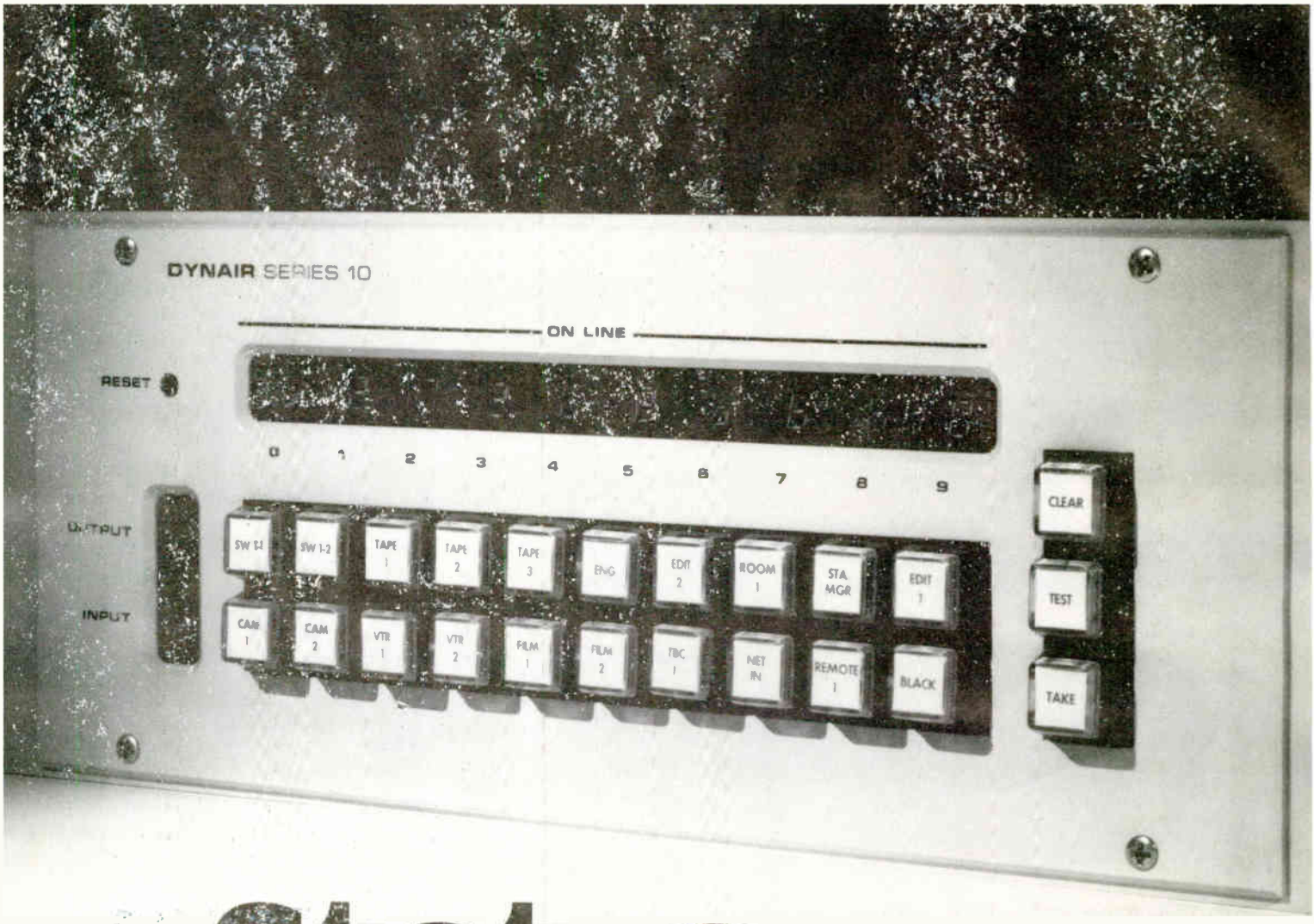
Continued on page 45

Donna Moore is associate producer, Kentucky Educational Television.

confidence

Included in KET's legislative coverage were live broadcasts of gubernatorial addresses. Governor Julian M. Carroll presents his budget message to a joint session of the House and Senate in the House Chamber.

Operating under less than ideal conditions, KET gained the respect of the Kentucky General Assembly for positively affecting the legislative process.



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became the center of attention as office workers on lunch breaks or visitors to the Capitol would gather to watch the magic of television in progress.

Since only one VTR was used in the Annex, and key remarks seemed to come especially during tape changes, our engineers learned to rival an Indianapolis pit crew in keeping down-time to a minimum. Our camera crews would have preferred a little more down-time during some of the eight-hour budget hearings and told the committee chairman that neither Republicans nor Democrats would be penalized for a "TV time out." Since our cameras had not been modified in a studio configuration (did not have large viewfinders or remote zoom and focus controls), the camera operators had to peer through the small eyepiece for hours on end.

The importance of camera mobility on an assignment like this was proven many times when committees adjourned less than 30 minutes prior to the House and Senate opening gavel. Engineering and production crews would race back through the tunnel with cameras, tripods and spreaders to one of the two Capitol elevators. At this time, of course, 138 members of the Legislature were also attempting to ride an elevator to the chambers on the third floor.

Three cameras were used in the House Chamber and two in the Senate. Audio was taken from the two house systems and fed to the right and left channels of the stereo audio board. House and Senate directors received chamber audio through one side of their headsets and received videographer communications through the other side.

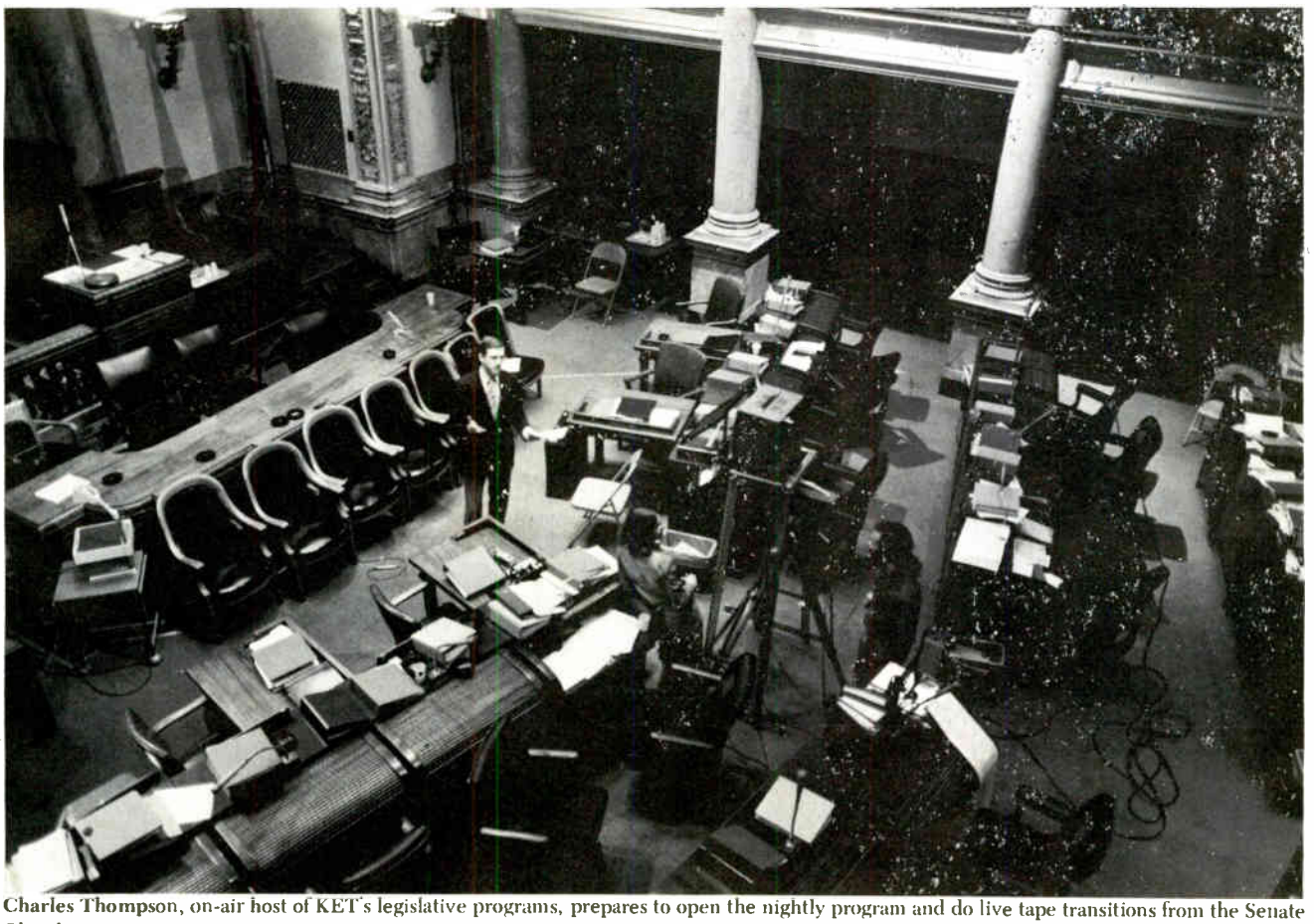
The Grass Valley switcher worked double duty during chamber sessions, as the House was switched on the program bank and the Senate on the previous bank. The directors sat side by side, using their outside arm to switch; neither happened to be left-handed, which might have made it somewhat easier. Each bank of the switcher fed into its own Ampex VPR-1 one-inch machine. A third machine was used for editing, and all machines were switched between recording and editing as needed.

Although the cameras were not designed for our purposes, they performed well. Our biggest problem was getting three of them into the switcher in phase and sync. Because our cable lengths varied from 50 to well over 500 feet, the timing on the cameras had to be adjusted each time we moved them. Engineers and production personnel differ on the length of time needed for setting phase and timing, but it was between 20 and 30 minutes.

Following afternoon adjournment, editing of House and Senate sessions, and any committees that had not been edited earlier in the day, was completed in time for the 7:30 air time. Two associate producers, each with the responsibility of all House or Senate activities, kept time-coded records of everything on tape (at the start of each day, they both synchronized their watches with the time code generator in the control room).

Special notations were made of key discussions to aid the executive producer in his selection of excerpts for that night's program. Once the selections were made, the editor used the time-coded notes to quickly assembly the program. Editing was often a hectic pro-

Continued on page 46



Charles Thompson, on-air host of KET's legislative programs, prepares to open the nightly program and do live tape transitions from the Senate Chamber.

Vote of confidence

cess because sessions seldom adjourned before 5:30 or 6:00.

During this time period associate producers and reporting staff supplied background material and pertinent updates to the producer and on-air host for the preparation of his copy. The length of copy was adjusted to fit the time needed between taped inserts. Character generator material for that night's program was relayed to the network center in Lexington where it was added during the broadcast.

Only once did the microwave malfunction, but with the aid of a state trooper and his cruiser, we were able to get the tapes to Lexington minutes before air time. The KET engineer who hand-carried the precious cargo remembers only too well the hair-raising ride, and voted to stay in the pit and off the track from then on.

The cameras also doubled as studio cameras. A continuing part of KET's public affairs programming is a 30-minute weekly news analysis with guest journalists in the studio. During the legislative sessions we aired this program live from the Capitol, in addition to the General Assembly coverage. The

Continued on page 48

A member of Kentucky Educational Television's engineering department mounts the microwave dish on top of the Capitol Building in Frankfort, from which KET broadcast live during the General Assembly.

Director John Neihaus directs and handles the switcher as production and engineering personnel look on.

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Cameraman Rick Klein communicates with the camera operator in the balcony in preparation for the opening gavel of the House of Representatives.

program aired on Friday evening as a lead-in to the regular coverage.

Response to KET's legislative coverage has been gratifying. Random telephone surveys of viewers and questionnaires completed by legislators show positive results. An estimated 101,000 households in the state watched our 1978 coverage, and all indications point to a larger audience during this past year's broadcasts. Ninety-seven percent of the legislators who responded to KET's questionnaire indicated they had watched the coverage. Legislators felt the most important reason for watching was to keep abreast of activities in the other chamber. They also wanted to see what people at home were seeing so they could evaluate self-image. Comments from constituents, as reported by the legislators, were mostly positive and most often mentioned how informative the coverage was, both on issues and the legislative process in general.

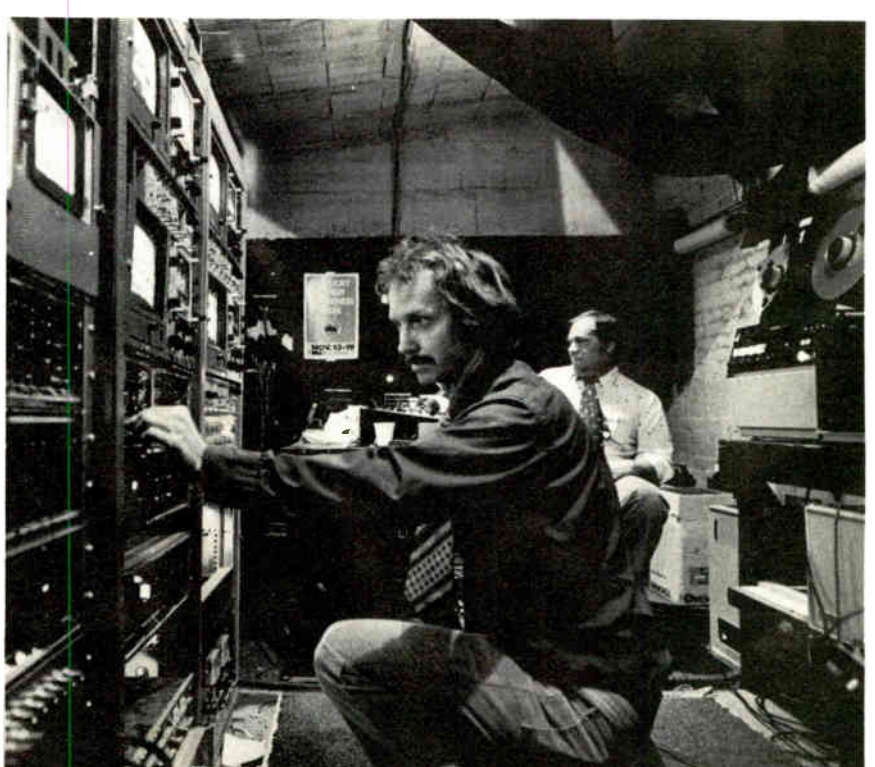
According to William G. Kenton, Speaker of the House, "KET's coverage of the Legislature had the effect of causing members to be more organized in their presentations and created a greater sense of decorum in each of the chambers."

At this writing, KET has completed the coverage of both a regular and a special session of Kentucky's General Assembly. Both have occurred during January and February, so with weather forecasts in mind, an apartment was rented in Frankfort for the duration of the session. Even though the unit was unfurnished, as many as 18 people at a time found it a welcome alternative to icy roads and a morning crew call of 5:00.

Because Kentucky's state capitol is a small town with few motel facilities available even when the Legislature is not in session, our foam mats and sleeping bags were the most we could ask for the days when roads were impassable.

There are now rumors that a special session may be held again this summer. Kentucky's temperatures will soar to the mid-90s and we'll appreciate the scenic route to Frankfort (in this, "the heart of the Bluegrass") on our way to the Capitol chambers that are without air conditioning.

Editor's Note: The rap against legislative coverage is that the cameras attract too much attention and that the legislative people will be too affected by being "on camera." But here is an example where the results, even handled out of a boiler room, were positive. So positive, in fact, that the coverage was a benefit to the viewers and the legislators. BC



Video engineer, John Anderson, takes advantage of a near-empty control room to adjust cameras before sessions start.

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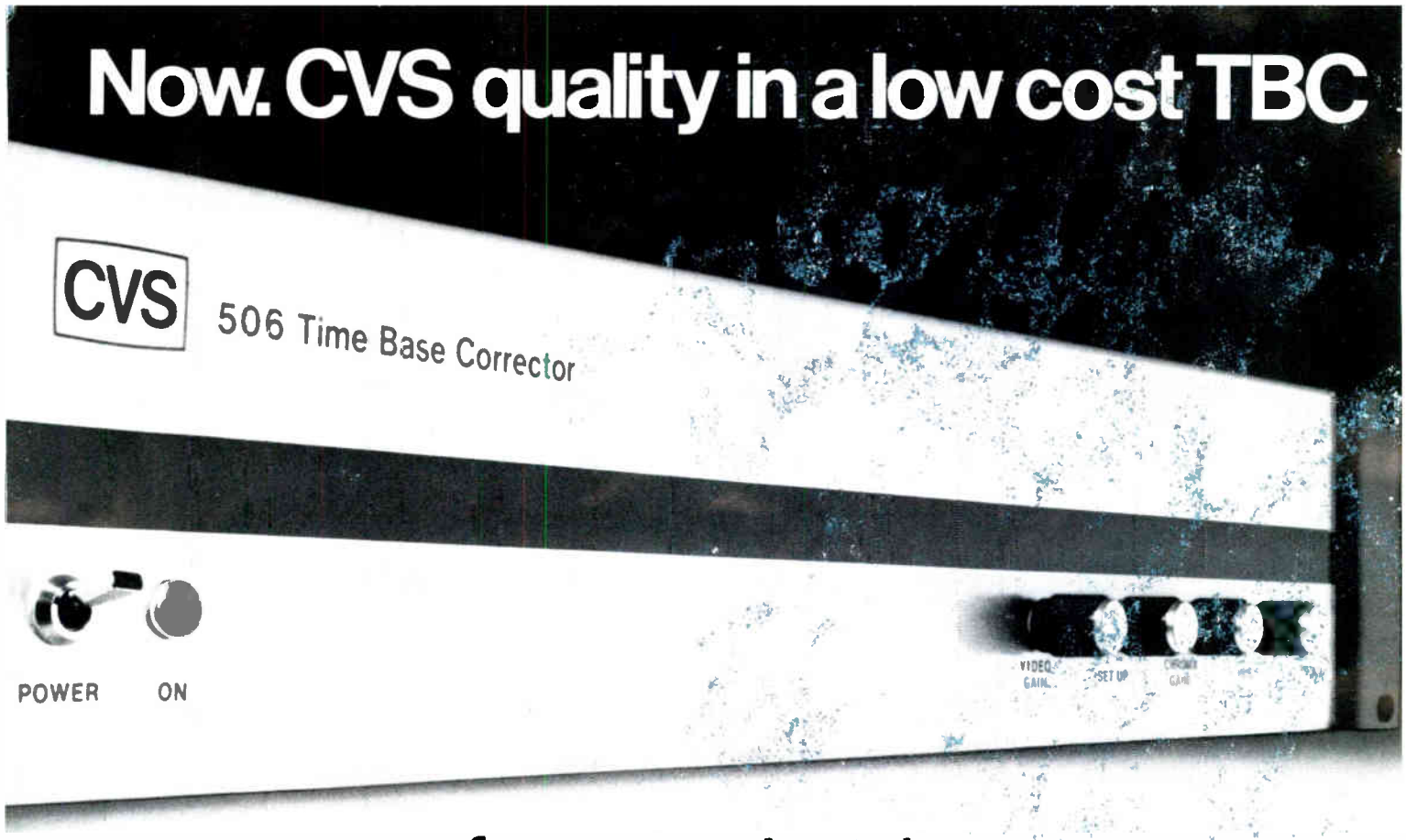

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JOE ROIZEN

Montreux Symposium reacts to booming technologies

Digital dominated in Montreux, and some of it presented the broadcasters who attended the Symposium with a mixed bag of pros and cons to seriously consider.

Most of the predictions of a bigger and better exhibition were right. There were more than 155 exhibitors (up 15%) occupying over 10,000 square meters of space, part of which was a temporary structure put up between the exhibition hall and the Pavilion. One exhibitor brought 180 staff members to Montreux; however, the average staff was about 20, making a total of approximately 3,000 for that group. About 2,100 registered delegates including the invited lecturers and panelists formed the Symposium core. And Raymond Jaussi, Symposium director, estimated a total of 8,000 participants came to Montreux.

After the past complaints of too many papers at previous Symposia (185 in 1977), the Organizing Committee came up with a new plan that reduced the numbers of technical lectures to a manageable 85, but increased the number of roundtable discussions from two to eight. The result pleased most delegates, even though the printed proceedings of the Symposium still filled seven volumes weighing over five pounds.

The citizens of this Swiss resort town have voted to build a large addition to the main exhibit hall which will provide adequate space for exhibitors in 1981. This will surely come in handy, as according to Jaussi, some manufacturers like Ampex have already asked for more space next time. Luckily construction of the new structure, going up in the area now occupied by the old Lorius hotel, will start this fall and will be finished on time.

Although some efforts were made by several American exhibitors to move the Symposium to a later date in the fall, so as to stretch out the post-NAB period before being confronted by another big

Continued on page 52

Joe Roizen is international cideo editor and president of Telegen.

The teletext panel, chaired by Professor Ulrich Messerchmid of the Institut fur Rundfunktechnik in Munich, included representatives from the U.K., France, Italy, Switzerland, and the United States. *(Photo by Donna Foster-Roizen)*

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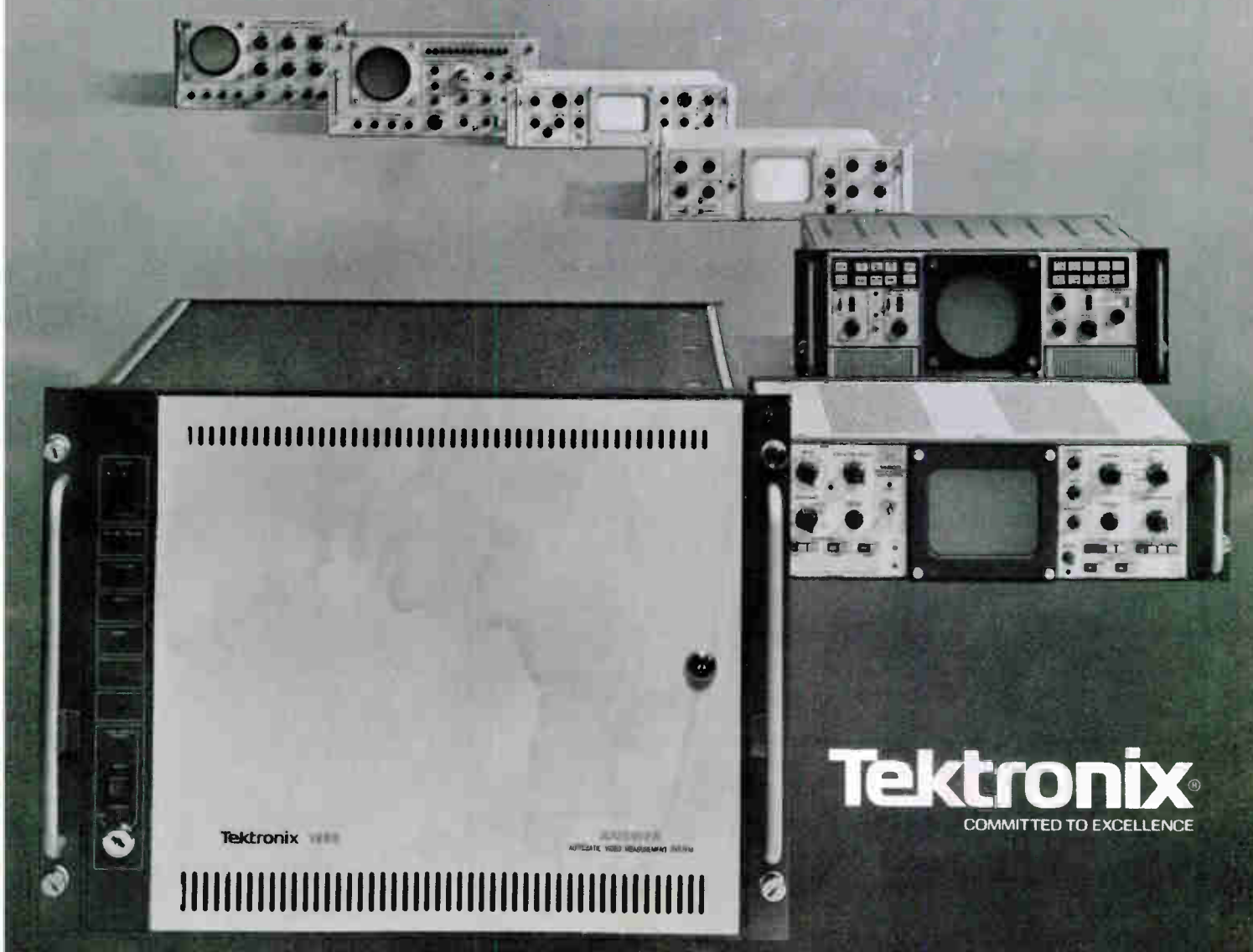

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show, the final decision was to continue Montreux in the same time frame. The two major reasons given by the Organizing Committee were as follows:

- Most international TV services have their budgets confirmed in the summer and want to see what they might buy a few months earlier.
- There are a variety of TV-oriented events of major importance that already exist in Germany (Photokina, FKTG, Berlin Radio Show) in September and October, and Montreux does not want to compete with these.

Jaussi indicated that there was no hesitation among most exhibitors to agree to the May/June dates of Montreux 81; the committee will have planning meetings in December, with first notices going out in early 1980.

Montreux 79 had some notable highlights on both the technical and social sides. Bosch Fernseh celebrated its 50th anniversary in the TV hardware business; Joseph Flaherty, CBS vice president of engineering, won the Montreux Gold Medal Award; Ampex, Bosch Fernesh, and Sony all showed digital VTRs; Thomson-CSF privately displayed an instant record/replay laser-operated video disc of broadcast quality; RCA made a major push to sell high-power transmitters in Europe, and the TK-47 automated camera is still leading the industry in that area. Digital video effects have come to PAL and SECAM, and anyone who was sending anything to Moscow for the 1980 Olympics was not shy about publicizing it.

A few smaller companies had some surprises as well. Dolby Laboratories teamed up with IVC for the first exposure of a Dolby video noise reduction system applied to a newly configured IVC one-inch helical format. Quantel's floppy disc memory made it seem so easy to produce a wide variety of complex digital effects at the push of a button or the positioning of a lever. Editing systems at all levels of complexity, from the expanded keyboard of the CMX-340X down to the joystick units on the simpler Convergence control track editors, were on hand for delegates to practice on.

No single technology elicited such guarded comment from the suppliers, or was of more ominous interest to the broadcasters, than that of the digital VTR. Each of the three major contenders in this arena (Bosch Fernseh, Sony, and Ampex) had yet another generation of a DVR, operating on the PAL standard, and showing excellent results. Each claimed this was just another milestone in the evolutionary cycle of DVR development until a practical machine is produced for eventual television application. Each machine is physically and electrically different, and these variations warrant some description.

Bosch Fernseh has built on the work done by the IBA to produce a BCN-based digital recorder with several advantages over the experimental unit shown by John Baldwin and his group at IBC last year. The BCN/DVR on display at the Fernseh booth in Montreux was operating at a tape speed of 5 IPS recording 80 megabits of information on the one-inch tape. All of the electronics were housed in the machine's frame and the picture results with error correction and concealment were excellent. With the concealment circuitry turned off, there were visible white dots on the color monitor, but they were minimal, and a vast improvement over the IBC demo. The recording technique includes conversion from analog video to

Continued on page 54

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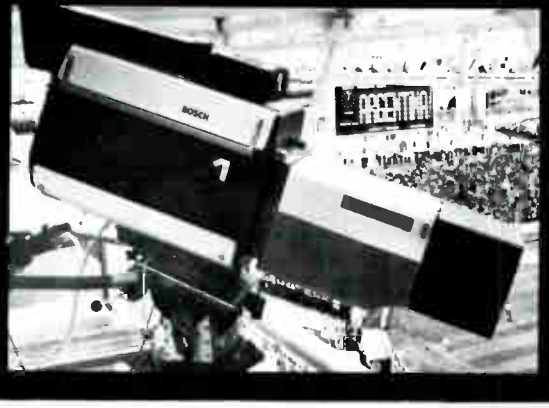

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4*fsc* then reduction to 2*fsc* before recording on tape. The reverse takes place during playback.

Hans Groll and Henry Zahn of Fernseh both emphasized that another version of this digital recorder, running at 10 IPS, could handle 160 megabits of digital data, and they saw this as potentially attractive for the EBU digital VTR of the future. Fernseh does seem the closest to a marketable digital recorder; although they claim to be far from selling this machine, it does offer some attractive possibilities for post-production houses and major program-origination facilities.

Sony engineers have re-packaged and redesigned the NTSC/DVR they showed at NAB into a more compact PAL unit, using the BVH-1100 as the basic tape transport. The digital electronics were in a separate unit, much reduced in size over the machine shown privately in Dallas at the NAB. Most impressive was the fact that Sony had two such machines on which they had made 50th generation copies of the original test pattern or color camera image input. The Sony DVR also had high-quality digital sound with a large number of audio channels possible. It was almost impossible to detect the 50th generation from the first, this even though Takeo Eguchi explained that they were going through the full cycle of 4*fsc*/2*fsc* conversions at each dub. This fact was later pointed out by Tom Robson and John Baldwin of the IBA, as adequate proof of the validity of the IBA proposals for digital signal handling in DVRs via bit rate reduction techniques.

When the ultimate tests were applied to the Sony DVR, and the concealment circuits were shut off, the pictures were still very good with somewhat less noticeable errors than on the BCN machine.

As they did at NAB, both Howard Steele and "Morrie" Morizono reiterated their statements about the interim nature of this latest Sony DVR. Morizono stated that Sony considers this modified C Format DVR as a device with which they could solicit user opinion while working toward a more compact and more practical end product.

Camouflaged in a private suite at the Montreux Palace Hotel behind bold signs reading "Ampex Digital Theater," and requiring a signed invitation card to gain entry, the latest Ampex DVR continued the "Cadillac" approach shown at the SMPTE Television Conference last February. The transport was an AVR-2 with some extra electronics in a rack. The scanning system was still octoplex (eight heads) with regular 2-inch quad tape as the medium. But there the similarity ended.

Ampex engineers Lemoine and Diermann have now gone the extra step to tailor the tape geometry to optimize digital parameters. The video track width is now only 2.0 mils with a guard band of 0.6 mils. With this track configuration the longitudinal tape speed is now reduced to 6.6 IPS instead of the

Continued on page 56

Rolly Zavada of Kodak and SMPTE engineering vice president poses some questions during the roundtable discussion on digital VTRs. Zavada also stated the SMPTE posture with regard to initiating standards work in this field. *(Photo by Donna Foster-Roizen)*

Otto Oechsner of Fernseh (left) accepts Joe Flaherty's toast at the candlelit banquet in the Chateau de Chillon, put on by Fernseh to celebrate the company's 50th anniversary. *(Photo by Donna Foster-Roizen)*

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former 15.0 IPS. The head writing velocity is 2100 IPS and the PAL signal is sampled at 4*fsc* and recorded with 135 megabits.

Audio is still being proposed in the same way that the NTSC machine was supposed to handle it, but Ampex stuck to the digital VTR tradition of not actually demonstrating any working sound channels.

Most impressive about the Ampex DVR was its ability to reproduce nearly flawless images even with the concealment circuits off, an indication that with their linear packing density of 33 kilobits they are operating in a very safe region as far as errors are concerned.

Ampex executives Steinberg and Kleffman insist that this is not a saleable product, and that if a digital VTR is to emerge, it should be a top-quality approach with no compromises such as bit reduction. Undoubtedly the DVR they showed had the best performance characteristics, but whether that's what users really want remains to be seen.

It seems inevitable that some special-purpose digital VTRs will be sold in the near future to production or post-production houses which are not concerned with an industry-wide standardized machine, and to whom the high initial cost is not overly significant. In the meantime it would be beneficial to the TV industry as a whole, if steps could be taken to implement some forum where digital VTR standards could be established for that universal DVR that will emerge four or five years from now.

Perhaps the only way for this to happen is for the users to declare their intention of not acquiring any digital VTRs until such a standard is established.

Joe Flaherty shows his wife, Jan, the Gold Medal he had been awarded in Montreux. Mrs. Flaherty is a frequent participant in SMPTE and other functions that Joe attends, and she has done promotional work for the Montreux Symposium. *(Photo by Donna Foster-Raizen)*

Joe Flaherty, vice president of engineering at CBS, presents Hans Groll of Bosch Fernseh with historic camera to commemorate Fernseh's 50th anniversary. The presentation was made at the CBS reception held after Flaherty received the Gold Medal. *(Photo by Donna Foster-Roisen)*

The opening session on Sunday was held at the Montreux Casino where a full house listened to the various welcoming addresses by F. Locher, director general of the Swiss PTT, and H. Probst, Symposium chairman.

Keynote speaker was Mr. Jullian, noted television executive in France where he served as board chairman for Antenne 2, one of the three national networks. Jullian's speech was titled "The Springtime of Television" and he gave high praise to the "magicians" of television (the inventors and engineers) present in Montreux, whom, he said, had brought the means of global communication into every home. He ended on the theme of how the new developments being demonstrated or discussed in Montreux would further widen viewers horizons as they gained access to in-

teractive teletext, video disc devices, and direct satellite-to-home TV.

The high point of the opening session was this year's presentation of the Montreux Gold Medal Award for outstanding personal achievement of new techniques or equipment which have significantly contributed to the improvement of television broadcast engineering.

Presented by Dr. Paolo Zaccarian of RAI, the Gold Medal went to Joseph A. Flaherty, vice president of engineering and development at the CBS Television Network. Flaherty's citation included his pioneering work with ENG from concept to operational implementation.

Started at CBS News in 1971, ENG became a major new tool for newsmen; since then, it has spread to all parts of the television world. Flaherty adds this new award to the many others he has received in the past. The SMPTE gave him the David Sarnoff Gold Medal in 1974 and he collected a CBS Emmy in 1969.

Flaherty expressed his special appreciation for the Montreux Gold Medal by pointing out that an award from one's international peers was the highest honor he could aspire to.

CBS held a special reception at the Montreux Museum Club on the same evening, where Flaherty presented a historical Minicam to Hans Groll of Fernseh in honor of their anniversary celebration. This event kicked off a round of gala evenings, boat excursions, and cocktail parties sponsored by either the exhibitors or the organizers of the Symposium. BC

Raymond Jaussi, perennial director of the Montreux Symposium, welcomes two members of the high-level delegation from the People's Republic of China. The occasion was the cocktail reception given by the organizing committee after the opening session. *(Photo by Donna Foster-Roizen)*

JOE ROIZEN

Broadcasters sort out the state-of-the-art

During the International Television Symposium and Technical Exhibition in Montreux *BC*'s international video editor took time out to interview a number of broadcast experts from around the world. Looking for reactions to the technology and how it affects their individual operations in general and the Symposium specifically, he talked with Saudi TV's director general, Alaudeen Alaskari; Dr. Paolo Zaccarian of RAI (Italy); Peter Hansen, technical director of the Danish Radio and Television Service; and assistant general manager of Radio Televizija Beograd, Aleksandar Todorovic.

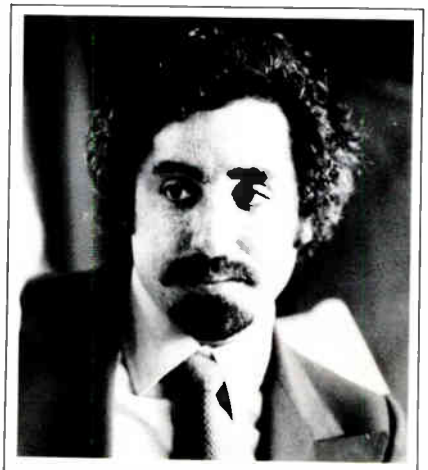
These interviews were conducted individually, but were pulled together here for a side-by-side comparison of their interesting answers.

BC: *In the international broadcast community, technology seems to be prompting accelerated expansion of programs and new services. What new developments are taking place in your country?*

Alaskari: Saudi TV is currently working toward becoming one of the largest TV networks in the world as far as number of stations and number of production centers is concerned. At the moment, we have five production centers in Saudi Arabia and we are expanding this to 10 in the near future. The biggest production center will be located in Riyad. This center will have nine studios: two for news, two for continuity, and five production studios. The building itself is 126,000 m² with an auditorium that can accommodate 900 people. The building which is being put up by a West German firm will cost almost $300 million without any technical equipment. The tenders are out for the TV equipment to go into the building, and these range from $100 to $120 million.

Saudi Arabian television operates 13 transmitters in color on the SECAM standard. While the decision for SECAM was political, we are very pleased with the results we have been obtaining.

Our current studio equipment is mostly Thomson-CSF 1515 color cameras; we do have one new studio in Riyad equipped with IVC 7000s. We are looking at other cameras as well. For VTRs, we have all generations of Ampex quad machines, as RCA is boycotted in our country. We are also using BCN machines for our one-inch format. The VPR-2s just came to market recently, and we have been using BCNs for three or four years. The one-inch machines are used in remote areas for the pilgrims and other such coverage.



Alaskari
Saudi TV
"We plan to equip our newsrooms with computerized editing equipment eventually, but for the time being we are using simpler editing gear."

(Photos by Donna Foster-Roizen)

The pilgrimage to Mecca is one of the largest news events in our country, and we transmit it live to 44 countries around the world by satellite as well. We have two international ground stations for handling signals from satellites; we now do PAL to SECAM transcoding, and in a few months we will be able to handle NTSC to SECAM over a Quantel unit that is scheduled for delivery around July 1.

The Saudi TV network is planned to cover every single village with 2,000 people or more. A detailed survey of our country showed that we would need 88 transmitters to achieve this coverage in our kingdom.

Zaccarian: RAI is currently building up to launch a third television network by mid-December of this year. Programs for the third network will start reaching 50% of the population and will be increased to match the existing services. Programs will come from three sources: network programs produced at the main center, regional programs produced in the regions for network use, and regional programs produced for local transmission.

The purpose of the new network is to serve regional needs, local news, art, culture, and so on. There are 21 regions in Italy and we are installing in each region a news studio with some VTR editing equipment and three ENG

Joe Roizen is international video editor and president, Telegen.

Hansen
Danish TV
"I believe that digital VTRs are sure to come, but I can't fix a good date for that. Their first use will no doubt be for post-production applications, and we want to watch how this area develops in the next five years."

crews to cover local activities. The regions will also be able to share a pool of five larger OB vans for special coverage. Our basic ENG crew is two people; where needed, a specialist in lighting or audio may be added.

The cameras are TK-76 and the VTRs are the high-band BVU ¾-inch cassette. Everything is in color and RAI is officially in PAL. There are SECAM broadcast stations, such as the relays of the French Antenne 2, and viewers with dual-standard receivers can get them; however, the SECAM audience is considerably smaller.

We consider the use of the BVU at its origination quality level to be acceptable. We edit and dub to one-inch machines at the regional centers.

Hansen: In Denmark we have just completed a routing and continuity installation of considerable magnitude which lets us operate with computer assistance. This is not an unmanned operation, but a computer-assisted setup which contains the sequence of operations in the computer store; and they are called up automatically to initiate VTRs or other picture sources. There are manual overrides in the whole system to accommodate late changes. This system has been operational since April of '79 and is working well.

We are also in the process of building a new center for television news and current affairs; and we are going to equip it with quite extensive technical facilities starting next year. We expect this new facility to be operational in the first half of 1981. The equipment to be used will be Fernseh cameras and BCN VTRs, although I do believe there will be other VTR formats used.

Our current 12 quads are still working well and we expect to continue to use them for some time. We did decommission a few 15-year-old VR-2000s recently.

Todorovic: We are building new studios and re-equipping some of our old

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ones. In Belgrade we are just completing a large 1,000 m² studio for program production.

The major new developments are the introduction of ENG practices and the major implementation of regional centers for news coverage as a first stage; at a later stage they will produce their own regional program.

Yugoslavia has eight federal regions that have somewhat autonomous TV services. In each federal unit there are regional stations in smaller cities or towns. For ENG coverage we are using RCA TK-76 cameras and currently have U-Matic machines. We have, however, decided to standardize on the new high-band U-Matics. The crews consist of two people in a normal vehicle, but we are equipping a few vehicles with portable microwave gear to relay the live pickup or VTR recording back to the studio. Our microwave links provide live inserts for the news programs, particularly because our cities are not so large, even Belgrade has only 1.2 million inhabitants. When we are in a hurry we edit on the ¾-inch tapes; when we have time we transfer to quad before airing. This can mean dubbing on an ACR-25 cassette and programming it into the news show.

BC: *The Symposium papers covered the spectrum of TV's state-of-the-art.*

Todorovic
Radio Televizija Beograd
"Up to now the VTR has been the weakest link in the studio chain. The digital VTR could change this, and we should work hard to achieve a 'transparent' VTR for studio use."

Summing up from your viewpoint, what was the major message you got from the Symposium?

Hansen: The major message I got from the Symposium came at the editing session where I'm in agreement with Mr. Anderson (Ampex) and others who think keyboards are getting too complicated. I believe that entertainment programs need not be edited on typewriters, and that we have to solve the ergonomic problems of editing with equipment tailored to the human user. I might first say that it was an advantage to have the lectures grouped in separate series; the systems in one, the hardware in the other. I followed all the post-production themes this week and found them quite interesting, but they raised more questions than they answered. We have to go home and work hard on some better definitions of what we need.

Todorovic: The Symposium's major message to me was the evident change in European attitudes to ENG and EFP. At this Symposium we have heard that there are now substantial tests being carried out to change fundamental ways of operation. The other area was the digital discussions at the sessions where there were two distinct views expressed. One side is against having a single piece of digital equipment in an analog environment, and I personally agree with that. The other is to take advantage of any new digital equipment as it becomes available.

Alaskari: I found Montreux very important to us this year as I have had to miss NAB in Dallas. We had a meeting of the ASBU, the Arab Broadcasting Association, at that time; and as vice president of the engineering committee I had to be there. We did bring six people to Montreux to cover the various activities including the Symposium, and we will meet later to compare notes. We also appreciate the opportunity of meeting with so many other broadcasters who come here.

BC: *Sorting your way through the equipment demonstrations in the Technical Exhibition, what impressed you most?*

Alaskari: I was particularly interested in the studio equipment on display in Montreux because of our outstanding tenders for such equipment. The digital switcher and the new 1518 camera that Thomson-CSF showed were of interest; the latter especially because of the updating possibility for our 1515 cameras. I don't have to throw out our old cameras. We are also using Microcams, and the new version in a single unit looks attractive; we will study it carefully.

I was impressed by the new telecine from Bosch Fernseh, especially the good

Zaccarian
RAI (Italy)
"Digital recording from a technical viewpoint is a certainty, even though there might not be a major market for it."

picture quality and low flicker. I also liked the Rank telecine with the color and picture correction circuits.

Zaccarian: There are plenty of new things which have impressed me here in Montreux, although I have seen some of them before at other shows. Most intriguing is the fact that each of the major VTR manufacturers has a digital video recorder on display, but nobody wants to put one on the market. Digital recording from a technical viewpoint is a certainty, even though there might not be a major market for it.

Also the Thomson-CSF disc could be of major importance in the future to broadcasters, when it is fully developed. There seems to be an interest among my colleagues in the CCD telecine and in automated cameras, but it remains to be seen if the broadcaster really wants a truly automated camera because of cost and flexibility. One new product that is very interesting to me is the Sony two-transport VTR which stores short sequences for slow-motion analysis or still pictures.

Getting back to the digital VTR situation, RAI is not a production company and would not like to see any isolated formats developed. We would prefer a digital VTR format that becomes a universal machine that can be used throughout our network.

I was very interested in the digital effects displays at Montreux because RAI uses frame synchronizers and DVE systems. I think that there is a rather

large market for such devices as they make sports programs involving remote feeds and helicopters easier to handle and more interesting.

Hansen: I feel that this Montreux exhibition is too close to the most recent IBC show to have any really new equipment for immediate availability. We are now thinking more on longer terms with five-year targets. I believe that digital VTRs are sure to come, but I can't fix a good date for that. Their first use will no doubt be for post-production applications, and we want to watch how this area develops in the next five years. I've seen all three digital VTRs and they all make excellent pictures. It's almost impossible under show conditions to make a critical comparison, but I was impressed by the Sony documentation and the attempt to show 50th generation tapes.

The other interesting product which is operationally available is the Fernseh CCD telecine. It does all you could ask a telecine to do and it should have a big potential. Even though we are currently matching our existing Rank telecines with new ones to simplify operations and maintenance, we do appreciate this new Fernseh development.

Todorovic: The first thing that should be mentioned is the appearance of digital effects in PAL, which are of great interest to European broadcasters. We have only seen these things in NTSC before, and now they are being shown in PAL and SECAM. Also, the new generation of one-inch helical scan machines in the C format are of great interest. We did some extensive tests on both the B and C formats and we are now trying to decide on standardizing on one of these formats for use throughout Yugoslavia. We do have a few of each type now, but the numbers are small enough not to stop us from a national decision. Both formats are technically acceptable, but the operational side is the one that may determine which format we use.

The digital VTRs shown in Montreux prove that a DVR can be done in a short time; however, we need some work in standardizing a digital VTR. Up to now the VTR has been the weakest link in the studio chain. The digital VTR could change this, and we should work hard to achieve a "transparent" VTR for studio use.

Most of the rest of the equipment in the camera and editing field seemed to be just updated versions of what we have seen before. Only the Fernseh CCD telecine was a very new device.

BC: *Where do you stand on developing ENG operations?*

Alaskari: We are not encouraging the use of ¾-inch cassette machines because the picture quality from a 3rd or 4th generation is just not acceptable. We plan to equip our newsrooms with computerized editing equipment eventually, but for the time being we are using simpler editing gear. We don't want to confront our operators with the most complex editors from the start. It is always easy to buy things but hard to run them, so we want to absorb this technology in gradual stages. One of our biggest problems is developing our technical personnel, so that they can cope with operations and maintenance.

Hansen: We have four crews working with ENG equipment for our news coverage. The cameras are Ikegamis and we have U-Matic VTRs, but we want to improve the quality and we are looking into the high-band BVU or the one-inch machines. One idea we want to evaluate is record on BVU but transfer to one-inch during editing. We have promised ourselves to go home and review this subject thoroughly after our exposure to all of this equipment in Montreux. BC

Digital dominates Montreux Exhibition

The Montreux TV Technical Exhibition was once again the showplace for the international roadrace of technologies. Manufacturers from around the world exhibited a variety of new products and products shown for the first time in SECAM, PAL, and PAL-M versions. But despite the bird-in-hand theory, the spotlight keeps swinging toward digital VTR developments.

While manufacturers are showing off their original experimental digital VTRs as a stepping stone to the future, they're getting the message loud and clear that broadcasters around the world are intensely interested in these designs . . . and the role they may play down the line.

Of course no manufacturer is saying at this point that they are ready to run one of these units down an assembly line. After all, there remain a number of design problems to be resolved. And then the thrust will be to standardize. Meanwhile, all manufacturers will be concerned about the investment they have in analog machinery, machinery which is now standardized and growing in applications around the world. Certainly no one is going to put off buying analog based on current or projected needs. At this point in time the interest of manufacturers and broadcasters alike is centered on the technical challenge.

The Montreux Exhibition itself provided a demonstration, stand by stand and booth by booth, of the high interest in state-of-the-art available today in recorders and a myriad of other video products.

Part 2 of the Exhibition coverage will be printed in the August issue of *BC*. And in both parts you'll note that "circle numbers" follow most product descriptions. If you need more information on these units, circle up the appropriate numbers on the Reader Service Card in these issues and information will be sent to you by the manufacturers.

Bosch celebrated their 50th anniversary at Montreux with an amazing number of new product introductions, so our first stop on the Exhibition trail will begin at their booth.

BOSCH FERNSEH — Bosch celebrated its 50th anniversary by exhibiting 11 new products. A few were shown at NAB in an NTSC version or were displayed as prototypes. One of the most visible exhibitors at Montreux, the company held two celebration dinners. And their personnel were stressing the firm's historical contributions to the development of television technology around the world.

Following the existing OEM agreements between Philips, IVC, RCA, and Bosch Fernseh, a new agreement has been signed by Thomson and Bosch concerning the BCN B Format range of broadcast VTRs. In addition, Bosch and Thomson have already agreed to cooperate, and have started work, on the further research and development into the use of the BCN as a digital VTR.

As part of a study in digital videotape recording techniques, the Television Systems Division has designed and constructed a digital version of the BCN VTR. Based on the BCN 40, the machine provides full frame recording and reproduction with a single bit stream at 80 Mbit/sec. The head-to-tape writing speed has been increased to 48 meters/sec and the video track width has been reduced. The resulting tape speed is only 12 cm/sec, or about half that of BCN analog machines.

(Photo by Donna Foster-Roizen)

Sub-Nyquist sampling (2x subcarrier) and block code techniques are employed in accordance with IBA methods. Any dropouts that occur are made subjectively less apparent by scrambling techniques which distribute them over the entire picture area. (Circle **150**)

Described by Herman Zickbauer as "the biggest support yet for the Type B format," the BCN 100 automatic multicassette VTR can be remoted up to 500 feet. It has rapid random access to 32 cassettes with up to 30 minutes playing time each, and a choice of up to three tape decks to insure new production applications in addition to news or commercial insertions. It records, plays, and edits its own cassettes, or it can process cassettes previously recorded on the briefcase-sized BCN cassette VTR. (Circle **151**)

Also among their highlighted introductions, Bosch showed their dual format, digital telecine, the FDL 60. Its CCD scanner offers excellent color reproduction and resolution. The CCD scanner eliminates color smearing and lag, convergence and deflection hardware. The unit's digital frame store and continuous capstan drive film transport allow slow motion, fast motion, jogging, stills, and search in forward or reverse with true-to-scale color. Internally, you can generate SMPTE time code, so you can use it as an editing system. (Circle **152**)

The BCN 5 cassette recorder is the first portable studio-quality VTR offering true cassette convenience in a worldwide format — 1-inch Type B. Its weight is only 12 kg, and its power consumption is less than 30 watts. Cassettes with 20-minute tape capacity can be removed in any winding state. (Circle **153**)

In the KCP 60, Bosch showed studio-quality economy with an economical tube design. The result is a camera for those situations which do not require the complex sub-systems of today's huge top-grade cameras, but which do require quality. Its 2/3-inch optical system practically eliminates microphony. It should be well received as an outside camera. (Circle **154**)

Other new products from the company included the KCA 100 color camera that has auto focus (in or out), weighs 6 kilos and can take cable or fiber optic links up to 4 kilometers. It was designed for easy and quick servicing. Their remaining introductions were rounded out with a high-resolution monitor that uses a Mitsubishi CRT; a new ENG/EFP KCA 90 package for NTSC, PAL, PAL-M, and SECAM; a long-playing VTR (six hours on one tape); a new range of compact transcoders; and a digital synchronizer.

Nippon Electric Company (NEC) — Three new products were highlighted in the NEC booth along with a variety of products from this wide-line manufacturer.

One of their most interesting introductions was the model 790 satellite television receiver for 12 GHz. Its applications obviously include direct reception (it includes an antenna of 1.2 meters), community reception for CATV, re-broadcasting, and experimental receiving. (Circle **199**)

With remotes continuing to grow in variety, NEC was on target with two microwave ENG links. The TVL-100 operates at either (depending upon the model you select) 7 or 13 GHz. Using new advances in low-noise SHF FET technology, these new field pickup units provide 1 watt at 7 GHz and 0.13 watts at 13 GHz with reciprocal receiver noise figures of 5 dB and 9 dB respectively. The transmitter weighs just 10.1 pounds, and the receiver checks in at 12.4 pounds. Options include a second audio channel and a second operating frequency. (Circle **201**)

The MI-LINK 40 takes you to 40 GHz where you're a lot less likely to run into interference. It's virtually water-tight, easy to set up (one touch polarization change, for example), and lens horn and parabolic antennas for long distances are available. The transmitter output is 10 mw, and the receiver noise figure is 12 dB. (Circle **202**)

QUANTEL LIMITED — During private demonstrations at the Exhibition, Quantel introduced its new DLS 6000 Digital Library System, and solicited suggestions from the invited guests as to the final configuration. Although the system's development is only partially completed, the unit's basic features include several innovations. The unit's capacity is 700 still frames, and is expandable in 700-frame increments by increasing the number of disc drives. Zoom and positioning, size and positioning storage, multiple-image handling, and a "browse" facility are among the system's features. Quantel also emphasized the unit's compact size and low power consumption. (Circle **160**)

Also featured were the improvements the company has developed for its digital production effects system. One new standard feature and three new optional facilities were announced, all of them retrofitable to DPE 5100's already in use. The new integral feature is called "Tumble and Spin" and can produce picture inversion and tumble, or reversal and spin. The new DPE 5001 *Plus* accepts up to four extra inputs in addition to the original feed, and can individually manipulate each input via the same single control panel, to provide up to five different images on a TV screen at the same time.

The new Autoflex facility is based on a horizontal and vertical picture zoom control that makes it possible to stretch or distort an image to one of the special shapes indicated on the control panel; users can even specify certain custom shapes which will be programmed at the Quantel laboratories. Other options include the Multilink, a timesharing facility for the Digital Production Effects system, and Autosequence, an effects recording, playback and editing system. (Circle **161**)

MARCONI COMMUNICATION SYSTEMS LIMITED — The highlight of the Marconi Communication stand was the Mark IX family of color television cameras. All six variants of the Mark IX, along with the new ENG camera, were shown at Montreux.

While retaining the design characteristics of its predecessor, the Mark VIII, the Mark IX includes significant technical improvements. The compact optics, automatic registration, and ex-

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ceptional sensitivity are accompanied by low power consumption and light weight, optional automatics, auto and manual dynamic gain, and a wide range of lenses. A major advantage is the camera's built-in diascope which allows the camera to be automaticaly lined up without the use of an external pattern in front of the lens.

The compact CCU includes all of the video circuitry, coder and power supply in a frame only five rack units high. In addition to these features, Marconi emphasizes its design philosophy which allows a broadcaster to "tailor-make" his camera by choosing from the many features available within the Mark IX line. (Circle 180)

The new ENG camera in the line offers battery operation, coax/triax option, automatic facilities, and 625 PAL and 525 NTSC versions. The camera is self-contained and can be operated in any of four modes. (Circle 181)

Announced as the first field synchronizer for the PAL 625 standard, the B3565 digital field synchronizer was introduced to the European market. The unit has a storage capacity of one television field as opposed to the usual two; this design modification helps keep the B3565's cost and size to a minimum. The unit also eliminates the need for genlocking, thus providing for more operational freedom and economy. (Circle 182)

AMPEX — The theme of the Ampex exhibit this year was the 1980 Olympics, but there is continued interest in the Ampex digital videotape recorder.

New at the Technical Exhibition this year was their ACM-202 and ACM-400 outside broadcast units. The 202 is a mini-mobile production unit designed for news and field productions. It's a custom-fitted vehicle, based on a Mercedes L608D panel van or one of similar type chassis. It includes air conditioning and a roof ladder access; it has a reinforced roof platform/sunshield; and it has an acoustically-isolated generator compartment. Up to three portable cameras can be accommodated, or two studio cameras can be used. The unit also includes a VPR-2. (Circle 193)

The ACM-400 series includes a choice of two vehicles, with longer wheelbase and considerably more production, equipment, and control room inside. Its size and top platform make it attractive for a wide variety of applications. On the platform there is ample room for cameras and microwave antennas, yet the size of the vehicle would not prohibit its use as an ENG van. (Circle 194)

There are other Ampex outside broadcast units that will fill almost any outside unit requirement, large or small.

In a private showing in the "Ampex Digital Theater," their ESS system and the digital VTR were highlighted. It was another successful show for Ampex, as they reported six major sales at Montreux.

THE GRASS VALLEY GROUP — Grass Valley unveiled its all-new 300 Series production mixing system at the Montreux Technical Exhibition. Designed to meet the stringent demands of modern television production, the system's central design features are high performance, easy operation, fully integrated digital circuits, and interface flexibility. The system, including digital effects, is available in PAL or NTSC. Four input buses are provided to each mix/effects system, with two separate input buses for video and title key sources. (Circle 158)

Also shown was a stand-alone audio routing system, the 410 Series. It shares the audio-video routing/assignment system of 32-in/16-out format; even larger formats are possible without the need for input fan-out distribution amplifiers. (Circle 159)

Also announced by The Grass Valley Group was a PAL version of the Mark II digital video effects (DVE) system. Projected availability is 1980.

AMERICAN DATA CORP — A complete line of PAL switchers and seven mixers compatible with PAL standards were offered here. Delegates were treated to a hands-on demonstration of the 558 Series video production system which features a new technique for processing video by selectively controlling the unit's four channels. The "B" control element is employed as the prime channel because the majority of third-generation devices currently in operation utilize this channel as the primary bus. Therefore, when title keying, the key appears over the "B" channel video. This feature allows operators familiar with third-generation switchers to operate the 558 with little or no re-training. Other objectives incorporated into the 558 Series design are the unit's realistic physical size and ability to accomplish multiple functions more easily and efficiently. (Circle 163)

SHURE BROS. — Leading the offerings by Shure was the company's new model SM81 unidirectional condenser microphone. Designed for professional applications in studio recording, broadcasting, and sound reinforcement, it is

especially suitable for applications requiring extremely wide frequency response; low noise and distortion characteristics; low RF susceptibility; and reliable operation over a wide range of temperature and humidity extremes.

The microphone features a selectable 10 dB attenuator and a three-position low-frequency response switch. The SM81 is designed for simplex (phantom) powering from an external supply, or directly from recording, broadcast or sound reinforcement equipment; it can operate over a wide voltage range covering both DIN Standard 45 596 simplex voltages of 12 and 48 watts. (Circle 184)

ASACA — Displayed at this booth was an array of precision test equipment, most notably the PAL video noise meter now being used in Europe. Designed to measure video noise voltage generated in television transmission equipment, television cameras, videotape recorders, video disc units, and digital image processors, the Shibasoku noise meter supplements the conventional meter functions with a new function that allows operators to measure the chroma noise of color signals.

The unit measures chroma and luminance noise, and AM and PM noise. It features tilt head balance control, subcarrier trap, weight filter (CCIR), and high pass/low pass filter. (Circle 155)

Also featured by Asaca was a PAL digital pattern generator using digital circuitry with ROM that's available in 500 lines or 1,000 lines. An envelope delay measuring set with built-in sync and blanking circuit was also shown. (Circle 156)

FARINON VIDEO — Featured in this busy booth was the FV-MP Miniature Portable Microwave Transmission System, and the FV-P Series of larger, higher-powered portable television-transmission radios.

The FV-MP "mini-link" family is lightweight, compact, and frequency-agile for most internationally-recognized video plus audio program pickup and temporary service bands between 1990 and 13,250 MHz. With an optional high-gain antenna, color video and up to two program subcarriers can be transmitted and received over one-way paths exceeding 25 miles. Duplex system arrangements are also available. (Circle 171)

IKEGAMI — A new ENG/EFP camera, a new studio color camera, and a new multicore cable base station were spotlighted in the Ikegami booth. The HL-79A ENG/EFP camera claims quality and colorimetry compatible with studio cameras, along with low power consumption and light and compact size. The company feels that the HL-79A camera eliminates the need for a part-weightlifter/part-engineer cameraperson, and opens the area to more journalistic and creative options. (Circle 200)

The HK-312 studio color camera's strongest feature is its reliability. According to Ikegami, breakdowns are so uncommon that a situation requiring six-camera coverage needs only six Ikegami cameras. An elective auto setup microcomputer saves greatly on time; installation of optional triax cable adaptor is simple and extends system versatility. (Circle 175)

The Ikegami MBS-77/79 multicore cable base stations are remote control systems that permit the use of the HL-77 and HL-79A (see above) self-contained cameras for complex field productions and sophisticated studio applications. The units permit distances of 200 and 300 meters for each of the cameras, respectively, and are small, modular, and rack-mountable, with an optional field carrying case available. Numerous built-in test and operation verification features add to the full use of the possibilities of ENG/EFP situations. (Circle 176)

RCA — Basically, the company was showing equipment that had been introduced earlier at the NAB convention, but this was their European debut.

The limelight went to their new TK-76C ENG camera. It weighs less than 6.5 kg. Deliveries of the new camera are scheduled to begin late this year, and a retrofit kit will be available to convert existing TK-76B models to the lightweight TK-76C version. (Circle 195)

The demonstrations also highlighted the TK-760, their studio/field production camera. RCA announced that they had sold 90 TK-76 and TK-760 cameras to RAI, Italy. (Circle 196)

RCA introduced the TH-200 one-inch helical videotape recorder. It features previewable automatic editing; optional "dynamic tracking" for broadcastable slow motion; and fast-motion and still pictures. (Circle 197)

The company also showed off their new TTG series of transmitters designed for VHF Band I and Band III applications. These transmitters will be available in NTSC, SECAM, PAL-B, and PAL-M.

TEKTRONIX — The Tektronix exhibit centered on the ANSWER television signal measurement system (see Digital Workshop, June *BC*). ANSWER automatically measures signal amplitude, phase, and timing parameters, and can automatically run and log a complete in-service NTC #7 measurement routine in less than one minute. The manufacturer claims worst case accuracies of ±0.5%/0.5° for most measurements. Also featured are alarm signals, RS-232-C and optional GPIB interfaces, and the programmability to meet special requirements and future measurement needs. A PAL version of the ANSWER system is now being developed and is expected to be available within the next year. (Circle 164)

CINEMA PRODUCTS — The company's crowded booth was the ideal stage for introducing to Europe its KM-16 film-to-tape transfer system. This equipment allows for quick transfer of 16mm film to videotape without the need for a large telecine chain. The system projects an image from 16mm film to any ENG/EFP-type video camera for recording on videotape or transmitting by microwaves or cable.

The possibilities in a mixed newsfilm/ENG operation are obvious: newsfilm can be quickly transferred to tape format, and need no longer be held up for lack of access to a large telecine chain. Low cost and high-quality performance make it of special interest to smaller TV stations.

For more information, write Cinema Products, 2037 Granville Avenue, Los Angeles, CA 90025; (213) 478-0711.

THOMSON-CSF TUBE DIVISION — The major theme at the Thomson-CSF Electronic Tube Division was in the direction of energy conservation through more efficient power tubes used in transmitters. With electrical cost going up, this supplier has developed two exceptional high-performance tetrodes (TH-393 and TH-382) with power outputs of 2 kW to 10 kW. These tubes are designated for use in UHF television transmitters and in comparison with older klystrom, they provide high gain and extra-wide band width. (Circle 170)

In addition to the triodes and tetrodes for transmitters and translators, the Electronic Tube Division also exhibited a broad line of normal- and low-light level camera pickup tubes, CCD units, and traveling wave tubes (TWT) for satellite television broadcasting. Sales and marketing representatives were on hand, including the general manager, L.F. Guyot.

IVC (INTERNATIONAL VIDEO CORPORATION) — In private demonstrations, IVC introduced its new 1-11 production VTR. Retaining the advantages

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of the well-known 1-inch VTRs, the 1-11 adds a second video head to record the vertical interval. Other features include a high-band signal system derived from the IVC 9000; a full 5.5 MHz low noise video signal; and two high-quality, independently editable audio tracks. An optional digital timebase corrector including dropout compensation and velocity compensation is also available. IVC predicted initial shipments in December 1979. (Circle 165)

IVC also exhibited its PAL/SECAM/MONO addition to its Series 2002 digital time base correctors. Of special interest is the unit's ability to handle SECAM/MONO segments from a tape automatically. (Circle 166)

IVC's camera line has also been expanded. The company introduced its new 7005 studio camera and 7005P field production camera. The two cameras are designed to use the new diode gun lead oxide pick-up tube to provide higher resolution. The 7005P also incorporates Automatic Beam Control for the elimination of comet-tailing often associated with picture highlights. (Circle 167)

3M COMPANY — Introduced in Europe by 3M's Magnetic Audio/Video Products Division was the company's new Scotch brand 479 Master Broadcast Video Tape. 3M claims significant improvements in the areas of RF output, S/N ratio, and color noise. Available in 30-, 45-, 60- and 90-minute lengths, "Scotch" 479 MBVT is compatible with Ampex, Bosch-Fernseh and Sony 1-inch broadcast recorders. (Circle 168)

The 3M-Datavision model D-8800 Titling System was also introduced to the European market at Montreux. Designed around the latest microprocessor technology, the system features a human-engineered INTER-ACTIVE control console which helps simplify the unit's operation. An alpha-numeric panel display can walk a new operator through an operation, while an experienced operator can ignore or override the cueing instructions. (Circle 169)

CONVERGENCE CORPORATION — The emphasis here was on the first European showing of the company's Superstick Multi-Source Editing System. The unit includes the Superstick panel with Cruise Control, Auto Tag, Replay, Automatic Return to Edit, transport controls, adjustable preroll automatic audio monitoring with built-in speaker amplifier, record mode controls and accessory controls. The Superstick is compatible with NTSC, PAL and SECAM standards and both ¾" and 1-inch tape. (Circle 189)

TFT (TIME AND FREQUENCY TECHNOLOGY) — The emphasis here was on the company's digital remote control system and line of broadcast monitors. The TFT 7600 is hailed as the first fully modular remote control system that can be tailored to fit any AM, FM or TV application. The system provides both digital telemetry/control and direct control/status monitoring. Its modular design makes it possible to start with a stand-alone, 10-channel Telemetry and Raise/Lower system, and have the option of adding up to 70 more channels of Raise/Lower plus up to 30 channels of direct On/Off control and up to 30 channels of Status/Alarm monitoring. Other available add-ons include a microprocessor-controlled multi-channel data display, automatic logging, and a provision for external control by a computer or ATS monitor. All components fit in a standard 19-inch rack. (Circle 185)

The model 701 is an all-solid-state broadcast monitor designed for off-the-air or on-site monitoring of all VHF and UHF broadcast transmitters. Digitally settable peak flashers display plus and minus aural modulation peaks simultaneously. Frequency measurement accuracy can be calibrated directly against NBS and a WWV receiver. Additional features include an illuminated meter scale, remote meter and flasher outputs, optional SCA output, and built-in high-accuracy aural modulation calibrator. (Circle 186)

ANGENIEUX — In response to what it sees as the two major demands in broadcast zoom lens requirements, Angenieux introduced two new lenses at Montreux.

To answer the need for larger and more flexible lens systems for use on cameras with 2/3-inch pickup tubes, the company showed a new 25 to 1 zoom system. The basic lens has a focal range of 10 to 250mm and a maximum aperture of f1.4. Optional attachments permit a 62 to 1 zoom range from 10 to 625mm at f1.4 to f4.2. (Circle 178)

In meeting the second requirement, that of quality for users of 1- and 1¼-inch tube cameras, Angenieux has developed a 12 to 1 zoom lens with a focal range of 12.5 to 150mm for 1-inch, and 16 to 192mm for 1¼-inch cameras. Angenieux says that this lends approaches the theoretical diffraction limits. (Circle 179)

EEV (ENGLISH ELECTRIC VALVE) — It was difficult to miss the main attraction at the EEV exhibit. Prominently positioned was the company's high brightness alpha-numeric message display system using the EEV E729 character display tubes. The 10-character display draws from a keyboard input memory of 256 characters for rolling messages. Message boards of this type offer high brightness, high readability, 12-volt operation, and power dissipation of only 2/3 watts per character. Suitable for television scoreboards, highly accurate digital clocks, industrial process control displays, and passenger information panels, these systems effectively extend the size range of electronic display into new applications. (Circle 183)

SONY CORP. — Prominently displayed at the Sony booth was the company's 1000th BVH series Videocoder produced since the line's introduction in late 1976. The latest model, the BVH-1100PS, was developed to meet the EDU 1-inch Type C format and operates on both PAL and SECAM 625-line standards. The unit features built-in assemble and insert editing, confidence video replay during recording, the BIDIREX tape control system, and optional fourth audio track. The recorder is also fitted with the Dynamic Tracking option. (Circle 162)

Other products shown included the

microprocessor-controlled BVE-5000 production editing system, along with its portable version, the BVH-500PS; a new high-band recorder, the BVU-50P/s; new PAL and SECAM versions of the BVP-300 three-tube camera; and a new color monitor. A new video recorder which can store and access up to 9000 still picture frames and new Sony audio equipment also attracted attention.

By appointment only, Sony also demonstrated its experimental compact digital 625-line PAL recorder which includes a digital audio capacity. The company stressed the prototype status of the unit and that Sony considers the format for a digital VTR to be only in the preliminary stages of the development process; initial showings of the digital VTR are designed to elicit users' opinions, Sony added.

CENTRAL DYNAMICS — One of the highlights of this company's booth was the CD-480's newest advanced technology accessory that allows computer-assisted production (CAP). Shown static only at the NAB convention, in Montreux it was put through its paces in an operating demo. Complex scenes involving multiple sources, keys, SFX Amplifier mode, etc., can be preloaded into CAP's memory and recalled randomly or sequentially, and accurately executed during real time production.

Full manual control of all functions is maintained to allow last-minute manual overrides of any CAP selection. Meanwhile, it memorizes all crosspoint selections, mode selections, and pot settings for a complete CD-480 Processor System. It has an integral memory for 32 or 64 switcher setups. On top of this, the unit has a variety of additional options.

As for the CD-480 itself, the company announced at Montreux that the research program to develop a new switcher offering a full range of modern video special effects to SECAM users has been completed. (Circle 172)

They also showed the EEG-1980 extended effects generator that is free standing, and can update any switcher. It's NTSC, PAL, and SECAM compatible. Included are a full complement of wipes, soft edging, positioner, and rack mount self-powered electronics. (Circle 173)

NURAD — A number of products were displayed for the first time in continental Europe. Among them were several new antennas for ENG, EFP, electronic journalism (EJ), and other auxiliary broadcast applications. Included in these were the new 7 GHz QUADROD™ transmit antenna, the 2.5 GHz SLIMLINE™ directional antenna, the QUAD receive antenna in all three (2, 2.5, and 7 GHz) auxiliary-broadcast frequencies, and the MC2 digital remote control for use with both the QUAD and SUPERQUAD™ receive antennas. (Circle 174)

Nurad told *BC* its rationale for Montreux attendance was the company's strength in the areas of special-purpose antennas and complete systems. "Although the emphasis on ENG — our major domestic market — is not nearly so great outside the U.S. (with the possible exception of Australia), the fact that we can engineer antennas for specialized applications, often involving frequencies of operation that are not normally used in the United States, makes us feel that we should continue to direct substantial sales efforts toward the foreign market," said Les Lear, director of marketing for Nurad.

MEMOREX — The Spindle Height Alignment Gauge was the main feature at the Memorex display. Referred to as SHAG, the gauge is designed to detect one of the primary causes of edge damage in ¾-inch videocassettes: improper spindle height alignment.

Until the introduction of SHAG, it took a qualified technician up to four hours to check for proper spindle height alignment. Now, anyone can do it in just 30 seconds. The gauge fits all mini- and standard-size U-matic videocassette recorders, is easy to use, takes less than a minute to check alignment, and is portable.

Memorex claims substantial time and money savings when the SHAG is incorporated into a regular preventive maintenance program for U-Matic VCRs. (Circle 157)

TECHNICOBEL — A French corporation with a Belgian parent, Technicobel came to Montreux with a wide variety of new products designed for general purposes or customized to specific client demands. In this general category, the RB-60 audio mixing console, the PM-60 premixer and the CFD-60 parametric equalizer represent a broadening of the company's audio product line.

Tailored products made for the French channel FR-3 included the CARL-50 broadcast console, designed to be used by a single sound engineer while providing multi-channel control. The COMA-50 audio switching console was also made for FR-3, and provides control for eight separate audio sources. In another category Technicobel is manufacturing under license the CRA-60 artificial echo chamber which it developed in cooperation with Telediffusion de France (TDF). (Circle 198) BC

BILL AVERY

CLOSE-UP:

Television News

The use and abuse of ENG

Years ago the creator of the cartoon strip "Pogo" must have had a vision about Electronic News Gathering when he came up with the phrase, "We have met the enemy and he is us!"

The head-long rush into ENG has left more casualties than just film camera companies. Somewhere along this oxide-coated path, television news has abandoned good photography. Worst of all there is no reason for it. Hardware and technology have left good photographic technique on the cutting room floor. Furthermore, this problem has infested all markets from small to large.

Every day television news bombards viewers with power zooms, panoramic pans, and a variety of jerky shots that serve to emphasize the entire effort was ill-planned and poorly executed. There appears to be a compulsion to use all of the tape on the cassette. In-camera editing has largely ceased in favor of the "I-shot-so-much-there-must-be-something-good-in-there" syndrome.

The lack of planning in the field shows up first in the editing room. Searching through the glut of video bogs down the editing process. Interviews are a particular problem. Economics used to dictate some conservatism in the length of filmed interviews. But videotape has given rein to long, rambling, inane interviews that would have been better served by one or two concise questions.

Nowhere is it more apparent that basic photographic techniques have been junked than in live remotes. Situations which demand multiple cameras, or at the least several different camera angles, are often served by one stationary camera. The cameraman must encompass the event, the reporter, and generally an interview subject like a Whirling Dervish with a zoom lens. If there's a national outbreak of motion sickness it will likely be traced to dedicated television news viewers who have been exposed to an excessive number of live remotes.

> "... videotape has given rein to long, rambling, inane interviews that would have been better served by one or two concise questions."

The heightened pace brought on by ENG seems to have left less time for critical review of video work. And critical review is exactly what will be required to extract us from our photographic morass.

The very nature of video cameras leads to much of the problem. F-stops on the lens are largely decorative and most ENG-era camera people tend to "eyeball" the F-stop. Light meters have been placed on the shelf. This informality toward the video has been furthered by instant playback capability. "Instant pictures" seems to reduce much of the care that existed in film. Then, a nagging uncertainty that anything would come out of the processing machine seemed to dictate more care as the film was being shot.

In-camera editing has quietly been subverted by the fact that most video recorders don't make edits as they go and the glitch marks have to be edited out later. Still, a return to good sequence shots will pay dividends when editing time is tight and the care taken in planning these shots will enhance the final product.

Who's doing your camera work? Here the industry is beset by two problems. When the switch to ENG was made, a lot of engineers suddenly became camera people. In deference to union contracts many of these people had to learn on-the-job, and too often a camera was placed in their hands without corresponding instruction. Also, colleges, universities and trade schools have been churning out journalism majors with little or no photography background. In both cases the only answer is a regular critique with examples of good and bad video.

While television news consultants

Bill Avery is news director, KEVN-TV, Rapid City, South Dakota.

have been issuing regular monitoring reports to clients, it's obvious that they haven't spent much time on the single most important ingredient in the program: the video that goes on the air.

Part of the problem is the nature of ENG. Even though it shouldn't be faster to shoot in the field than film, it eliminates processing time. But pushed-back deadlines have generally been used to generate more stories rather than to spend more time editing a solid video report.

Feeding stories by microwave back to the studio for editing often eliminates another vital ingredient. The camera person and reporter generally aren't around to monitor the editing process for the shots they took to fit, and the person editing doesn't have more than a long-distance feel for the story. If it was an advantage to have some of this input with film then why amputate the field crew from the finished product using tape?

Again, the pressures of time and the competition enter in, but the same technology that allows field crews to microwave a story should be able to tape their input on editing. Increasingly exotic two-way radio gear can help communicate the need for specific shots used in a meaningful sequence. But again, more time will be required than most news directors have been prepared to invest.

Time is the key word. A day-long shooting schedule for a reporter and camera crew must include some time for preparation to trim the length of interviews and for adequate location lighting and thought to camera angles.

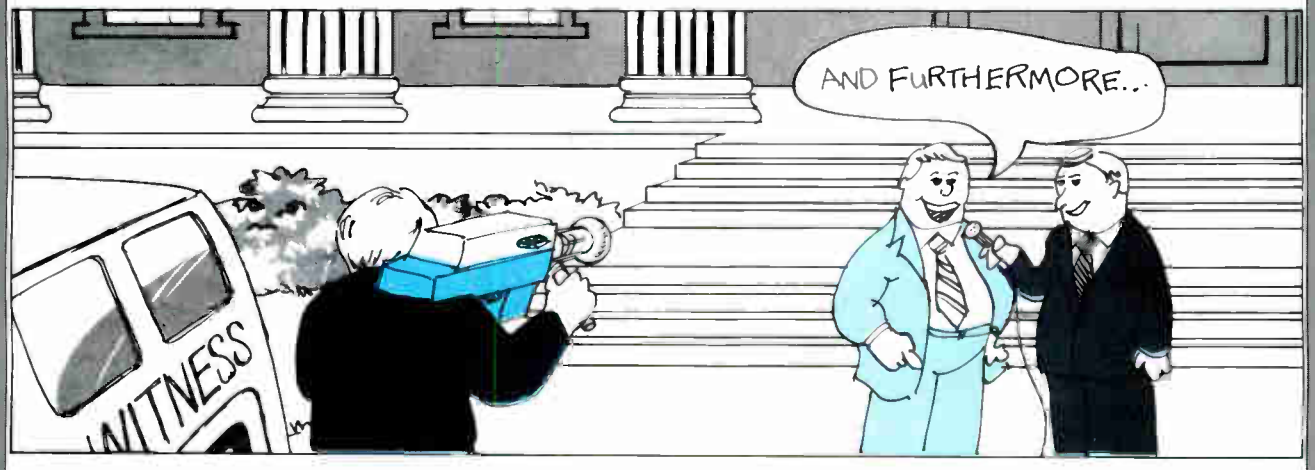
"Audience reaction to a never-ending string of thumb-sucking stories will eventually generate boredom with the gimmick rather than expanded trust in our abilities as reporters."

Perhaps being tied to a separate recording unit has had some impact, but so often video reports use flat, boring shots rather than high and low angles. Even with the arrival of new cameras with built-in recorders, I'm afraid we are in danger of permanently losing those unique angles that can only be had by climbing, crawling or otherwise getting close to the subject of the story. If the economics of possibly damaging a multi-thousand dollar camera prevail against such video work than we are doomed to bumpy X-CU's (extreme closeups) on subjects which are not designed to be covered from afar.

In the embryonic stages of ENG an oracle of sorts mumbled something about never doing something live if you could do it on tape. The reasoning was that given the luxury of editing, the reporting was more precise and was less likely to ramble. Simply looking at some of the questionable subjects for live remotes has proved the point. We have teletransported audiences to shopping malls, rodeos, the historical district, and elusive fires where there were no flames.

"Live" should be restricted to those instances when nothing else will do to get the story out. And to have any impact with the viewing public it must have an honest urgency that seems lacking with coverage of another politician or, if you can believe it, the final, climactic moments of a baby-judging contest.

The events tailored to live coverage should be, in a word, stupendous.



Failing that, they should at least be important. Audience reaction to a never-ending string of thumb-sucking stories will eventually generate boredom with the gimick rather than expanded trust in our abilities as reporters.

If imitation is the best form of flattery then we as broadcasters have flattered ourselves too much. The abuses of ENG are being copied in every television market. The individuality of broadcast journalism has given way to a herd instinct. Just because you don't physically touch the videotape is no excuse for a hands-off approach to the video on the air.

BC

DENNIS J. MARTIN

No green curbs... please!

Environmental considerations are running neck and neck with new station site selection problems. KGUD solved both through a candid approach to their local government.

Management is well aware of the ingredients that, when combined in the proper order, make a radio station. This is particularly true when studio and transmitter equipment and office furniture are considered. But in the initial planning of a new station, there are many not-so-often-thought-of elements that affect the environmental aspects of construction. If you're not prepared, you could end up with a green parking lot!

When we built KGUD-AM in Banning, California (about 75 miles east of Los Angeles), we learned the importance of careful research, planning, and the need for cooperating with city government.

We got our project started by looking for a site close enough to the center of our City of License to provide primary coverage as required by the FCC, yet situated so as to provide the best signal to the bulk of the population. Larger market stations in Palm Springs, San Bernardino, Riverside, and even Los Angeles cover our service area day and night, so the site selection was a very important decision.

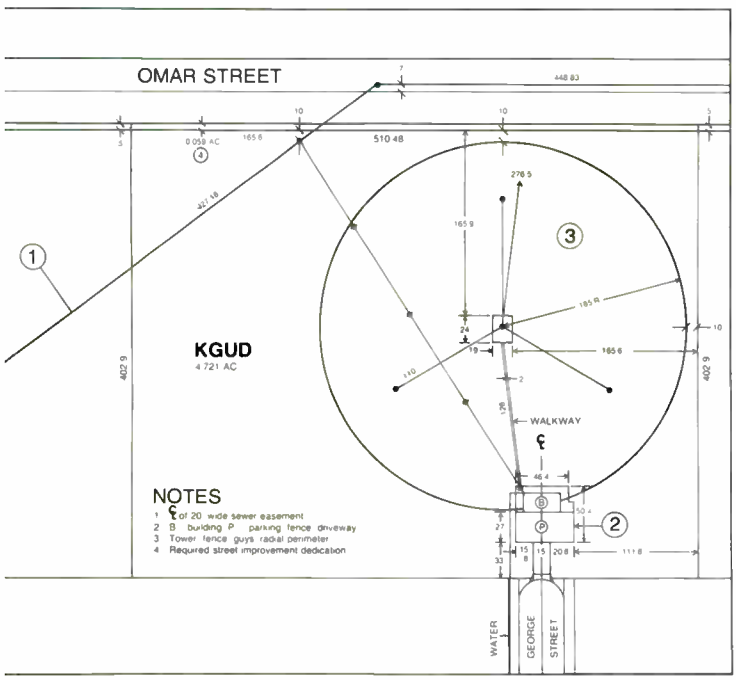


Figure 1 Site of KGUD-AM.

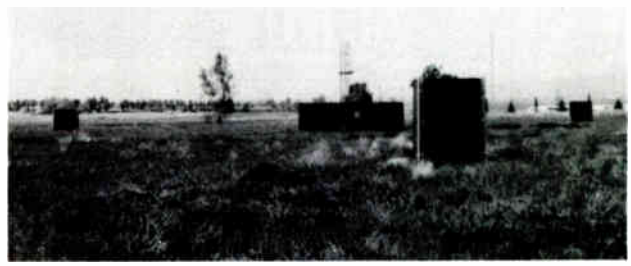


Figure 2 Chain link fence with redwood slats was used around the tower base and at each of the three guy anchors.

Other requirements included that it be free of deep gulleys and large rocks, with reasonable drainage, and close to a paved street — all to help minimize construction costs. Since there were no specific zoning requirements in the city for a radio station, it would be necessary to file for a special permit wherever it was located.

We finally decided upon a site in a residential district, within our City of License, and near the borders of the two other major towns in the area: Beaumont and Cherry Valley. However, at this point in the negotiation for acquisition of the property, to protect ourselves, we clearly stated that final sale was contingent upon securing a zoning permit from the city and FCC approval.

After we were certain the location was optimum, we applied for an Unclassified Use Permit that specially covered radio station transmitting sites, among other things. Public hearings were held by the planning commission and the city

Dennis J. Martin is chief engineer at KGUD-AM, Banning, California.

council. Residents within 300 feet of the site were notified by mail, and the mayor and other city officials personally interviewed nearby residents. Fortunately, no objections were raised, and the general attitude was quite favorable.

The permit didn't come without conditions: a chain link fence around the tower base, electric power service underground, paved parking spaces, and other recommendations that, in general, did not seem unreasonable.

However, it was required that, "The area surrounding the tower fencing . . . shall be landscaped with shrubbery sufficient to provide reasonable visual screening." It was this item with which we had to take exception. Even in our wildest estimations of oleanders towering some 10 feet above the ground, what would "visually screen" the remaining 150 feet of the tower?

We could understand the city's desire to beautify the site as much as possible, but we explained the virtually impossible task of planting shrubs anywhere near the tower base due to the minute spacing of the 240 ground radials. Planter boxes were proposed, but later abandoned because we felt plant growth would be stunted. And any irrigation system near the tower might become damaged when the radials were installed.

After we did a little research, we submitted a sample of chain link fence with redwood slats (although metal slats are available, they tend to be noisy in the wind and we are in a residential district). This fence, we said, would "visually screen" the tower base, tower tuning unit, etc.; prevent throwing rocks through the fence; and discourage climbing. It was clearly a fair compromise.

The subject of weed control was also discussed. We indicated that it would be impossible to disc the field after the radials were laid — chances are they would become cut into many pieces. Although some officials favored soil sterilization, we felt the cost for 4.7 acres was prohibitive. We all mutually agreed that annual weed mowing would suffice.

One official suggested we use rock outside the tower base fence for weed control. We noted that any size, even including ⅜-inch rock (pea gravel), is exceedingly tempting to

Continued on page 72

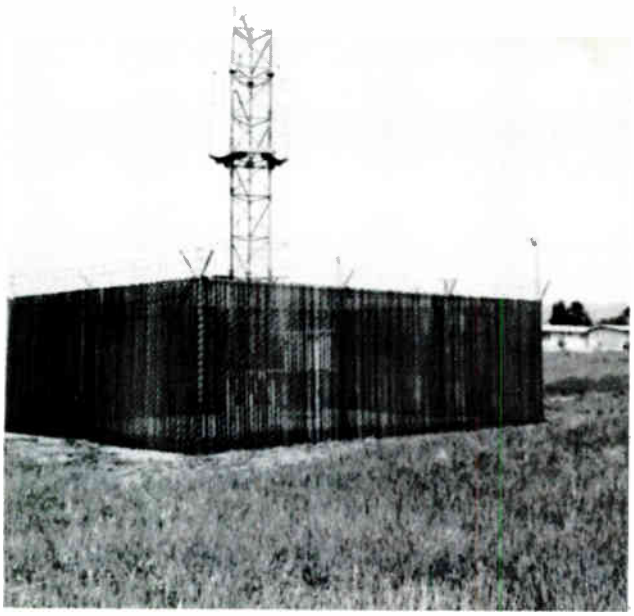


Figure 3 Close-up of tower base shows barbed wire and flood lights included for night meter readings and maintenance.

youngsters, especially if provided in large quantities. (Pea gravel, however, is used *inside* the tower base and building fenced areas.) A good-quality weed killer was applied around the tower base and guy anchors to prevent a fire from burning up to the fence and igniting our redwood slats.

We then started planning the tower and building orientation. Since two sewer lines cut across the southwest corner of our lot, although about six feet under, we purchased additional land to the north. We had nightmares of a city crew digging up our ground radials looking for a sewer line. It also allowed us to locate our building directly at the end of a short street, thus providing three distinct advantages: a nice method of entering and leaving the parking lot; a way of preventing future continuation of the street over our radials; and a means to make a good return on our money (real estate is still a good investment).

To prevent any unintentional mishaps, we decided to enclose our guy anchors with fence, including redwood slats to match the tower base. Hopefully, this will help impede tampering with the turnbuckles and, in two semi-local cases, greatly reduce the chance of a truck or bulldozer from shearing off the anchor when an unsuspecting driver backs up. "But I didn't see it" doesn't help much when you find your tower laying on the ground. Figures 2 and 3 show the tower base and the three guy anchors (Figure 3 includes the building). The back of the guy anchor is really a gate, somewhat camouflaged, that opens for maintenance.

When it came to the building, landscaping presented no obvious disadvantages, nor did the inclusion of an irrigation system. Although we very much liked the discouraging aspects of cactus (which would have braved our high desert climate nicely), we settled for oleander — a favorite plant used to landscape Southern California freeways — planted completely around the outside of the building and parking lot fence. Figures 4 and 5 show how well our mammoth 12-inch plants already conceal the building. Redwood slats were not provided here because it would have about doubled the price per foot versus standard chain link fence. (Figure 5 shows the asphalt walkway between the building and tower base — a real convenience during rainy weather.)

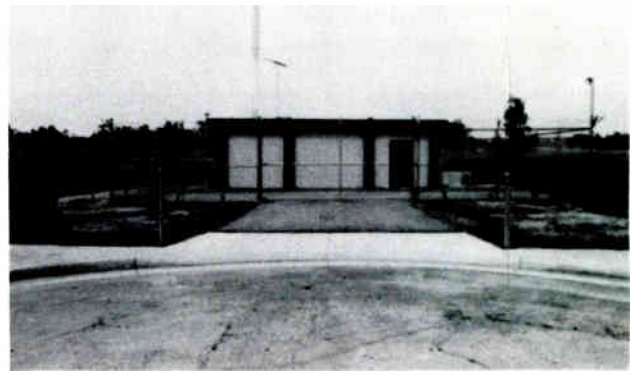


Figure 4 In this front view of the station, take particular notice of the culdesac curb and sturdy fence.

For security, the building and parking lot were completely encircled with fence (8-foot high, 11-gauge chain link with Y-type barbed wire, single arm). The building has no exterior windows, and only one exterior door (the door and frame are steel). These precautions are based on our experience and were also suggested by the city building department.

We had proposed to simply install curb and gutter with a driveway straight across the end of the street, but this was unfortunately rejected because it was not considered conducive to efficient street sweeper operation. A culdesac-type curb was required, which left a triangular-shaped apron on each side of the driveway. This particular maneuver required removal of some of the existing curb and gutter, and partial excavation of the street, at additional cost of course.

In any case, we were requested to plant, irrigate, and maintain the aprons. However, we hesitated to assume responsibility for city property. We proposed good-ole-wholesome concrete. But they suggested we color the apron's concrete green, to produce a grass-like effect. We said we would do it . . . if you don't mind a green curb (permanent temporary parking perhaps?), green gutter, green driveway, with the green aprons (the curb, gutter, driveway, and aprons would be poured at the same time, with one load, from one truck). So we again compromised: concrete aprons — uncolored.

Since we were required to run the primary electrical service underground from the utility pole to the building, we naturally buried a conduit for our telephone service as well (the trench was backfilled about a foot before laying the telephone conduit).

Water service was a minor problem because there was no water main in the street that ended at our driveway. The cost of digging up the street and installing a main, to which only we would be connected, didn't seem reasonable, so we applied for an encroachment permit.

This allowed us to run our water pipe in the city's easement (through our neighbor's yard) to an adjacent street. The only obstacle was his driveway, under which we drilled hydraulically. This proved to be a reasonable and cost-effective solution.

Our 400-foot sewer line connects to the main (described previously) which cuts across our property, and was installed before the ground radials. We felt that good-quality clay pipe would probably last as long as our ground radials.

Despite the fact that the FCC didn't feel it necessary to provide lighting for our 160-foot tower, we filed with the FAA for a top-mounted dual obstruction lights. Although we are not directly in the flight path for the local airport, air traffic near our tower is still quite heavy. This includes the Goodyear Blimp which refuels at Banning Municipal and has been seen only several hundred feet above the ground about half a block from our tower.

To reduce lighting maintenance costs, however, we installed *two* sets of dual obstruction lights (four separate 116 W lamps and housings), running two separate feed lines to a transfer switch at the tower base. When one set fails, we switch over to the other set. A rigger need only replace the lamps half as often. (Incidentally, for additional safety, we notified the airport immediately when we began tower erection.)

One final construction note is the importance of providing adequate outdoor lighting. In addition to the normal parking lot lights, and lights around the building, we included a set of three flood lights for the walkway between the building and tower base, and two flood lights in the tower base. Nighttime meter readings, or even maintenance after midnight, is very

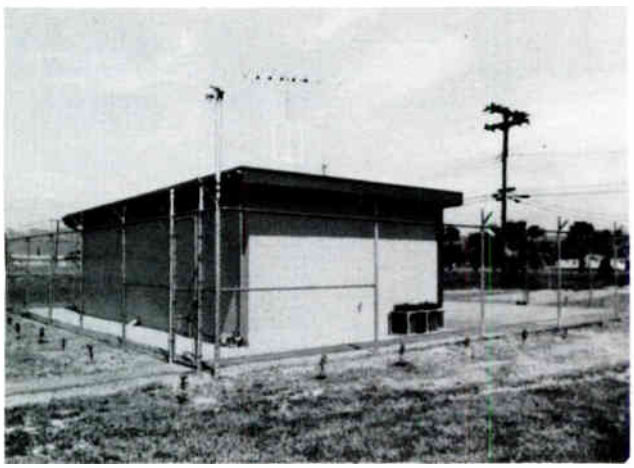


Figure 5 This building side view shows our oleanders, walkway to the tower base, and walkway flood lights (on fence post).

simple and safe. The cost of installation during building construction was really insignificant and the advantages are numerous.

The environmental planning and construction phase of station construction was definitely a challenge, since it involved problems and principles that station management normally does not consider or deal with daily.

The city, in its attempt to help make our installation acceptable to local residents, was never unreasonable, and was very open-minded. The building department worked very closely with us in designing the facility, and provided a wealth of good advice and free information.

We believe the most important factor in the station/city relationship is to be candid — completely open and honest. It paid off for us. BC

HAROLD ENNES

Digital Sight and Sound

A practical encounter with 8-bit encoding

Encoders are units which change discrete inputs into a combination of coded outputs. For digitized audio and video, the analog signal is first sampled and held, then fed to a quantizer, then to a logic system for conversion to a code.

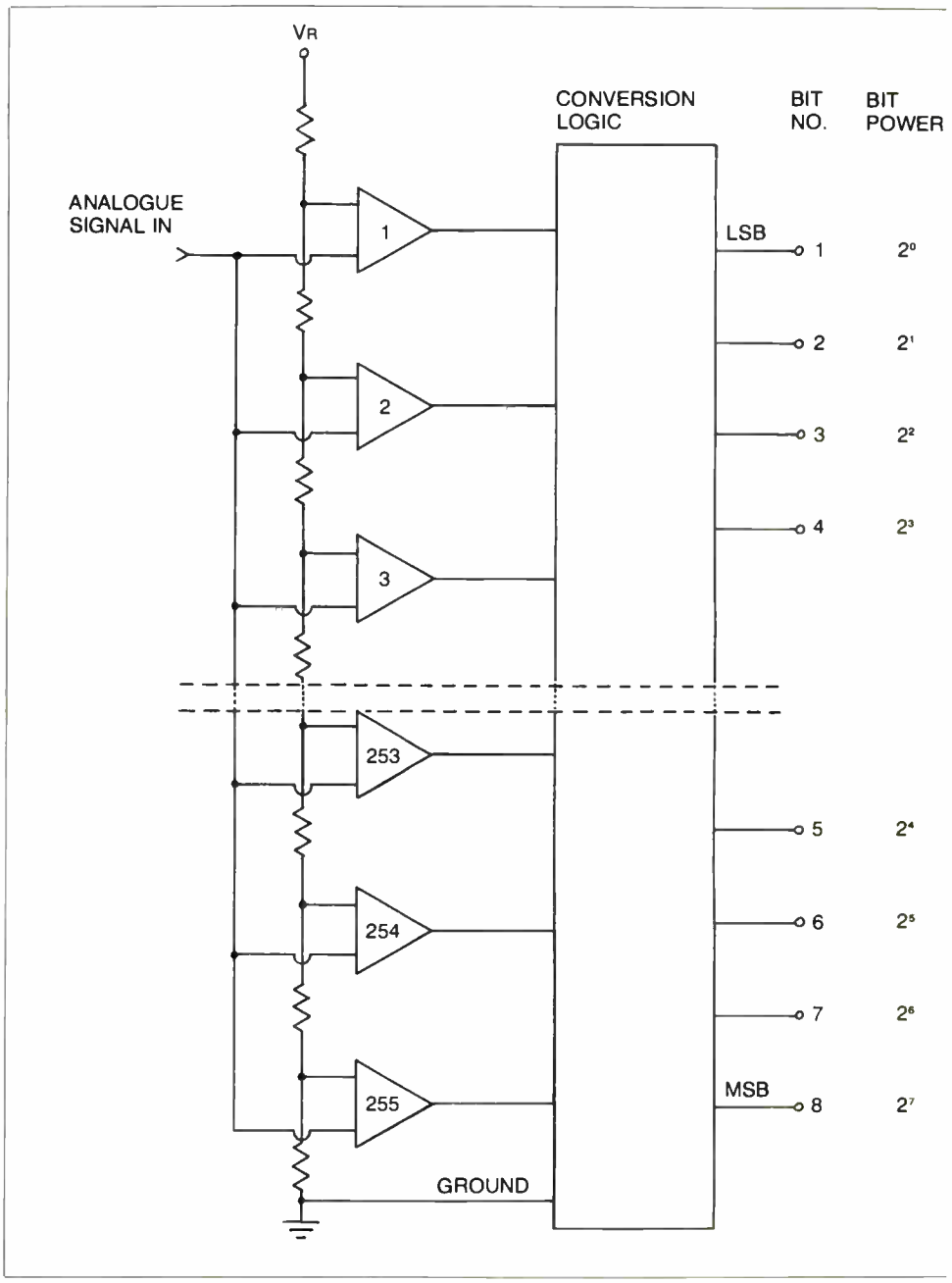
In our last session we examined a quantizer and logic for formation of a 3-bit code. (Review Figure 17, session 6, April issue.) A 3-bit code requires *recognization* of only 8 levels ($2^3=8$) which we *realize* cannot accommodate the *resolution* needed in practice.

We will now apply this principle to a practical 8-bit encoder such as employed in digital video systems.

Brute Force. Figure 21 shows the expansion of Figure 17 required for an 8-bit coded format. There are 255 comparators and a common ground feeding a 256 to 8 logic unit which supplies the 8-bit output. So you have 256 wires on the input and 8 parallel wires on the output of the logic device. The encoder is extremely fast, and has been termed a *flash encoder* or *brute force* encoder. This technique has been used for digital video, but the sheer magnitude of hardware requirements result in a very costly system. So let's take a peek at a system with much less hardware requirement, but a conversion time almost as fast as the brute force method.

Multiple-Comparison Subranging ADC. This is the most common form of ADC used today for digital video systems, so let's prolong our *peek* long enough to get a fair comprehension of the theory.

For the flash encoder of Figure 21, only one *look* is required to form 8 bits. In the system of Figure 22, there are two steps (two looks) with four subranges per



Harold Ennes, digital editor, is the author of several digital texts, and radio and television maintenance textbooks.

step. Thus the 8 bits are formed with just two looks, requiring very slightly longer conversion time than the brute force technique. Yet only 30 comparators are required in contrast to 255 comparators.

The input signal is first fed to a 4-bit multiple comparator ADC. The four output wires from the logic section bearing the four *more significant bits* split into two paths; one path is the output terminal strip and the other path is to a digital-to-analog converter (DAC). The DAC will be discussed in session 8. The DAC output is a low-resolution (16

Continued on page 76

NOTE: $2^1 = 2$ and $2^{-1} = 0.5$

So:

$2^0 = 2^1 \times 2^{-1} = 2 \times 0.5 = 1$

Any number raised to the zeroth power is equal to 1.

8-BIT CODE								
POWER OF 2	7	6	5	4	3	2	1	0
DECIMAL NUMBER	128	64	32	16	8	4	2	1
MAX COUNT (Binary)	1	1	1	1	1	1	1	1

= 128 + 64 + 32 + 16 + 8 + 4 + 2 + 1

= 255

= 256 levels counting 0.

Figure 21 A "flash encoder" uses 255 comparators with a V_R equal to p-p value of signal. Conversion logic converts 256 levels to 8-bits.

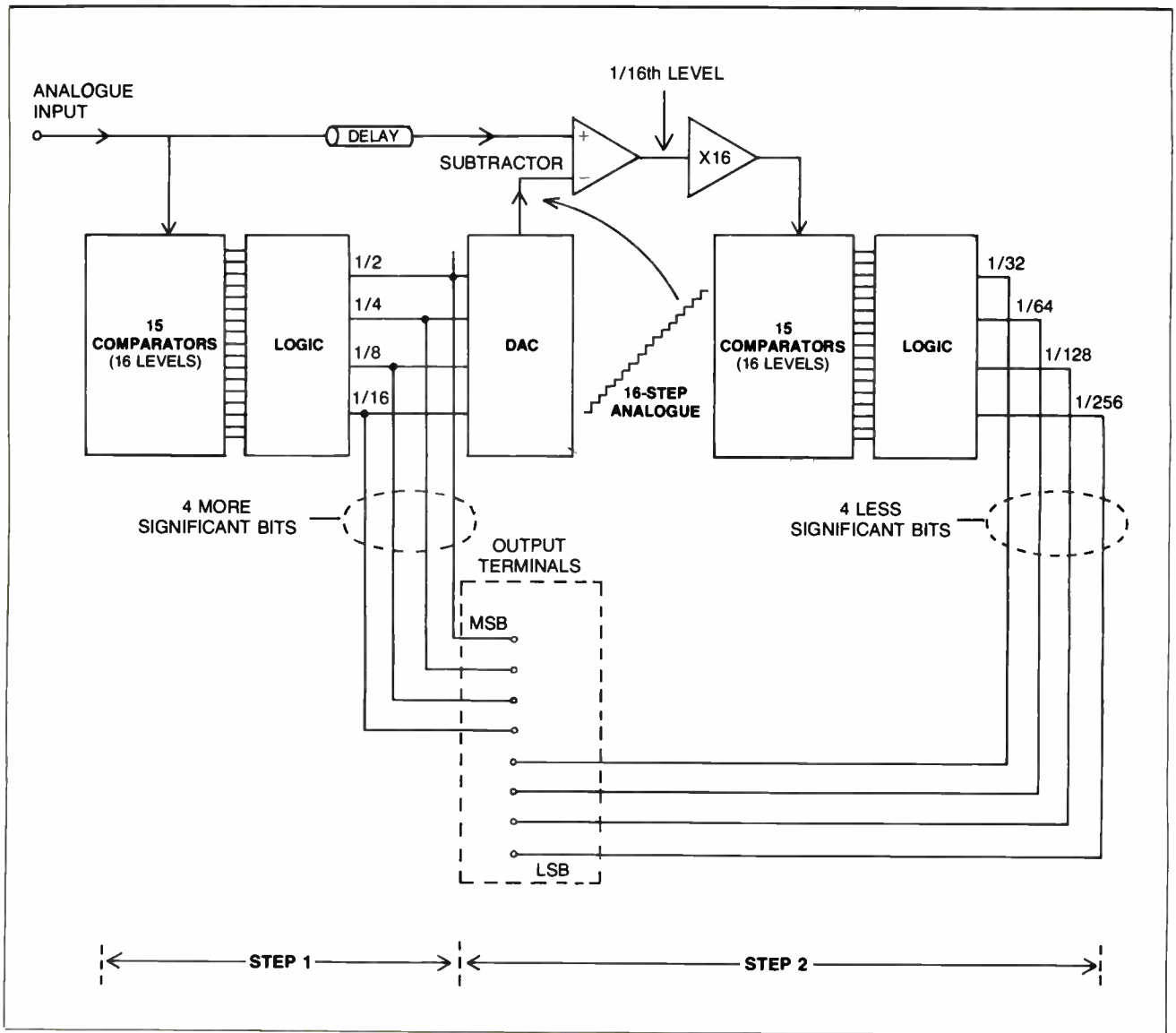


Figure 22 Multiple comparison subranging ADC. This principle is used in most digital video systems today.

step) analog video signal which is fed to the subtractor unit.

The other input to the subtractor is the original analog signal, appropriately delayed to match the conversion delay to this point. The difference (output) voltage is the error between the input video and the low-resolution video.

The subtractor output will be exactly 1/16th of the input signal, so this signal is amplified exactly 16 times and fed to another 4-bit (15 comparator) ADC. The four wires from the second logic output bear the four *less* significant bits of the 8-bit code. So we now have an 8-bit code representing 16 X 16 = 256 levels.

Commercial Subranging ADC. Figure 23 presents a simplified schematic of a subranging ADC employed in

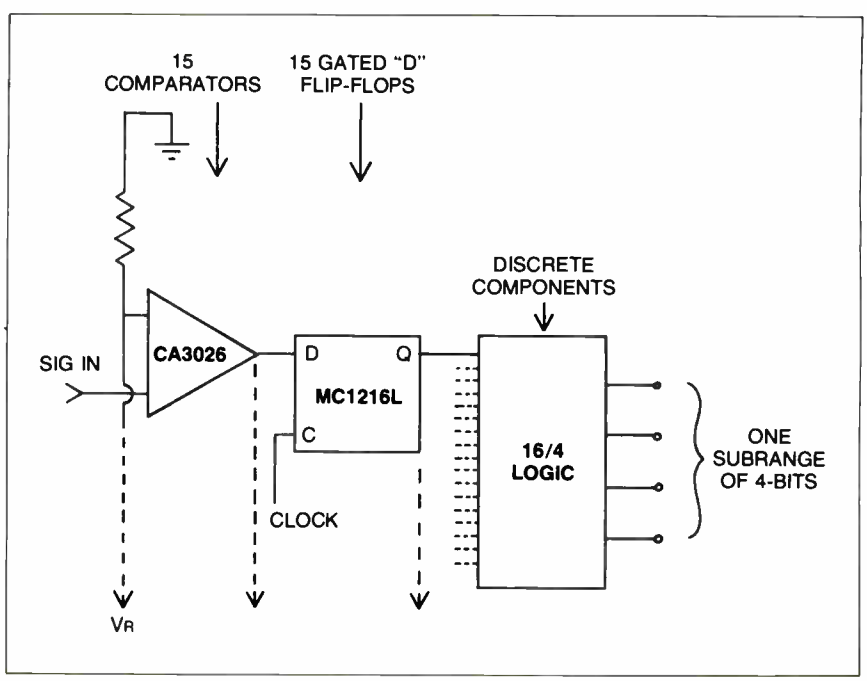


Figure 23 Simplified schematic of subranging ADC used in one commercial TBC.

one commercial digital time base corrector. Each subrange consists of 15 type CA3026 comparators, and 15 type MC 1216L gated "D" type flip-flops. This provides the *latch* for the *hold* interval so that the voltage does not vary for the entire sampling interval. On the next *look* (clock pulse), the memory capacitor has changed value and the new voltage is held for the sampling interval.

The 16/4 logic for each subrange consists of discrete components and works on the principle outlined for Figure 17 (session 6) for 3-bits. Each subrange in practice is a 16-input, 4-output function.

The Traffic Director-Successive Approximation. A form of ADC often found in digitized audio systems is called *successive approximation*.

You can visualize this technique as employing a traffic director who directs the flow of data by noting the size or magnitude of the data. He notes the size of the MSB first and tells him whether to go up or down, and duplicates this procedure for each successive bit. You will note from Figure 24 that this method, in common with the subranging ADC just described, employs a DAC as an intermediary between the binary output and a comparator input. The clocked gates are nothing more than AND gates with clock and signal voltage level inputs as in Figure 19, session 6. The *register* is a temporary storage device employing flip-flops as the *memory*.

The digital output is determined one bit at a time, starting with the MSB. Remember that the MSB of any binary word first occurs at half level. At the start (clock no. 1, Figure 25A) the varying analog input is first compared with ½ of the full scale voltage by setting the MSB in the register to 1. If the analog input is greater than this first approximation, the second most significant bit is also set to 1. This causes the input to be compared to ¾ of full scale voltage. Conversely (Figure 25B) if the analog input is less than the first approximation, the first register bit is reset to 0 while the second is set to 1, causing the input to be compared with ¼ of full scale voltage.

Note from Figure 25C that, in like manner, the analog input is compared with successively finer approximations until the LSB has been determined. In this technique, three looks are required for three bits. Eight looks would be required for eight bits, and thus is a little slow for the rapid sampling rates of digital video. However, the lower sampling rates of digitized audio are readily adaptable to successive approximation even with 14- to 16-bit words. It is an excellent compromise between circuit complexity, speed, and ability to produce high-accuracy codes. BC

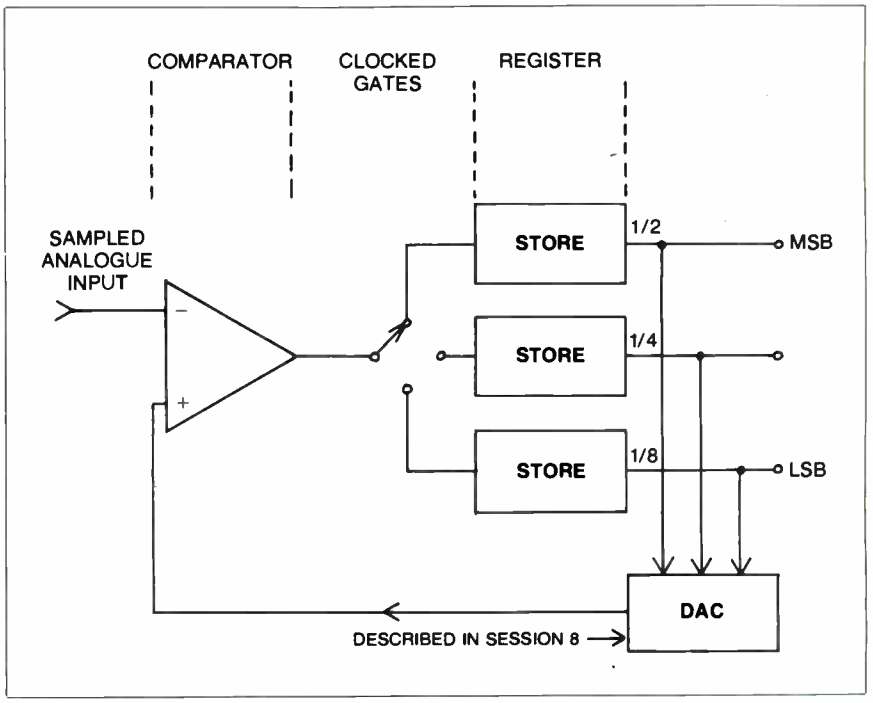


Figure 24 Simplified block diagram of 3-bit ADC employing successive approximation.

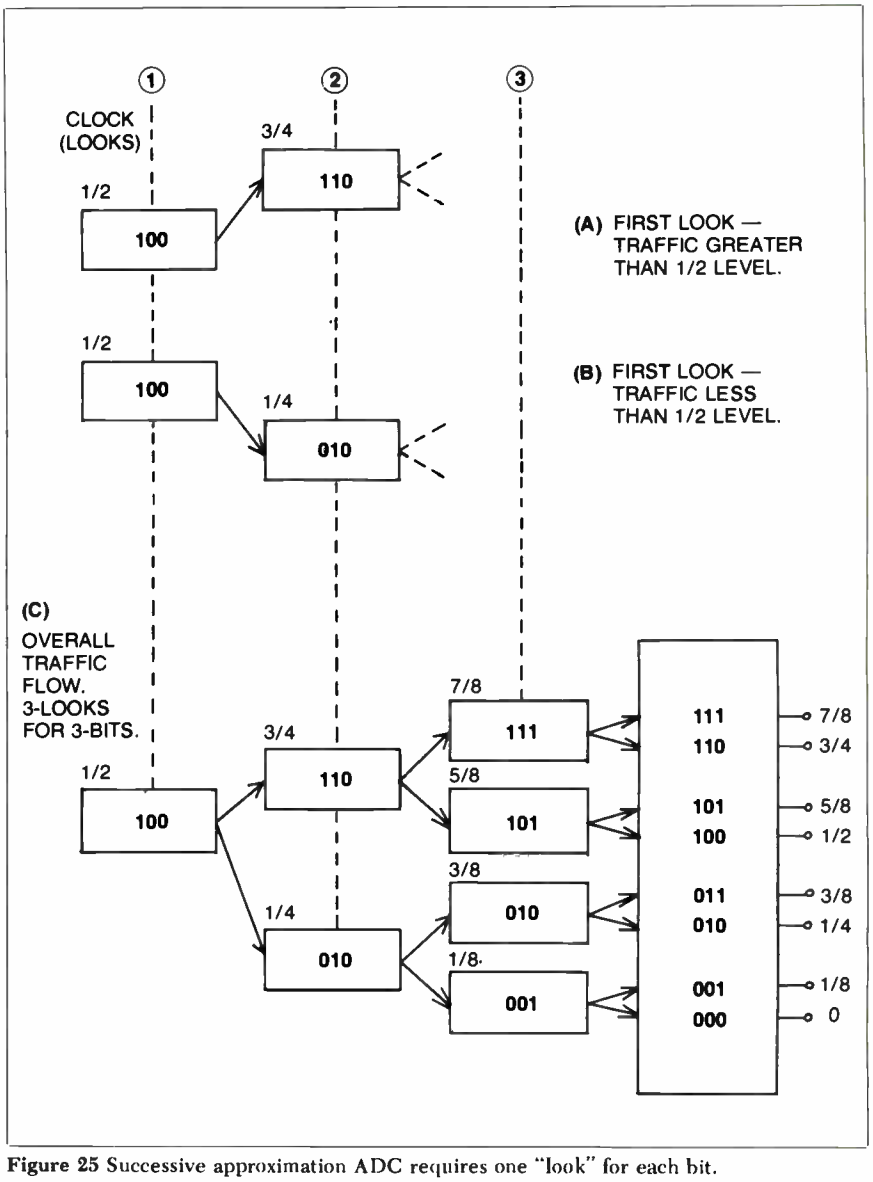


Figure 25 Successive approximation ADC requires one "look" for each bit.

Audio still coming on strong

For more information on products highlighted in this section, just use BC's *convenient Reader Service Card.*

After the deluge of new products hit the exhibit floor of the NAB convention this year, you might get the impression that the new product introductions for 1979 would taper off to a dribble. But it isn't working that way.

Contrary to popular belief, not every manufacturer exhibits at NAB, and even those who do often just miss developing a product in time to get it out of the lab and onto the exhibit floor. But equally important, the state-of-the-art is in a state of flux these days. And that translates to almost constant new product introductions.

Due to our concentration on video products in the Montreux Symposium coverage section of this issue, let's start this month's review with a number of interesting audio products.

Audio level indicator (Circle 106)
ESE — A new audio level indicator designed to simulate the action of a conventional VU meter but with superior dynamic characteristics is now available — the ES 214. According to ESE, the LED meter is 5 to 10 times faster in responding to complex waveforms than the mechanical meter without sacrificing the familiar meter movement. And apparent loudness changes between voice and music can be smoothed out with the quicker LED meter.

The company also says that short duration peaks are more accurately measured on the ES 214, thus enabling the operator to maintain more consistent levels.

Audio digital delay (Circle 115)
AMPEX — ADD-1 is a new audio digital delay designed as part of the Ampex mastering system, which includes the ATR-100 audio recorder with the new ½-inch, two-track head assembly; Ampex Grand Master studio mastering tape; and now, the ADD-1.

ADD-1 provides a delay of 16-bit digital or balanced-line analog input signals with 90 dB dynamic range. According to Ampex, with ADD-1 the recording professional has the capability of bringing 80 dB performance to the lathe.

ADD-1 offers standard features that eliminate changing tape speed and rethreading problems. The same setting can be used for any tape speed and the push of a button on the LED control panel changes delay times. Delay times can be pre-set in adddition to selectable delay times in 5 ms increments.

The system requires only two channels of audio, and eliminates the need for a special preview machine. ADD-1 is totally compatible with normal and half-speed cutting. It can be used to preview direct-to-disc or digital recordings; ADD-1 features transformerless input/outputs, with both serial and parallel multiplexed digital input and output ports.

Dynamic sibilance controller (Circle 116)
ORBAN ASSOCIATES — The model 526A Dynamic Sibilance Controller performs effective and subtle de-essing of vocal material in order to reduce excessive sibilance to natural levels in recording and broadcast applications.

The 526A features a threshold-tracking circuit which maintains a constant level of de-essing in spite of input level variations. A set of lamps monitors both the de-essing action and the output level. The input is a transformer-coupled and will accept mike or line levels through a built-in XLR-style connector. Output is transformer balanced and floating.

Boom-mike headset (Circle 108)
TELEX — A new professional boom-mike headset for live sports broadcasting has been introduced by Telex. The

Sportscaster II is effective for broadcasts from a press box, interviews on the side lines, or reporting from the playing field or track.

The Sportscaster II (model CS-91) features an omnidirectional broadcast-quality dynamic mike which transmits the announcer's voice over crowd and background noise. An in-line push-to-cough switch lets the announcer mute the mike when needed.

The circumaural cushions of the binaural headphone receivers attenuate noise to let the announcer monitor the program in one ear while he receives cues in the other. Extra-comfort socks for the ear cushions are included. A snap-on foam-filled headband cushion provides ventilation during prolonged periods of use.

Amplifier/speaker (Circle 114)

RAMKO RESEARCH — The model MAS-1 is an all-purpose utility amplifier, complete with speaker and headphone jack, which is designed to monitor the many audio fees found in a radio or television station.

Features of the MAS-1 include a 20k balanced bridging input, 1 watt RMS audio amplifier, 3"x5" PM speaker, headphone jack with speaker cut out, 12-position input select switch, and level control.

According to Ramko, the MAS-1 is ideal as a desk-top monitor for station personnel, or as a monitor system and headphone amp for a newsroom or auxiliary studio.

Controller-timer (Circle 117)

SHAREPOINT SYSTEMS — Upstart™ is a compact tabletop controller-timer that, according to the company, makes cartridge production easier, faster, more accurate, and more consistent.

The new controller-timer, in sequence, will start and preroll turntables or reel-to-reel tape players regardless of start-up time; start and preroll cartridge recording machines; noiselessly switch on the audio; digitally time the cartridge while separately timing into vocal and time to outro; and remove audio at the end of the program.

Upstart, which is Sharepoint's first product, minimizes duplication of effort in repeated running of the cartridge for timing after it has been produced. And, it avoids manual cueing errors.

Bulk eraser (Circle 118)

FIDELIPAC — The new Blank-IT is a hand-held bulk eraser which the company says has a longer "on" duty cycle and higher magnetic strengths than in other available units.

Blank-IT includes a high mu core cap-

able of erasing magnetic tape of all formats, including audiotape of up to 1 inch, computer tape, and both VHS and Beta videocassettes. Thermocouple protected, the unit shuts off when its duty cycle has been exceeded. After a short cooling period, it is operable again. Duty cycle for the unit is five minutes on, 15 minutes off.

In addition to allowing the immediate reuse of tape by eliminating previous program material, Fidelipac says Blank-IT eliminates the need to run tape through a recorder for full erasure, thus reducing motor and eraser head wear.

Video editing system (Circle 121)

MACH ONE DIGITAL SYSTEMS — The Mach One video editing system is now capable of switching between and editing 24, 25 and conventional (NTSC) 30 frame/second formats.

The 24 fps format, with a scanning frequency of 655 lines of resolution, enables edited tape to be directly transferred to 35mm motion picture film for theatrical release. The 25 fps format has a scanning frequency of 625 lines, and allows editing of alternative phase format tapes (PAL) for European broadcast transmission.

The Mach One editing system also features the ability to switch, with one keystroke, either drop frame or non-drop frame time code.

AM peak limiting amp (Circle 113)

GREGG LABORATORIES — The Series 2640 AM peak limiting amplifier is designed for use in AM broadcast transmission applications as a final peak limiter to feed the transmitter and effectively maintain maximum legal modulation with maximum loudness.

Distortion cancelling techniques and asymmetrical peak control provide for minimum audible dynamic distortion with highly equalized program material necessary to correct for losses found in typical AM radios, while eliminating out-of-band components which cause splatter to adjacent channels.

The 2640 must be interfaced with a form of gain control and equalization, allowing flexibility for separate studio/transmitter locations. The Gregg Laboratories Series 2530 is designed for complete capatibility.

Features of the 2640 include low-noise, precision instrumentation circuitry; total modular construction with plug-in electronics; variable limiting slope; and four sequential LED indicators on negative and positive limiting.

Turntable (Circle 119)

RUSSCO — The Mark V is an instant-starting, vari-speed turntable requiring less than one inch back cue. Speeds are precision variable ±10% at 33 or 45 RPM. The Mark V features remote start and stop; digital speed readout; wow and flutter under .05%; rumble (RRLL) mono, −63 dB, stereo, −57 dB; removable tone arm plant, and line voltage 120 or 240, 50 or 60 Hz.

The new Russco tone arm is precision machined of rugged aluminum with ball-bearing lateral pivots and jeweled vertical pivots. Tracks at 1 gram or less, with built-in stylus pressure scale. The tone arm mounts easily in the same holes as Micro-Trak and Shure M32.

Continued on page 80

PRODUCT PREMIER

Time code generator (Circle 191)
ELECTRO AND OPTICAL SYSTEMS — The Elector Mk III is a completely portable SMPTE/EBU time code generator which measures just nine inches long and weighs less than three pounds. And it can run for up to 16 hours at a time on rechargeable batteries.

The TCG Mk III is as versatile in the field with its belt harness carrying case, as it is inside the studio with its optional desk-top stand, utilizing its battery eliminator. Available with an integral play-speed time code reader, the Mk III is offered in NTSC, PAL, and SECAM configurations.

Audio editing mixer (Circle 192)
CEZAR INTERNATIONAL — A new editing mixer designed to facilitate and expand audio production capabilities of VTR editing systems is now available from Cezar.

The AUDIO BOX accepts two audio outputs from a playback VTR and it delivers two audio lines to a record VTR providing switching and mixing functions; these functions allow Audio 1, Audio 2, or a combination of both, to be fed to either or both audio inputs of the record VTR. A mike input and an internal calibration tone can be injected into Audio 1 or Audio 2 input lines.

Two high-quality VU meters and an audio monitor with built-in speaker make up a monitoring package which permits record level calibration and precise playback level control as well as convenient sound verification. This package is also available in a stand-alone configuration.

Editing systems (Circle 190)
DATATRON — A complete line of editing systems for every application and budget requirement is available from Datatron, with the newest product in the line being Datatron 2000.

The 2000 is an all-new third-generation videotape editing system with many outstanding features. These include distributed processing; interactive color CTR operator interface; continuous record VTR roll capability; floppy disc edit list storage; user bits; and more.

Other editors available from Datatron are Tempo 76 and Editmate III. Tempo 76 combines SMPTE time code and control track technologies in one unit, and it features test editing, extended memory, system debug, and expanded interface capability. Editmate III is a full-feature control track editor with edit decision listing capability. This unit is also available in an editor-only version (Editmate II) and an edit lister-only version (Editmate I).

Digital effects options (Circle 110)
MICRO CONSULTANTS (MCI/QUANTEL) — Multiple input options for the DPE 5000 digital video effects system were introduced at Montreux.

Designated DPE 5000/PLUS, the new options permit digital manipulation to be performed on three, four, or five channels simultaneously, giving television producers a wide range of effects for production sequences.

The basic option, housed in a 48-inch-high enclosure, includes two effects units connected to the master DPE 5000, yielding a total of three channels. One or two additional effects units, providing a total of four of five channels, may be added to the system at any time.

Each effects unit is a complete frame-store system dedicated to a single input. The multi-channel systems operate from a single control panel, but each input may be keyed into any other input.

ac

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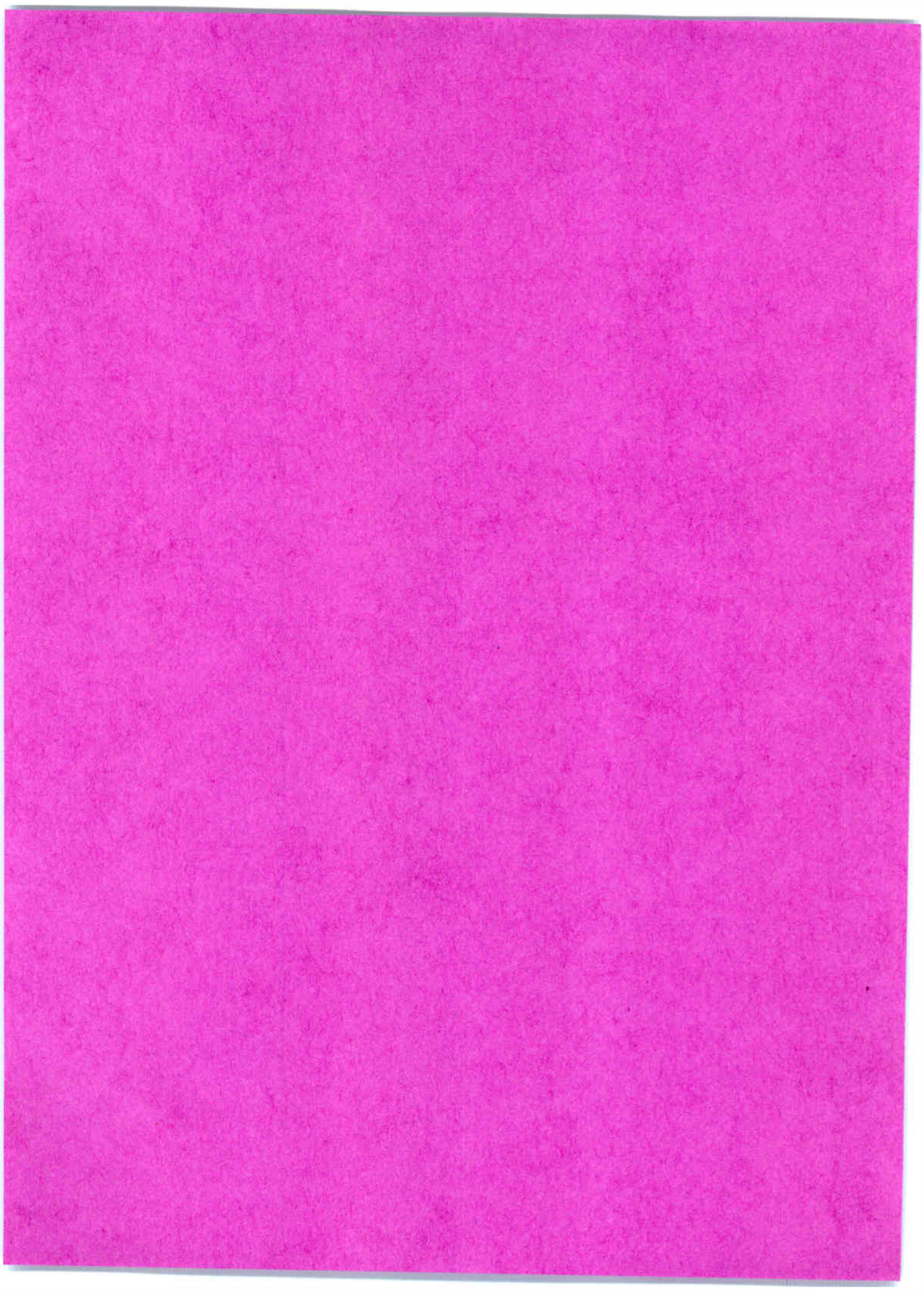

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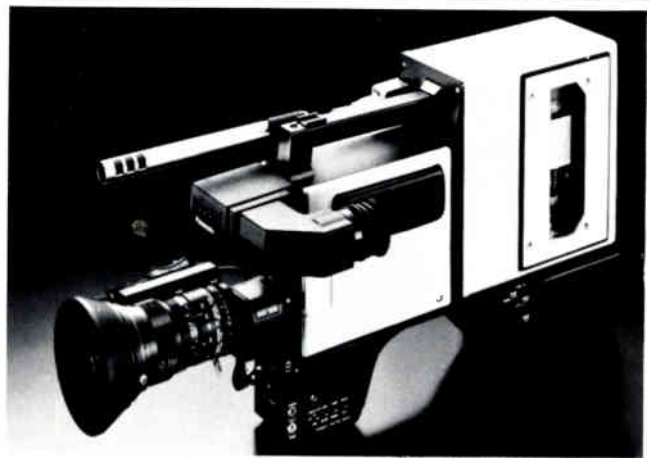
Combo Cameras Are Off and Running
Glen Pensinger
Despite the lack of standards, combo cameras are selling. Here's an update on system similarities and differences, including the new ¼-inch versions, and comments on how the movement will affect component television.



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BC Staff
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Cover—New technology is improving the performance of audio consoles. For a look at the trends in console design, see the article beginning on page 46. *(Photo by Larry Titus)*

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The Sony BVE-5000 editor and BVH-2000 recorder. Two extraordinary machines created for a single and simple purpose:

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"How long will we be down this time?"

Thanks to the Sony editing system, this scenario is rarely, if ever, played out in leading production houses like Broadway Video, Videoworks, JSL and a host of others currently using it.

The reason?

"Sony belongs to a small group of manufacturers that still think of broadcast equipment as a product, not an experiment," says Frank Herold,

chief editor of Videoworks in New York.

"When you take a piece of Sony equipment out of the box and plug it in, an amazing thing happens. It works!"

And keeps working. Faster. Easier. And more precisely than any other system.

THE MOST INTELLIGENT CONVERSATION YOU'LL EVER HAVE WITH A MACHINE.

Today, there are any number of people trying to compete in this, a communications industry, with machines that can't even communicate with each other.

An irony not lost on all those who have invested in the equipment you see here.

All elements of the Sony editing system have been programmed to speak to each other fluently. And to understand each other perfectly. With absolutely nothing lost in translation or transmission.

You'll find that they're geared to speak equally well with Sony's Beta® and U-matic® recorders. Not to mention with you.

The system's high-resolution CRT screen provides clear, easy-to-follow instructions. Asks questions when you haven't been explicit enough. And delivers the most comprehensive, and yet, comprehensible display in the industry.

A MYRIAD OF FUNCTIONS WITHOUT A MYRIAD OF BUTTONS.

The BVE-5000 control panel has the capacity to make an editor feel like an editor, not like a typist.

Strikingly short of buttons, the system is in no way short of features. Offering dynamic tracking. Variable speed search. Full Biderex Jog. And Vertical Interval Time Code.

Each of which, like everything else in the Sony system, helps to push profits in a rather vertical direction.

For more information contact Sony Broadcast in New York/New Jersey at (201) 368-5085; in Chicago at (312) 773-6045; 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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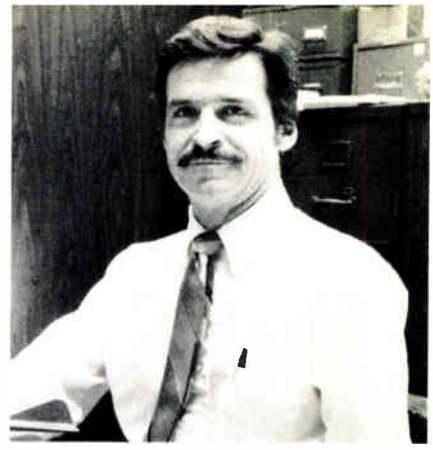
ON-THE-AIR

RON MERRELL

The cost of doing (movie) business



Contrary to popular belief, growth in the new electronic media has not fostered a concurrent surge in Hollywood theatrical film production, according to a new 253-page report from International Resource Development Inc. (IRD), a market research firm based in Norwalk, Conn. This unexpected phenomenon is primarily due to the astronomical rise in production costs over the past several years.

The cost of an average movie has jumped from $4 million in 1976 to close to $12 million in 1982. While revenues to the studios from pay cable, videocassettes, video discs, and other new distribution media are rising steadily, they are still relatively insignificant when compared to this escalation in costs.

Ironically, it was the lure of profits from the pay cable industry that may have been responsible, at least in part, for the dramatic increase in film production expenses, according to the IRD report. The spectacular growth in pay TV subscribers essentially provided Hollywood with a blank check for spending on films in the late 1970s, resulting in losses for the industry when revenues from the new electronic media weren't quite as large as they had been guesstimated to be. IRD predicts that it will be three to five years before the additional revenues from the distribution media will contribute to an increase in theatrical film production.

In broadcast television, made-for-TV movies—and especially the mini series—are receiving special treatment by the networks, who have come to realize that these films deliver almost twice the value per rating point that theatrical films shown on TV do.

With the exception of some very vertical-interest cable offerings, it's not easy to distinguish between programming being offered by the various distribution systems. Even the proposed DBS programming sounds like more of the same. But while cable TV has not been able to afford the expensive productions so typical of broadcast network television, their lesser ventures are pulling ad dollars off the top.

Broadcast television now has more than a few years of experience at successfully attracting the American TV audience, especially when it airs a mini-series. If the point is taken, we can look forward to more unique series. However, we seem doomed to endless start-ups of shows bound for oblivion.

Pulling together

Who needs whom? James H. Rosenfield, executive vice president of CBS/Broadcast Group, recently told affiliates, "It takes two to be number one." It wasn't a play on words. Rosenfield was talking about how to "remain the single most desirable channel for our viewers to choose, no matter how many alternatives are offered."

On the one hand, Rosenfield recognizes the impact of localism and applauds it, but he insists that full cooperation is needed: "As we successfully communicated to many of you earlier this year, the network's performance depends on your support, especially for new programs trying to establish an audience. I have been delighted to learn that in the first quarter of this year there has been a significant reduction in the number of one-time-only preemptions. We fully appreciate your occasional need to meet local concerns you know so well. But support for our schedule on your part is crucial, particularly when you consider the incredible costs we bear in developing and scheduling new programs."

Leading in the ratings, CBS has a message worth considering. But more and more stations understand that attention to localism sets them apart from the other distribution systems in both image and profits.

Bucking the marketplace

The Federal Communications Commission has been asked to modify and reinstate three policies which the NAB says would ensure that broadcasters will provide local service.

The NAB told the FCC that the elimination of the suburban community policy, the Berwick doctrine, and the de facto reallocation policy is in basic conflict with a provision of the Communications Act. In its filing, the NAB also objected to the commission's redefinition of "community" as an inadequate and unworkable substitute for the policies.

Congressional intent, NAB stated, was to "ensure distribution of locally oriented broadcat service, throughout communities of all sizes, in the face of market forces working to concentrate such service in heavily populated areas." It said that while the agency has asked Congress to eliminate the provision, Congress has not done so and the commission must adhere to the statutory mandate. Continuation of these policies, perhaps in modified form, is needed, NAB said, to enable the FCC to ensure compliance with the statutory requirement of local broadcast service.

The FCC was not instituted for broadcast program control. So while it has garnered more power in that direction than it was intended to have, the technical aspects of its original intent have been diminishing. Surely the industry would want to distribute a locally oriented broadcast service. But let's not go asking the FCC to step into an area of programming where they're not needed.

What's in a name?

At the NAB convention, the Society of Broadcast Engineers announced that it was changing its name to the Society of Broadcast and Communications Engineers. The action followed a survey of the membership, but was never put up to a membership vote.

Flack is showing up now by some members in the form of petitions for a membership vote. If the decision is reversed, the Society, whatever it's called, would be hard pressed to explain the presence of their new president, Dolye Thompson, who is in charge of the engineering side of The Weather Channel. The Weather Channel is a most sophisticated operation. But as has been pointed out, and despite Thompson's long broadcast experience, this is a *cable* service.

Other associations have found, to their dismay, that the total membership will never totally be in agreement on policy matters. Their survival was based on listening to all sides.

In any case, the broadcast engineer will never be swallowed up by any association, because collectively they represent the technical integrity of broadcast communications. BC

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Circle (6) on Action Card

WHMM sets first in broadcasting

In April, the National Symphony Orchestra of the Nation's Capital, under the direction of Mstislav Rostropovich, went on a good neighbor tour of the Far East, touring Japan, Taiwan, the Phillipines, Hong Kong, and Korea. While Rostropovich and the Symphony were adjusting to jet lag on the other side of the globe, Avon Killion, program director at WHMM-TV in Washington, D.C., received a telephone call from Adam Chang of the Television Academy of Arts & Sciences of Taiwan.

Chang had a brainstorm. Why not telecast the National Symphony Orchestra live from Taiwan? WHMM-TV certainly had the technology to take on the job; all they had to do was prove it would work. This telecast would be an all-time first in many respects. It would be the first time a television program would be sent to the U.S. live from Taiwan, and the first time an American orchestra on tour overseas would have a concert telecast back to the United States. Additionally it would provide the viewing audience an opportunity to see its own symphony orchestra performing live, which ironically many have never seen simply because they can't afford it.

And so it was that WHMM-TV, the first black-owned and operated public television station in the United States, made broadcast history by launching into a new realm of TV: live international broadcasting. On April 24th WHMM-TV viewers saw "Friendship Through Music" spread across the backdrop of the Sun Yat-Sen Memorial Hall in Taipei, Taiwan—live via satellite.

"WHMM-TV was very pleased for a number of reasons that the Television Academy of Arts & Sciences of Taiwan came to us, a black television station, to air the program," affirms Arnold D. Wallace, general manager of WHMM-TV. "It was a very tricky high-tech endeavor: the program was transmitted by satellite from Taiwan to San Francisco, then retransmitted on another satellite to WHMM-TV. There were a few technical problems, but overall it went very smoothly. It really gave Channel 32 the opportunity to prove that it has that high-tech capability and knowhow to broadcast a program live from any country on this planet. This alone has tremendous implications for international programming and exchanges."

This last point is perhaps the most important. It is an example of WHMM-TV's mission to be a funnel for both the poor and minorities in Washington, D.C., and on a national and international level as well. "Not only does it give the voice of the Third World a chance to be heard, but it gives American viewers a different and additional viewpoint that conventional media outlets leave out," adds Killion.

In the United States, the American public gets many varying viewpoints on international affairs. However, there is one important link missing in the chain of international information flow: the people who are directly affected by events or who make the events happen have heretofore not been heard on either commercial or public television. There are many reasons why this hasn't occurred, but primarily it is because these people and nations have, in effect, been denied access to the tools of communication due to high cost and a lack of trained personnel.

In a very recent report by the National Association of Broadcasters, they concluded that the American viewing audience is not happy with the programming on commercial networks and is turning more and more to public television. An ever-growing vacuum is being created by the lack of good network programs, so public broadcasting must respond to this need.

WHMM-TV is attempting to do just that. Located in the nation's capital, which is an internationally flavored city, Channel 32 has easy access to all the embassies. "If we were broadcasting from Iowa, it would be impossible to do what we're trying to accomplish," explains Wallace. "If the Symphony had been broadcast from Taipei to Iowa, it just wouldn't have been as significant as it is coming from Washington, D.C."

Associated with Howard University, WHMM-TV can take advantage of the international atmosphere on the campus. Many of the leaders of the Third World, particularly Africa and the Carribbean, have been educated at Howard and frequently come to the school to discuss world politics. This international atmosphere has created and developed an important dialogue about international affairs and how they affect our lives in the U.S. Issues are examined in light of the information as it is presented from all sides—the American viewpoint as well as that of other countries.

Wallace wants the "American public to get to know the rich, cultural diversity of other countries. International programming can make tremendous contribution to our national fiber by offering the means for a better understanding among nations—our problems, desires, concerns, and creativity. This, I believe is a lofty but quite realistic goal."

Stations enter satellite age

More than 500 commercial television stations out of a total universe of approximately 800 stations can now be accessed by satellite for program delivery, according to results of an extensive survey conducted by Wold Communications.

The list of 500 stations include 350 affiliates of ABC, CBS, and NBC, plus about 150 independent stations, according to Gary J. Worth, president of Wold Communications.

"In the 50 largest TV markets, which deliver 66 percent of the nation's TV households," Worth said, "the penetration has reached 100 percent." About 80 percent of the stations in these 50 markets, he explained, have co-located earth stations and the remainder may be reached through local common-carrier links.

Many TV stations, Worth said, already have two or more earth stations (to simultaneously access more than one satellite). Recent announcements by all three major television networks of plans to greatly expand satellite distribution to their affiliate stations over the next 12 to 18 months will increase antenna farms at some stations to three or four dishes, he said.

Groups oppose 'airborne' ban

The National Association of Broadcasters and several other media organizations have asked the Federal Aviation Administration not to implement a rule that would ban the media from covering news events from the air. The agency is considering amending its provisions restricting flights over a disaster site or the site of any other event of public interest.

As an alternative, NAB suggested that newsgathering aircraft entering a restricted area be required to maintain contact with a designated flight service station or other specified facility. This radio communications link, NAB stated, will enable officials on the ground to advise the aircraft instantly of developments necessitating changes in their flight plans.

The association pointed out that "the

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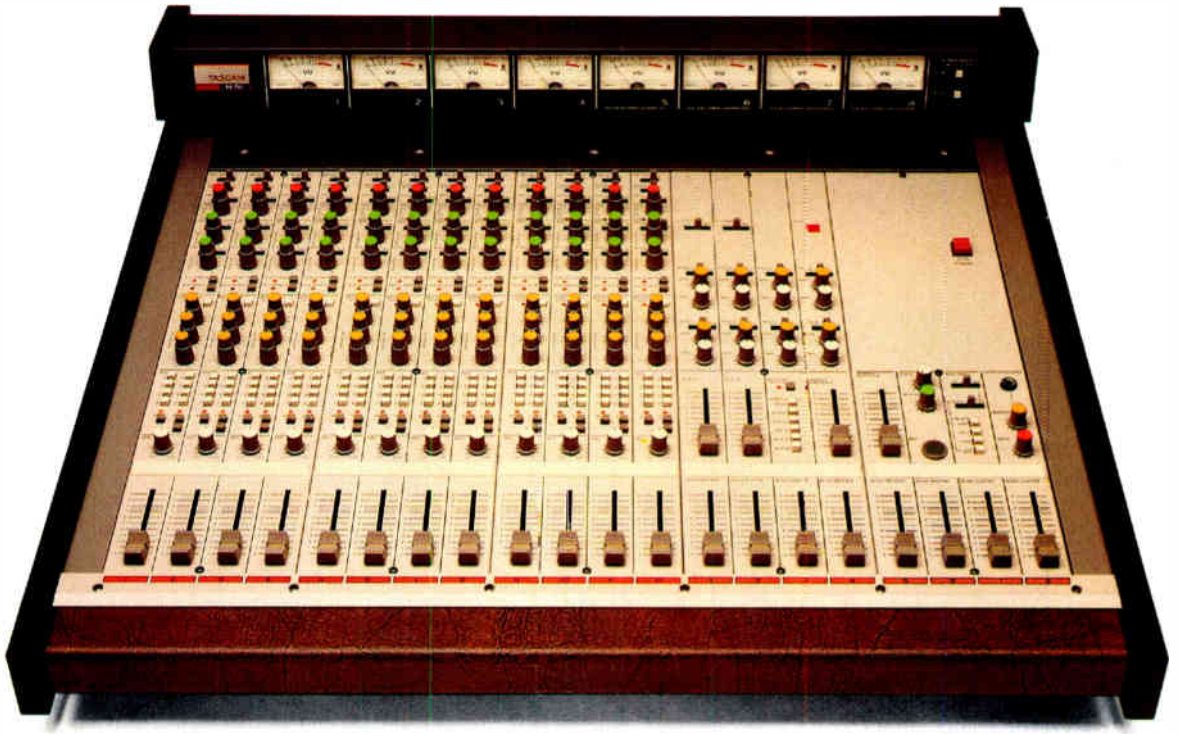

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TASCAM's M-50 is the compact 12x8x8 mixing console audio production professionals have been looking for. With its multiple inputs per channel, plus assignable submixes and monitor sections, you get the flexibility to get the job done in all production modes—record, overdub and remix or assembly.

By including direct boxes to accept instrument inputs, phono pre-amps for replaying effects library or reference disks and stereo solo "in place" permitting monitoring of individual channels or whole portions of a mix, you get what you need. High performance functions as standard equipment.

The M-50 is reliable and fast, with extremely flexible signal routing. A valuable asset to the ad agency production room, the small video production/post-production company, the multi-media production facility, and in many other applications.

Because the M-50 includes Solo and PFL, multiple auxiliary mixes, plus balanced and unbalanced inputs and outputs, it is also well suited to final film assembly, small club P.A., and broadcast with clean feeds provided.

TASCAM's extensive design and manufacturing experience in professional recording equipment made it possible to create the M-50. Compact and affordable, this modular 8-track mixer is within the reach of any serious professional.

For additional information, see your TASCAM dealer, or write TASCAM Production Products, 7733 Telegraph Road, Montebello, CA 90640, (213) 726-0303.

TASCAM
TEAC Production Products

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It takes a very tough tape to withstand edit after edit through today's VTR equipment and still deliver a crisp, clean playback image.

And tough is exactly what new Scotch® 480 one-inch video tape is.

A special coating formulation on Scotch 480 means you no longer have to worry about problems like stiction.

In fact, during computer editing, 3M lab tests have shown 480 is capable of delivering over *1,000 edits from the same preroll point,* with no significant reduction in playback quality.

And in today's tough video production environment, that kind of durability can mean a lot.

Scotch 480 is further proof of why 3M is the leader in professional use video tape. And why we sell more one-inch tape for professional use than all other manufacturers put together.

For a free brochure on new Scotch 480 call 1-800-328-1684 (1-800-792-1072 in Minnesota). And find out more about the tape that's as tough as today's editing equipment.

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ability to view, photograph, and report on a site from the air is essential to the news coverage of most disasters and many other newsworthy occurrences—events on which it is often vital that the public be kept informed." Without such coverage, it added, the media would lack the ability to gather, first hand, such critical information as the scope of a civil disturbance or the extent of a chemical fire.

Joining NAB in its filing were CBS Inc., National Broadcasting Company, Radio-Television News Directors Association and Society of Professional Journalists/Sigma Delti Chi.

Mutual going all stereo

The Mutual Broadcasting System has completed the first phase of its stereo conversion process one month ahead of schedule, which has enabled 300 radio stations nationwide to have a minimum of three simultaneous program choices including an on-line capability for dual-channel stereo, Gene Swanzy, senior vice president for broadcast and communications services, announced.

Phase 2, which includes the continuing conversion of affiliated stations' electronics for stereo reception, will now proceed with additional stations being equipped. Also, many stations will be equipped in this next phase to receive still more channels, which will carry additional program offerings.

Affiliated stations in the Pacific Time Zone are already receiving Mutual multicasting signals via Westar IV, Transponder 1D. The switch from Transponder 2D has no operational impact and, in fact, was accomplished by flicking a switch. There has been no interruption of service.

"We are very proud of the speed and the expertise demonstrated by our technical staff in beating our timetable for Phase 1 of stereo conversion," Swanzy said. "The changeover to Transponder 1D on the West Coast makes available channels on both Transonder 1D and 2D for additional programming, and gives Mutual a new measure of system-wide adaptability. It will have no impact on our audio fidelity or our multicasting service, but it does promise more programming on more channels in the future."

ARI comes to Philadelphia

Blaupunkt's ARI® (Automatic Radio Information) service will be introduced to the Philadelphia metropolitan area in September.

Hans-Peter Bauer, general manager for Blaupunkt automotive sound systems, said that addition of this second market "represents the next logical step in establishing an East Coast traffic-information corridor." ARI was introduced in New York on April 12.

ARI is Blaupunkt's exclusive subcarrier technology which enables selected FM radio stations to provide motorists with timely, specific traffic bulletins for "travel zones" within a metropolitan region. A driver approaching a city from the north, for example, would not receive reports for southern suburbs.

ARI-equipped Blaupunkt car radios draw traffic reports to the driver's attention by increasing volume to a preset level only during those reports. As long as a driver is tuned to the ARI broadcast station, the information will be received—even if the radio volume is off or if a cassette is playing.

Blaupunkt currently is studying the natural traffic flow patterns in the

Continued on page 16

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FUJI

Circle (9) on Action Card

Philadelphia area to establish travel-information zones. It will also identify FM broadcast stations which best serve those areas in terms of both programming and signal.

Additionally, Blaupunkt will establish an ARI traffic-information station in central New Jersey to "bridge" the New York and Philadelphia markets. By the end of 1985. Blaupunkt intends to have ARI service in the top 20 U.S. markets.

Broadcast show set for Toronto

The annual Broadcast Equipment Trade Show and Conference sponsored by the Central Canada Broadcast Engineers will be held at the International Trade Centre near the Toronto International Airport October 2-4.

"Unresolved delays, differences, and demands placed upon the CCBE by the Canadian Association of Broadcasters made it necessary for the CCBE to proceed on its own to ensure that a successful annual show would continue," said William Onn, exhibits manager.

While the Constellation Hotel has been designated as the official hotel for the event, a free shuttle bus service will be provided for all hotels along the "Airport Strip" both to and from the International Trade Centre.

"Exhibitor support of the CCBE's move in this direction has been most encouraging," Onn said. And he suggested that "while another 20 percent increase in space has been provided in 1983, exhibitors should ensure that the space they require is reserved as soon as possible."

Business Hotline

VICA ASSOCIATES—Vica Associates of Stone Mountain, Georgia, has announced their appointment as the exclusive U.S. importer of the new Polar Video Ltd. S.A.G.-101 safe-area generator. The S.A.G.-101 is designed primarily for use with ENG cameras as it is supplied in a strong metal box which can be fitted to the side of the camera and routed in series with the viewfinder, therefore generating the necessary safe action area (5% all round) directly in the viewfinder (superimposed on the video you are shooting). Detailed information and engineering information is available from Vica Associates, 4622 Eberline Court, Stone Mountain, GA 30083; telephone (404) 292-7506.

A.F. ASSOCIATES—AFA Systems Division recently delivered a new "mini-mobile unit" built for the ABC-TV Network. The completed unit, which is 29 feet long and contains approximately 200 square feet of interior space, will be used by the network for entertainment production in the New York area, including soap operas. The unit contains three Ikegami HL 79 cameras, two Ampex 1-inch portable VTRs, a Grass Valley switcher, and a Yamaha audio console. An on-board power generator will enable the unit to operate completely independent of any stationary power source.

CINEMA PRODUCTS—This Los Angeles-based manufacturer and distributor of professional motion picture and television equipment, has been undergoing a major reorganization since the beginning of 1983, with upper-level management being restructured to strengthen production and marketing operations.

Ed DiGiulio, president of Cinema Products, feels that control of the company and its direction is now back in the

Continued on page 18

SUPPLIER SHOWCASE®

hands of people who truly understand, and have an affinity for, the very special nature of the motion picture and television industries, so that they can look forward to developing the kind of innovative products required by the industry to promote cost-effective interface between film and video technologies.

Since its founding 15 years ago, Cinema Products has achieved worldwide industry recognition, earning several technical/scientific Academy Awards for its innovative design achievements, including an Oscar for the design and development of the revolutionary Steadicam® film/video camera stabilizing system.

CMX/ORROX—Sunrise Video West has ordered a CMX/Orrox 340X videotape editing system for its Albuquerque, New Mexico, production facility, making the facility the first in the area to offer computer-assisted editing. Sunrise Video West is a producer of television commercials serving such clients as Kenyon and Eckhardt, Grey Advertising, North Castle Partners, and William Esty.

QUANTA CORPORATION—A Quantanews computer-assisted newswriting and management system has been installed by WTLV, an ABC affiliate in Jacksonville, Florida. The new system, designed and built by Quanta, will eventually feature five independent, self-supporting computer terminals to permit individual handling of all newsroom functions.

TIMES FIBER COMMUNICATIONS—Times Fiber Communications has announced the signing of an agreement to jointly license its fiber-optic cable television distribution system, Mini-Hub, with Campagnie Industrielle des Telecommunications CIT-Alcatel and Societe Anonyme de Telecommunications (SAT), two of the largest telecommunications firms in France. Under the agreement with CIT-Alcatel and SAT, the companies will manufacture and market the Times Mini-Hub systems in France on an exclusive basis, and market, on a non-exclusive basis, to other parts of the world. In the future, the French firms will undertake development work on an all-digital switched network; and Times will have the exclusive right to use any such technology in the U.S. market.

The Mini-Hub System is a modular, two-way interactive, video-switching system incorporating the latest advances in fiber-optic and microprocessor technology.

SCIENTIFIC-ATLANTA—Scientific-Atlanta and Cox Cable Communications, Atlanta, Georgia, have signed a two-year, $16 million purchase agreement. The agreement specifies a complete line of CATV equipment, including distribution electronics, taps and passives, broadband data modems, coaxial cable, earth station antennas, video receivers, headend electronics, and series 8500 set-top terminals. The equipment will be used in several Cox Cable systems across the country. Cox currently operates 58 CATV systems in 23 states.

RCA—RCA's Commercial Communications Systems Division has been awarded a contract to assist Satellite Television Corporation (STC) in the design and integration of a broadcast center for STC's direct broadcast satellite (DBS) system. Under the contract, estimated at $250,000, RCA will develop plans to design, layout, install, and test broadcast equipment housed in the center near Las Vegas. RCA also will work closely with STC's architect to ensure proper integration of the equipment and the building. The broadcast center will handle program scheduling, editing, reproduction, and technical quality control. The Nevada complex will also contain the equipment to control the DBS satellites and transmit programming to them. BC

RTNDA NEWSLINE

Computer workshop is success

Journalists were introduced to computers, some of them for the first time, at the RTNDA/IBM Computer Workshop in May. In a concentrated two-day course, the class of 36 was shown a series of hands-on demonstrations of the computer's power to crunch words and figures. They heard lectures about computer technology and discussions of the impact of computers on society.

RTNDA and IBM joined forces to put on the workshop because of the woeful lack of knowledge about computers among radio and television journalists. At a time when computers are almost ubiquitous, broadcast journalists are still writing copy on typewriters, putting assignments on a blackboard with chalk, and making out the newscast rundown with liberal applications from the bottle of whiteout.

The workshop was designed to acquaint the students with how computers work and what they can do. It began with a lecture on the history of computers from punch-card data processing through the room-size monsters of a few years ago to today's micro chip, and even into the future, when lasers may change the way some data is stored.

For the demonstrations, the class was broken into four small groups in which the students, two to a terminal, were shown how to use the computer for word processing, electronic files, database acquisition, and budgeting.

The workshop was not designed to teach computer applications in the newsroom. There are as many different ways to use computers as there are newsrooms, but some applications are obvious. The word processing demonstration, for instance, involved re-writing wire copy into script form, and demonstrated the ease with which errors are corrected, sentences and paragraphs can be moved around, and wholesale editing accomplished without ruining the appearance of the copy. The file program was devoted to overtime, and the students learned how to enter overtime data and then extract reports analyzing that data in several ways—by department, by reason, by date, etc. And the budgeting session demonstrated how easy it is to play "What if?" with an electronic spread sheet.

The students stayed at the IBM Homestead near the banks of the Hudson River in Poughkeepsie, New York. IBM brought in some of the company's top officials to brief the journalists. There were lectures on the impact of computers on the work force, the problems of privacy in the computer age, and how businesses have devised ways to secure their data from theft. One security code IBM has developed is so safe, they claim, that it would take the best computer in the world 2,000 years to break it!

If there was a bottom line to the workshop, it was that radio and television journalists have ignored for too long a tool that will help them do their jobs. Computers exist basically to process information—so do journalists. It is past time for introductions. It is time to put computers to work in the newsroom.

The most advanced editor now costs less than stripped-down units.

Mach One® Series II from Bosch-Fernseh. The fastest, easiest-to-use, and most powerful videotape editor on the market.

Now, we're making it the most affordable editor.

Less is more.

Series II is our second generation Mach One system—with a combination of advanced features no other computer-assisted editor can match. Regardless of cost.

Features like **dual-channel audio control** to give you independent control over two separate audio tracks plus the video channel.

Variable speed control to let you select any of 16 shuttle-jog speeds in either direction.

Programmable slow motion to let you program your selected speeds in the edit list—with the sequences completely repeatable.

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NEWSMAKERS

Robert Frederick, president of RCA Corporation, has been elected to the board of trustees of the Committee for Economic Development (CED). A non-profit, nonpartisan research and educational organization, CED conducts research and formulates policy recommendations for business and government on major economic and social issues.

Eugene Hill, a nationally known television engineering executive and consultant for some 30 years, has been named chief engineer of KSDK-TV, St. Louis. Hill comes to KSDK from Reno, Nevada, where he had operated his own consulting firm, Tech Resources, for the past two years.

Katy Baetz has joined WJBK-TV, Detroit, as on-air production manager for advertising and creative services. Baetz has extensive experience in television promotion and is the recipient of a Louie Award (Louisville-area creative competition) for a newspaper campaign promoting a news series.

Merrell Hansen was promoted to vice president and general manager of KSD AM/FM, a Gannett radio station. Hansen, who has been vice president/sales of the station, is the first woman general manager at a Gannett radio station. Also at Gannett, Walter Harvey has been promoted to vice president/national sales director of the Gannett Broadcasting Group. He had previously been national television sales director.

Business Moves

John Poole of Conatus has been appointed by EEV as their OEM representative in California for the sale of camera tubes, namely Leddicons®, Vidicons, Yokes, and test equipment. Poole is well known in the broadcast industry, and many of his papers on telvision cameras and associated equipment have been published by notable associations such as IBC, NAB, and SMPTE.

Dan Wright has succeeded Dave Friedley as executive vice president and general manager of Grass Valley Group in California. Wright spent five years with Tektronix before transferring to GVG as manufacturing engineer in 1979. He then became modular products division manager, and more recently production systems division manager, before being selected for the top GVG executive post.

T. Bahnson Stanley, III, has been named director of business development for the broadcasting and video enterprises division of Landmark Communications. The division operates WTAR-AM and WLTY-FM in Norfolk; KLAS-TV in Las Vegas; KNTV-TV in San Jose; and The Weather Channel, a satellite-delivered national cable television network with studios in Atlanta, Georgia.

John White was promoted to the position of product marketing manager at Leader Instruments. White has been with the company for over two years in engineering and marketing positions.

Hugh Gillogly, a national television industry marketing executive, has joined DigiVision Corporation of San Diego as director of marketing. Gillogly comes to DigiVision from NEC America, where he served first as national sales manager, and more recently as director of sales for the firm's broadcast equipment division in the western U.S. BC

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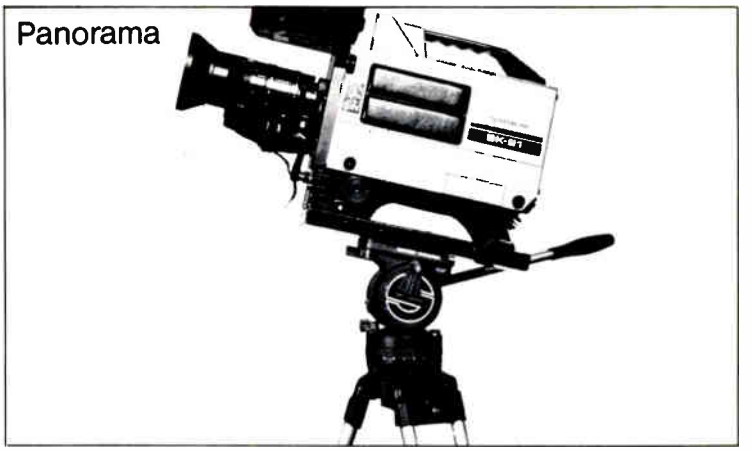

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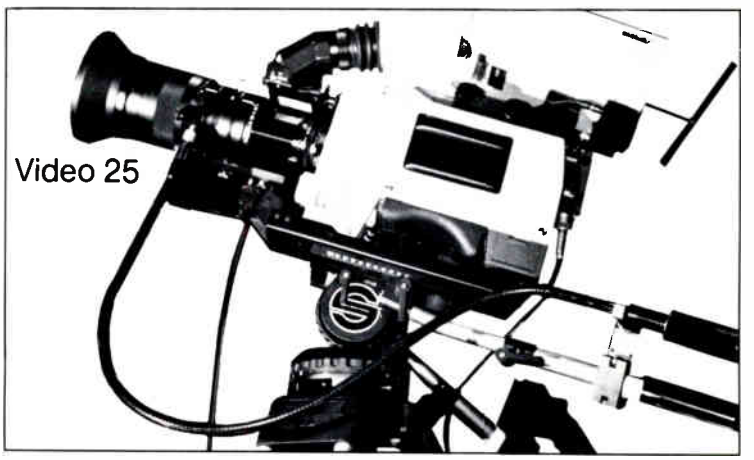

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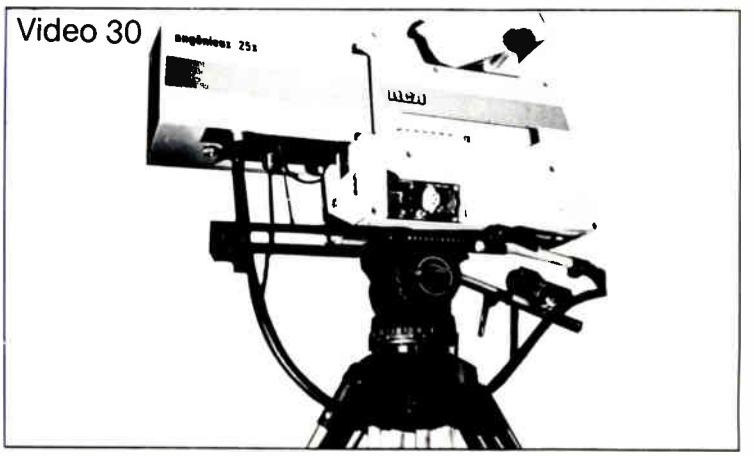

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How to achieve the 'right' sound

BY MORRIS COURTRIGHT

Most of the problems and complaints associated with audio processing can be attributed to one reason: It all depends on the ear of the listener! More specifically, it is a problem of sensory vs. perceptual loudness. What sounds "right" to one person's ear can sound totally "wrong" to another.

A prestigious technical committee, formed specifically to develop test procedures for proof of performance for audio processing, concluded that there is no easily definable test or series of tests that would measure or have any correlation with the subjective qualities associated with audio-processing techniques. They also noted a lack of definable terms to describe the effects of audio processing.

Even the FCC has found it extremely difficult to deal with the subject, and have made little progress in formulating standards for audio processing. The present FCC policy seems to be that audio processing is a programming decision, and of no interest once the minimum technical requirements have been met.

Audio processing is a frequent topic of discussion among engineers and program directors because of those subjective subtleties that make it difficult to test and analyze. If there is any doubt about the subjective qualities of audio processing, just thumb through a few catalogs and note the wide variety of audio processing equipment on the market.

Far too many years ago, the Delco radio in my dad's Buick Roadmaster had five pushbuttons (which could be rearranged to spell Bucki after a local beer) and all radio stations sounded pretty much alike, except for program content. None really "stood out" on the dial. All of them were gentle and unobtrusive with hardly a modulation peak above 95%.

Early ventures into audio processing were primarily automatic gain-control amplifiers that sensed waveforms in excess of a given amplitude and caused a modification of the gain of the device. The whole idea was that below a preset threshold the amplifier was linear, but above the threshold there was a progressive reduction in gain, so the modulation level could be increased without overmodulating on the peaks. Today there are a wide variety of such devices—the differences being primarily attack and release times, compression ratios, operating logic and purpose for which they were designed.

When properly used, automatic gain-control devices can do an excellent job of "riding gain" within their design limits. However, excessive use can easily result in severly reduced dynamic range or objectionable noise levels during pauses in the programming. It should also be remembered that the amplitude range requirements and limitations for AM, FM and TV are vastly different, and must be considered in the selection and use of AGC equipment.

Another basic method of level control is the limiter. Essentially a device to provide a sharp limit on modulation, they frequently are used as part of, or in combination with, the AGC amplifier. The most common problem with limiters is excessive clipping in an attempt to increase the average modulation level. Clipping more than 3 or 4 dB can turn sine waves into square waves with resultant serious distortion of the program content and sound. Since most meter indications lag the actual amplifier dB reduction by 2 or 3 dB, operation with a gain reduction of 6 dB is usually required for control to be effective.

An often-overlooked problem is that of "compression on compression." While some stations have been known to purposely use compression amplifiers in series, it can also occur when the program material has been prerecorded with substantial amounts of audio processing and compression. This can produce an unexpected and rather startling effect in terms of loudness.

As audio-processing technology evolved, multiband processors were developed in order to allow different treatment of different parts of the audio spectrum. This use of discriminate multiband processing eliminates many of the undesirable side effects of dynamic range compression. As with any technology, this asset has some problems of its own, such as an audible swishing when there is a significant difference in actual compression between adjacent bands. A "fringe benefit" of multiband processing is the ability to "shape" or "tailor" program response similar to use of a graphic equalizer.

One other technique of importance to AM broadcasters is that of phase reversal of the audio to maintain optimum assymetrical modulation. Some phase switching circuits have a nasty habit of clicking or popping at the instant of reversal, but probably the more annoying problems occur when someone forgets to pay attention to the phasing of the audio wiring.

The most annoying problem with audio processing equipment is something I call "knob twiddlers." Not too long ago, I spent the better part of the night laboriously installing and setting up a rather sophisticated stereo audio processing system. The very next afternoon a frantic call from the station informed me they sounded "terrible." It seems the morning man didn't think things "sounded right" and reset everything by "ear."

A new development is digitally programmable audio processing. At least one manufacturer now offers a multiband processor with remote manual or computer control of the various processing parameters. The processor may be set up with manual pre-sets accessible by remote control to change parameters, or placed under computer control via an RS-232C data interface to alter processing on an ongoing basis. The computer may be any of the usual computers with the required interface; however, you are pretty much on your own for writing the software.

Lest we forget, there are many, many other boxes that "do things" to your audio. Commercial a bit too long? There are devices that allow you to alter the time length while maintaining proper pitch. There's even one that can be computer controlled to automate all speed and pitch ratio computations. Then there are the special-effects processors, graphic equalizers, parametric equalizers, synthesizers (to create a psuedo-stereo from mono), sibilance controllers, reverb units, and delay lines. Judicious use can produce some unique and pleasing programming. Non-judicious use can produce something that is best called just "unique." The engineer's problem is to keep all the boxes working properly, not necessarily to decide how they are to be used to alter program sound.

There is at least one beneficial use of a graphic equalizer to solve an engineering problem. Some pre-recorded political spots contained some annoying background noises. All were reduced to acceptable levels with the equalizer, except

Continued on page 24

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one distinctive sound. A brief visit to the recording location revealed that the microphone was in a location to pick up the sound from the air conditioning vent. On another occasion, a spot recorded for radio was being dubbed as the audio for television and was one second longer than the video. A bit of time altering easily solved that problem.

Any discussion of audio processing would not be complete without at least a mention of metering.

How many remember the old "blinking" neon lights and the "magic eye" tube? While most of the U.S. grew up on VU meters, Europe used the peak program meter (PPM). Now, as anyone who attended the last NAB can attest, we are faced with a wide array of LED bars, color TV, and plasma displays that may be VU, PPM or have their own unique characteristics. Consistent on-air quality of sound requires that you set up your audio processing with an understanding of what the meter is telling the operator.

Program level excursions of 300 milliseconds or more will be accurately displayed by a VU meter; shorter ones indicate a lower level. A PPM will indicate excursions of 5 or 10 milliseconds (DIN or UK/EBU). The fast risetime of the PPM will show the shorter peaks, but the slow fallback doesn't follow speech and music dynamics too well.

The VU with a quasi-RMS "average" will correlate better with the audible program, but will indicate lower levels for short duration excursions. The operator will set his base levels on the meter indications and audio processing set up should recognize this.

Faced with the multitude and variety of audio-processing equipment available in today's marketplace, and recognizing the extremely subjective nature of judging performance, the best advice to prevent problems is to "try it before you buy it." Specifications and data sheets are fine, but the final test is how it sounds to the owner or the program director.

This reminds me of the night an engineer spent about three hours trying to set up a system to satisfy the program director.

After finding and removing a low-end rolloff filter, nothing else seemed to work. The solution: about 20 minutes of merely killing the audio, restoring it, and shouting "How's that?" until he heard "Perfect, leave it right there."

A growing number of broadcasters are beginning to doubt the old "louder is better" theory and are placing emphasis on audio quality and long-term listenability. Your audio processing setup is the key. BC

Morris Courtright is facilities editor.

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TELEVIEW
RUTH MACY

New opportunities in cable

Knowing the difference between a "broadcast" channel and a "cable" channel is beyond the expertise of most cable subscribers. Though a hefty percentage no doubt are able to identify HBO, Showtime, and ESPN as "cable" channels, the rest of the channels they punch up on their 30- or 54-channel converters are simply called "television."

This blurring of the distinction between broadcast and cable is apparent at the national programming level, too. CBS, though down for the count with the failure of its CBS Cable cultural channel, has recently announced plans to join forces with HBO and Columbia Pictures to form a new movie production studio. ABC is involved in numerous cable programming ventures, including Daytime and ARTS (both in association with Hearst Video), ESPN (in association with Getty Oil), and the Satellite News Channel (in association with Group W). And Group W, whose name long has been synonymous with broadcasting, also is partnered with another longtime broadcaster, WSM Inc., in the recently launched Nashville Network.

Though for most viewers and for many of the national program producers, distributors, and networks, the line separating broadcast from cable television has become exceptionally fine, for most local broadcasters the distinction is readily apparent: cable is the enemy.

This false notion could cost broadcasters one of their greatest opportunities to capitalize on the new video technologies. For cable represents a new—and fast-growing—potential source of revenue for broadcasters.

First, there are the programming opportunities, both on a national level and at each local cable system. Nationally, several of the cable programming services already depend on local broadcasters to supply them with programming, predominantly news. Both Cable News Network and the Satellite News Channel utilize the news-gathering capabilities of local broadcast stations. SNC has some 25 regional broadcast affiliates nationwide, each of which supplies news for the national cable network on a daily basis.

Other stations supply non-news programming. *Sonya*, which runs twice a day on Daytime (part of the USA Network), is a production of WDIV-TV, Detroit. The one-hour daily talk show features local Detroit psychologist Sonya Friedman. The program has been running on Post-Newsweek's WDIV for three years and on Daytime for the past year. WTTW-TV, the Chicago public broadcasting affiliate, has produced a series of live concerts for Home Theatre Network and several subscription TV outlets. The proliferation of satellite uplinks around the country (almost all of the 25 SNC broadcast affiliates already have their own uplinks) will facilitate the transmission of timely programming from broadcast stations to cable network hubs.

The basic cable programming services, it would appear, welcome the productions of traditional broadcasters with open arms. This past March, at the annual NATPE convention, representatives from the Cable Health Network, Group W Satellite Communications, Hearts/ABC Video Enterprises, and the Nashville Network, all invited broadcasters to join them in their programming efforts. Buddy Ragan, production manager of the Nashville Network, noted that they are very rapidly going through the 400 hours of programming that were in the can prior to launch just two short weeks earlier.

Given the large blocks of time to be filled on the basic cable networks, too often quality is sacrificed for quantity. In one instance where quality did win out (namely, CBS Cable) ultimately the viewers lost out. CBS Cable closed down its operations some $40 million in the red after just one year on the air.

Broadcaster-produced programming offers the same basic cable services the opportunity to fill their network time with high-quality shows that more than likely will cost less than the programs coming from independent producers. For broadcasters, the national cable networks can provide an ideal outlet for local sports and cultural events, concerts, documentaries, interviews, and other such programming with national appeal.

Each local cable system also offers broadcasters attractive programming possibilities. It's probably safe to say that no one who has tuned into a local-origination channel recently has mistakenly thought he or she was watching a local-market broadcast station. Local cable programming has, shall we say, a rather distinctive look to it. For most cable systems, allowance-size budgets have meant a shortage of high-quality facilities and equipment, and staffs composed in large part of high-school volunteers.

Especially in the newer cable systems —those with 54 or more channels—the operators are hard-pressed to fill their channels with attractive, affordable programming. And blank channels, many operators have already found, spell churn. So where once cable operators may have done everything in their powers to keep broadcasters off their systems, now many recognize the attractiveness of the high-quality, diversified programming local broadcasters have to offer. Everything from magazine-type shows to documentaries, cooking, and high-school sports can be produced for cable (and for profit).

And, of course, there's news. Since, for most local cable systems, "newsgathering" means clipping the important stories from the morning newspaper, local broadcasters have an opportunity to fill a void unparalleled in electronic journalism. One- or five-minute local news and weather inserts can be done hourly, or longer news shows can be done during different dayparts. It is even conceivable that the broadcaster's own early evening newscast could be repeated later the same evening on the cable system, to capture those viewers who return home too late from work to catch the newscast on the station.

To carry the programming idea a step further, broadcasters also can lease their own full-time cable channel, whether for a subscription service or for ad-supported programming. Local cultural events, school sports, adult programming, all-news. . . the possibilities are limited only

Continued on page 28

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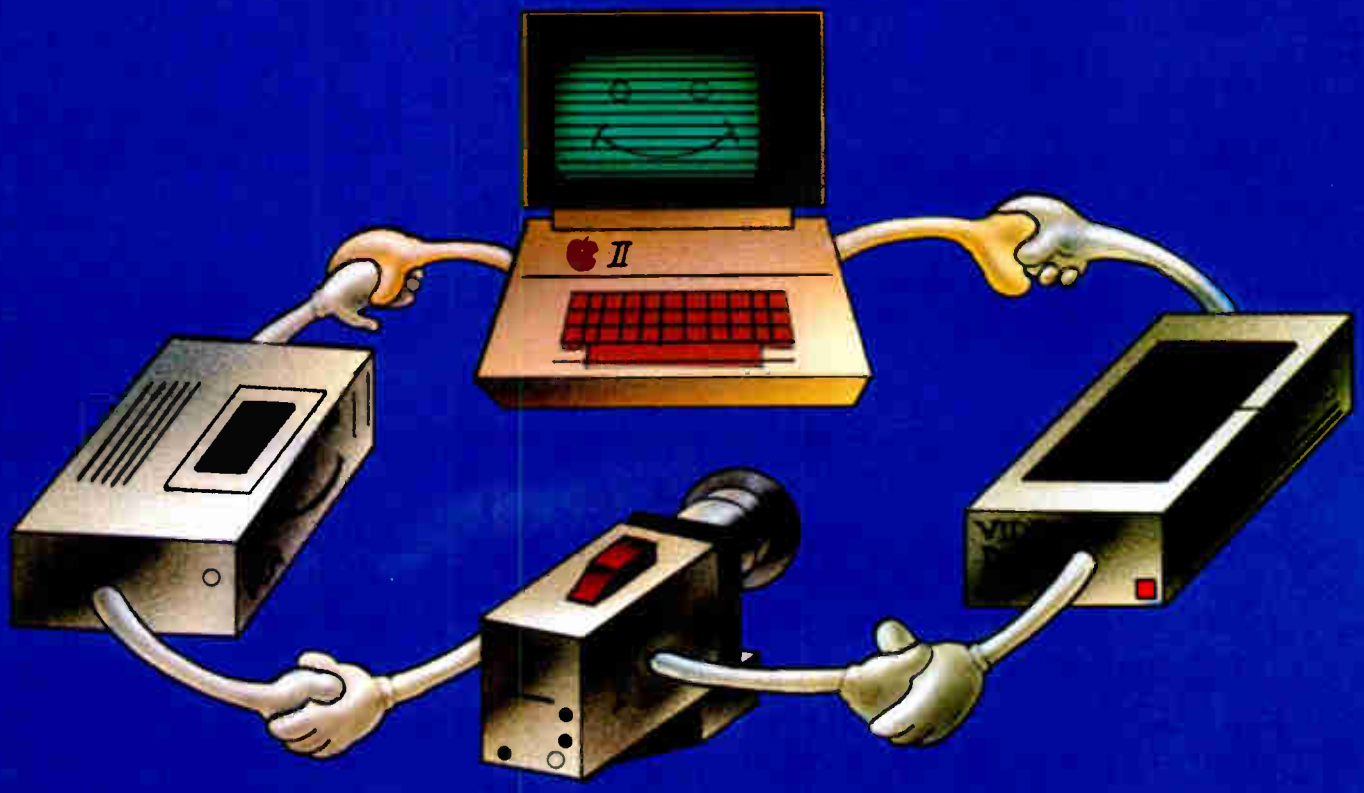

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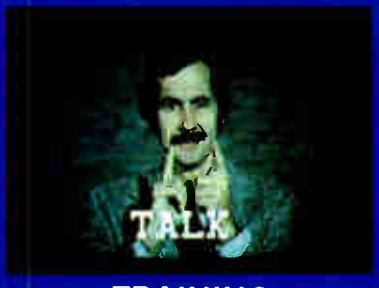

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by the imagination. Where once the local cable operator would have been reluctant to let the broadcasters in, today—with the surfeit of empty (and unprofitable) channels on the newer and larger systems—the certainty of income and the lower probability of churn resulting from broadcaster-leased channels far outweigh the ever-dimming perception of impending takeover.

Programming, however, is not the only commodity that broadcasters have and that local cable operators need. Broadcasters also know how to sell advertising. And that expertise is something that cable systems need desperately. "The cable operators are really floundering in terms of selling local advertising time," Cable Health Network president Jeffrey Reiss told attendees at one NATPE session. He urged local television station managers to let their sales personnel apply their considerable talents on behalf of cable systems as well.

While at first blush it might seem that broadcasters would be taking food from their own mouths by convincing local advertisers to put their ad dollars into cable, on closer look, it's clear that the ad dollars that would go to cable are not the same ad dollars that keep the local broadcast stations healthy. The comparatively low rates cable systems charge will attract advertisers who have never before used the video medium (the local dry cleaner, the beauty parlor, the jewelry shop); and, by and large, these advertisers are unlikely ever to advertise on a full-power local broadcast station.

The fact that these are first-time video advertisers also means they will need to have commercials produced: another new source of revenue for broadcasters. One warning, however: do not become so busy selling advertising on the local cable system that you forget to sell the local cable operators and the national cable programming services time on your own station as well.

Local broadcasters and cable operators can and should work together for their mutual benefit. Neither is so powerful that it can crush the other, and each has something that can be of benefit to the other.

In case the preceding has not convinced you to make peace with your local cable system, the following may. The must-carry rules that currently guarantee your presence on the local cable system may not be with us much longer. Now is the time to develop a good working relationship with your local cable operators. After all, he's captain of the lifeboat. BC

Ruth Macy, satellite editor, is founder and president of TeleWords, an editorial consulting firm serving the communications industry.

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COMPUTER PRINTOUT

BRYAN BOYLE

Computers are 'in the news'

Many of my past columns have dealt with the uses for the computer as a tool of the business end of this industry; but lately, I have begun to discuss the other areas of the station where the machines could be put to good use. One of the most exciting areas under consideration is the potential use of small and medium-sized computers in newsroom areas of both radio stations and small TV operations. You don't have to be in a large metropolitan area to use these machines to their capacity, as those that use one have found out. But for those of you who haven't, perhaps a discussion of some of the pitfalls and possible benefits would be in order.

Pitfalls are mentioned first because, in the introduction of any new technology, there must be some caution in deciding whether to buy in the first place; and if the decision is made to go ahead, there are areas where you have to move cautiously.

The first is apparent: do you need a multi-user system, or do you even need a computer? How many people do you have in your news department? How active are they in gathering information? If yours is a two- or three-man operation, the addition of a computer to your staff may be a questionable purchase, because the price you must pay for a system along with the requisite software and personnel training could outweigh the productivity increase.

If your newsroom staff, small as it may be, is an active participant in your station and the market, then even if there are only two or three people involved, a computer can be put to good use for word processing, filing contacts, and other record-keeping chores.

The next consideration is the amount of information processed by your news department on any given day. Do you have multiple wires coming in, hourly newscasts around the clock, with a full staff including a traffic reporter? Here a computer would add to the efficiency and productivity of the staff, increasing the accessibility of information and freeing the existing staff to be more creative and aggressive in their professional tasks. There are small computers available now that read the wires, and spool them to a disc for instant retrieval, all while operating a word processor/file manager. The cost? About $10K.

Multiple stations off the main processor are extra. In a small- to medium-market small-staff news operation, such an addition would be a worthwhile investment while not totally breaking the budget. Of course, there is some training involved, but the majority of the programs are self-prompting; and the eagerness of your news staff, if they are the ones requesting the machine in the first place, should offset any problems in getting them to use it when it's installed.

In the same vein, you should consider that computer systems change abilities and complexity almost as often as the weather. This leads to something that we are all familiar with. It's called "analysis paralysis." This dread disease is the inability to make a move in the marketplace, either in buying or selling something, because you are always waiting to see the "next generation" of components or competitors' wares. For some broadcast systems, this makes sense. But computers are a different story. The technology is changing from week to week (even day to day); and if you sit back and think to yourself, "Well, I'll wait until the next generation comes out, then I'll buy," you run the risk of jumping in two or even three generations later, when the support might not be there. Of course, you will have the latest in computer hardware, but no way to run it in a manner that will benefit your operation. When you have your needs finalized, that is the time to decide on which system to get, whether it be off the shelf or custom. Go with a current, supported machine that has had the time to "sort itself out" and gain the proper measure of support that it needs from the equipment manufacturers and software writers.

The computer that you buy should be well known to your supplier, who should be willing to make the extra effort to ensure that the system is as free from bugs as any purchase of this magnitude should be. You should ask if there is a technician available should the machine need repairs, and what hours is he or she available.

Does the vendor handle service calls directly, or is that the venue of the equipment manufacturer? Is the software a custom implementation or off-the-shelf and modified to fit your uses? All of these bear into the final decision, and really point out the systems that are well supported versus those "cut and paste" systems that probably won't fit your operation.

Before your computer system arrives, there are some things to do. If it is a multi-user system, it probably will be bigger than the normal conception of what a small computer is, such as the Apple or TRS-80 series. Figure on the processor cabinet being about the size of a two-drawer filing cabinet. That's not too big, but it will take up some floor space.

There needs to be some air circulation available. Locking it in a closet is not a good choice. The processor unit itself should be kept in an area that is relatively free from air-borne dirt. (Dont't put it in the same area as your printer paper supplies.) And, while it is not necessary to maintain hospital-operating-room cleanliness, scraps of paper and other refuse should not be allowed to collect in the same area. For obvious reasons, keep moisture at a minimum.

The human interface to this system is the terminal or terminals that are placed at the reporter's work stations. Here the choices are almost as varied as the selections on a paint chart. But, for the sake of efficiency, there are a few ground rules to follow. The screen itself should be a non-glare type with a slow phosphor raster, P31 or its equivalent. This prevents eye strain which is common in the cheaper types of displays which contain excessive flicker. There is a growing debate over the relative merits of either a green or amber phosphor; what it comes down to is whatever suits you the best.

The terminal should have an adjustable contrast control. Different people have different sensitivity to the brightness of the characters on the screen, adjusting the contrast is one way of making the terminal more pleasing to work with.

Probably the most important factor, considering the area the terminal will be installed in, is that the keyboard be easy to use and understand, as well as "beverage proof." Coffee, cola, and any other sugared beverages can make a mess of the contacts in the keyboard, causing intermittent keys, sticky contacts, and a host of other problems, not to mention the possible electronic damage from spilled liquids finding their way into the chips. This is not to say that the keyboard should be environmentally protected. The

Continued on page 32

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cost would be prohibitive, but a good, sturdy keyboard will go a long way toward keeping maintenance costs down and preserving the sanity of those who use these devices on a daily basis.

When you've installed the computer, the technicians will be busy with the final operating system generation. When all looks good for the switch to be thrown placing you in the age of computerization, there is an integration procedure that should be used. Run the system in parallel (that is, phase in the system by running some basic programs, then add a few more, etc.) for awhile until all of your operations are over to the new system. This ensures that the operators will gain confidence from slowly learning the system. It allows bugs in programming to be rectified with a minimum of bother; allows the news employees to become aware of the capabilities; and it ensures that when the system is fully online, it can be used to its fullest extent with no problems.

So, what do you have to gain by making such a step? Increased flexibility, productivity, and accountability. Never again lose copies of scripts to the cleaning person or misplace important wire copy needed for color in the story. For television operations, your news programming will be planned in advance; and should there be a big story breaking, modifications can be made with a minimum of bother and results produced almost instantly. In short, as the typewriter improved the climate and efficiency of office operations, the installation and widespread use of small- and medium-sized computer systems will bring your news operations up to date and position you in your market to take advantage of the information age.

Databits: Response to the offering in the April issue of *BC* for engineering programs has been overwhelming! But, in order for this to work, we need input from you. If you have any programs dealing with broadcast engineering, that are in the public domain, or you have written programs for any computer, send them to me at 171 East 205th Street, Bronx, NY 10458. If you haven't received your packet yet, please be patient; it is probably on its way! If you really want to make it worthwhile, a $5 contribution to the Ennes Scholarship Fund of the SBCE will put you on the list for updates and additions as they become available.

Editor's Note: The use of computers in broadcast newsrooms is not new. Several companies offer newsroom management systems. What is new is the increasing use of small business computers to handle text entry, wire feeds, and more.

Bryan Boyle is computer editor.

CABLE/VIEW
GREG VANDERVORT

Programming with 'the arts'

The performing arts can provide a wealth of programming opportunities for a cable system's local-origination channel, but there are many roadblocks. That's why local systems place "the arts" so low on the list of programming possibilities.

I know a cable system operator who was approached by a small opera company to cablecast their performance of a Christmas operetta. The operator explained that he would be delighted to do so, if the opera company would obtain clearance from the copyright holder. The company said they had obtained proper clearance, so the cable programmer sent out a production truck and taped the performance.

A few weeks before the program was to be cablecast, the cable operator realized that he should have copies of the release papers and asked the opera company for them. Then it came out that the company had never really gotten copyright clearance. They had decided that just as it was "not really necessary" to clear their performance, it was also not really necessary to clear the cable coverage of it.

At this point, the cable operator contacted the copyright holder and was told that one of the major broadcast networks held exclusive video rights to that work. Because the cable programmer did not properly check out the copyright situation ahead of time, he had wasted time and money on a project that would never air.

The problems with local arts programming arise from three general areas. First, over many years, unions and copyright regulations have become very protective of the rights of the artists. Second, most individual cable systems are not sophisticated enough to deal with the expense and complications of these protections. And third, making the other two even harder to deal with is the fact that culture is a hard sell.

Arts on television has always been a very expensive proposition. The unions have made sure that its members are not taken advantage of by the broadcast community. And they have made sure that all artistic contributors in a teleproduction share in the financial wealth of the industry. Now cable comes along and becomes involved with the arts community on a more local basis than had been possible for most broadcasters. The problem is that the broadcast regulations are now applied to cable.

The union blues

A chamber group looking at cable as a means of promotion and exposure came to Suburban Cablevision. The group, composed of union musicians, was quite good, but could never really expect to get on broadcast television.

Suburban Cablevision thought it was a great idea to videotape a performance as part of its local programming. The musicians were not looking for money from the cable system; they felt the promotional value was enough. When the musicians were asked by the system to sign releases, someone checked with the musicians' union. Word came back to the cable system that the musicians could not waive union fees for videotaping their performance without jeopardizing their union standing. The result: no program.

Another sour note

Another example concerns the videotaping of a symphony. The rights' fees paid to performers turned out to be about $8,000—a high-budget item in the world of local cable systems. The interesting fact is that this amount was the same whether the finished program was to be aired nationwide over a broadcast network, or cablecast to 30,000 homes.

Current union regulations concerning videotaping of the performing arts need to be re-evaluated when applied to cable's local programming. Cable is a different animal from broadcast. The motivation for local cable programming is primarily community service, not financial. Cable's local nature can allow it to work with local arts groups that have been overlooked by the world of broadcast. However, cable systems certainly are not going to produce a lot of arts programming when faced with high clearance fees and the complications and legalities concerning copyrights.

Paying the price

Part of this problem also lies with the maturity of cable local programming. Most systems do not have money budgeted for performer fees and don't want to spend legal dollars unraveling clearances and rights. Systems operators must begin to realize that if they are to work with qualified, professional local artists, these artists should be compensated for their work. They should not be paid fees established for broadcast television, but they should be paid something.

Cultural programming does appeal to a select audience, and is not known as a tremendous advertising vehicle. CBS Cable couldn't make a go of ad sales in cultural programming at the national level; and local systems will probably find ad sales in arts programming difficult as well. If there was the same sort of ad support for local culture as there is for local sports, the systems would be in a better position to handle the high costs.

Finding the funds

Systems need to look beyond spot sales to make the performing arts work. Tying in with the people who are currently funding the arts is a good approach. For instance, in the example I mentioned earlier in which a symphony was paid $8,000 for the videotaping of their performance, the $8,000 was paid by a university that was sponsoring the performance itself. The university was in a position to do additional fund-raising to cover this cost for the videotaping.

Another possibility is through grants. Most granting organizations will only fund non-profit groups. There are unprofitable cable systems, but I don't think any are non-profit. However, it is possible for a cable system to approach a non-profit arts group such as a dance company. The dance company could apply for the grant to produce a videotape, then hire the cable system to do the production.

There are difficulties in getting the performing arts on the local channel, but the industry is beginning to deal with these problems. Cable systems are realizing the importance and benefits of this type of programming on the cable level.

Artists are beginning to discover the uniqueness of local cable. In many instances it's their first involvement with television. The artists are finding a freedom and sense of experimentation that doesn't exist outside of cable. It will take work and effort, but cable systems and the artistic community can clear the roadblocks. BC

Greg Vandervort, cable production editor, is the director of local origination at Suburban Cablevision in East Orange, New Jersey.

NEWS DIRECTIONS

PHILLIP KEIRSTEAD

State nets are up in the air

State radio networks are taking to the air—via satellites—now that additional radio transponders are available.

The state radio networks have almost universally complained that they were being held back by the problems they encountered using wired networks. Frequent among the complaints are the lack of quality lines in some areas, high cost, and difficulties in dealing with multiple telephone companies with widely varying service.

Until recently, the state radio networks were stuck. They had nowhere to go other than dealing with Ma Bell and her nieces. Lately, however, transponders have become available, and the state networks are moving as rapidly as they can to take advantage of the lower cost and improved signal they can achieve through satellite transmission.

Missourinet and its partner organizations activated their satellite network late in 1982. Advanced Communications Engineering did the technical work and installation on the uplink.

The parent company, Learfield Communications, has leased transponder space from Western Union on Westar III. Learfield uses two 7.5 kHz audio channels and a data segment capable of transmitting 25 slow-speed data channels.

Each affiliate provides its own downlink. If the affiliate has an AP or a UPI dish on site, it can be shared with Learfield's programming.

Chairman Clyde G. Lear says all the company's affiliates have ordered downlinks, and he says the network will be totally land-line independent.

Prior to the satellite network, Missourinet and its sister organizations, the Brownfield Network and Delta/Net, paid the line cost to the telephone company's test board. The affiliate paid the cost of the loop to the station.

Now an affiliate has access to Missourinet, which covers state news in Missouri; Missourinet Sports, which broadcasts University of Missouri basketball and football; the Brownfield Network, which distributes farm news; and Delta/Net, which carries farm news into the Missouri bootheel and surrounding areas. In addition, the networks feed data, including the national and state weather wires and the Missouri Highway Patrol newswire.

Harris is supplying most of the affiliates with its Delta-Gain dish. The uplink is a 9-meter model from Harris.

Missourinet is the nation's fourth state radio net, preceded by Texas, Arkansas, and Oklahoma.

The Texas net started in the 1930s and recently announced it has leased space on Westar III for its Texas State Network. The net provides news, sports, agribusiness, Spanish-language, and Dallas Cowboys football programming to more than 250 radio stations.

TSN plans to feed two channels simultaneously. The dual channels are a real advantage to TSN, which can transmit English and Spanish versions of Cowboys games simultaneously.

The Texas State Network is made up of TSN, which feeds news and sports, TSN Agribusiness Network, TSN Spanish Information Service, and the TSN Dallas Cowboys Network. A TSN spokesman says distribution costs rose from 40 to 300 percent in the past two years. TSN is owned by Metromedia Radio.

Further east, group owner Capitol Broadcasting of Raleigh, North Carolina, is putting its state networks on satellite feeds. Again, Westar III will carry the signals of the North Carolina News Network and the Virginia News Network.

Capitol Broadcasting is supplying its affiliates with downlinks. At last report, the company had set up 110 markets for satellite reception in the two states. The company will transmit over uplink facilities in Raleigh and Richmond, Virginia. The lease of satellite space will also permit Capitol Broadcasting to transmit the Capitol Sports Network, which carries football and basketball from Virginia and Duke. Beginning this fall, it will carry North Carolina State games.

At the Kansas Information Network, news director Kitty Malone says satellite transmission is definitely a part of the net's plans.

Florida Network Administrative Manager Rod Hemphill says: "We anticipate we'll be doing something in '83."

In Atlanta, owner Don Kennedy says The Georgia Network has been on Satcom IV since June 15, 1982. The net feeds its signal by high-quality line and microwave to The Satellite Program Network in Atlanta where it is put on as a subcarrier. Stations can lease or buy their downlink from The Georgia Net. The network expects to have all 121 affiliates on satellite reception this spring. Georgia Net is feeding an 8 kHz signal through a Wegener-Demart dish.

The Louisiana and Mississippi networks uplink their signal to Westar III. The uplinks are located in Jackson, Mississippi, and Baton Rouge, Louisiana. Stations in either state get their signal from Westar III, so it is possible to send both networks from one uplink if an emergency arises.

As a further backup, there is a terrestrial microwave link available connecting Baton Rouge to Jackson. It is the property of the ABC-TV affiliate in Baton Rouge, which leases a channel to the Georgia and Mississippi nets. A telephone line is used to connect Jackson to Baton Rouge.

The Louisiana and Mississippi nets do not use data channels. They send their billboards out on the regular UPI broadcast wire. Under a time-sharing agreement, Louisiana and Mississippi are distributing RKO-II over their systems. The downlinks are Comtech 3.8 meter dishes.

The latest addition to the lineup of satellite-transmitted state networks is one recently innaugurated by Minnesota Public Radio.

MPR has formed a separate entity to provide statewide news to commercial radio stations. The signal is transmitted to Westar IV from an MPR uplink and is received on Mutual downlinks around the state. Non-Mutual affiliates have to buy short landline connections, much as do some AP and UPI affiliates. MPR officials anticipate the signal will still be superior to a completely wired net.

The new commercial branch of MPR will have a pool of 28 people from which to draw. Hourlies will be fed from 6 a.m. to 6 p.m. seven days a week. The net will also feed business reports, agribusiness, and farm news and closed-circuit actualities for local insertion.

We'd appreciate hearing from other state networks which may be moving into the satellite age. Just address your comments to News Directions, Broadcast Communications, P.O. Box 12268, Overland Park, KS 66212. BC

Phillip Keirstead, news technology editor, is associate professor of journalism at Florida State University in Tallahassee. He is currently a Fulbright scholar lecturing in India.

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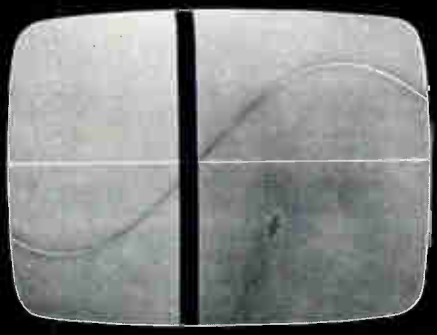
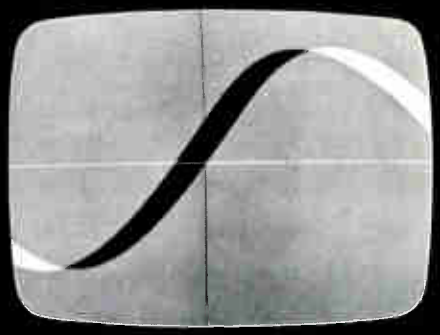


Set system timing.



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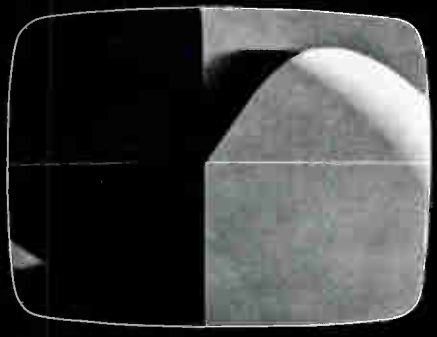
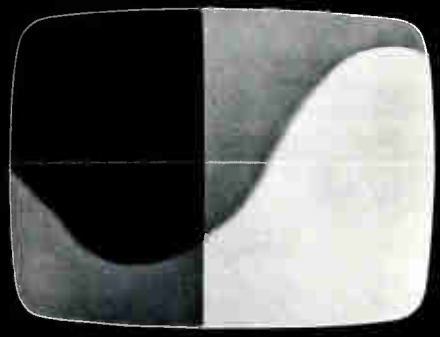
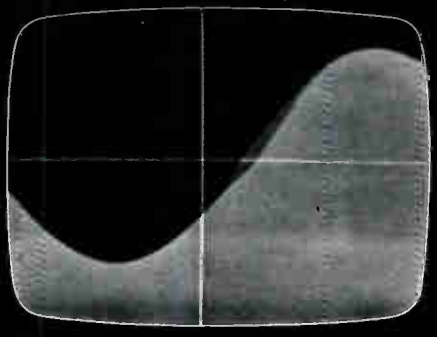


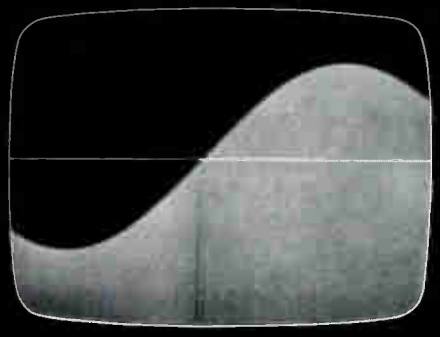
Set subcarrier frequency to network.



Find timebase error.



Pinpoint sync to subcarrier jitter.



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PROGRAM GUIDE
ED SHANE

Take the oath: Be prepared

Twice in a recent five-week period, I was called on to be "talent" again. For both performances, I was guest host for the celebrity talk show regularly conducted by *Houston Chronicle* columnist Maxine Mesinger from a posh west Houston watering hole.

First, Maxine left Houston to cover the Academy Awards for her paper, and I played host to broadway actress Joan Deiner, the *woman* from La Mancha, and to *New York Times* food columnist Pierre Frenay.

Later, Maxine left to be a judge for the Miss U.S.A. pageant. I interviewed Jack Kramer and Wendy Turnbull, the tennis greats, and some film people in Houston shooting made-for-TV movies.

The point of this is a confession: In the first instance I forgot my own very stringent rule about show preparation. I went to the show's set and "winged it." After all, I know a bit about Broadway. As regards La Mancha, I have dreamed the impossible dream and I have fought the unbeatable foe. As far as food is concerned, friends say that I have been doing sufficient research in that area already.

Don't get me wrong. It was not a *bad* show. But it was not the show I wanted. It was not the free-flowing, yet challenging, exchange that I think is vital to "talk" in the electronic media.

On my second assignment, I had learned from the first and studied harder. I also reviewed my long-standing rule about show prep that I have insisted upon with program directors and disc jockeys in too many meetings and consultative seminars.

After all, I couldn't take a chance with tennis. I am not a tennis player and I don't follow the game. A tennis junkie on my staff provided some trigger questions for Kramer and Turnbull. I secured a copy of Kramer's book and spent time with it. I quizzed a local PR person about the people from the movie company. With that homework behind me, I could *begin* my show prep, organizing that material into a direction for the interviews.

I was told after the second show that I "must really know my tennis," and that I made it easy for behind-the-scenes movie people to move into the spotlight. By the way, *I* felt better about it, too.

I listen to hundreds of airchecks each year. My guess is that 60 percent (or more) of the people who turn on microphones in this country are not ready to do so. Often they cover themselves by dropping into a station logo or into a "crutch" phrase they've developed for themselves. (For instance, what is really happening when a disc jockey says, "It's Wednesday morning, June 8th, with just 206 days remaining this year"? He's covering a lack of show prep!)

The most common examples of lack of

planning happen when two people are involved in the on-air interchange, but there's been no communication beforehand. A disc jockey who tried to involve his female newscaster in a Thanksgiving "bit" began, "I saw Dave in here earlier chasing a turkey around the studio." She responded, "But you weren't here when Dave was here." Had she been prepared for his line, she would not have blown the bit by telling the truth!

Another real-life exchange that could have been saved by planning: "I have a joke that was just called in," the disc jockey said. "Well, why don't we wait til 3:20?" asked the news person. (I haven't the slightest idea of the importance of 3:20, but it didn't matter anyway. The exchange was derailed because of lack of preparation.)

Very often I hear air talent "distracted" by something that happens in the studio. "Well, Walter the program director just walked in. Howya doing, Walt?" One would hope that the listener was more interested in whatever information was being imparted rather than the fact that someone walked into the room. I often get the feeling that young disc jockeys are trying to replace TV so that the listener can "see" everything that happens. Instead they sound ill-prepared.

When I was a Chicago program director, I had a jock who quite often got distracted in mid-sentence. If he didn't get distracted, he'd freeze and stumble over almost every word. It took a long time to analyze the situation and develop a cure. Once the cure was found, it seemed so simple. I got a supply of legal pads and pens, and I made the DJ write everything down first, then *read it back* on the air. During records, he had time to re-word, to time, and to practice his lines.

No one in the listening audience knew that this disc jockey was *reading*. They only knew that he didn't falter or wander as he delivered his raps. Remember, radio performers have been reading scripts for years. Jack Benney, Burns and Allen, and Bob and Ray all scripted their materials. If an ad lib came, it was in the context of the script!

One of the most spontaneous-sounding radio performers is Gary Owens at KPRZ in Los Angeles. Gary has stated, however, that he is a firm believer in show preparation. He used to carry a pad with him to jot down notes for his shows. When he was able to afford a secretary, he began to carry a pocket dictating machine, so he could record a funny idea or a crazy bumper sticker he might see. The secretary types sheets of lines and ideas that Gary turns into his radio show.

I've seen stations that hand disc jockeys a "show prep form" on which they must plan their music and their voice breaks. One such form had a formatted place each hour where the air talent was obliged to provide "area relatabilty"—something that mentioned an area of town or a person from the city.

Where does a disc jockey look for relatability? The newspaper, the TV, the request line, and bumper stickers on Main Street, are all starters. It doesn't take much time, but it does take effort and commitment. And it saves embarassment. I heard a talk-show host introduce his guest, a financial analyst who writes a newsletter for investors. The host's opening statement was "I don't remember what the stock market did yesterday." Goodbye credibility, all for the lack of preparation.

Program managers have an important lesson to teach the air staff: When the mike switch is thrown, it only turns on a piece of equipment. It doesn't invoke the Muse. BC

Ed Shane, programming editor, is program director at KTRH Radio, Houston, and an independent programming consultant.

SOUND IDEAS

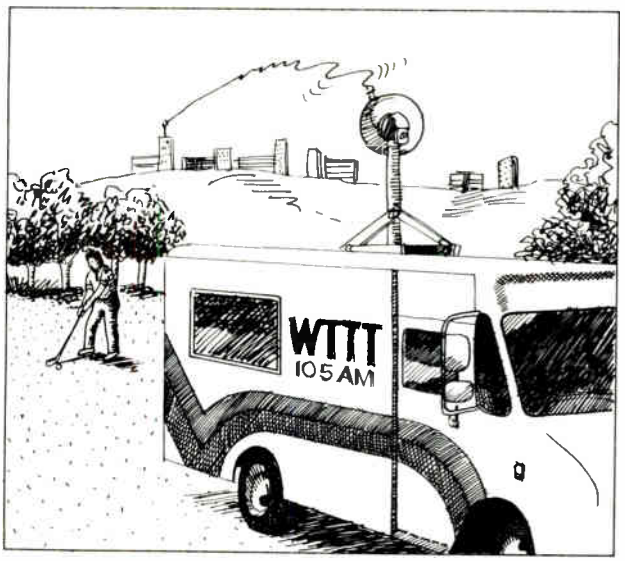
ERIC NEIL ANGEVINE

The audio side of remotes

As I sit down to write this month's column, a local radio station promises to take me to the scene of a new discount store opening this afternoon. Their mobile van will be "on the scene" this afternoon and I can go watch their deejay at work. I'm familiar with that one. When they broadcast from their van, you know it's a remote broadcast. Maybe they want it to sound that way. I wouldn't.

Last night I listened to a local radio station broadcasting an out-of-town sporting event. Due to the poor quality of transmission between the remote facility and the local station's studios, it sounded more like I was trying to pick up the game from a station in the other city.

Remote broadcasts do not have to sound the way they do. Modern communications techniques can provide signals nearly as clean as any produced in the studio. Where once all remote broadcasts lacked an audio fidelity, we must now be more concerned with producing quality sound. This is just as true for television audio as it is for audio.



The remote booth

The first link in the broadcast audio chain is the space used to produce the sound. This may be a mobile van or broadcast booth in the pressbox of a sports complex. It really doesn't matter. The criteria for a good acoustical environment are the same. And they are the same as those for a studio audio booth.

The space must be reasonably free from outside extraneous noise. This can include the sound of the activity you are on-the-scene to broadcast. Crowd noise at a sporting event and even the sound of a concert should not intrude on the audio booth. This can all be picked up using appropriate microphones and remixed electronically to provide the right balance and audibility of the announcer.

Occasionally it may be impossible to achieve the desired sound isolation from extraneous noise, such as in an open broadcast booth at a sports arena. In this case, a microphone designed for close-talking can be used, which essentially eliminates sounds at any distance. However, there are frequency response considerations which must be addressed when using a microphone in this way. (See *Sound Ideas*, November 1982.)

It is not practical to consider improving the sound isolation of a broadcast booth used only occasionally, or one in an out-of-town stadium. You may, however, want to consider improving the construction of a booth used regularly in a home-town auditorium or sports complex. The guidelines for this are similar to those for normal studio spaces, which have been addressed in previous columns.

In the van

Let us now look at the mobile van studio. Its biggest drawback acoustically is the number of sound leaks in the construction, which allow outside sounds in. This may at first be surprising, since you may think of a vehicle replete with windows as having its greatest sound transmission through the glass. But automotive glass is all laminated safety glass, which has fairly high sound-insulating properties. Similarly, heavy steel body panels will provide good sound attenuation. But motor vehicles have many operable doors and windows, as well as other panels which join together to provide a very leaky sound enclosure.

If you are selecting a new mobile van, pick out one with a minimum of operable doors and windows. If the van is large enough, you may want to install an interior wall to separate the audio booth from the front of the van. Care must be taken, however, to make this interior partition extend to the structural walls and ceiling, so that sound cannot pass around the end through hollow body panels.

You may, however, already own a mobile van with problems of excessive sound transmission. The trick to improving the sound isolation of the interior is the same: minimize the number of operable doors and windows. This may mean permanently sealing some existing doors or windows and caulking them with an acoustic sealant. Naturally you will want to seal any other cracks or joints with the same material. All remaining doors should be made to fit well when closed and have proper gaskets. Operable windows are not necessary. They should all be eliminated.

Internal acoustics

Once you have minimized the sound intrusion into your mobile studio, you must still optimize the internal acoustics. Just as with any other small studio or audio booth, you will want maximum treatment with acoustically absorptive materials.

This does not mean you should carpet the walls and ceiling. Carpet is not an ideal source of acoustical absorption. It may be more absorptive than many other materials, but carpet materials typically have sound absorption coefficients of around 0.3, which means they are only 30-percent absorptive (and therefore 70-percent reflective).

Likewise, you cannot install an acoustic ceiling. In fact, most acoustical materials are not easy to install in small irregular space. This is one place where open-cell foam really is the answer. Either flat foam (one-inch of thickness is a minimum) or configurated foam (Sonex) may be used. Many products are available with a self-adhesive back to make installation simple. Treat all available surfaces. That still won't be a lot.

Methods of keeping the electrical signal clean in the transmission path back to the main studio will be discussed in a future column. BC

Eric Neil Angevine is acoustics editor.

Combo cameras are off and running

BY GLEN PENSINGER

Frezzolini "On-Cam" VTR

The new combination recording cameras are more than we bargained for. There are more noncompatible formats than most of us envisioned. There are more choices, more decisions, more features, and more applications that we expected from the long-awaited, self-contained camera recorder. Most importantly, there is more quality.

Each of the differing component recording formats is significantly better than the ¾-inch U-Matic standard they propose to replace. In subjective quality, they approach 1-inch formats. In this article, we'll tell you what we've been able to find out about the various formats and we'll take a look at some of the advantages and disadvantages of the side issue which may come to be the main concern: component analog video recording.

If we use the Cinema Products CP-16 news film camera as the size and weight that new electronic combination cameras have to shoot at, they seem right on target. With lens, battery, and a 400-foot load of film, a CP-16 weighs about 17.5 pounds. The ¼-inch combo's (Bosch's QuarterCam, Hitachi's SR-1 and SR-3) and Sony's ½-inch BVW-1, along with the Thomson Betacam and the Ikegami system, are all within ounces of the CP-16's weight. Hitachi's M-format SR-10 with MOS sensors is just under 20 pounds; Sony's 3-tube Betacam is just over 20 pounds; and the 3-tube combination camera recorders from Panasonic and RCA range in weight from the low to upper 20s.

The manufacturers have devoted considerable time and effort to satisfying more than just the weight requirements of news gathering. Two audio channels and a SMPTE time code track are standard in all the units. Typical audio specifications claim 50 Hz to 15,000 Hz response within 2 dB. SNRs are listed at 50 dB or better with up to 60 dB SNR when noise-reduction techniques are applied.

Each manufacturer has incorporated unique features into their unit. Improved signal-processing techniques include black stretch, knee, and contrast compression circuitry. There are microprocessors to monitor performance and help with diagnostics. The viewfinder in Panasonic's Recam and Hitachi's ¼-inch recording cameras not only give the operator the usual record tally, low battery, VTR warning, black and white balance, tape remaining and video level indications, they also provide bar graphs in the picture that indicate instantaneous audio levels.

An almost universal attempt to eliminate troublesome cables has extended even to the earphone. In the Sony Betacam and Thomson Betacam, a tiny speaker and volume control are located on the recorder's port side right where the operator's ear will be when shouldering the camera.

Enter the TBC

These systems have also ushered in the era of the built-in TBC. The early M formats did not include TBCs, but the slots were there in the card cage. Soon Fortel was building a component TBC for those slots. This year Panasonic was showing its own plug-in TBC. The ½-inch Betacam and the ¼-inch systems were introduced with integral TBCs in their players.

Flexible adaptors

There was a common theme in all the combination camera recorder displays at the NAB: the manufacturer will help you use their new recorder in any system configuration you want. There are adaptors which permit the one-piece units to be separated and operated as two pieces. Other adaptors connect the combination's camera section to any recorder or NTSC video system. During the NAB, RCA announced that NBC has purchased 20 HC-1 Hawkeye cameras (sans recorders) with HCA-1 adaptors of this type. There were also adaptors to take the signal from any camera or NTSC video source and convert it to the components used in the manufacturer's component portable recorder. Other adaptors converted component signals directly Y and 699 chroma for dubbing and editing to ¾-inch U-Matic without going through another NTSC codec.

To keep size and weight down, many of the original designs for recording cameras did not include provision for playback. Each of the manufacturers now offers a field playback unit for on-the-spot color playback and microwave feeds. This year both RCA and Panasonic were demonstrating black-and-white viewfinder playback in their Chroma-Track/M-format machines. Bosch's QuarterCam also has black-and-white playback to the viewfinder.

Studio production

The good video quality and low cost of these component analog recorders makes them likely candidates for more than just field recording. KSKN, a new UHF that is scheduled to go on air in Spokane, Washington, this month, plans to use the Chroma Trak ½-inch system as its principal videotape format in all phases of production. As a possible replacement for the complicated 2-inch cassette machines, RCA has the TCR-10

Sony BVP-3 Betacam

in which six Hawkeye studio recorders were operated under computer control. Panasonic has the MVP-100 in which nine decks share two playback signal processing and time base correction systems. The computer of the MVP-100 can be programmed to control up to 28 decks. Its "look-ahead back-up" feature automatically records a dub of upcoming breaks prior to the event and airs it in lock with the original for instant switchover in case there's a problem.

Component signal handling

The long-range impact of this flood of new recorders will probably have more to do with their component method of handling the video signal that it will with the fact that you can finally carry a camera and recorder without orthopedic damage.

The world's color coding systems (NTSC, PAL and SECAM) produce excellent pictures by concentrating their bandwidth compromises in areas where the eye is less apt to be bothered by them. Their drawbacks don't become serious until digital special effects and encoded chroma key are attempted or until the video passes through the narrow window presented by a videotape recorder. These processes aren't as forgiving to our encoded compromises as is the eye. The familiar cross color, cross luminance, and edge crawl are examples of the price we pay because color information shares the same frequency band as luminance.

There's little new about video components. Baird's early color system and CBS's color wheel of the 1940s depended on independent red, blue, and green signals, Today, relatively few people are aware of the picture quality that can be obtained when the color components are maintained as separate signals from source to display. That awareness is increasing. Component video is routine in arcade video games and is finding its way into homes and offices in computer, high-resolution color displays.

To show the significant advantages of component signal handling, Grass Valley Group put on a demonstration in a suite at the Las Vegas Hilton during the NAB. They assembled an RGB component switcher similar in operation and panel layout to the 1600 1L. It accepted RGB inputs from live cameras and (via dematrix boards) the Y, R-Y, B-Y signals from two Sony BVW-10 Betacam players. The most impressive aspect of this demonstration was its chroma-key quality. Chroma keys were done from live camera and from tape. There was no discernable difference—the keys from tape were every bit as good as those from the live camera. Cross color, cross luminance, and edge crawl were completely eliminated. All this was accomplished with machines which have very low head-to-tape speeds—lower even than U-Matic.

Multiple formats

To reap these benefits, we are going to have to contend with multiple tape formats. The attempt to get a single standard for ½-inch cassettes has failed, and the two competing ½-inch camps have made enough sales that it looks as though both will coexist in the marketplace. The decision is not in on ¼-inch yet. Both Bosch and Hitachi have expressed a strong desire to work through SMPTE to see if a common standard for ¼-inch is

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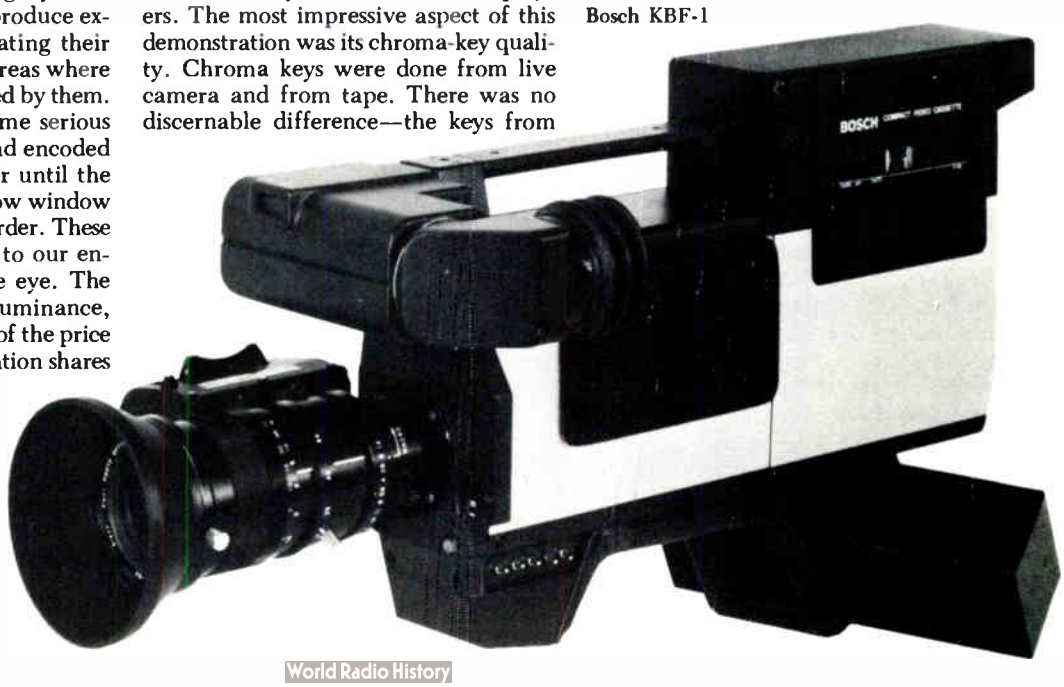
Bosch KBF-1



Ikegami HM-100

RCA Hawkeye HCR-1

possible, and a working group has been set up.

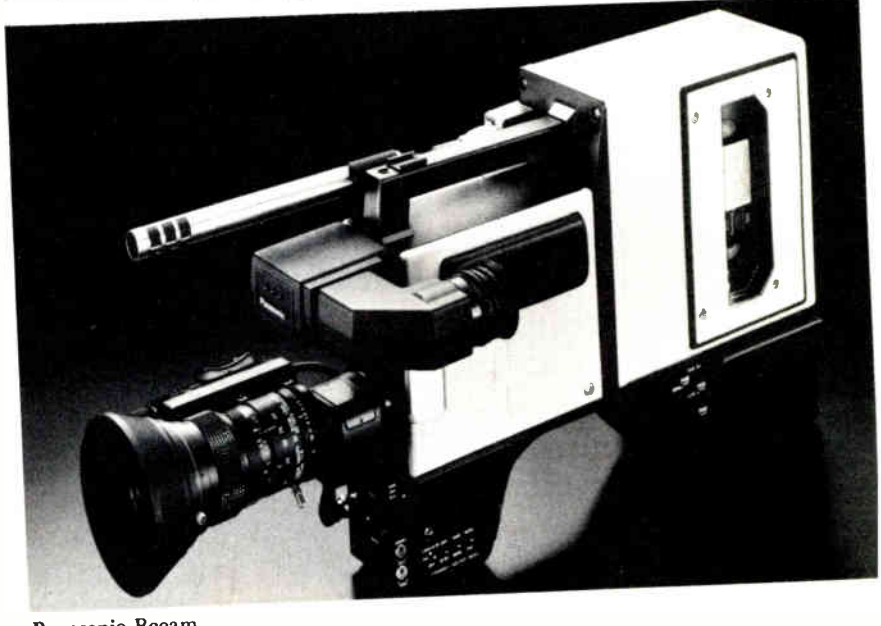
There is another area in which we may yet see some standardization. The SMPTE Working Group on Component Analog Standards has been meeting since late last year in an attempt to define standards for the interconnection of equipment that uses component analog signals. What should the form of the signals be? How many cables will there be, and of what type? Which signals should appear on which pins of what kind of a connector? Can the analog component interface be designed to provide a smooth transition to the emerging digital component studio? The chance of agreement seems much better in these areas than it was for a ½-inch format.

Use internal standards

Lack of standardization in the tape formats themselves may not be as bad as it first seems. We've managed with 1-inch Type B and Type C. Since the new cassettes will most likely be production and not distribution formats, it is only necessary that an organization standardize on one of them for its own internal use. Release dubs will continue to be made to 2-, 1- and ¾-inch. The new systems fit so well into a price/performance hole in the market that production companies should be able to get a reasonable return on their investment even without a standard. The 20-minute maximum recording time on these cassettes might prove more of a barrier to component analog post-production than the multiplicity of tape formats.

The various formats are technically quite interesting. The M, or Chroma Trak, format, developed jointly by RCA and Matsushita, uses a VHS-type cassette. Its components are YIQ. Q bandwidth is approximately half that of I as in NTSC. As in all these systems, one field is recorded in the pass of a pair of heads. A 3 MHz bandwidth Y is FM modulated on a 175 micrometer wide track. Narrowband I & Q (approximately equal to those in NTSC) are frequency division multiplexed and then FM modulated onto the parallel, 65 micrometer wide track. Linear tape speed is 8.05 ips. Writing speed is just over 220 ips. Two audio channels occupy the top edge of the tape with time code and control tracks along the lower edge. The spec's quote audio bandwidth as 15 KHZ with 50 dB SNR.

Sony's Betacam format uses a Beta-type cassette and writes two parallel tracks of equal width for each field. The components are Y, R-Y and B-Y. A 4



Panasonic Recam

MHz luminance signal is FM modulated onto one of the tracks. The two 1.5 MHz chroma signals are compressed 2:1 in time so that each occupies only one-half a line interval; they are then time division multiplexed onto the FM carrier of the second track. In playback, the chroma signals are expanded to their original form. The processing results in a two-line delay between liminance and chrominance. Digital retiming circuitry in the player corrects Y/C timing to within 10 ns. Two audio channels are positioned along the top edge of the tape, and time code and control tracks are along the bottom. Linear tape speed is 4.67 ips. Writing speed is 271.6 ips. Audio bandwidth is quoted at 15 kHz and SNR is 60 dB with Dolby C.

Going even smaller

Bosch has chosen the ¼-inch CVC-type videocassette and some sophisticated electronics to achieve a 20-minute recording time with 3.6 MHz luminance bandwidth and 1.3 MHz chrominance bandwidth. The components used are Y, R-Y and B-Y.

Time compression and expansion circuitry are used here, too; but the approach is very different. In order to achieve a good signal-to-noise ratio with the narrow track widths and low head-to-tape speeds, they have chosen a scheme which increases the recorded wavelength on tape. The luminance video signal for a given line is first put through time expansion circuitry so that, when recorded on tape, it occupies the time (space) of one and a half lines. The associated chrominance information is compressed before recording so that it occupies the time of half a line, thus the luminance and chrominance for one line occupy twice the space on tape that they would if they were recorded at their real-time lengths.

As in the other formats above, the necessary space for the time-manipulated luminance and chrominance signals is provided by writing two tracks in parallel for each field. Linear tape speed for NTSC is approximately 4.8 ips and writing speed is just over 216 ips. Unlike the other systems which use guard bands between tracks, Bosch has adopted the no-guardband/offset-azimuth technique which has worked well in consumer videotape formats. Two audio tracks are recorded along the bottom edge of the tape and a single combination control and time code track is written along the top edge. Audio bandwidth is reported to be 15 KHz with a 60 dB SNR.

There isn't as much information on the Hitachi ¼-inch format as the others. These are the details that are available. The CVC-size cassette and Y, R-Y and B-Y components are used. Luminance is recorded on one of a pair of tracks and chrominance on the other. With a linear tape speed of about 6.2 ips they get 10 minutes recording time with a luminance bandwidth of 4.1 MHz. Two audio and one time code channel are provided. Audio bandwidth is quoted at 15 KHz with 50 db SNR.

The On-Cam system

For those who find ¾-inch quality sufficient and are seeking just improved portability, there is one more choice. Frezzolini has introduced the "On-Cam" VTR system. They have taken a portable VTR which uses the VHS mini, C-type cassette and modified it to meet the stringent requirements of news gathering. It has been "ruggedized" and extensive modifications have been made to improve audio performance.

A complete line of mountings and single-cable interfaces has been produced for direct connection to all of the popular ENG cameras. The package adds 5.5 pounds to the weight of the camera. Frezzolini feels that these standard VHS recordings, coupled with contemporary signal processing circuitry, can match ¾-inch in performance in most applications and do so at half the price, and at less than one-third the weight.

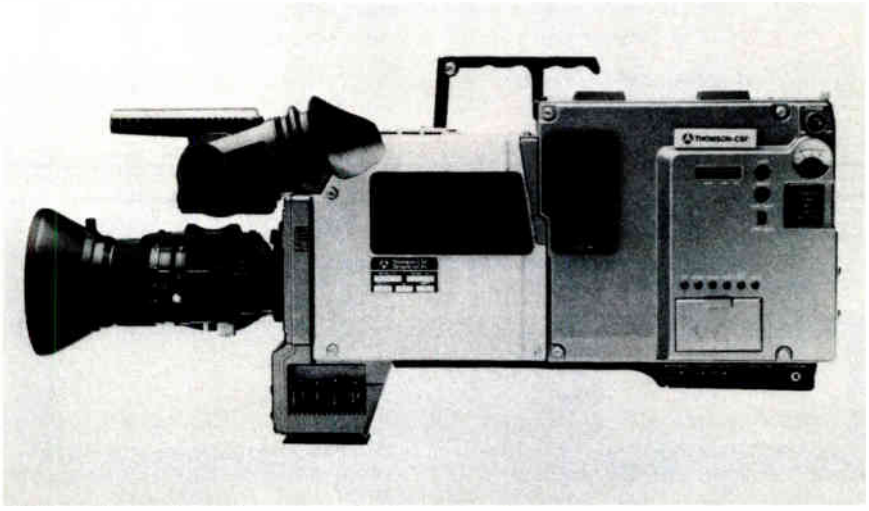
Tape selection

While all the new formats appear to use consumer tapes, that isn't quite the case. When questioned, each manufacturer notes that they can be used, but that optimum performance is achieved only with "graded" or carefully selected tapes. At NAB, Ampex, Fuji, and 3M were showing tapes tailored to the new formats. Anti-static treatments, improved surface smoothness, lower drop-out counts and more rugged cassettes were stressed as important for the higher packing densities in these new formats.

A growing lineup

Working under a licensing and manufacturing agreement and an agreement that includes an exchange of technologies, Thomson-CSF is marketing a Thomson Betacam in cooperation with Sony. Thomson's staff has been trained in sales and service of the one- and three-tube cameras as well as the entire Betacam system. According to a Thomson spokesman, the Thomson Betacam is being built now by Sony, but later will be built by Thomson.

Ikegami did not show a combo camera at this year's NAB. Instead, Ikegami is marketing their HL-83 camera with an add-on sidemount adaptor that will accept the HM-100 M-format recorder. The system, when used with the HM-100, includes an extended shoulder mount, as the recorder is added to the side of the camera instead of at the rear. Other adaptors for the HL-83 accommodate microwave and genlock. Taking the Ikegami approach, the station can buy a good ENG camera with or without the add-on recorder. Boston's WNEV has ordered 14 complete systems from Ikegami.



Thomson-CSF Betacam

Meanwhile, Philips has entered the arena through an agreement with Bosch Fernseh. In a statement issued during the 1983 NAB convention, Philips announced the successful completion of an association with Bosch Fernseh to adopt the ¼-inch Lineplex recorder for a new Philips ENG recording camera. According to the company, "It will feature ⅔-inch pickup tubes for the best possible picture quality. The choice of the Bosch ¼-inch Lineplex recording system was made after close examination of

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available formats." It's the opinion of Philips that the industry will adopt this format for ENG camera/recorder applications. Philips plans to offer a complete line of ¼-inch playback and editing equipment. The new system from Philips is expected to make its debut at the next NAB in Las Vegas.

On the consumer side

The combo camera's acceptance is apparent in the JVC lineup, namely the GZ-S3. This is a breakaway system that can be used as separate pieces or combined for an over-the-shoulder combo camera. It's a very small, very lightweight system, using a compatible VHS recorder. The recorder weighs 4.4 pounds and is half the size of most portables. Called the HRC-C3, it's fully compatible with all VHS equipment through the use of a cassette adapter. To date, JVC has been marketing this camera as a consumer system. It shows that the combo camera concept is as attractive in the consumer market as it is in the broadcast market.

A promising future

The small, precision equipment companies will be important factors in the successful implementation of component systems. There will be lots of loose ends that won't become apparent until a user tackles a special application. The smaller companies are in a position to directly attack these problems. Merlin Engineering has already worked with Panasonic to help develop the MVP-100 multi-deck player and a means of transmitting the M-format signal over microwave in its component form. In addition to Grass Valley, Michael Cox and Shintron have introduced component switching systems. As the number of applications expands it will be the specialized equipment suppliers who fill in the holes and ensure that component analog's potential is realized.

The future of component analog recording is bright. We should see dynamic tracking and slow-motion in the not-too-distant future. Despite the disappointment of multiple formats and the complexity of adding component signals to an NTSC encoded plant, the new systems should see wide use. This is one of those rare occasions where broadcasters and production houses are offered a major increase in quality without a corresponding increase in price. For some systems, component analog may even represent a significant reduction in cost.

Glen Pensinger, video production editor, is television engineer for San Jose State University and an independent television systems consultant in the San Francisco Bay area.

Circle (32) on Action Card

HOW TO AVOID
The dreaded transients

BY SKIP ALDRICH AND DICK CAPRINGO

Computer-controlled television station programming can be a masterpiece of efficiency when it's working, but a nightmare when blackout, brownout, spikes, or other common power problems cause distorted data, mechanical damage, or system shutdown.

At WTCN-TV (Channel 11) in Minneapolis, a Gannett station, the installation of an uninterruptible power source for program-control computer equipment has virtually ended the threat of power problems, making computerized operation the dependable and productive system that it was intended to be.

WTCN-TV, formerly a Metromedia station, began total computerized operation on July 4, 1974, according to engineer Skip Aldrich, who is in charge of computer systems at WTCN. The installation was the first of its kind among the Metromedia stations, and if successful, would provide the experience for consideration of similar systems in affiliated stations. WTCN was sold to Gannett in April 1983.

"During our first two years under computer control, we experienced a number of power problems," Aldrich recalls. "Interruptions due to weather were a continual threat, especially in the spring when lightning would interrupt power several times within hours. We saw power outages due to cables being cut by construction crews; and utility switching commonly caused voltage transients, which we usually noticed as flickering lights."

The station is equipped with a diesel motor-generator standby, he notes, and its coolant, fuel, and crankcase oil are kept pre-heated to operating temperatures so the equipment can respond quickly in any weather. But, power must be out for two or three seconds before the engine is started, and then it requires an additional 15 seconds to stabilize.

"The generator can take care of any long-term blackouts, but it isn't fast enough to compensate for momentary failures or severe transients," Aldrich said. "In fact, it has even contributed a few problems of its own. For example, when the transfer switch brings the generator onto the power line, it creates a spike that's been recorded as high as 60 volts above the normal 120V. The computer would sense this spike and take the defensive action of shutting itself off."

On one occasion, he adds, the generator produced an overvoltage that caused extensive damage throughout the computer control system.

The answer to both line-power problems and generator problems was a 5 kVA UPS system produced by Sola Electric in Elk Grove Village, Illinois. This unit is equipped with a bank of 20 three-cell lead-calcium batteries (60-cell total) that provide 15 minutes of standby power on three 120-volt, 15-amp AC output lines. They provide no-break power to key elements in the computer control system—switching computer, traffic computer, disc memory, line printers, teletypes and dataphone—long enough to allow for generator start-up and stabilization. Transmitter remote control was added to the UPS output later in order to cure the transmitter's tendency to shut itself down when noise appeared on the power line.

The UPS is installed downstream from the generator/utility transfer switch, as are the station's VTR and projection equipment, emergency lighting, and control room air conditioning. This allows generator output to feed into the UPS so battery recharging can begin as soon as the generator light comes on line. It also takes advantage of the UPS system's voltage regulation and isolation characteristics to prevent voltage fluctuations, spikes, and noise created by either the generator or the transfer switch from disturbing the computer equipment.

Designed to operate normally throughout most brownout conditions, the UPS will accept input voltage reductions as low as 20 percent below nominal and still maintain output voltage ±5 percent of nominal without discharging the batteries.

Power for the computer system and its support equipment passes through the UPS and better bank in normal operation, so if the power line fails, the battery bank simply continues supplying the load from its own reserve of power, maintaining full output with no break.

"No-break power has proved to be an essential ingredient when a TV station is totally controlled by computer," Aldrich explains, "because virtually everything the station does hangs on the computer's reliability."

At WTCN, he explains, computer control involves two on-premises computers, a PDP 11/15 and PDP 11/05, both with various peripherals such as printers and CRT (video) input terminals. Both computers use a disc storage base that uses 10-inch hard discs with capacity of 2.5 megabytes per disc. A duplicate dual-disc drive provides redundancy for both hardware and software.

In operation, the 11/15 controls all broadcast switching functions necessary

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The master control room is supervised by a lone technical director (Larry Johnson) with the air of totally computerized switching system. Program log sequence of upcoming 15 events is observed on CRT terminal directly behind switching console; all events are timed, cut-in, and ended automatically according to preset log.

for starting and ending each program event on schedule according to a daily log. The 11/05 primarily serves a traffic and billing function, preparing daily logs and loading them into the 11/15, as well as doing bookkeeping, invoicing, and other data processing chores.

The control sequence actually begins well in advance of broadcast date, usually up to 22 weeks ahead. WTCN originates much of its programming locally, including movies and weekly series as well as commercials, public service messages, news, and sports coverage. All these events must be keyed precisely into available time slots, like pieces of a jigsaw puzzle, which requires accurate processing of tremendous amounts of data.

As individual commercial contacts and program elements are confirmed during daily planning, they are entered via computer terminals, processed by the 11/05, and stored in disc memory. At 6 a.m. every day, the 11/05 transfers all data from the previous day's entries by phone link to a storage computer center in Colorado Springs. This center, operated by Broadcast Communications Services Division of Kaman Sciences, provides a station program package for more than 60 TV stations around the country. Essentially an electronic filing service, it receives WTCN's daily information, shuffles and combines it into daily program logs, then stores the logs for retrieval as needed.

Completed daily logs are drawn out of storage two to four days before air date by WTCN's 11/05, and printed out at the station for review and corrections. The final approval log is then transferred to the 11/15 switching computer, which locks all log events into a timed broadcast sequence.

Prior to the start of each broadcast day, the 11/15 provides a printout of the upcoming day's program log, which gives the technical director on duty a hard copy that can be used as a back-up reference if manual switching becomes necessary.

Broadcast proceeds automatically

If nothing goes wrong, all switching is performed automatically. Shows, announcements, and commercials in film or videotape form, are loaded manually on the appropriate playback equipment in projection and VTR rooms adjacent to the station's master control room. The computer-controlled switching system automatically selects these elements as called for by the log, starting and ending each one at the prescribed time.

The technical director supervises this process with a video terminal that displays a list of the most immediate 15 events on the log.

Displayed along with each listing is the time at which that event is programmed to start. As each event works its way up to the top of the list, its time designation is replaced by a countdown display that ticks off the seconds until switching occurs. The top line of this event stack always displays the on-air event and the time remaining until next event.

If the 11/15 fails to switch the events as logged, or if any event must run overtime, the technical director can override the computer to manually bring the program back onto schedule.

After the day's log of events are completed, the 11/15 transfers log data back to the 11/05 with time data added to con-

firm broadcast. This confirmed log is then transferred by the 11/05 back to Colorado Springs where billing data is prepared. Finally, the 11/05 retrieves the billing data and prints out advertiser invoices at WTCN.

"Protecting the traffic and billing computer from power outages is equally important, but for a different reason," Aldrich asserts. "The 11/05 is not critical on a moment-to-moment basis as is the switching computer, but if power disturbances occur during a transmission to or from Colorado Springs, costly errors could be injected into the log or billing data, or perhaps the entire transmission would have to be restarted from the beginning at our expense."

As a further precaution against the potential expense of recreating billing or log-assembly data lost in transmission, WTCN duplicates its data storage discs three times each day in a sequence that results in two complete back-up discs for each day extending back through the preceding seven days. If all else fails, this backup permits WTCN staff to recreate log and billing data for an entire week at any time without the expense of repeat transmissions from Colorado Springs.

The main backup for the switching computer, however, is human. "Our ability to manually compensate for error or failure in the switching computer isn't much consolation when you realize what needs to be done in the control room," Aldrich explains. "Manual control means that the person on duty has to follow the log, keep track of where the various tape and film events are, watch the clock, and manipulate the switches to make sure the broadcast continues as planned. At the same time, that person has to note all events and times to provide the required program records and billing data. On top of this, he has to restart the computer, using a teletype terminal to tell the computer what day it is, and where to start tracking the log again. Bear in mind that this entire scenario is most likely played out in a panic situation, with only one person on duty in master contol.

Disc damage averted

"The problem can become more difficult if the power outage causes physical damage in the disc drive," he adds. "With a sudden loss of power, the magnetic heads could drop onto the moving disc and destroy the emulsion. When this happens—and it has happened—we have to shut the drive down and replace the disc and the heads. This is why we have a second dual-disc drive for redundancy."

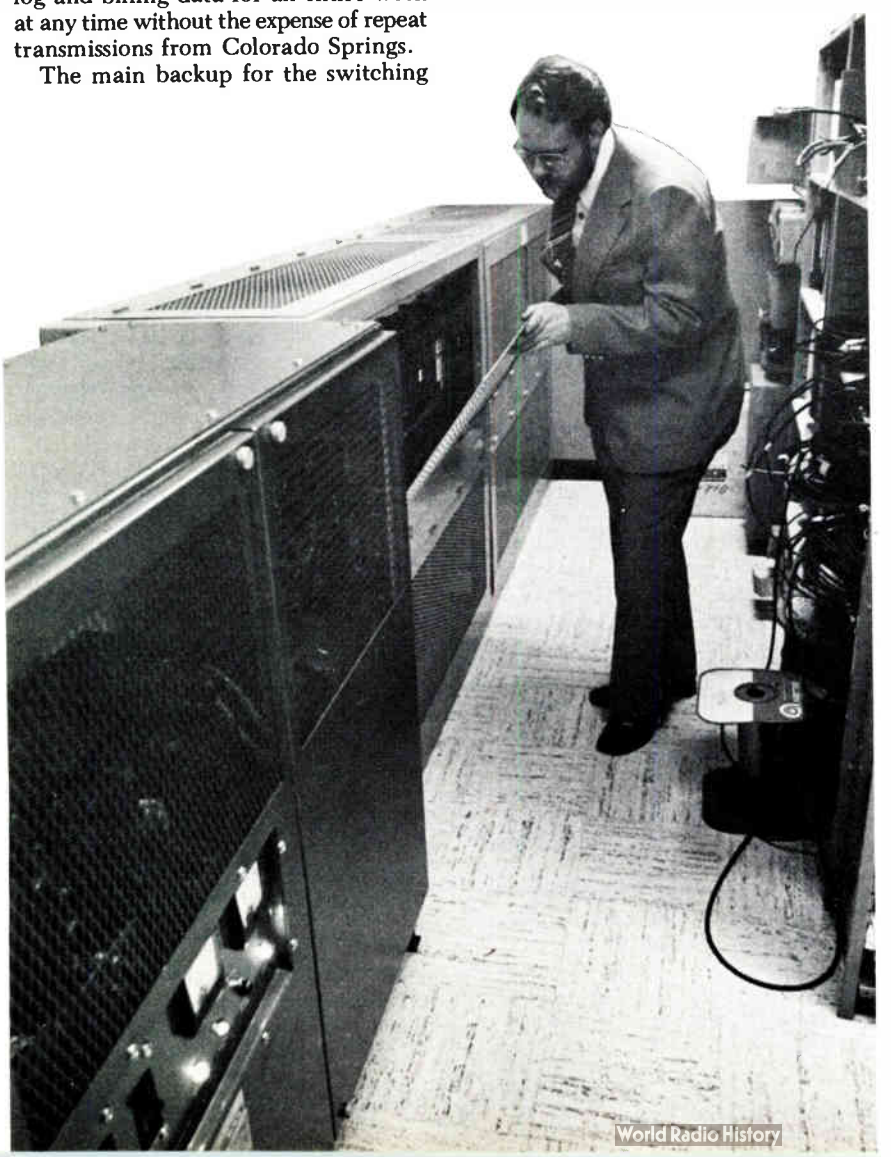
If even a momentary power loss occurs while information is being recalled from the disc, the data may be garbled and the reading has to be repeated. If it occurs while information is being loaded onto the disc, then the errors become locked in memory and might remain there long enough to cause erroneous readings later.

"The sensitivity of the disc drive, and the critical importance of accuracy and reliability at that point in the system, is the main reason why we first considered adding a UPS," Aldrich says. "No matter what else happened, we wanted to prevent power failures from corrupting the information on the disc. If the computer can't read the data, or can't find it, we're back on manual operation in a hurry."

In specifying Sola's UPS, WTCN engineers selected a unit with the solid-state transfer switch for the UPS system's AC bypass. Normally used as a safeguard against internal malfunction, to transfer the load to raw AC line power in the event of any malfunction within the UPS rectifier or inverter, this switch provides a special benefit at WTCN. It allows the UPS to protect itself from overload during disc drive startup, when current inrush leaps to about ten times normal current for a period of about five cycles. Sensing the start of this inrush, the Sola unit's solid-state transfer switch shifts to the bypass line within 4 msec., well within the computer's tolerance of up to 7 msec. outage.

As TV stations move into the computer age—a relative of the information age—line security has become a key consideration. At WTCN it allows the staff an equal measure of confidence and pride in their operation. **BC**

Skip Aldrich is the computer systems engineer at WTCN-TV. Dick Capringo is with Sola Electric.



Switching computer, traffic, and billing computer, disc memory, and other equipment essential to keeping WTCN on the air receive no-break power through a Sola Electric uninterruptible power system (UPS), offering 15 minutes of 5kVA output from a 60 cell battery bank. Unit protects critical equipment from blackout, brownout, spikes, and transients to assure computer reliability. WTCN engineer Skip Aldrich inspects batteries, encased in metal cage for added safety.

AUDIO CONSOLES: MORE POWER FOR YOUR DOLLAR

BY BC STAFF

On the surface, audio consoles for radio stations have settled into two choices: rotary and slide faders. Under the attractive panel and into the main electronics, the choices are endless.

The wide choices confronting buyers today include voltage-controlled amplifiers (VCAs), LED, PPM, VU, and gas discharge level meters, and endless options. As Art Schubert of Ward-Beck puts it, "We offer over 300 options. That's more than we'd like to offer, but the positive side is that we can meet any needs."

But there's more. Enter the microprocessor and the possibilities start all over again. The basic surface choices still rule the industry, however, with rotary faders still selling quite well. As Larry Cervone of Broadcast Electronics explains, "We feel obligated to producing simple equipment with better performance characteristics. You look at our 3600 series plug-in amplifiers, and they're third generation with improved ICs. Besides, the industry is very slow to change. In the medium and small markets, rotary consoles are selling very well."

According to Cervone, one of the factors that keeps Broadcast Electronics, and some other manufacturers, from switching to slide faders is the fact that there is no U.S. manufacturer producing quality slide faders. The industry standard in slide faders is the Penney & Giles version manufactured in England.

At LPB, Harry Larkin agrees that rotary models are popular with the small and medium markets, but that it has as much to do with economics as it does with technical improvements. Larkin points out that the famed Penney & Giles people now have a rotary pot that's not a step attenuator. Instead of stepping a couple of dBs as it goes through its rotation, it gives infinite signal control.

The Penney & Giles faders have basically been speced for military and industrial applications. In fact, it has been reported that the latest rotary versions from Penney & Giles were designed for use in the Harrier fighter.

At Broadcast Audio, these faders are already in their boards and have been on display at the latest conventions. According to Dave Evans, the reaction at NAB was excellent. Of course, Broadcast Audio is one of those manufacturers using VCAs. What this does is to put a DC voltage on the fader rather than the audio signal. Evans says that one of the reasons for going the VCA route is to eliminate the shielded wiring harness. This is a manufacturing advantage and a positive aspect of how the console is laid out. Cervone adds that it's also an attempt to get away from transformers.

All manufacturers questioned indicate that there still is reluctance by some operators and engineers to switch from rotary to slide consoles. However, the key is cost. Most rotary consoles are sold to medium- and small-market stations. At some medium- and large-market stations, the on-air console is still rotary, but the slide fader version is in the production booth.

Another aspect of the choice rides with the operational format of the station. If the on-air format is not complicated, a rotary may be quite appropriate. And as you're automated, the variations of your automated format again will affect the console selected.

UREI takes the approach that you can change your fader from Penney & Giles conductive plastic faders to linear or rotary faders, and Bournes rotary faders. The faders can be removed and the alternate fader put in plate whether it's rotary or linear.

So on the surface, those rotary models you see at conventions look very familiar. But give a salesman half a chance, and you'll quickly discover that rotaries aren't what they used to be. If they've been your choice all along, better take a close look at what's behind the panels. Across the board, the 1983 versions are vastly improved and still cost effective.

Sliding into slides

Arguments abound among manufacturers concerning VCAs. Ward-Beck has no intention of using them at present, yet other manufacturers see them as a real selling point. As Art Schubert puts it, "The Penney & Giles is good enough by itself. Besides, we can't find a VCA today that would do justice to the Penney & Giles." On the opposite side, Barry Roche at Rupert Neve feels that they are important, but that they build their own VCAs and they are not likely to license anyone else to use them.

Dave Evans at Broadcast Audio told *BC* that there is an alternative to VCAs. "There is a digital pot control. We do have one console that employs digital audio pot controls. We use a digitally encoded slide fader, which is used in conjunction with analog devices. Like VCAs, the audio stays in the preamp and it's controlled by a servo digital signal."

At Rupert Neve, VCAs are seen as an operational aid. The company says they permit subgrouping packages. They've designed their own VCA on a thick film subtrate.

When you cross the line into slide faders, costs are higher. This starts with the fader itself, and the variations off the theme go on up from there. Cetec is among those who cross the line, offering both rotary and slide. On the slide side, their console includes excellent specs, but as Dow Jones (that's his real name!) told *BC*, the console has some interesting features. The trouble indicator is an example, bordering on diagnostics. Jones told *BC*, "It can be customer wired to show loss of air signal, EBS alert, or trouble with the mike, transmitter, or phone. The meters, not to confuse the issue, are dark until a channel is activated. What's more, the equalizer can be wired to equalize three of the fader modules."

As David Oren at Teac explains it: "When you're using a linear fader, you can tell where your level is set at a glance. With a rotary fader, it's a lot tougher to tell at a glance. Now if you

Audio consoles are becoming more flexible, more user friendly, and more capable.

go with VCAs, the next step is automation. But by using linear faders, you have a lot more real estate to work with." Oren told *BC* that Teac modules can be removed while the DJ is on the air; and, as he says, "In demos, we've pulled modules out and you can't hear any pop in the speakers."

Bob Bloom of ADM points out that there's more to using slides. "The rotary attenuator, to do it well, requires about 2¾ inches of panel space. A slide attenuator on a typical console takes 1½ inches. The consoles are becoming so complex today that room becomes a real problem." One look at ADM's ST series II or the VP series is sufficient to verify Bloom's point. "That's why we've gone, and I think that's why other manufacturers have gone, to the slide vs. the rotary."

Where VCAs are concerned, ADM wants to satisfy the user. For example, on the VP series, they are optional. Not everyone is in agreement about their use.

At Auditronics, Larry Lamoray told *BC*, "We have come across some opposition to slide faders, but most people who want rotaries are looking for a lower-priced console. However, there are other features typical of slide consoles that you won't find in the lower price ranges. The amount of built-in logic is an example. You can add limiter, compressor, telephone interfaces, and other modules."

At Pacific Recorders & Engineering, Larry Zaiser told *BC* that their approach is to provide in the BMX a control point. "We've tried successfully within the logic and the switching capabilities to make the studio reactive to the engineer or announcer at his console... without making him into an octopus." So machine control is another aspect of the changes sweeping the console market. As Zaiser says, "The traditional studio, over a period of time, is an assortment of little boxes... all with their knobs and switches. They really don't unite to become a system. One of the things that Pacific has been successful at, as well as several other vendors, is uniting various products within the studio to make it an operational system."

MRI Systems is another company designing in the central control philosophy. Their modular SS8824 has that ability to offer the operator total control. Take one look at this board and you can see that if they were using rotary pots, the unit would be 10 or 12 feet long. The SS8824 also has two individually assignable stereo buses, plus an auxiliary stereo bus, with individual level assignment, electronic cue switching, and improved on/off switching.

Metering the signal

There are not quite as many varieties of readout devices being offered as electronic devices, but there is a choice. In Europe, the PPM meter is quite popular; however, VU meters still prevail in the U.S.

In recent times it has been optional on some consoles and standard on a few to offer LED readouts or gas discharge devices. Generally, the LEDs jump up the line dBs at a time, while the newer gas discharge devices are being built with as many as 200 elements across the scale. This gives a fluid movement. Still, like rotary vs. slides, metering is a matter of preference.

Manufacturers who specialize in

Continued on page 48

custom consoles will give you whatever you like, even if it comes down to using VUs and LEDs or gas discharge devices on the same console. Ward-Beck, for example, considers the meter as "third party" equipment. Since they don't manufacture the meter, it depends on what the customer wants.

The ESA-10 console from Audio Metrics uses multi-segment LED meters in a linear fader arrangement. On the other hand, Teac takes the combination approach. They use a combination VU/peak LED meter in the same meter case. While Teac feels LED meters may be best used in low-light environments, the Teac consoles have been used in both on-air and production applications.

Looking at maintenance

The arguments for modular vs. rotary in terms of maintenance are obvious. Modules can be removed from the console quickly, and in some cases without removing the console from the air. However, one look at these consoles will tell you that they could easily be more susceptible to cokes, coffee, cigarette ashes, and the like. And while that's true, manufacturers such as Ward-Beck take extra pains to design the module and the mainframe so that the module is well protected. Still, it can happen. It pays to examine those modules closely with maintenance in mind.

Coming from a long history in the recording business, where faders first made their appearance, David Oren says there was little evidence in that industry of having cokes or coffee spilled on the faders. Anyway, as he points out, the linear fader is not wide open. The fader track closes as it moves along.

Basically, rotaries are simpler consoles, and that lack of loaded down circuitry and open space does become a maintenance factor. Loose wires, heavy cabling, and point-to-point wiring are on the way out. In some consoles, and especially the modular versions, when the faders and optional modules are removed, there is little left in the console other than the mainframe.

Basically, all consoles have undergone layout modifications that bring maintenance down to a minimum. The Cetec trouble locator not only speeds maintenance, but by alerting the operator, it further cuts actual air down time.

Automating the process

Wally Kabrick at Harris told *BC* that their Micro Mac console, not exactly a new model, is just now catching on. It brings with it the microprocessor, an addition that is making its way into the crowded world of consoles. This year, Ernie Ankele of Autogram also brought out a console with a microprocessor in it.

Says Kabrick: "People really want the assist mode instead of the full automation mode, so we have an assist mode sequencer. Now that we've added the walk-away option, we've had people saying to us, 'Hey, now I've got some-

Console manufacturers

For more information on the stereo console manufacturers listed below, circle the corresponding boldface number on the Action Card in this issue.

ADM Technology	(Circle 200)
ALICE (Stancoil Ltd.)	(Circle 201)
Allen and Heath Brenell USA Ltd.	(Circle 202)
Amco Engineering	(Circle 203)
Amek Systems and Controls Amek of America	(Circle 204)
Arrakis Systems	(Circle 205)
Audioarts Engineering	(Circle 206)
Audio Processing Systems	(Circle 207)
Auditronics	(Circle 208)
Audix Limited	(Circle 209)
Audy Instruments	(Circle 210)
Autogram Corporation	(Circle 211)
Don Britton Ent.	(Circle 212)
Broadcast Electronics	(Circle 213)
Broadcast Technology	(Circle 214)
BSM Broadcast Systems	(Circle 215)
Cetec Broadcast Group	(Circle 216)
Coherent Communications	(Circle 217)
Continental Electronics Mfg. Co.	(Circle 218)
Datatronix	(Circle 219)
Davis & Sanford Co.	(Circle 220)
Dyma Engineering	(Circle 221)
Elcom-Bauer Broadcast Prod.	(Circle 222)
Elektroimpex	(Circle 223)
Enertec, Professional Audio	(Circle 224)
Farrtronics	(Circle 225)
Full Compass Systems	(Circle 226)
Greg Laboratories	(Circle 227)
Harris, Broadcast Division Studio Systems Operation	(Circle 228)
Harrison Systems	(Circle 229)
Howe Audio Productions	(Circle 230)
IGM Communications	(Circle 231)
LPB Inc.	(Circle 232)
Logitek Electronic Systems	(Circle 233)
McMartin Industries	(Circle 234)
MBI Broadcast Systems Ltd.	(Circle 235)
MCI/Sony	(Circle 236)
MRI Systems Ltd.	(Circle 237)
Micro-Trak Corporation	(Circle 238)
Modular Audio Products	(Circle 239)
Neve Electronics International	(Circle 240)
Panasonic, Professional Audio Division	(Circle 241)
Patch Bay Designations	(Circle 242)
Processing Plus	(Circle 243)
ProTech Audio Corporation	(Circle 244)
Quad/Eight Electronics	(Circle 245)
RCA Broadcast Systems	(Circle 246)
Radio Systems	(Circle 247)
Ramko Research	(Circle 248)
Richmond Sound Design	(Circle 249)
Rohde & Schwarz GmbH	(Circle 250)
C.N. Rood BV	(Circle 251)
Russco	(Circle 252)
SATT Electronics	(Circle 253)
SONOSAX	(Circle 254)
Salt Electronics	(Circle 255)
Scantex Laboratories	(Circle 256)
Siemen AG Osterreich	(Circle 257)
Solid State Logic Ltd.	(Circle 258)
Sontec Electronics	(Circle 259)
Sony Broadcast Limited	(Circle 260)
Soundcraft Electronics	(Circle 261)
Spectra Sonics	(Circle 262)
Studer International AG	(Circle 263)
Studer ReVox America	(Circle 264)
TOA Electronics	(Circle 265)
Tascam, Div. of Teac	(Circle 266)
Tramec Electronics	(Circle 267)
Trident USA Inc.	(Circle 268)
Tweed Audio USA	(Circle 269)
UMC Electronics Co.	(Circle 270)
UREI	(Circle 271)
VIF International	(Circle 272)
Video Accessories Mfg Co.	(Circle 273)
Ward-Beck Systems Ltd.	(Circle 274)
Yamaha International	(Circle 275)

thing I can talk to my general manager about.' Before, they really didn't need it because they could do whatever they needed with other consoles."

With the walk-away option, you can program in, via the keyboard, the sequence of sources that you want to start. You can put in the start and stop delay for reel-to-reel machines. You can program it from one or two events up to four or five hours.

On the TV audio side, ADM's new 9000 full-stereo console is equipped with a computer-oriented router which virtually eliminates the need for external switching and patching.

Microprocessors lead into a whole new direction for consoles, and more than a few manufacturers are starting or moving in this direction. Digital audio also becomes a factor, but most manufacturers are leaving that to the future.

Looking down the line, ADM's Bloom told *BC*, "The main thing we see is that microprocessors and routing will become a big part of the television production console. We see that especially with stereo television coming on. The other thing we see is that the SMPTE bus will start to affect audio. The stations are going to automate more and more, and our consoles had better be able to clock SMPTE. We're taking a lot of strides in that direction."

According to Ward-Beck's Art Schubert, the company has been using Penney & Giles slide faders since 1972. But one of the newer additions to a Ward-Beck console is the microprocessor. Schubert says it's used "for control. . . . This is a sophisticated means of control. You can boil that down to microprocessors. It allows you to control things that go on in your system, with the emphasis on system." Once more we see the console as a central control device rather than solely riding the audio level.

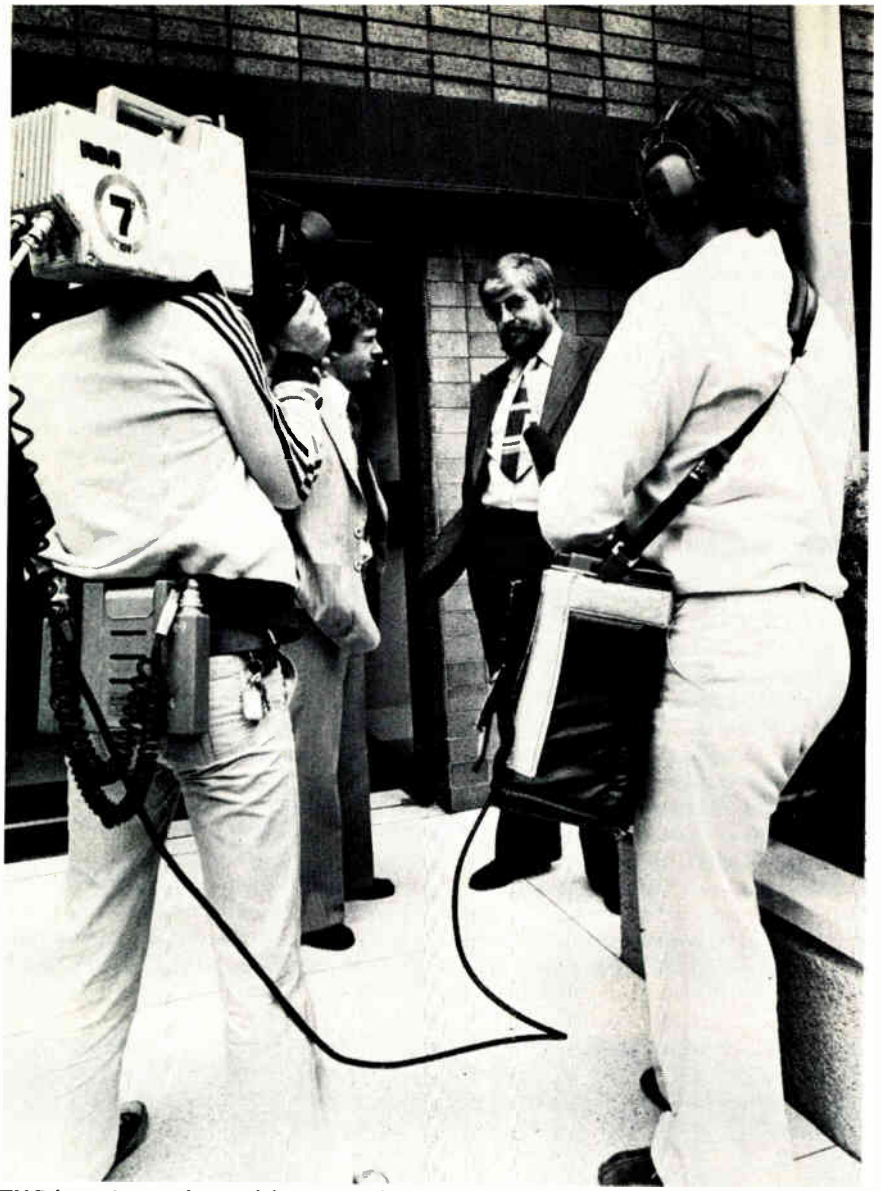
According to Barry Roche at Rupert Neve, the microprocessor can be used for controlling output assignments on production consoles. They can, in fact, be used to memorize preset functions. Rupert Neve added the microprocessor in some designs back in 1979.

While other manufacturers are holding off on digital, Neve has delivered a digital console to the BBC for use in a specially equipped audio van. Their approach also has been to include fiber optics. Roche told *BC* that contrary to popular opinion, digital will actually bring the costs down.

Summing up

There are far more manufacturers of quality consoles that need to be checked out than we could cover here. The list of those we suggest contacting is included with Action Card response numbers for your convenience. The manufacturers interviewed were seen as typical of the predominant design philosophies prevalent today, and are not presented as the last word or as having the only answers. Hopefully, the comments presented will give broadcasters the result we found: consoles today can be whatever you want.

AM stereo's potential has had its effect on design philosophies, as has the ever-growing popularity of the microprocessor. From packaging to faders to electronics, consoles have been evolving, and all indications are that improvements will continue. In the process, we've seen the simple board transcend into a console. We find them more flexible, more operationally user friendly, infinitely more capable, and certainly a better buy than at any time in their history. BC



ENG batteries are designed for rugged field use, but still require care to ensure long life.

Batteries:

What you get depends on how you treat them

BY RON MERRELL

Battery packs and battery belts don't fall into the "Gee Whiz" category of product development. After all, their prices have been steady for a long time now, and we haven't yet seen a battery that never runs down.

What has been happening is that the industry has seen packaging and internal improvements, taking little note of either. Starting with the lead-acid battery, the industry has shifted to using the nickel-cadmium and silver-zinc batteries, with nickel-cadmium leading the way for most applications.

Lead-acid batteries

Most lead-acid buys are based on cost factors. They do cost a lot less, but there is a lower cycle life that must be dealt with. Cycle life refers to the number of times a battery can be recharged to a full charge before it no longer delivers its rated capacity under normal use. The surest sign that you've reached this point is when you fully charged the battery and yet under use, it quickly drops below the operating voltage of the equipment it's running. Also, you can detect it in the charge cycle when you know that the battery is nearly completely discharged, yet it comes to a full charge in far less than the normal full charge time.

According to a conversation with Ray Turner and Bill Mallon of Perrott Engineering, lead-acid batteries will yield more of their rated capacity in cold weather than nickel-cadmium batteries. But, as Turner says, "You can take care of that by putting your battery belt under your jacket. That keeps the temperature of the batteries higher."

Lead-acid is cheaper, but it will not have the same cycle life of nickel-cadmium, the discharge curve is steeper, and it probably should be slow charged. Manufacturers agree that which battery you select has much to do with its application and your budget..

On the other hand, Kapco, a manufacturer of lead-acid batteries, uses the lack of lead-acid memory effects as a selling point. Ambient temperature is important, and their batteries will work in temperatures as low as – 40 degrees up to + 150 degrees Fahrenheit. Their guarantee is for maintenance-free operation over a one-year period.

Nickel-cadmium batteries

The nickel-cadmium battery is a good compromise between lead-acid and silver-zinc batteries, although some manufacturers would disagree. The cycle life of typical nickel-cadmium batteries is in the range of several hundred cycles, according to John Crawford of Frezzolini.

Generally, the nickel-cadmium bat-

tery also is, as Crawford says, "running better than they ever have before. The performance record in the field is very outstanding for us and the major suppliers. I think if you talk with the professionals, you'll find that they don't really have to worry too much about these batteries. You're seeing more capacity, better performance characteristics, and still at an economical price."

Turner points out that nickel-cadmium batteries are not only lighter than lead-acid, but they are better candidates for fast charging. Be sure when you buy one to specify a fast charge or standard battery. There is a difference.

Other batteries

There are other batteries available, such as silver-zinc and lithium, but for most broadcast applications they are not necessary. Lithium, for example, is more for a one-shot assignment. Silver-zinc is being offered today, and it often takes a back seat to nickel-cadmium based on price. Generally, the silver-zinc battery is lighter and will last far longer on a single charge. They have been used by the military and the networks, but most stations have not used them.

While these batteries last longer on a single charge, running several hours, the tradeoff is that they do not offer the higher cycle life of nickel-cadmium batteries. As one manufacturer puts it, you can take a bag full of NiCads for an all-day assignment, or one silver-zinc battery. It's a point worth discussing with battery manufacturers the next time you are at a convention, especially when you're about to assume that batteries are batteries, so why waste time at a battery booth. All manufacturers interviewed agree that your battery choice depends on your applications.

Can a battery remember?

Steve Alexander at Alexander Manufacturing says that "battery memory is probably the most misused and most misunderstood term in the battery business, especially among users.

At Anton/Bauer, John O'Keefe jumped right on the subject of battery memory. It isn't as though the battery has a built-in memory device, but from a user standpoint, it may as well have one. If you take an ENG camera on an assignment that lasts just one cassette long and then store the battery, you might be better off to let it sit until the next assignment. At least that's better in most cases than bringing it back to the station every day after 20 or 30 minutes of shooting and bringing the battery immediately back to full charge.

Why is this so? Because the battery seems to remember that it runs for 20 minutes and then gets recharged. The result is that, in the field, the battery will start to drop off faster than it should, after 20 minutes.

An Anton/Bauer technical bulletin explains it this way:

"The cause of the so-called 'memory effect' can be attributed basically to two situations. The first is precisely repetitive partial discharge, followed by a full slow charge. The key word is *precisely*. This effect was first noticed in a satellite where the battery was discharged only partially to the exact same point and recharged. As the process continues, the battery eventually will 'memorize' this point of partial discharge. If the battery is partially discharged to various and random depths before discharging, the memory effect is not encountered."

The bulletin explains that this can be avoided by labeling the batteries so they can be rotated, avoiding the memory effect.

Mallon explains the problem this way, "In the battery you have two different plates and you have a separating material between them. As the battery discharges, the liquid that is in there is absorbed into the plates. In the charging cycle, what you're doing is forcing the liquid out of the plates. So by only half charging it or half discharging it, you never get all the liquid in and out of the plates. The plates aren't exercised properly. When you 100-percent cycle it at given intervals (discharge it down to 1 volt per cell, then charge it) you force the liquid out of the plates to where you have the maximum amount of liquid out of the plates. This gives you the maximum capacity."

Manufacturers agree that cycling the battery two or three times will eliminate its sluggish, lazy, or memory effect.

Charging the battery

The subject of charging batteries can be linked to what we've been calling battery memory, or depressed voltage by others. As Don Civitillo of Cine 60 told *BC*, there are many versions of the phenomenon, but you can experience it by overcharging.

Alexandres of Alexander Manufacturing comments that replacing cells with "alien" types can have another effect. As he explains, "One good cell inserted with ones near the end of their life put you in a case where you haven't gained a thing. The others will die and the one good new one won't help.

Most battery manufacturers have their own chargers. It's not just a function of additional sales and profits. While Christie has a long history of producing quality chargers, the individual battery manufacturers feel that their chargers are designed specifically for their batteries. Of course, they will work on other batteries, but there is not just one model of nickel-cadmium battery available. "The worst fear I have," explains Civitillo, "is that someone will put a lead-acid charger on our nickel-cadmium batteries." Why? Because as Civitillo says, "The battery will never be fully charged, yet the battery will heat

Continued on page 52

up." This could be hazardous because the batteries could start venting acid and a fire could result.

Generally, manufacturers recommend bringing the battery up to room temperature before going into a fast charge. Remember that not all nickel-cadmium batteries are fast-charge types. For a slow charge, it's possible to charge in low temperatures. Don't put a fast charge on a cold battery. However, all charging is recommended at room temperature. Since all batteries are not alike, it's best to read the manual or literature that comes with the battery.

Wall chargers and cheap chargers can shorten the life of batteries as well. This is true because they can overcharge the battery and shorten its cycle life. The better chargers sense the battery condition. The cheap ones don't. Some also sense the battery heat and shut the charge down when the battery goes beyond a certain point. Some temperature cutoff systems shut the charger down at 105° F.

At conventions, manufacturers field complaints that batteries aren't living up to expectations. They won't hold a charge, or they die earlier than they should. In many cases, the problem was how the battery was charged and whether or not it was exercised. Manufacturers recommend exercising the battery on a regular schedule. The higher cycle figures being quoted today can only be reached by proper care and treatment.

Replacing batteries

Occasionally batteries do have their own problems. Far too often what happens is that the engineer runs out and buys an "alien" cell and wires into the pack or belt. But Civitillo echoes the warning of all manufacturers when he says, "The pack or belt will be no better than the weakest or lowest capacity cell in the series."

Cheaper cells can get the belt going, but the problems can become severe. For example, nickel-cadmium batteries should be charged when they get to about 1 volt. But suppose the capacity of the cell added on a hurry-up job does not match those in the belt. If that cell falls too low, it can go into reversal. Once in reversal, the cell will look like the opposite polarity. The next time you put the belt on a charger, it will come up nicely; but under use, the voltage will fall off quickly. In fact, the pack or belt could be damaged permanently.

Christie batteries now feature overload with an automatic reset and a discharge indicator light that tells you when to recharge. It is true that if cells go too far down, they can go into reversal. Like most other reputable battery companies, Christie does offer a warranty on their batteries. Their connection with the broadcast industry has led to charger designs that are compatible with most batteries in common use in the industry. The fear that most battery manufacturers have is that chargers will be used on nickel-cadmium batteries that stand a good chance of destroying them or greatly shortening their life.

Batteries also can be damaged by using chargers that were never intended for the belt or pack. The wiring and connectors are the culprit.

The life of a charge is all that it's cracked up to be, but often the user thinks only of the actual shooting time. If you have a 20-minute cassette and the camera runs down before or just at the end of a cassette, you can miss a key shot. Trouble is, the camera must be set up, and many times it is not turned off between setup and shooting or between

List of suppliers

For information on the following suppliers, circle the corresponding boldface number on the Action Card in this issue.

Battery belts

Adwar Video (Circle **276**)
Alexander Battery Sales (Circle **277**)
Alexander Mfg. Co. (Circle **278**)
Anton/Bauer (Circle **279**)
BW Lighting Systems (Circle **280**)
Calvert Electronics (Circle **281**)
Century Precision Optics (Circle **282**)
Christie Electric (Circle **283**)
Cine 60 Inc. (Circle **284**)
Cinema Products (Circle **285**)
Comprehensive Video Supply (Circle **286**)
Continental Camera Systems (Circle **287**)
Enerlite Products Corp. (Circle **288**)
Film/Video Equipment Service (Circle **289**)
Frezzolini Electronics (Circle **290**)
Kapco (Circle **291**)
Multiplier Industries (Circle **292**)
Nalpak Sales (Circle **293**)
One Pass Video (Circle **294**)
PAG Power Ltd. (Circle **295**)
PEP Inc. (Circle **296**)
Panasonic (Circle **297**)
Perrott Engineering Labs (Circle **298**)
Portable Energy Products (Circle **299**)
Smith-Victor Sales (Circle **300**)
Swintek Enterprises (Circle **301**)
Tascam (Circle **302**)
VDO-PAK Products (Circle **303**)

ENG battery packs

Alexander Mfg. Co. (Circle **304**)
Anton/Bauer (Circle **305**)
Calvert Electronics (Circle **306**)
Century Precision Optics (Circle **307**)
Christie Electric Corp. (Circle **308**)
Cine 60 Inc. (Circle **309**)
Cont'l Camera Systems (Circle **310**)
Enerlite Products Corp. (Circle **311**)
Film/Video Equipment Service (Circle **312**)
Frezzolini Electronics (Circle **313**)
GNB Batteries, Industrial Battery Division (Circle **314**)
Harris, Broadcast Division Studio Systems Operation (Circle **315**)
Ikegami Electronics (Circle **316**)
Kapco Inc. (Circle **317**)
Marti Electronics (Circle **318**)
Multiplier Industries (Circle **319**)
PAG Power Ltd. (Circle **320**)
PEP Inc. (Circle **321**)
Panasonic (Circle **322**)
Panasonic Canada (Circle **323**)
Perrott Engineering Labs (Circle **324**)
Portable Energy Products (Circle **325**)
Pro Battery (Circle **390**)
RMS Electronics (Circle **326**)
Sharp Electronics (Circle **327**)
Smith-Victor Sales Corp. (Circle **328**)
Sony Broadcast Products (Circle **329**)
VDO-PAK Products (Circle **330**)
Videomedia (Circle **331**)

Lighting battery packs

Adwar Video (Circle **332**)
Alexander Mfg. Co. (Circle **333**)
Anton/Bauer (Circle **334**)
BW Lighting Systems (Circle **335**)
Bogen Photo (Circle **336**)
Walter S. Brewer Co. (Circle **337**)
Calvert Electronics (Circle **338**)
Century Precision Optics (Circle **339**)
Christie Electric Corp. (Circle **340**)
Cine 60 Inc. (Circle **341**)
Cinema Products (Circle **342**)
Comprehensive Video Supply (Circle **343**)
Film/Video Equipment Service (Circle **344**)
Frezzolini Electronics (Circle **345**)
Kapco (Circle **346**)
LTM Corporation of America (Circle **347**)
Multiplier Industries Corporation (Circle **348**)
PAG Power Ltd. (Circle **349**)
Panasonic (Circle **350**)
Perrott Engineering Labs (Circle **351**)
Portable Energy Products (Circle **352**)
Smith-Victor Sales Corp. (Circle **353**)
John M. Sullivan Associates (Circle **354**)
VDO-PAK Products (Circle **355**)
Videomedia (Circle **356**)

Battery chargers

Alexander Battery Sales (Circle **357**)
Anton/Bauer (Circle **358**)
BW Lighting Systems (Circle **359**)
Beyer Dynamic (Circle **360**)
Brabury Electronics (Circle **361**)
Calvert Electronics (Circle **362**)
Christie Electric (Circle **363**)
Cine 60 Inc. (Circle **364**)
Cinetronics (Circle **365**)
Comprehensive Video Supply (Circle **366**)
Dynamote Corporation (Circle **367**)
Film/Video Equipment Service (Circle **368**)
Frezzolini Electronics (Circle **369**)
GNB Batteries, Industrial Battery Division (Circle **370**)
Ikegami Electronics (Circle **371**)
Kapco (Circle **372**)
Marti Electronics (Circle **373**)
Multiplier Industries (Circle **374**)
PEP Inc. (Circle **375**)
North Wind Power Co. (Circle **376**)
Onan Corporation (Circle **377**)
PAG Power Ltd. (Circle **378**)
Panasonic (Circle **379**)
Panasonic Canada (Circle **380**)
Perrott Engineering Labs (Circle **381**)
Portable Energy Products (Circle **382**)
Sharp Electronics (Circle **383**)
Smith-Victor Sales (Circle **384**)
John M. Sullivan Asso. (Circle **385**)
Swintek Enterprises (Circle **386**)
Vanner Inc. (Circle **387**)
VDO-PAK Products (Circle **388**)
Videomedia (Circle **389**)

shots. If you clock the time from when the camera is first turned on until it is turned off, or the total on time, you will see most professional batteries meeting their claims.

Once again, as the manufacturers say, your battery choice should be dictated by your applications. Batteries are offered in a variety of amp hour ratings; and while you may opt for the cheapest way out, you may also have limited yourself to the shortest discharge time. If you tell the manufacturers how you use the equipment and explain, without all the painfull details, your typical assignments, they will in almost all cases suggest the most compatible battery within their line. They want repeat sales. And that comes after a long and successful battery life-cycle experience.

Meanwhile, chargers have been greatly improved, both by battery manufacturers and by charger manufacturers. The key word is to understand what your battery requires, and that includes cabling and connections. Charger manufacturers will be equally interested in matching their units with your batteries.

Battery packaging

Today's batteries are packaged in cases and belts truly designed for the field use they'll get. Anyone working remotes and ENG assignments knows that the battery gets the roughest treatment, yet they seem immune to damage.

While it's true that batteries can take rough treatment, beware of crunching blows. If a battery is dented, it should be replaced. Most manufacturers are protecting their batteries quite well, but remember in the case of the belt, the batteries are wired together. Newer designs make it easy to get into the belt, so it's a good idea to occasionally check out the battery after it has been in the field for several months and survived many cycles.

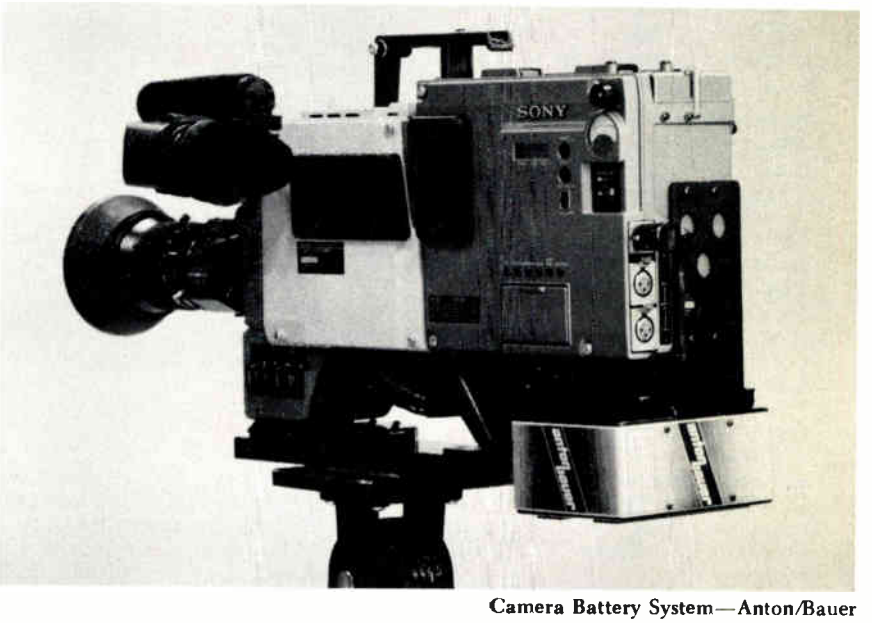
Packaging not only is more sturdy and road-worthy, it's also more attractive. Gene Sherry's Pro Battery offers batteries in five different colors. They'll even put your call sign on it.

Other improvements are bound to come. There will be effects of meeting new military and space requirements, and there always will be the effect of competition. For now, they are a good buy, especially when you matched your needs with the specs. BC

PRODUCT PREMIERE

Camera battery system (Circle 111)

ANTON/BAUER—Anton/Bauer Snap-On™ quick-release battery brackets are now available for both the Sony BVW-1 and BVW-3 Betacam combo cameras. These brackets, models QR-BETA 1 (Sony #DC-306AN) and QR-BETA III (Sony #DC-307AN) respectively, attach directly to the camera with existing screws; therefore, no modifications are required.



Camera Battery System—Anton/Bauer

Balance is significantly enhanced and the center of gravity is lowered, which makes these cameras more stable on the shoulder. Cameramen will appreciate the improved handling and reduction of fatigue.

Most important is the almost three times greater running time with the industry standard Anton/Bauer Pro Pac™ 13 battery (Sony #BP-65AN). Reliable charging is accomplished with the new Anton/Bauer Lifesaver™ chargers.

These brackets will also accept Anton/Bauer SV-13 silver batteries (pictured with BVW-3) which will run the BVW-3 an astonishing five hours with the BVW-1 over seven hours.

Edit code master control (Circle 101)

EVERTZ MICROSYSTEMS—At the Montreux Symposium, Evertz featured a number of new products, including the model ECM 4000 edit code master. The unit is designed to take full advantage of a multitude of applications for vertical interval time code (VITC). It is a combination generator and high-speed reader for both longitudinal and VITC, with nearly all active components on plug-in modules. Using a powerful microprocessor and built-in diagnostics, the 4000 is reliable and flexible.

By distributing, switching, and recording VITC along with program video, the applications are limitless. Examples include synchronization of time clocks to frame accuracy; transmitting alphanumeric data, such as program cues to network stations along with the program video; issuing remote control commands to unmanned transmitter sites or loading computer data memories; and sending machine start, stop, and record commands through the routing switcher along with program video. In addition, you can have manual or automatic source identification.

Two levels of remote control are available.

Digital audio disc system (Circle 102)

SONY—Sony Professional Audio Products is introducing a professional Compact Disc player, the CDP-5000. The console-type player offers professional capabilities, and is designed to support and enhance the worldwide launch of the Compact Disc digital audio system.

The 4¾-inch diameter Compact Disc is capable of storing more than 60 minutes of high-quality stereo audio on one side. Information on the disc is read by laser-beam pick-up, completely eliminating the wear and distortion introduced by mechanical pick-up devices.

The CDP-5000, designed for broadcast studios and recording studios, permits rapid and accurate access to any segment of a Compact Disc recording. In addition, the professional player has the reliability and durability required for use in radio and television stations and recording studios.

Portable battery (Circle 103)

PRO BATTERY—This company is introducing the rugged PB-90, a 12-volt

NiCad battery for the Sony VCR. The new battery is designed for longer use, faster loading, quick recharging, and standing up to tough field use. Color coding and personalizing for corporate identification, crew identification, and even cameraman identification are available on the PB-90.

Pro Battery takes special care to ensure that the PB-90 gives the longest life possible per charge and the maximum number of recharges for a NiCad system. They achieve this by using only GE matched graded cells. This dramatically increases efficiency.

The PB-90 can be slow charged overnight in a slow charger, or it can be quick charged in the Sony or equivalent one-hour type charger (500 to 1000 charges). These are the same GE fast-charge cells used by Sony in some of their original equipment.

The case is designed with rounded corners to facilitate loading the PB-90 in the Sony recorder battery storage chamber. A strong ribbon hand pull makes it easier to change batteries. Speed and ease of loading are particularly important when shooting a news story in progress.

Digital video effects (Circle 109)

NEC AMERICA—The Broadcast Equipment Division of NEC America announced the availability of the new Optiflex EPR-400 Perspective/Rotation accessory, a cost-effective option which greatly expands the creative capabilities of the E-FLEX DVE® system with a wide new range of three-dimensional digital video effects.

Utilizing the smoothest digital video processing techniques available, the Optiflex system features an easy-to-use controller, allowing the operator to add, quickly and easily, an entire new range of three-dimensional effects to E-FLEX sequences. The image can be rotated around three axes: horizontal, vertical, and perpendicular. The degree of rotation is easily variable.

Horizontal or vertical rotational effects can be enhanced by adding depth through perspective. Rotation on the perpendicular axis makes the image spin like a top or a propeller. Each axis can be positioned anywhere on the screen as desired. This allows the operator to change the viewpoint, and the degree of perspective effect is separately variable. On perpendicular rotations, the point of spin could be in the center, at a corner, on the edge, or anywhere else on the screen.

All rotational effects can be combined with each other and with basic E-FLEX effects to provide the operator with all of the optical flexibility of film without any of film's limitations. BC

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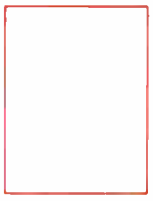

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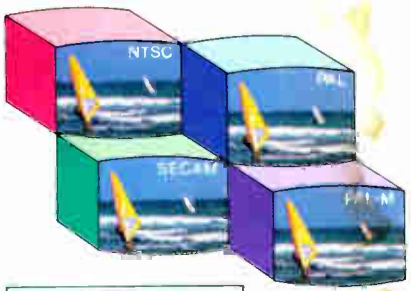


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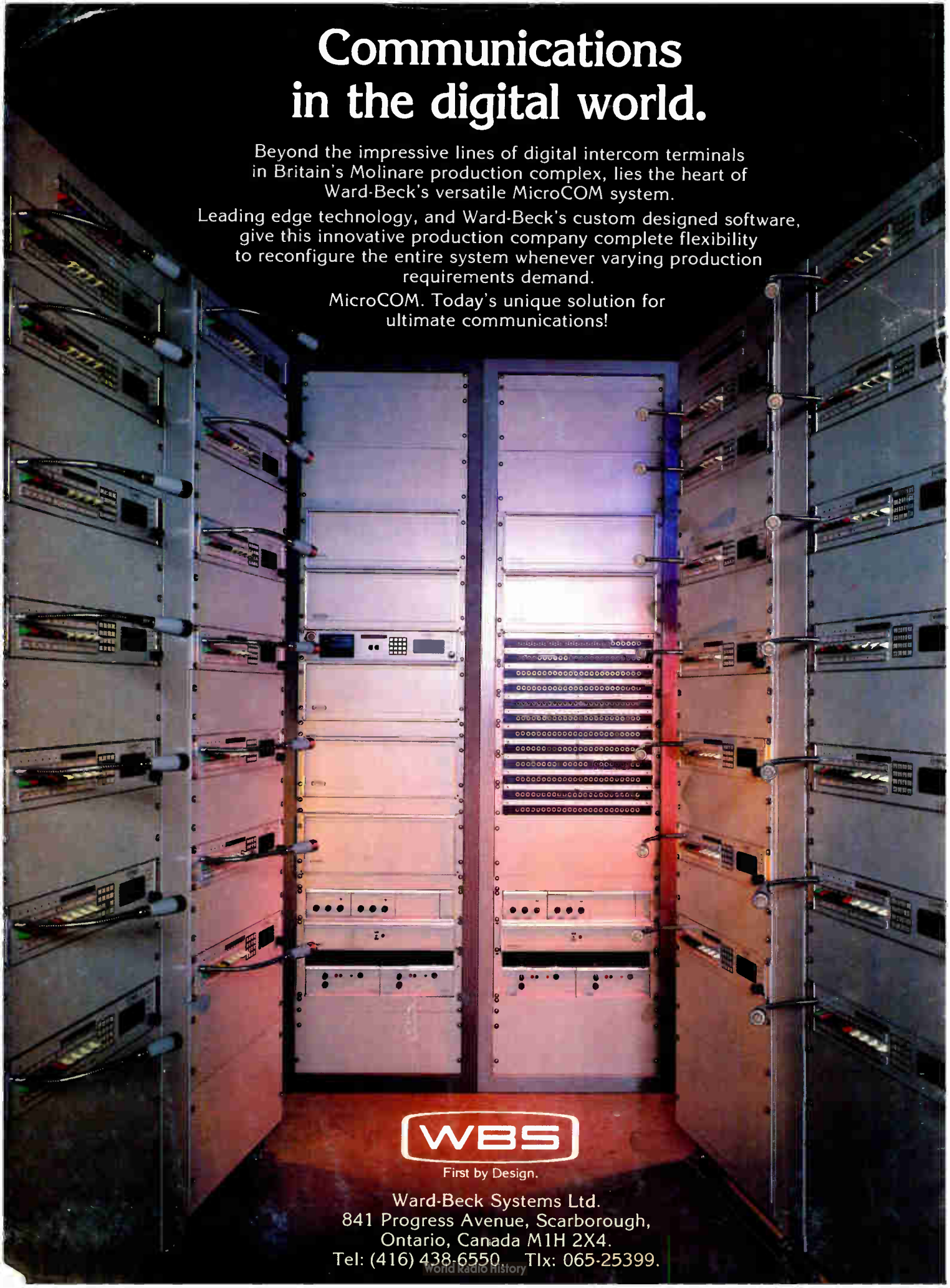

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