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Television Engineering

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Television Engineering

February 1990

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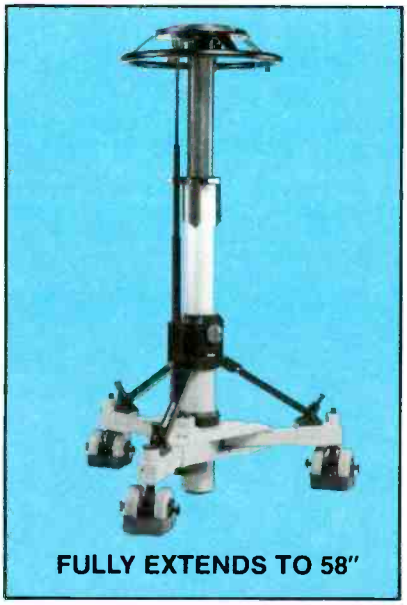

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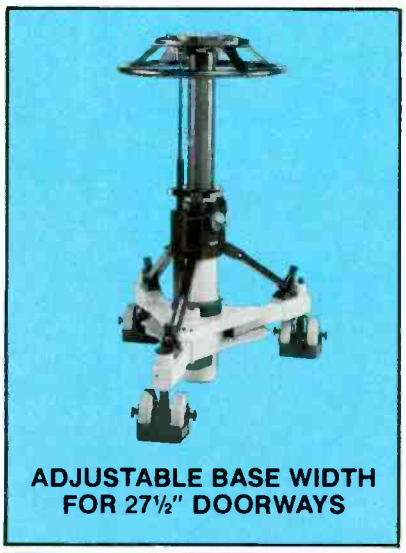

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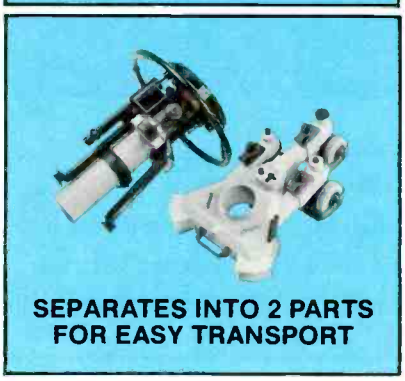

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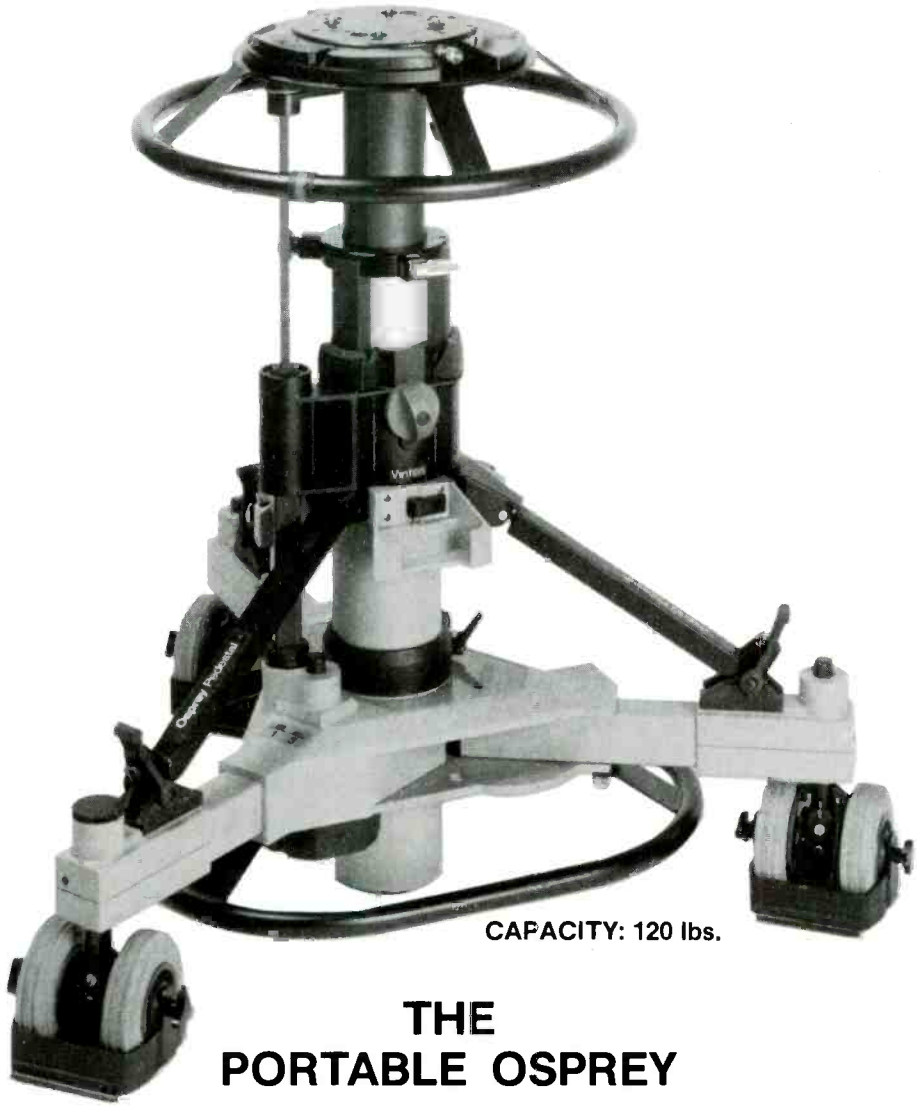

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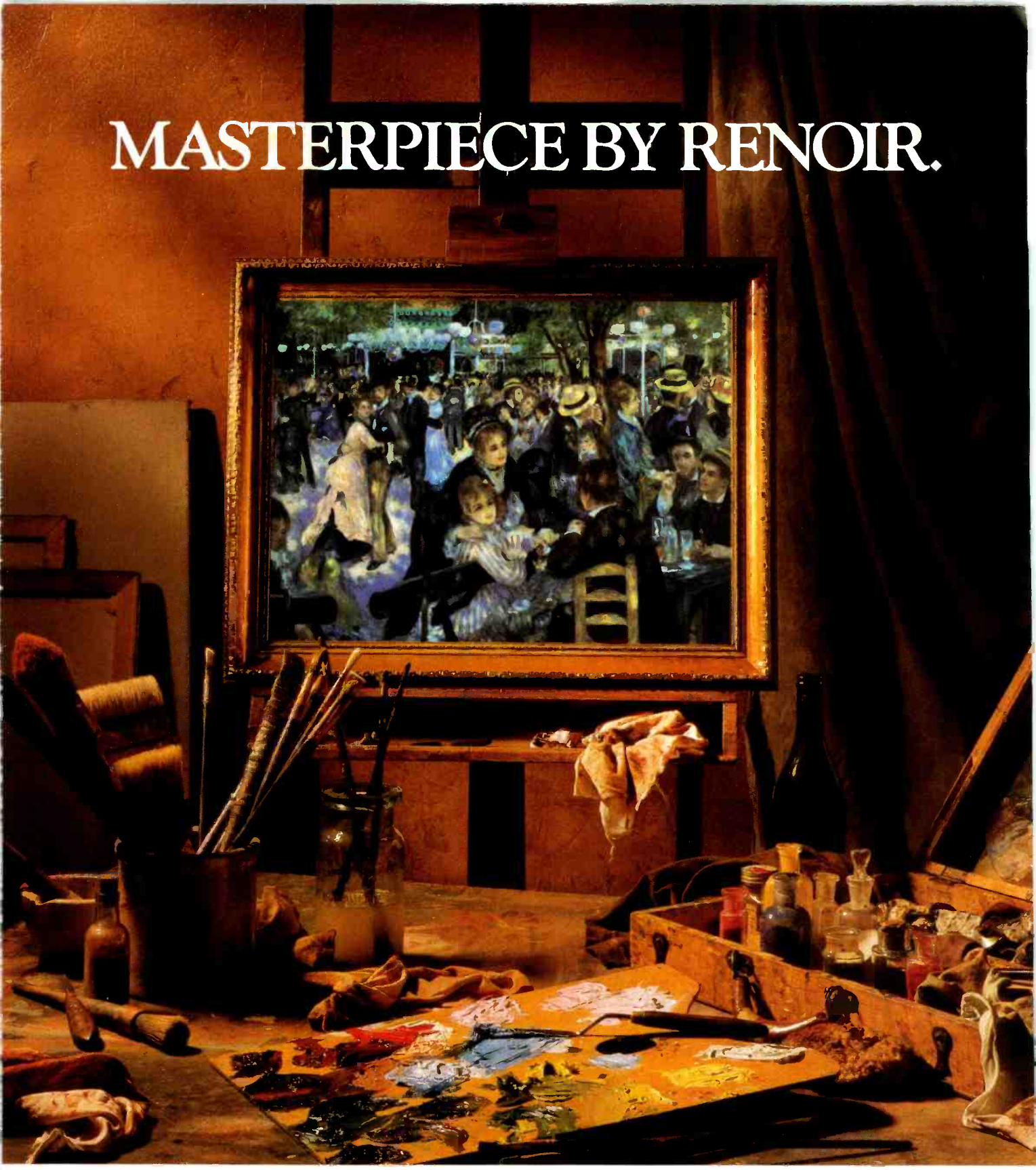

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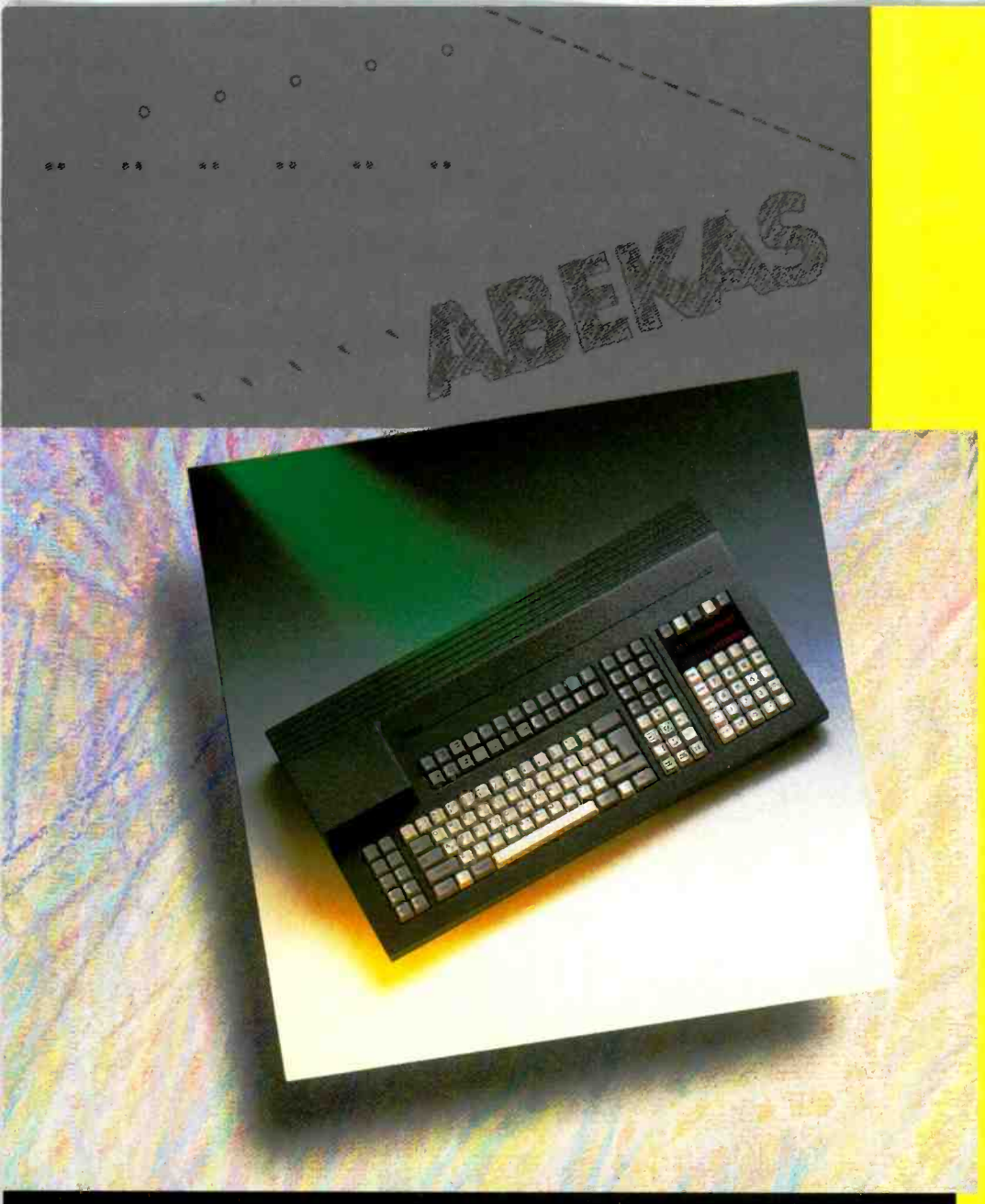

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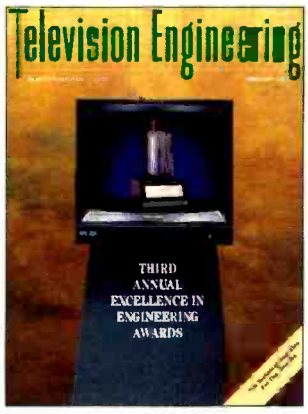

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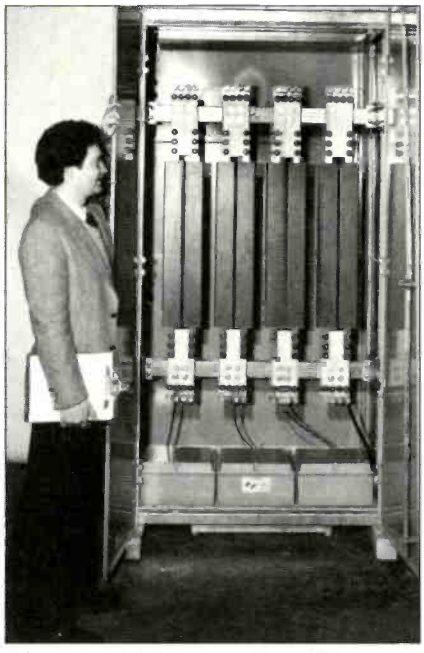

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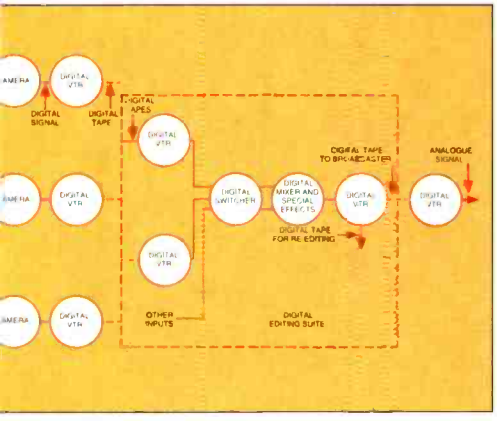

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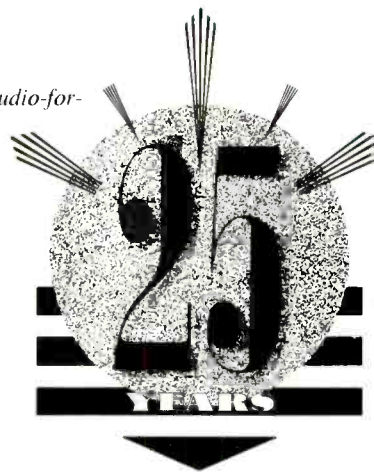
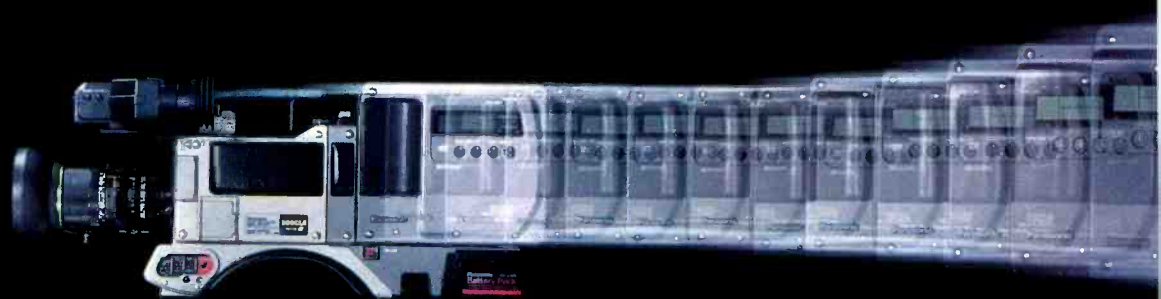


Panasonic Field Recording



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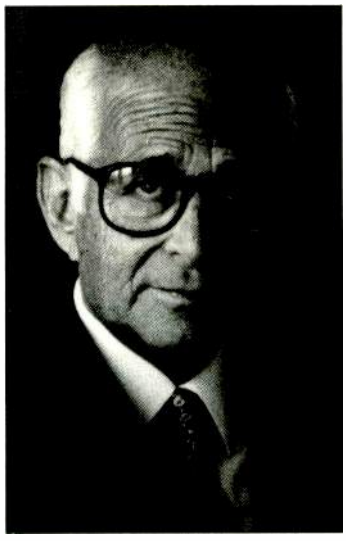
VIEWPOINT

With the premiere issue of Television Engineering, Act III Publishing continues a commitment to excellence.



Until now, you have known *Television Engineering* as *BME*, the top publication covering broadcast management and engineering for the past 25 years. With this issue, we relaunch *BME*, bringing it into the world of the '90s. As we approach a new century, TV and radio have become separate markets. What's more, TV technology is about to enter the era of advanced and high-definition television, which promises more change and innovation than anything since the invention of the medium itself.

We have several goals at Act III Publishing. One of them is to build a company that produces the best magazines in the field of communications. Another is to have our magazines encourage excellence in their respective targeted industries.

This premiere issue of *Television Engineering* seeks to prove that both of these goals can be achieved.

It strives to meet the highest standards of editorial excellence, as do all our magazines, and it also showcases the annual Excellence in Engineering Awards. These awards honor TV stations and teleproduction houses that have combined technical expertise with good business sense, and have built state-of-the-art facilities which can serve as examples to others.

In this same spirit of rewarding excellence, *Channels*, another Act III publication, each year honors producers and programmers with its Excellence in Television Awards. *Marketing and Media Decisions*' annual Media All-Stars issue salutes agency media experts who make the right decisions for their clients. *Mix* magazine's TEC Awards recognize talent in audio technology.

Television Engineering will always be focused on the needs of its readers, keeping them up to date on technology as fast as it changes. Our mission is to inform our constituency of engineers at TV stations, teleproduction facilities, corporate video studios and cable operations about the momentous developments that will have a lasting impact on their business.

It is thus highly appropriate that this premiere issue honors the best among its readership. And just as *Television Engineering* supports excellence in its targeted field of broadcast and video technology, Act III Publishing remains committed to excellence in its chosen field of magazines.

The proof lies in these pages. ■

Norman Lear
Chairman and CEO

UPDATE

Ice Storm Fells Towers ... Camera Robots Find Home ... Congress Seeks Return of Cable Regulation ... IEEE Elects Officers ... Former BM/E Editor-in-Chief Robert S. Rivlin Dies at 42 ...

Ice Storm Fells Towers

Broadcasters in the Raleigh-Durham, NC, market are still recovering from the effects of a major ice storm, which felled two 2000-foot transmission towers on December 10, 1989. Both CBS affiliate WRAL-TV and NBC affiliate WPTF-TV were knocked off the air when their towers collapsed early that morning. ABC affiliate WTVD-TV received some damage as well, although its tower remained upright.

According to eyewitness Jim King, of Tower King Inc., Marietta, GA, the towers fell within an hour of each other. King was repairing damage caused by a previous storm on the WTVD-TV tower when he saw "300- to 400-pound ice chunks falling from the WPTF and WRAL tower guy wires, causing the imbalance that resulted in the collapse of the towers."

The first to fall, at approximately 8:30 am, was WPTF-TV's tower. According to the station's chief engineer, Latham Hamner, his tower "z'd" down, collapsing on itself and on the station's transmitter building. Both were a total loss.

Referring to his station's situation, Hamner called it "bad luck, with a little good luck behind it."

The station had moved to its current transmitter site just over two years ago, according to Hamner. While the transmitter was removed from the old site, the building, tower, antenna, transmission line and heat exchangers were left in place. Hamner located a used transmitter at WVAH-TV in Hurricane, WV. He expected to be back on the air, using exciters salvaged from his demolished transmitter, seven to 10 days after the loss of his new facility.

A few minutes after the collapse of the WPTF-TV's tower, WRAL-TV's tower went down. According to chief engineer Wilbur Braan, "the tower had received a thick coating of ice, particularly on its upper portion." As sunlight melted the ice, a large chunk fell, hitting a guy wire and causing the tower to oscillate, resulting ultimately in its collapse.

According to King, falling ice demolished WTVD-TV's transmission line bridge and several new antennas that were on the ground waiting to be installed. When *Television Engineering* spoke with WTVD-TV chief engineer Curt Meredith, he was "keeping everyone away from the tower until the stormy weather cleared, so that the structure could be inspected close up." Meredith feared that parts may have been knocked loose, as the tower had "swayed about 5–6 feet, and bowed under the stress of accumulated ice." King estimated that there was almost 20,000 pounds of ice on the tower.

As ice shakes loose from tower, tower sections fall just above tree line.

PHOTO COURTESY OF JAMES KING, TOWER KING INC.

All three stations' towers were built by Kline Iron & Steel Company Inc. According to the company's chief engineer, Lewis A. Forman, Jr., the two collapsed due to the "abrupt release of loading." Forman explained that each tower and its guy wires were covered with ice from the storm, with anywhere from six to nine inches of radial ice (equal to 18 inches in total thickness) on the tower guys.

On the morning of December 10, sunlight caused rapid melting of ice on the east guy wires, creating an imbalance in the tower load, as heavy ice remained on the other guy wires. As major portions of ice fell from the east guys, the tower was pulled towards the opposite guys. When the now-"unloaded" east wires were pulled tight, what Forman describes as a "slingshot effect" took place, causing the tower to snap back, which created further stress and led ultimately to the collapse.

This "slingshot" effect was confirmed by both Meredith and Hamner, who witnessed firsthand the forces of nature on their towers. Both noted that area broadcasters, cable operators and equipment vendors came to their rescue after the incident, with many volunteering equipment and manpower to help the disabled stations.

Both WRAL and WPTF programming was sent via satellite to
local cable operators, and was also broadcast by area independents until the stations were able to get back on the air. ■

Camera Robots Find Home at QVC Network

The QVC Network, a cable-shopping channel with more than 32 milllion subscribers, has purchased robotic camera systems for its operations center in West Chester, PA. The purchase of six Rademec EPO systems represents the "largest single studio installation in the country," according to Richard Lunniss, VP, sales, for A.F. Associates, the exclusive sales agent for the Rademec EPO system in the Western Hemisphere.

The QVC Network provides a 24-hour-a-day shopping channel to over 2000 communities coast to coast. The installation will include six new Hitachi SK-F3A CCD cameras, to be operated live by the Rademec EPO control system. QVC's Executive VP Ron Giles was impressed with the "speed and smoothness of the Rademec EPO system," as well as its ability to "consistently hit pre-determined marks" within the studio. As for the Hitachi cameras, Giles noted that his engineers had evaluated a number of cameras, selecting the SK-F3A for its high-quality images and ability to easily move from one preprogrammed lighting condition to another. The robotic camera systems will be used in QVC's studio D, where the majority of the network's 24-hour-a-day programming will originate, beginning in mid-January. ■

Congress Seeks Return of Cable Regulation

Faced with a mounting volume of complaints, Congress is looking towards reregulation of the cable TV industry to help resolve broadcasters' concerns on station must-carry and channel positioning, as well as on issues of price structure and poor service. With cable TV penetration of television households now surpassing 50 percent, more consumers are seeing cable as a necessity, and cable operators have gained control over the electronic gateway into viewers' homes.

A bill sponsored by Senator John Danforth (R-MO), which has widespread Senate support, proposes regulations favorable to both broadcasters and consumers. In a statement released to *Television Engineering*, Danforth pointed out that "in the five years that have passed since the cable television industry was largely deregulated, consumers, cities, broadcasters, small cable operators, microwave distributors of video programming, satellite-dish owners and others have come to Congress asking for help." Danforth expressed concern that "cable operators act as gatekeepers of information, free to decide what local broadcast programs their subscribers are able to see." He described his bill as one which would "place some check on an unregulated monopoly."

Supported by the NAB, the Danforth bill would provide for must-carry based on a compulsory license, and would require channel positioning on-channel, or on a channel mutually agreed upon by both the cable TV operator and the broadcaster. The bill would call for resolution of positioning disputes by the local franchising authority, and would eliminate the so-called "viewing standard," while conforming to NAB recommendations on carriage conditions.

The Danforth bill would return to local franchising authorities the responsibility for regulation of cable TV rates, services, facilities and equipment, and would permit the franchise authority to define categories of video services essential to the local public interest. The bill would revise franchise renewal provisions to a position more favorable to the franchise authorities, and would permit the local franchise authority to regulate basic service rates in areas where there is no effective competition to the

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cable provider. It would define competition as a cable overbuild, MMDS or DBS service available to at least 67 percent of the local community, and with at least 30 percent local market penetration.

In order to spur diversity of ownership, the bill would limit individual MSOs to 15 percent of the subscriber universe nationwide, following attribution rules similar to those applied to broadcast ownership. MSOs above the 15-percent cap would have 360 days to divest subscribers above the cap, with a six-month extension possible in case of economic hardship or possible disruption of service to subscribers. In addition, cable program services owned by MSOs would not be permitted to discriminate in denying access to competing services.

Summing up the reasons behind his proposed bill, Danforth stated that "policies aimed at promoting competition and preventing market abuses simultaneously advance diversity in the marketplace of ideas." ■

IEEE Elects Officers

Meeting in Tarpon Springs, FL, in late November, the Institute of Electrical and Electronics Engineers, Inc. (IEEE), has elected its new officers for 1990.

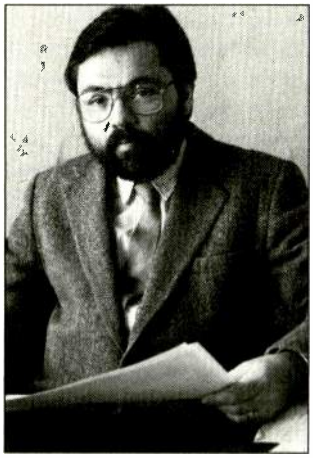
Carleton A. Bayless, a telecommunications consultant from Foresthill, CA, will become IEEE president on January 1, 1990. Bayless served as the 1989 IEEE president-elect, and will be succeeded by Eric E. Sumner, who was elected president-elect for 1990, and will become IEEE president on January 1, 1991. Sumner is VP of operations planning at AT&T Bell Laboratories, Holmdel, NJ.

Dr. Martha Sloan, professor of electrical engineering at Michigan Technical University, Houghton, MI, was selected 1990 executive VP, succeeding George Abbott.

Chosen as VPs were: Robert T.H. Alden, H. Troy Nagle, Ralph W. Wyndrum, Jr., Michael J. Whitelaw and Richard S. Nichols. Wallace S. Read was selected treasurer, Fumiio Harashima was chosen secretary, Marco W. Migliaro was chosen director of standards, and Eric Herz, executive director. ■

Former *BM/E* Editor-in-Chief Robert S. Rivlin Dies at 42

Robert S. Rivlin, a well-known industry editor and author, died January 5



from diabetes complications. He was 42.

Rivlin served as senior editor of *BM/E*, the predecessor of *Television Engineering*, from 1978–80, as editor from 1982–85, and as editor-in-chief from 1987–88. As senior editor, he received the ABP's Neal Award for editorial excellence.

Rivlin began his career as a copywriter at Dover Publications. His interest in experimental film-making and video led to a 15-year association with many of the major publications serving the motion picture and television industries. In addition to his tenure at Act III Publishing's *BM/E*, he worked as promotion manager and technical editor of *Millimeter*, and later served as editorial director of Vidpro Publishing.

In 1985, Rivlin launched *Video Graphics and Effects (VG&E)*, a magazine devoted to video graphics. He compiled his knowledge of the growth of computer graphics in *The Algorithmic Image*, published by Microsoft Press in 1986. The book won the Computer Press Association's award for best general nonfiction work of 1986. Rivlin's articles appeared in such magazines as *BME*, *OMNI*, *High Technology* and *Technology Illustrated*.

Rivlin wrote, produced and directed several documentary films. He also served as production manager and unit production manager for various segments of ABC's *American Sportsman* and *CBS Sports Spectacular*.

Former *BME* Editor Eva J. Blinder, who worked with Rivlin over the course of 10 years, considers him to have been one of the most proficient and best-respected journalists in the industry.

"He was a tireless worker, and he combined creativity with intelligence," she says. "He guided *BM/E* through its initial stages of refocusing after the Act III acquisition, and he was the one who came up with the idea for NAB roundtables. He had a good instinct for what went on in the industry. He was never afraid to challenge people.

"He was a mentor to me in a lot of ways. He challenged me in my own professional development," she says.

Robert S. Rivlin was born in Leicester, England, of an American mother and an English father. He received a B.A. in literature from Bard College, and an M.A. in linguistics from University College of North Wales, UK, and Trinity College, Dublin, Ireland.

Rivlin is survived by his wife, Alice Wolf; daughter, Meredith; son, Justin; parents, Archie and Norma; and brother, Michael. ■

MIDI Meets SMPTE: Low-Cost Box Simplifies Audio-for-Video Production

By Dan Daley

The winter NAMM show in Anaheim, CA, isn't the first place you would look for broadcast types to be lounging around. The show is the biggest gathering of musical-instrument and related equipment manufacturers and distributors in the country, and everyone there plays one instrument or another. They all play the radio, too, even though they may not know a megaHertz from a rent-a-Hertz.

The usual number of new product releases abounded. One particular announcement had implications for broadcast audio for video which could send the same sort of waves through this community that the home-recording explosion has been sending through the professional audio recording industry.

Tascam, whose two- and multitrack cassette decks have been fixtures in audio studios for some time, announced the shipping release of its new synchronization black box, the MIDIizer, a SMPTE/EBU time code-based synchronizer/controller. The significance of the MIDIizer lies in its cost—a list price of $1999—and in its capabilities. As a sync device with full panel controls onboard, the MIDIizer bridges the gap between the electronic language of musicians—MIDI, an acronym for Musical Instrument Digital Interface—and the somewhat more senior language of technical broadcast production. The MIDIizer can translate SMPTE timecode information into MIDI information, thus allowing MIDI-based equipment such as sequencers or computer-sequencing programs driving sound modules to chase-lock to video.

The implications are, frankly, astounding. To get a better perspective, let's look at what's been going on in the audio domain over the last couple of years. The advent of the affordable cassette-format multitrack deck—a format pioneered and still led by Tascam, interestingly enough—has spawned thousands of professional and semi-professional mini-recording studios all over the country. Instead of having to go into a dedicated commercial audio facility to do recordings of anything from jingle demos to finals to scoring, producers can now invest a fraction of what might have been spent over the course of a year in those facilities. With a few thousand dollars worth of equipment, some MIDI-interfaceable music gear, a sequencer or sequencer program, and some very good yet inexpensive digital signal processors, they can have their own studios. Not only can they now work on their own time at their own pace, but they get the tax benefits of equipment depreciation.

It goes without saying that this has upset a number of commercial audio facilities, particularly ones that fall into the so-called "mid-level" category, where the boundaries between residential and commercial space get more blurred by the minute. It may be a while before audio-for-video pro-

The modern recording studio relys on MIDI to keep "on time" musically.

The Tascan MIDIizer will chase and lock to SMPTE time code.

duction gets this far along the same route, but the MIDIizer will allow people who have already made the investment in personal multitrack equipment to now have access to the video domain, and in a language with which they are already conversant, if not downright fluent: MIDI.

For those of us involved in video production, the MIDIizer represents an opportunity to bring high-quality audio down to an affordable level for our clients. We no longer need to go to outside audio shops for dubs or transfers. "A small production company can now lock two machines together while also synchronizing a MIDI sequencer to tape," explains Tascam's music group product planner, Dan Tinen. A simple sentence, but one loaded with portent and potential. There is a unique opportunity to watch technological Darwinism in action here. In the last decade, the number of outlets for video grew exponentially as cable proliferated and video became more and more an integral part of the mechanism of sales and information exchange—for example, in in-store promotional videos, how-to tapes, the travel industry's use of video, etc. Audio was obviously necessary for these uses, although the quality of that audio was often abysmal. This lack of quality soon became an issue, as the public grew accustomed to stereo television, broadcast audio routed through sophisticated home stereos, and CD-level audio. So audio producers with personal recording gear came into the picture to fill the need for stronger audio for video. These producers got better at what they did, both creatively and technologically, but despite their intimacy with MIDI, they were relative neophytes when it came to SMPTE and video synchronization. Did this problem drive them back into the arms of dedicated audio-for-video establishments, thus completing some silicon mandala?

The MIDIizer bridges the gap between the electronic language of musicians—MIDI—and the language of broadcast production.

It did not. Like the primordial lungfish which first used their flippers to maneuver on land some time before George Burns entered vaudeville, the producers adapted. Or more precisely, the environment adapted to them—voilà, le MIDIizer.

With the MIDIizer, the user builds what Tascam refers to as a tempo or beat map of an audio-for-video program. The MIDIizer then tracks the map's real-time locations in both frames for SMPTE and MIDI clocks. When starting anywhere in the program, the MIDIizer compares a time location with the bar of the song and what the tempo is supposed to be at that point, and sends MIDI chase and lock instructions to the sequencer, using MIDI Song Pointer technology (SPP). Other features the unit offers include: reference time-coding, which can be derived from master, slave or internal TC; tempo data entry either manually or automatically, by reading a click track from a multi-track recorder or other source; 20-point autolocation; and simple data entry via a rotary dial and numeric keypad.

According to Tinen, a dichotomy is bridged here. While musicians/producers know MIDI, they aren't readily familiar with synchronization, mainly because up until now it cost at least twice as much as the MIDIizer. On the other hand, broadcast people are intimately familiar with SMPTE, but know little of MIDI, since the musical aspects of video have generally been done in professional facilities, delivered striped by engineers.

The MIDIizer will allow people who have already made the investment in personal multitrack equipment to now have access to the video domain.

A small production company can now lock two machines together while also synchronizing a MIDI sequencer to tape.

Now all of a sudden, the musician/producer can be the engineer, and the technology is both affordable and user-friendly. "This is especially important for small broadcast producers," Tinen says. "You can combine the MIDIizer with the [Tascam multitrack with MIDI interface] model 688, which has eight tracks and 20 inputs, and put together great-sounding audio tracks. You can lock them to video either with code-only master (which is the cheapest way to do it with a half-inch VCR as the master deck), or by using the Tascam IF1000 conversion unit, a peripheral which will interface the MIDIizer with standard parallel-type machines." As a result, the MIDIizer and the black boxes that are sure to follow in its wake will give a distinct advantage to the small producer. Inexpensive synchronization which incorporates MIDI may become the Grand Unification Principle of audio for video, a sort of Rosetta Stone for the incompatible babble in which the two domains have worked for so long. ■

Dan Daley is a New York City-based freelance writer specializing in audio technology.

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Poised to Test, ATTC Builds Its Laboratory

By Eva J. Blinder

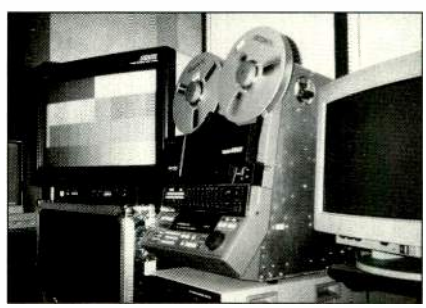
High definition television development in the United States is about to enter its most critical phase: the actual testing of the proposed transmission systems. With the future of over-the-air HDTV riding on the outcome of the tests, the construction of the actual test facility is of crucial importance to the industry. We recently spoke with Peter M. Fannon, executive director for the Advanced Television Test Center (ATTC), about the challenges facing the test facility.

According to Fannon, the ATTC faces several simultaneous responsibilities: learning more about the proposed systems; creating a facility "sufficient to deal with each [system] and with the challenges of all," and, in conjunction with the FCC Advisory Committee on Advanced Television, designing a test program to "thoroughly and stringently test the real operating characteristics of each system."

The ATTC has designed a plant intended to give each system a thorough workout, while moving the systems in and out in an efficient manner. The lab, based in Alexandria, VA, and scheduled for completion in late April, is a 12,000-square-foot facility designed to accommodate two systems: one under test and another either setting up or tearing down. The lab's objective is to have each system on-site once for objective and transmission testing, and at the same time create on high-definition videotape a record of the tests for subjective analysis later.

The lab itself is comprised of two separate rooms, one for each proponent on site. Each proponent will have a private office adjacent to the test room. A technical equipment room will house the picture source equipment, and a control center will allow the two separate rooms to operate in conjunction with the equipment room.

The rest of the physical plant consists of a lab area for the Test Center's and Cable Labs' own work, and fire-safe storage areas for written and videotaped records, both on- and off-site.



From top: (l to r) Peter Fannon, ATTC; George Vradenburg, CBS; Joel Chaseman, ATTC; Warren Williamson, WKBN, Youngstown. ATTC in Alexandria, VA. ATTC's temporary lab.

A key part of the testing facility will be an RF test bed for analyzing broadcast transmission. In essence, the RF test bed will serve as a surrogate for actual over-the-air testing, which would be impractical.

Fannon says, "The RF test bed will provide a simulated broadcast environment to introduce, under controlled conditions, specific video impairments over a wide range." The testing personnel will be able to introduce specific impairments—such as noise, airplane flutter, multipath and others—into the signal being tested to determine the range at which a particular impairment affects the signal. This method differs from computer simulations in that it uses real equipment, but under laboratory conditions.

Fannon adds that ATTC will announce the vendor for the RF test bed in the near future. A separate coax fiber cable test bed for cable transmis-

No dropouts in Russia.

Tape dropouts mean trouble for videotape professionals. No wonder so many of them choose to work with Sony Professional Videotape. Including the producers of two recent documentaries shot in Russia, who minimized dropouts by shooting with Sony Videocassettes.

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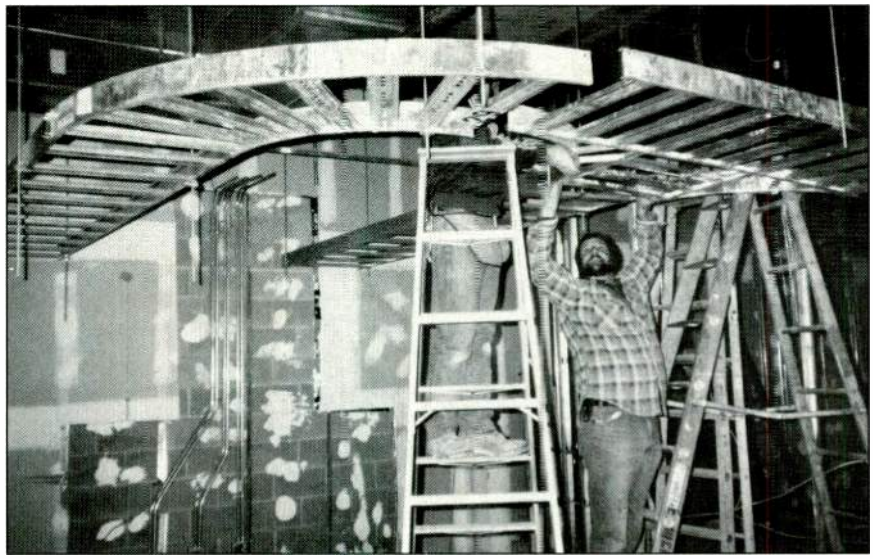
sion is being provided by Cable Television Labs to test "similar but appropriate" impairments for the cable environment.

Fannon describes the operation of the RF test bed: "The system proponent first sets up the system, and the operator informs the testers when the system is operating properly. The proponent then encodes and modulates the signal and gives it to ATTC. We put it through the test bed and then pass it back to the proponent, who demodulates and decodes the signal. The ATTC takes the signal back at that point and displays it on monitors and videotape-records the results." At that point, he continues, the test personnel will take measurements from the test equipment and record the results of some interference-related elements. They then "create the digital videotape record of the entire test, including those additional impairment conditions which will be used for subjective viewing."

The unusual needs of testing diverse HDTV systems, all of which are under continual development, has prompted the ATTC to develop some unique hardware. One of the most interesting devices to spring from the ATTC is the ATTC Format Converter. Recording the results of the simulated transmission tests on videotape is crucial, since it ensures a record of the testing, and is the only way to allow later side-by-side, subjective comparisons of the proposed systems. The format converter will enable ATTC to record the tests on a Sony 1125/60 digital HD VTR, even though none of the proposed systems conform to the 1125/60 standard. The ATTC recently granted Tektronix the contract to engineer and manufacture the format converter; the prototype unit is scheduled for delivery next month.

The ATTC commissioned a Laurel, MD, company, Century Computing, Inc., to develop a system to generate specialized ultra-high-definition still pictures and test patterns. The resulting system, called the ATTC Objective Test System (AOTS), is based on the Pixar II Image Computer made by Pixar, Inc., of San Rafael, CA.



Construction workers install video-signal and electrical conduits in the new ATTC laboratory.

According to Fannon, the Pixar is able to digitize the test pictures at a rate much higher than any of the proposed transmission standards can resolve. Because of its massive processing power and storage capacity, the Pixar will allow the testers to change the format of the test patterns and still pictures at the touch of a button. The still pictures for use in AOTS have a resolution of 16 million pixels, 30 times today's typical television resolution, and have been provided by Eastman Kodak.

The Test Center faces another major challenge in its choice of display systems, since inaccurate or biased reproduction could easily render the tests meaningless.

"The key issue with displays," Fannon says, "is that the 787.5-line format cannot be accommodated on any production monitor. One should have the same monitor to assess all formats, so the differences between monitors, monitor settings, the degradation over time of monitor phosphors and operations don't unfairly disadvantage any system." ATTC is acquiring monitors for use in the laboratory to test the signal along its path and for observation. Additional monitors will be used for critical observation, and a projection display system is being acquired. The decision on the projection display will be made in concert with the Advisory Committee and its parallel organization in Canada.

"Our biggest equipment challenges are building the best possible test bed, developing the ability to digitally tape-record, being able to photograph individual frames, and getting the right display monitors." In order to record single frames, the ATTC is presently developing, with another vendor, an active video gate for high definition. The gate grabs a single frame and permits it to be photographed.

The complexities of the ATTC test lab are many, Fannon admits. "We're building a plant to accommodate six different formats," he says. "It must be organized to deal with six different sync arrangements, and have equipment accommodating all of them. But test we must if HDTV is to be a viable format for the future."

Fannon sums it up nicely: "Until you test, frankly, everything else is PR." ■

Blinder is a freelance writer and former editor of BME.

For the third year running, Television Engineering is presenting awards to stations and facilities judged to have completed building the best broadcast or teleproduction plants in the past 12 months. These awards recognize not only technical acumen, but also skills in applying technology to the practiHcalities of the workplace environment.

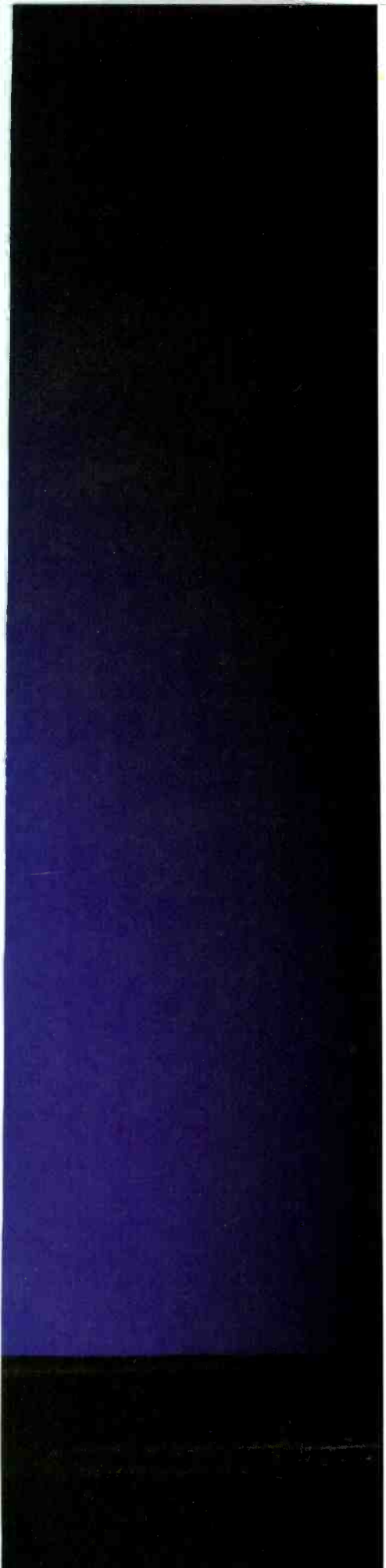
The judges of this year's competition consisted of Television Engineering's newly formed 12-member Editorial Advisory Board. These top engineers evaluated the finalist entries according to seven criteria: preplanning, equipment selection, room layout, plant layout, design creativity, problem solving, and suitability to the market. Once the votes were in, Television Engineering's Technical Editor Bill Owens—armed with supplied descriptions, floor plans, photos and his telephone—wrote the following six-part article.

Last year, when the trophies were awarded by our predecessor BME, radio stations were among the winners. Television Engineering, however, is exclusively TV-oriented, so this year's winners are limited to television facilities. The entire staff of Television Engineering joins me in congratulating them all. We hope that these descriptions of their achievements will serve as beacons to the builders of other stations and facilities in the future.

—Peter Caranicas, editor-in-chief

EXCELLENCE IN ENGINEERING: TELEVISION ENGINEERING'S THIRD ANNUAL AWARDS

Six winners receive trophies for new facilities that reflect today's new realities



PHOTOGRAPHY BY GARETH HOPSON

1990'S WINNERS

Planning For The Future With An Eye On The Bottom Line

"He Who Dies with the Most Toys Wins." So said the bumper sticker of a pickup truck traveling on I-95 in Georgia. I got a laugh out of it at the time. But in the aftermath of the age of the "Me Generation," perhaps it isn't so funny after all. If you're dead, how can you enjoy the benefit of all those toys?

What does this have to do with *Television Engineering*'s Excellence in Engineering Awards? As one who has spent most of his working life at independent television stations, marginally solvent at best, I've looked each year at the winners and always thought that if I'd just had the budget, *my* station could have been among them. All I needed was the money. I could have bought fancier consoles. I could have bought a better master-control switcher, better automation, better studio cameras. Could have spent more time on paint and wallpaper, less time on keeping an old cart machine running one more day. But the reality is that I've never had the budget.

What is the real meaning of "excellence in engineering"? Anyone can go to a turnkey house with a blank check and end up with a state-of-the-art facility. You don't need excellence in engineering for that; you just need deep pockets. We've all seen examples of stations that spent themselves out of business building electronic versions of the Taj Mahal. How many remember that this most beautiful building was built as a tomb for the wife of Mogul Emperor Shah Jahan, and that after its completion, the emperor ordered the architect beheaded so that he could never design another to rival its beauty? How many engineers have lost jobs and how many stations are out of business because they blew the budget on a state-of-the-art facility while ignoring the fact that they need to sell time to stay in business?

Excellence in engineering in today's business environment is more than just owning the latest toys. It is a philosophy of building what you

need and planning for tomorrow. Our winners reflect that thinking in all but one case, and that one case—a $12 million facility that almost died—should be a lesson to us all.

Four of our other winners were station rebuilds, and each one, represented a conservative approach to addressing station needs for the nineties. The sixth winner is an all-new facility, but it, too, was built after careful evaluation of the owner's needs and after years of operational experience.

Now on to our winners!

—William A. Owens, technical editor

WMAQ-TV/CHICAGO
After Three Years Of Planning—And 20 Hours Of Hell—The Show Goes On, On Time

On September 30, 1989, at 10:30 pm, WMAQ-TV closed a chapter of broadcast history, with the last broadcast from its home at Chicago's famed Merchandise Mart. In the beginning, of course, it was radio. The facility was designed by O.B. Hanson, who would go on to design the radio facility for NBC at 30 Rockefeller Plaza in New York City. In both cases, Hanson's forward thinking would ease the implementation of television broadcasting years later. For WMAQ, television began in 1947, and it was the first U.S. color station in the mid-fifties. Times change, as does television engineering, and today WMAQ-TV is well-prepared for the future.

Studio "B" control room monitor wall, as seen from the technical director's turret. Grass Valley Group 300 series switcher visible in the foreground. This is the control room for local newscasts.

"Total cooperation and team spirit got us through 20 incredibly tough hours," says WMAQ's manager of engineering, Donald Archiable. "As the camera tally light went off for the last time, five 45-foot tractor trailers were ready to roll." This tightly programmed move brought equipment and staff to their new home in the NBC Tower with just 45 minutes to spare before the scheduled October 1 10 pm inaugural newscast.

For James Powell, WMAQ's director of broadcast operations, and for Archiable, it was the culmination of three years of planning. While the building would be new from the ground up, the technical areas would house a combination of new equipment, equipment from the station's old facility, and equipment purchased from NBC's 1988 Olympics package.

Starting with a "clean slate," station personnel worked with a design team from Science Applications International Corp. of San Diego, CA, to create an ergonomically efficient operational environment. Working both with scale models and full-size mockups, the design team listened carefully to the station's operators.

The facility includes two studios of 11,400 and 5000 square feet, two studio control rooms, a production edit suite and extensive videotape areas, plus graphics and audio production facilities. A master-control suite functions as control point for both WMAQ and as backup for NBC network operations. Network news has its own area in the building, which can feed the network or local station as required. A combination newsroom/studio serves as a high-tech environment for local newscasts.

"We can talk to the world from any point in the building."—Donald Archiable, manager of engineering, WMAQ-TV

The station's equipment reads like a catalog of the latest television technology. Production control rooms are equipped with GVG 3003AN switchers, three-channel Kaleidoscope and Ward Beck audio consoles. Videotape includes both Sony BVH-2000 one-inch machines and Panasonic AU-650 MII machines. Master control features a GVG Master-21 with a Panasonic MARC II MII automated playback system. An MC-2055 automation computer is tied to the station's Enterprise sales/traffic system, and both automation and the MARC IIs are integrated to the 3M 6600 Central Control System routing switcher for total plant control. Quantel 6030 still stores and Chyron 4100s are also tied in.

While planning for the move was underway, it was decided to make a major change in the station's news program format, requiring the ability to originate the station's newscasts from the working newsroom. Pittsburgh's Performance Group was brought in to handle design work in the news area, resulting in a facility with 16 edit bays and room for the large news staff. Because the area had not been initially designed as a studio, low-temperature HMI lighting was brought in to keep air-conditioning loads within reason. And three TSM Robotics ACP-8000 camera-control systems have been in-

stalled for the studio cameras, now nicknamed Huey, Dewey and Louie.

Don Archiable is most proud of one particular feature of his plant, which he calls the Broadcast Service Panel. "We can talk to the world from any point in the building," he says. BSP panels are positioned throughout the building, and provide access to the master router for video, audio and telecommunications. From there, any source can be fed to air, the network or the rooftop satellite transmitters.

This is a plant steeped in tradition, and one where technical innovation is destined to begin again. The facility's rack room is just under half full. The balance of its 300-rack capacity is waiting, ready for the day when WMAQ converts to HDTV. ■

Telecine control room with GVG 100 switcher, Studer 910 audio mixer, daVinci color corrector and Ultimatte.

POWERHOUSE STUDIOS/WASHINGTON, DC
The Former Groupe Andre Perry Facility Comes To Life Once More

Like a phoenix rising from its ashes, the facility which began life as the Washington, DC, home of Canada's Groupe Andre Perry is on the move, and ready to serve the needs of the Capital City production community. A 12-million-dollar showplace of technology, Perry stumbled in its first full year of business, and in late December, the facility was sold to Powerhouse Entertainment, Inc. Re-christened Powerhouse Studios Inc., the facility is now attracting a solid base of local and national clients.

"This is the best-engineered facility in the area, with 14,000 square feet of top-notch equipment," Powerhouse President Joe Fries says. Fries was instrumental in the expansion of Quebec-based Perry into the Washington, DC, area, having encouraged the company to set up shop. "Problems developed in two areas, which ultimately caused severe financial strain on the parent operation," Fries explains. The first problem was in the construction of the facility, and the second in its initial operation.

Since the facility was located one level under grade in an office building, the facility's design team had to contend with both vibration and noise from the building's HVAC and elevator systems, as well as from two levels of a parking garage immediately below. A subfloor of acoustic blankets and neoprene isolators was installed, along with multiple layers of plywood, and walls were built on the floating floor. Construction was set back when a water-company crew allowed a main water line to dump four inches of water into the facility. Work already completed had to be redone, and that caused a domino effect with other parts of the construction process. The opening was almost a year late, with a staff already in-house and on payroll.

But according to Fries, the facility's real problem was one of attitude and cultural clash. "Perry's people were used to the way things were done in Canada. Their approach was perceived in this market as elitist, and sometimes downright arrogant," he told *Television Engineering*. "While [their methods of operation] worked for them at home, their approach did not travel well." Start-up expenses in excess of those anticipated, plus a lighter than projected workload, created a negative cash-flow which the Canadian owners were not able to support, and this resulted in the sale of the facility.

Powerhouse Studios Inc. has

One of the twin edit rooms at Powerhouse Studios Inc., featuring Ampex Century 330 switchers and four-channel ADO.

changed all that, with Fries positioning the company as a service-orientated facilities provider. Although the facility is already well-equipped by most standards, Fries has promised a million-dollar upgrade for 1990, to bring the facility's audio and video into the digital domain.

"A user can design a system configuration for a specific project, and count on the RMS to remember and duplicate it exactly for later use."—Jim Conley, director of engineering, Powerhouse Studios

Even without the upgrade, there is no doubt that this is a first-class facility. Twin edit rooms feature Ampex Century 330 switchers, four-channel ADO with concentrator, Sony MVP-2000 audio consoles, Chyron Scribes, Sony graphics cameras and GVG 51 edit controllers. A central machine room houses Ampex VPR-3s with Zeus TBCs, Sony BVW-75s and Sony BVU-950s. Graphics are created on a Quantel Paintbox with a Wavefront Technologies 3D system running on a Silicon Graphics 4D-60 Turbo Computer. Telecine features a Rank 4:2:2 flying-spot scanner with Faroudja encoding, Ultimatte and daVinci color correction, along with a Studer Revox mixing desk and Nagra-T for audio interlock and playback. And speaking of audio, a separate suite contains a British DDA DCM-32 console, an Alpha Audio Boss/2 editor and Studer recorders. A New England Digital Synclavier holds court in another audio production room.

Unique to Powerhouse Studios is the Resource Management System, a computer-based device built in-house by the Perry design team. The system can control any device in the plant, from almost any point in the plant, as interface panels are spread throughout. The panels allow complete control, so that any room can participate in the production process. According to Director of Engineering Jim Conley, the RMS controls both a BTS 60 x 80 router and a GVG 10 x 28 router, transporting audio, both component and composite video, RS-422, time code and intercom throughout the plant. Users can share equipment though a priority-delegation system, with the RMS in control of all routing and switching operations, in a manner transparent to the user. In Conley's words, "A user can design a system configuration for a specific project, and count on the RMS to remember and duplicate it exactly for later use."

For Groupe Andre Perry, it was a rocky start and a quick retreat. For Powerhouse Studios, with a state-of-the-art plant and a service-minded attitude designed to attract a loyal client base, the best is undoubtably yet to come. ■

BLACK ENTERTAINMENT NETWORK/WASHINGTON, DC
This Cable Network Turned A Real-Estate Reject Into A TV Showplace

A former cemetery bounded by railroad tracks and an overhead highway may not be your idea of a perfect home site, but after several years of operations in leased facilities, Black Entertainment Network Inc. decided it was just the place to call home. Washington, D.C. is normally a tight real estate market, but for BET, seeking a place to call "home" required careful consideration of both the network's physical needs, and the technical problems created by the electronic environment of the nation's capitol, a major communications center. With a heavy load of live sports and entertainment events, BET required the ability to uplink and downlink feeds on the network's chosen media, C-Band satellite. With the high volume of microwave "hops" operating in the city, finding an interference-free site was challenging.

The former cemetery, located in what is now the Capitol City Industrial Development Park, proved to have the right stuff for transmission/reception, but came with a couple of major minuses. Because of its former use, building on the land would require extensive grading and reshaping of the soil. As the site was located adjacent to Amtrak's main New York-to-Washington rail line, and with an engine-repair facility close by, diesel-engine noise and vibrations would be a problem. But even more of a difficulty was posed by the elevated highway bridge on the other side of the property, where heavy truck traffic caused noise and sharp-impact vibrations in the bridge's steel deck-

Master control features Bosch MCS-2000 master-control switcher capable of quick reconfiguration between playback operations and live interactive programming.

ing plates.

Facilities contractor Communications Engineering Inc. created a solution using a "floating," shock-absorbent foundation. Using computer modeling, the structure was designed with a system of physically isolated walls of concrete block, filled with sand or cement grout. Ceilings were layered with concrete, sheetrock and sound insulation. Audio control rooms were given additional attention, using techniques more often found in major recording studios. The result, according to CEI's VP Lawrence Brody, was "a facility where perfect sound recording is possible even with an idling locomotive parked outside."

For BET's director of engineering, Bruce Marshal, 14 months of planning and construction were well worth it. "Our program schedule has gone from 40 percent original, in-house production to almost 80 percent," he notes, "with 90 percent of that being live, interactive programming. Our viewers appreciate our participation in their community."

The technical plant is state-of-the-art, with two production studios using Sony BVP-7 cameras. Production control rooms are equipped with Grass Valley 300 series switchers, dual-channel Kaleidoscope and Sony MXP-2036 audio mixers. Two edit rooms feature GVG 200-2 switchers with dual Kaleidoscope, a GVG-151 edit system and Sony MXP-2036 audio. A dedicated graphics production room serves both suites via a two-channel Dubner GF-40 Graphics Factory, including paint, text, animation and 3D rendering.

Both Sony BVH-3000 and BVU-950 VTRs are used for playback of outside tapes and material recorded at BET's old leased facilities. For the 75 to 80 percent of programming BET now originates in-house, Sony Beta-SP is the choice for recording and playback, with break material and some program segments aired via Sony Betacart.

On-air operations are via a Bosch MCS-2000 switcher, with command of all audio/visual switching as well as machine control of all in-house sources. The switcher's event stacker is used to create smooth transitions. The Bosch allows source delegation and rapid reconfiguration of switcher inputs. This capability is critical during BET's live interactive programming.

"The ability to use the Bosch as a production switcher during live segments gives our master-control operators the kind of creative input more typical of a studio operation," Marshal says.

The BET edit room features GVG 200 switcher, 151 edit controller, and Sony MXP 2000 Series audio mixer. The room can function as a control room for studio production.

To eliminate any potential signal loss or interference, the network feed from master control is sent via fiber-optic cable to the transmission area, where a Scientific Atlanta 10-meter C-Band antenna system is used for transmission. Redundant exciters and power amplifiers are available in the event of component failure. A Scientific Atlanta seven-meter C- and Ku-band antenna is used for incoming remote feeds. The satellite systems are operated via a Scientific Atlanta 7672 Earth Station Controller.

For BET, the new home was worth waiting for, and for their viewers, it is one well worth watching. ■

"[This] is a facility where perfect sound recording is possible even with an idling diesel locomotive parked outside."—Lawrence Brody, VP, Communications Engineering Inc.

■

WPTD-TV/DAYTON
Faced With A Tight Budget, This Pubcaster Builds For Today While Keeping An Eye On Tomorrow

Chapter 11 is a strange place to start a story, but for Greater Dayton Public Television Inc., the Chapter 11 filing of a commercial station on Channel 16 was the beginning of both its own growth and its important service to the area.

Operating on Channel 14 in Oxford, OH, the organization was unable to reach the larger potential audience available in Dayton and the surrounding area. The purchase out of bankruptcy of the Dayton facility allowed WPTD-TV to begin operations on Channel 16, with a closer-in site and taller tower.

Today, WPTD, Channel 16, and WPTO, now a Channel 14 satellite, are operating from a new downtown "Telecenter," and are looking to the day when the two stations are both

WPTD-TV Telecenter is located on the ground level of a municipal parking and transportation complex. The station is linked via fiberoptic cable to the adjacent Municipal Civic Center, and via microwave (rooftop) to WPTD and WPTO transmitter sites.

able to independently serve their community.

After humble beginnings, WPTD operated as a "playback" facility for several years, able to air national PBS programs or those produced by others, but lacking its own production facility. The station's technical plant was located a distance from the administration offices. WPTD's desire to produce its own programming, plus its need to centralize operations led to the plans for the new facility.

The city of Dayton also had growth on its mind, with a new Convention Center, hotel complex, garage complex and transportation center on the drawing board to promote growth in a revitalized downtown. The plan was for WPTD to occupy the building in the summer of 1988.

According to Chief Engineer Fred Stone, "The station planned a staged move-in, with offices first, then production and finally master control." The first program from the new building aired in May of 1988. Working quickly, the station's staff built a temporary studio to "get by" and make good on its promise for a May air date. Actual air operations remained at the old facility. By August, the administration and production departments were in their new home, but master control was still at the old location. Logistics were a problem, as the move altered well-established patterns of equipment-sharing between production and air operations. An even greater problem was delayed delivery on the equipment necessary to make the final changeover to the new building, as an extensive microwave network had to be in place to feed signals to the distant WPTD and WPTO transmitter sites, as well as to two translators.

"The station planned a staged move-in, with offices first, then production and finally master control."—Fred Stone, chief engineer, WPTD-TV

Finally, all the necessary gear arrived and was put in place. On the night of November 13, following sign-off, the move was made. Critical master-control equipment was moved, and the station was back on the air from its new home on time November 14.

The facility includes two studios, a 50 x 80 main studio and a 56 x 36 studio, which can be utilized as a teleconference or meeting room. Ikegami HK-323 cameras serve the studios and two control rooms, each with Grass Valley switchers and a Dubner 20K character generator. One room doubles as an edit suite, with an Ampex ACE editor, ADO and ESS-11 still store. An off-line room, audio room and graphics room with a Dubner DPS-1 paint system complete the production capability.

Master control features a Utah Sci-

Designed for expansion, master control (foreground) features space for future separate control area for satellite WPTO. Videotape room is behind glass on left side. Station's lobby area is behind glass on right side, allowing visitors a close-up look at station's air operations.

entific switcher and remote controls for the two stations' transmitters. Videotape sources include Ampex AVR-2 quads and a VP-2B one-inch for air, and three VPR-6 machines dedicated for production.

It is a facility planned for the future. The parking structure which houses the Telecenter is adjacent to the Civic Center. During construction, a multichannel fiber optic link was installed to allow WPTD to cover local events by just tying in their cameras and audio lines.

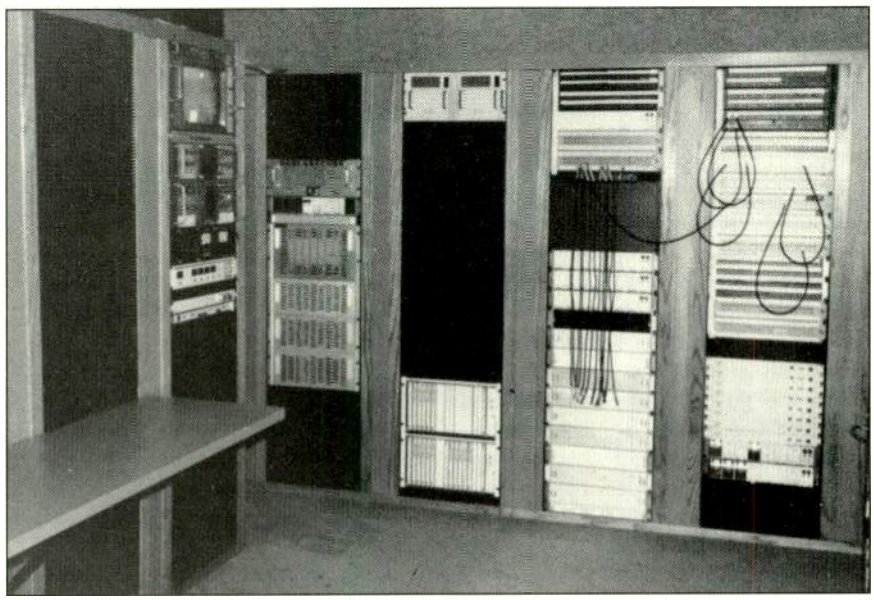
Looking ahead, thought has been given to the day when WPTD and WPTO are programmed separately. Plans are to upgrade the WPTO tower and transmitter, to bring its signal up to equal both the power and coverage area of WPTD. This would provide two channels covering the same territory. "We're prepared to implement separate programming on the two stations," Stone says. "One station would carry mostly network programming, while the other would carry more instructional local material." Master control is already set up to accept another switcher and monitor package.

"We're prepared to implement separate programming on the two stations. One station would carry mostly network programming, while the other would carry more instructional local material."
—Fred Stone, chief engineer, WPTD-TV

Stone is proud of his facility and his staff, who built WPTD over many 12-hour days. It is a pride shared by the community. ■

KSCI-TV/LOS ANGELES
A Station Builds For Today, Plans For The future

There is no question that competition in the Los Angeles television market is tough. With 26 broadcast stations, plus cable, a television station must be something special to stand out from the crowd. For KSCI-TV, a 15-year-old independent on Channel 18, that something special is a commitment to serve the many ethnic communities of the Los Angeles area.



Video distribution area shows a clean modern look. Note custom rack spacers between racks to eliminate clutter.

Licensed to San Bernadino, KSCI-TV began life as the typical independent, with a few syndicated reruns, some movies, religious programs and paid programming. Current management purchased the station five years ago, determined to carve out a niche in the marketplace. Today, the station promotes itself as "the International Channel," with programs around the clock in 13 different languages—from Armenian to Hebrew; Japanese to Persian.

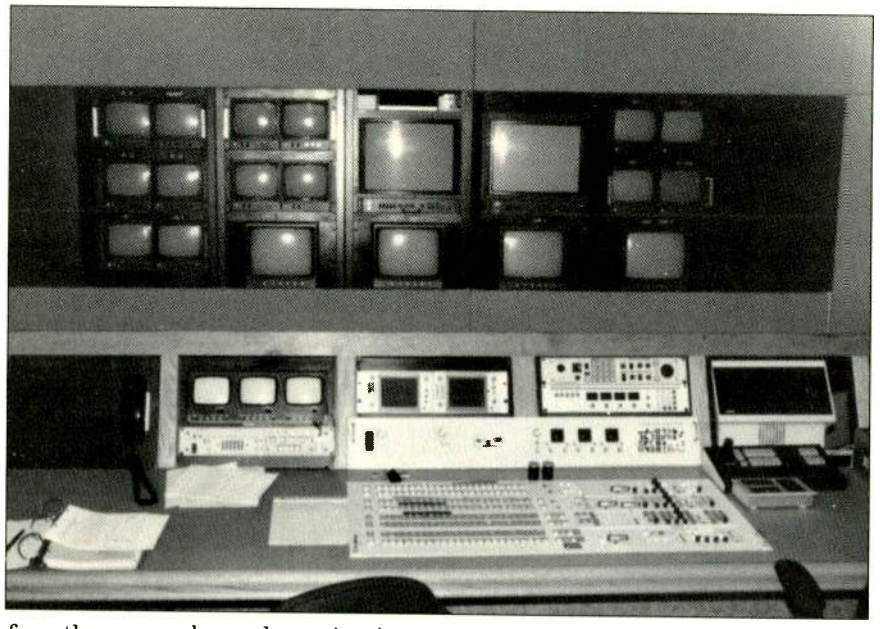
The station grew in a haphazard manner, with operations eventually spread over four separate buildings. According to station President Ray Beindorf. "The need to move was indisputable." His objective was to unify station operations in a versatile, straightforward yet powerful facility.

Bill Welty was hired as director of engineering in March of 1988, with the mission of building a new facility for a planned move early the following year. Welty was quite familiar with the problems of building a facility in the Los Angeles area, having built KDOC-TV in Anaheim and KADY-TV in Oxnard—now his competitors.

With a mission to create a flexible plant serving both the needs of the station's on-air operations and a growing number of outside production clients, Welty relied on a CAD program which allowed him to experiment with various floor plans and equipment layouts. He notes, "We were able to move equipment, racks and even rooms around within the building floor plan until we got what we needed." Welty used a three-dimensional overview of the technical area to spot unforeseen problems be-

"The need to move was indisputable, as we needed a versatile, straightforward yet powerful facility."—Ray Beindorf, president, KSCI-TV

■



The studio control room features a GVG-1680 switcher with ADO-2000. All consoles were built by station personnel.

fore they were beyond repair. As a result, the new facility was created in only three months. Careful consideration was given to the changeover from the old to the new locations. Even the positioning of the STL microwave was planned with precision, so that only a slight "tweak" was needed to transfer between old and new hops. Not one minute of air time was lost relocating the bulk of the station's equipment.

In addition to 24 hours a day of on-air operation, KSCI-TV handles a high volume of production, both for the station and for outside clients such as cable TV producers and national advertisers.

A 50 foot x 70 foot studio equipped with three Sony BVP-3 cameras serves as the main production studio. Production control is equipped with a Grass Valley 1680 switcher, an Ampex ADO-2000, a Chyron 4100, an Abekas A-42 still store and an ADM audio console. The second studio, equipped with Sony BVP-150 cameras, is 22 feet x 40 feet, and uses the station's remote truck as a dedicated control room.

The station's CMX room is equipped with a GVG 200 switcher, a Graham-Patten audio mixer and a CMX 3100 editor. The room shares the ADO and Chyron with production control. Recording chores are handled by five Sony BVH-2000s, a BVH-1100 and BVU-800s in the machine room.

Two additional edit rooms are available for in-house and outside clients. A three-machine room features a GVG-100 switcher, Sony BVU-800s and a BVE-3000 editor. A cuts-only room features Sony Type V machines and a Sony RM-440 edit controller.

A round-the-clock multilingual operation requires careful attention to on-air presentation and monitoring. Master control is housed in a dedicated room, placed adjacent to the videotape and transmission areas, yet isolated, so that on-air operators are not distracted by other station business. A GVG-1600 series switcher serves switching needs, while a station-modified Matco sequencer drives the on-air breaks and programming. "Because we receive a mix of outside program material in all formats, we needed flexibility not available in a commercial automation system," says Welty, who explains that his modified sequencer makes operations easier. Plant distribution is handled by a Utah Scientific AVS-1 router. As KSCI-TV looks towards the future, a second control room has been set aside for a planned satellite-delivered program service.

One unique feature of the station is the design of the equipment racks. Quite familiar with the age-old problem of rack-wire tangles, Welty had custom spacers placed between most rack frames. This allowed cables to be routed on the outside of the racks, providing less-cluttered access to rack-mounted equipment.

In the crowded market environment of Los Angeles, KSCI-TV clearly shows that it has the "something special" needed to survive. ■

"We were able to move equipment, racks and even rooms around within the floor plan until we got what we needed."—Bill Welty, director of engineering, KSCI-TV

■

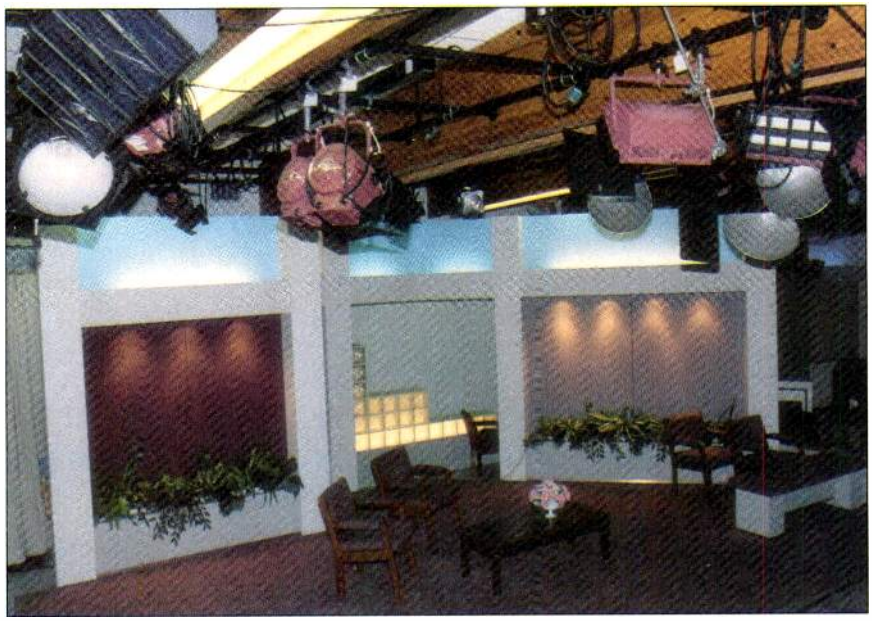
WMUR-TV/MANCHESTER, NH
How To Make The Transition From 6500 Square Feet To 23,000 Square Feet

At first thought, the marriage of a 112-year-old building and a state-of-the art television facility would seem to be a less than perfect match. But for WMUR-TV, it proved to be a winning combination.

WMUR-TV is Manchester, NH's Channel 9 ABC affiliate. Located geographically in the southern part of that state and demographically in the Boston television market, the station competes not only with other stations in the area, but with the Boston ABC affiliate as well. This has prompted a heavy commitment to local New Hampshire news, and with five local newscasts a day, WMUR delivers both news and a solid audience for its advertisers.

When the time came to build a new facility, the station required a high-visibility location that would reflect hometown roots while providing space for a totally modern technical plant. What WMUR found was the former Amoskead Mill, a building originally constructed in 1878 to house the largest textile manufacturer of the time. It would take three years of renovations to transform the

"The structural engineers shook their heads, but then went to their drawing boards and found a solution."—Joseph Paciorkowski, director of engineering, WMUR-TV



Two custom 48-foot beams create a truss to support the overhead load.

old mill building into a modern television station.

Two major problems required creative answers before the transformation could take place. According to the station's director of engineering, Joseph Paciorkowski, "Many floors were off-level by as much as six inches over 12 feet." This was due to the effect of the heavy load of textile machinery the wooden building had once housed. Since the station would be located on the building's third story, lightweight cellular concrete had to be used to level the floor.

The second problem required even more thought. To create space for a large production studio, seven load-bearing wood posts needed to be removed. Paciorkowski says, "The structural engineers shook their heads, but then went to their drawing boards and found a solution." Two custom-built, 48-foot beams would be "needled" onto the existing 14 foot x 14 foot beams, creating a large truss to support the load. This would give WMUR-TV the desired 64 feet x 40 feet of clear-span studio space.

Daily and weekly lottery drawings originate from WMUR, and its Ikegami cameras are kept busy with a heavy load of production, including public service and entertainment programming and the five local newscasts per day. Studio control includes a GVG 300 switcher, an Abekas A52 DVE, an A42 dual-channel still store and a Neotek audio console. The post-production room includes a Ross switcher and a Paltex editor, and the tape complement includes five Ampex VPR-80s and four Sony BVU-800s.

WMUR-TV's attention to detail can be clearly seen in the master-control operation, which is based around a Bosch MCS-2000 switcher and a GVG Horizon router. Sony Type V machines are used for station breaks, with a station-designed cuing system. Paciorkowski explains this configuration as one that fits his thinking of total back-up. "I don't like putting all my eggs in one basket," he comments. "[This way,] if one machine goes down, we're still in business." This thinking extends to programming as well, and important local programs are aired with back-up tapes.

"I don't like putting all my eggs in one basket. [This way,] if one machine goes down, we're still in business."—Joseph Paciorkowski, director of engineering, WMUR-TV

The station operates an extensive microwave system, both for signal transport and technical control. With an extensive statewide newsgathering operation providing material for the station's five daily newscasts, news bureaus in Concord, Nashua and Portsmouth are tied by microwave to the station's news center, and two ENG trucks are based at the Manchester facility. News stories are edited at the bureaus, or sent home "raw" for editing. All control for microwave and satellite operations is through a Moseley MRC-2 package with 96 channels. From master control, operators can monitor transmitter performance, steer microwave and satellite receivers, and handle incoming feeds.

One major accomplishment of the new facility was its selection by the ABC Network as home base for coverage of the recent New Hampshire primary election. At one point, WMUR housed 175 network staffers, provided feeds for *Good Morning America* and served as studio for *ABC World News Tonight* with Peter Jennings. During that program, the station handled live shots from 13 sites throughout the state.

In a building with a 112-year history, WMUR-TV is well-positioned to write some new history of its own. ■

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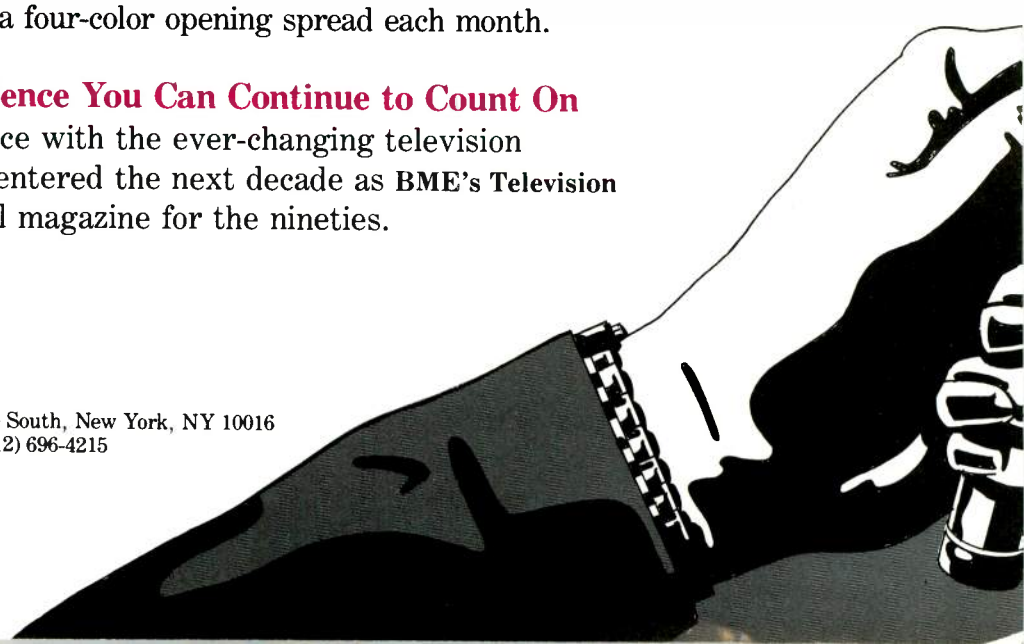

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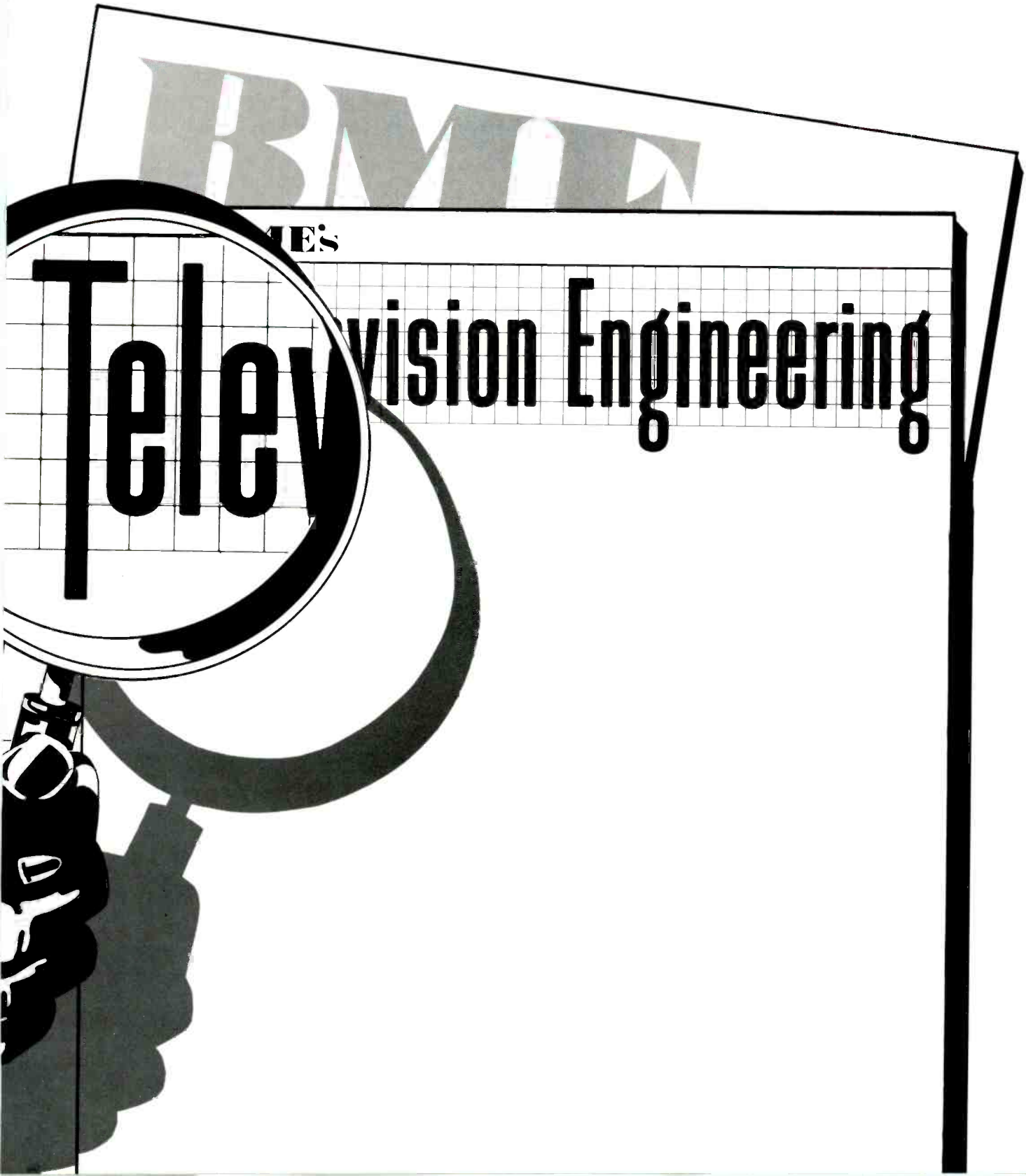


FULL BANDWIDTH, NO COMPROMISE

By William A. Owens

With 4:4:4:4 processing, digital video is moving beyond the "ultimate" quality of 4:2:2.

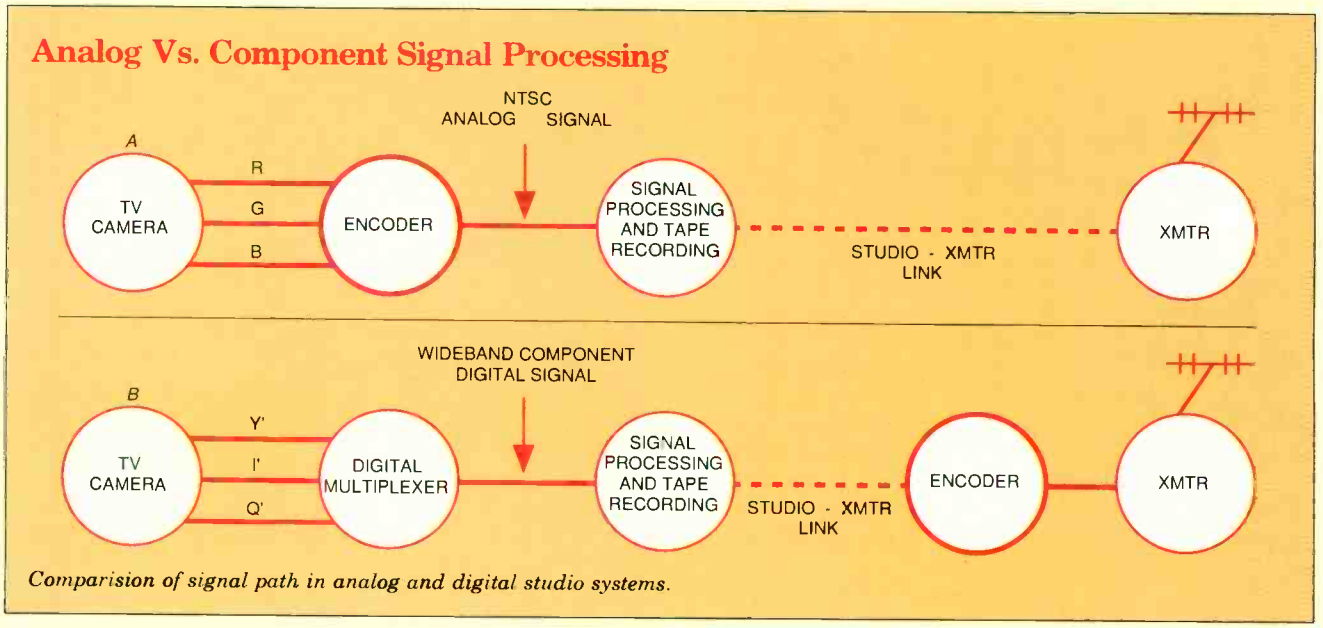
"There is no answer to the question, 'How good is good enough?' " The speaker is Paul Hansil, VP of sales and marketing for Abekas Video Systems; the topic, digital video technology. "With the strong possibility of signal degradation existing throughout the broadcast and transmission chain, producers must have the best-quality equipment to compete in the marketplace."

Like Indiana Jones searching for the Lost Ark, those involved in television engineering are on a never-ending quest for the Holy Grail of perfect pictures. Now, the search has brought us to the magic number 4:4:4:4, otherwise known as Full-Bandwidth Component Digital Video. Broadcasters and production houses are finding 4:4:4:4 a major improvement in the way television pictures are processed.

Digital video processing has brought changes in television, and in the way users look at technology. The story of 4:4:4:4 is the demand of the marketplace for higher-quality images. To understand the full scope and impact of the new processing, we need to know where we are, where we've been, and where we're going.

The basis for component digital television technology is CCIR 601, the international standard for digitizing component television video. The CCIR-601 encoding parameters define sampling systems, RGB/Y, Cb and Cr matrix values, filter characteristics, and specify 4:2:2 sampling at 13.5 MHz, with 720 luminance samples per active line and eight-bit digitizing. The nomenclature "4:2:2" refers to the sampling rate expressed as a ratio, with luminance followed by red and blue color-difference signals. Therefore, the ratio 4:2:2 represents luminance sampled at the 13.5 MHz rate, with the color-difference signals sampled at 6.75 MHz. The D-1 component videotape format conforms to CCIR 601 recording standards.

While D-1 would seem to be the "ultimate" format for high quality, even higher quality is possible using a higher sampling rate. This is what "Full-Bandwidth Component Digital Video," or 4:4:4:4, attempts to achieve. The numeric designation refers to the sampling-rate ratio expressed to a base of 3.375 MHz, with a sampling rate of



Comparision of signal path in analog and digital studio systems.

13.5 MHz and equal sampling rates for luminance and color-difference channels, as well as a fourth key signal channel. Many manufacturers, such as Ampex, Colorgraphics, Digital F/X and Abekas Video Systems, are producing equipment utilizing 4:4:4:4 for internal processing, in anticipation of widespread adoption of the format in the years ahead. And although a practical means of recording a 4:4:4:4 signal is presently lacking, that deficiency will be addressed by next month's NAB show when ColorGraphics premiers its 4:4:4:4 digital disk recorder.

The quality of 4:4:4:4 processing is clearly recognized by the manufacturers. Ampex Staff Product Manager Craig McCartney reports, "Ampex is committed to producing digital products and will use digital processing where it makes sense internally to the product, even in equipment lacking 4:4:4:4 output." McCartney points out that the new ALEX character generator utilizes 4:4:4:4 digital processing internally, following the market demand for increased quality levels. According to McCartney, the cost for building the ALEX was about 50 percent higher than if the product had been designed to use analog composite technology. "But for potential customers, the extra quality is worth the price," he says.

While broadcasters are slowly realizing the benefits of 4:4:4:4, it is in the post-production community where the greatest integration of 4:4:4:4 technology has taken place. Facilities are gearing up to meet their clients' demands, buying a variety of digital videotape machines, effects devices and multitasking graphics workstations.

The demands of production clients for improvements in audio and video quality are now pushing facilities to move to 4:4:4:4 technology. For broadcasters, the need is less immediate, but may be there nevertheless. The evening news may not need the quality of the 4:4:4:4 environment, but those producing programs with a long anticipated shelf life require the highest-quality master material. Many program producers are preparing for HDTV, seeking the highest possible audio/visual quality for their recorded material today, so that the best possible sound and video images will be available for transfer to whatever HDTV format becomes the standard tomorrow.

For Los Angeles-based AME, Inc., client demand prompted the move to D-1. According to Jan Yarbrough, VP of technical operations, his clients are "major film studios, who require the highest-possible quality format for archival media and duplication masters." Yarbrough's company recently created the new video master for Turner Broadcasting's *The Wizard of Oz,* using digital effects and recording technology to clean up and replace damaged film frames. The company uses the Rank Cintel Digiscan feeding a CCIR 601 signal directly to D-1 recorders, with upgrade to 4:4:4:4 anticipated as demand grows and 4:4:4:4 recorders become available. Yarbrough's only reported problems have been with encoders, which required extensive "tweaking" to obtain high quality.

For major production houses, 4:4:4:4 technology represents not only higher-quality video, but possible savings in manpower as well. Many of the available 4:4:4:4 products are "workstation"-type products that combine functions such as paint and character generation with video effects or editing. The cost of a product like the Digital F/X Composium, in the $200,000 class, may be well justified by the quality level of the finished video product alone. With one operator at one workstation replacing the large crew and suite of equipment that might otherwise be needed to do a similar production job, the savings can be considerable. This cost reduction can allow facilities to offer the same production job at a lower cost, or allow producers more time for creative experimentation within the same budget dollars.

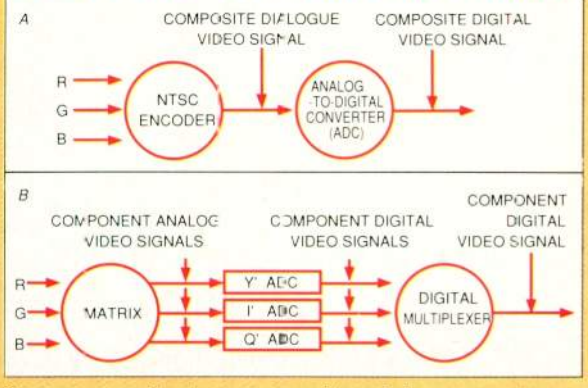
Digital F/X's VP of Marketing Barbara Koalkin points out that devices such as the Composium are based on a computer platform intended to make the operator more comfortable by simplifying execution of complicated effects functions. For the future, Koalkin predicts, "Operational improvements are more likely to be software-based than hardware-based."

One benefit of the use of computer platforms as the basis of video production equipment is the ability to add or change functions without the addition of new hardware.

Hierarchical Structure

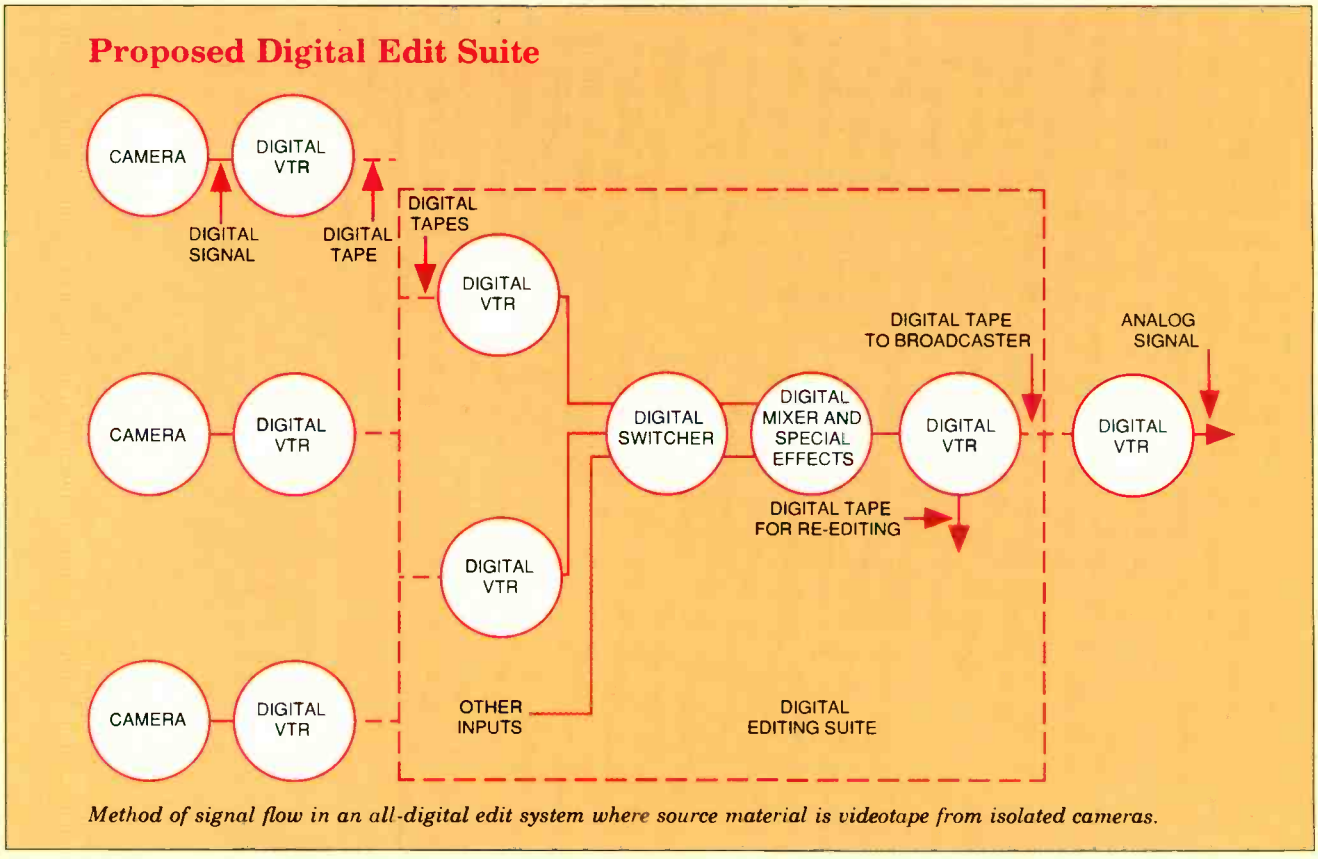
Ratios	fs (MHz)		
	Y	R-Y	B-Y
2:1:1	7	3.5	3.5
4:1:1	14	3.5	3.5
4:2:2	14	7	7
4:4:4	14	14	14

Component Vs. Composite Coding



Component coding is more complicated than composite, but provides greater freedom in signal processing.

FULL BANDWIDTH, **NO COMPROMISE**



Method of signal flow in an all-digital edit system where source material is videotape from isolated cameras.

While D-1 would seem to be the "ultimate" format for high quality, even higher quality is possible using a higher sampling rate.

Ken Ellis, operations director at Quantel, notes that while development in the past five years has centered on hardware, 'software appears to be taking the lead' in pushing new horizons in video. This would have the effect of reducing the cost of future upgrades, as the cost of software is considerably less than the purchase of task-specific hardware.

It is in the graphics area where the quality of 4:4:4:4 is most apparent. Bob Miller, VP and general manager of ColorGraphics, defines his graphics customer as needing "high-quality paint, layering, animation and rotoscoping," as well as the quality of D-1 recording. His company's DP-422 graphics system inputs and outputs 4:2:2, with all internal processing in 4:4:4:4. Miller points out that broadcasters and production houses seeking top-notch technology should "look beyond the flash and excitement of a new product, making sure that it is supported by reliable engineering."

At this time, all signals indicate that ColorGraphics will be the first industry manufacturer to introduce a recording device for the 4:4:4:4 environment. Miller told *Television Engineering* that the company will introduce a 4:4:4:4 format digital disk recorder, designed to function with its own graphics and animation systems, at NAB next month. The device, which most likely will be called Mosaic, records 25 seconds in 4:4:4:4 mode or 50 seconds of

4:2:2 video. More than one recorder can be chained together for longer record times. With the addition of Mosaic, ColorGraphics hopes to offer a paint and animation system, complete with 4:4:4:4 recording capability, for under $200,000.

Customer demand for optimum-quality character generation led Abekas Video Systems to use internal 4:4:4:4 processing in its A72 character generator. Hansil expressed concern over what he sees as the lack of support equipment for 4:4:4:4, with the need to "fit new technology into existing facilities" by providing input and output in the more readily available CCIR 601 (4:2:2) format. Hansil expects to see more 4:4:4:4 products as costs come down and 4:4:4:4 recorders become available.

Looking to the future is almost as important as buying for the present, according to Tom Heinz, director of video operations for Chicago's Optimus Film and Video. In his words, "You need to take advantage of current technology, knowing the areas where there will be client demand." With Sony D-1, Quantel Harry and Abekas A60 digital disk in-house, Heinz is now thinking about the next generation of video recorders and 4:4:4:4 processing. His advice to those considering new technology: "Don't blow the budget [one year], so you can buy what you need next time around."

New York City's Framerunner, Inc., is home to a Digital F/X Composium digital production suite, with all internal processing in 4:4:4:4. Company owner Tom Emmenegger says he "consciously decided to invest in technology with a future," concluding from his own research that "this is the next-generation video platform." The company also has a Chyron Infinit! character generator on order, and expects to add more 4:4:4:4 digital equipment as clients "recognize the benefits of forward-looking technology." Acknowledging that 4:4:4:4 produces visual images "clearly superior in the viewer's eye," Emmenegger believes that the lack of a full complement of support equipment, such as a 4:4:4:4 videotape recorder, makes the new processing "inefficient for a lot of operations." He reports that the company currently edits on component Beta SP, "to give clients high performance at cost-effective prices."

ColorGraphics hopes to offer a paint and animation system, with 4:4:4:4 capability for under $200,000.

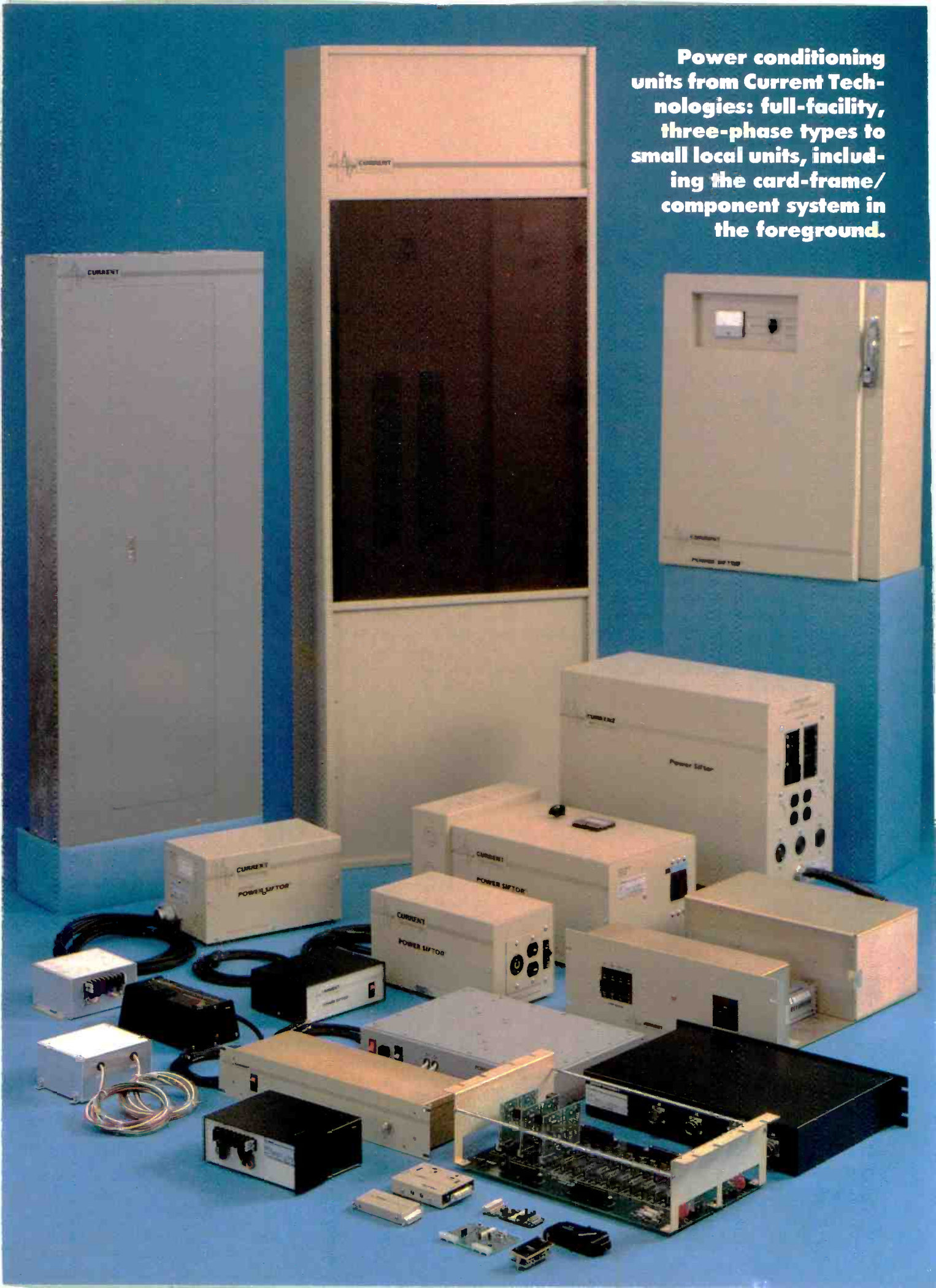
Digital 4:4:4:4 is familiar technology to Bob Frey, director of engineering at Pacific Video Resources in San Francisco, where the company has owned the Digital F/X 200 for some time now. Frey reports using the unit (recently upgraded to a Composium) in conjunction with an Abekas A60 digital disk recorder. In addition, Frey is able to use it as a source in his D-1-based edit room. One benefit he finds is the ability to put together as much material as possible without generational loss. Frey suggests that engineering people not be afraid of digital technology, and says he made a "very pleasant transition" to digital. Frey points out that his corporate clientele, in particular, are tuned in to the benefits of digital production technology.

The sunshine state is also well-represented in the digital revolution, with Hollywood, FL's Post Edge leading the way. According to owner and President Mike Orsburn, the company has "taken a unified approach to keep signals clean." In the company's Composium Suite, Digital F/X's 4:4:4:4 Composium is linked via 4:2:2 with an Ampex ESS-5 still store and an Abekas A60. In the Color-Perfection Suite, a Rank Turbo Telecine with DaVinci Color Corrector feeds 4:2:2 into Sony D-1 or (via an Intelvideo transcoder) Ampex D-2 machines.

Orsburn reports his entire plant is built "on a modular basis to permit the company to take advantage of new technology as it comes along." His philosophy is to "lead the market, providing clients with the latest technology, and to explain its benefits," and he finds that most clients are "very forward-looking," and appreciate his company's state-of-the-art technology. Orsburn expects to see a lot more of 4:4:4:4 in the future.

As for the future, one must consider HDTV. Many in the industry clearly see 4:4:4:4 as an important bridge to the new HDTV technology. The viewers at home are demanding better television quality. The increasing sales of "high-tech" home receivers will testify to that. With 4:4:4:4 processing, producers have the opportunity to upgrade their signal quality now, while providing a solid foundation for the future of television, whatever shape it may take. ■

Owens is Television Engineering*'s technical editor.*



Power conditioning units from Current Technologies: full-facility, three-phase types to small local units, including the card-frame/component system in the foreground.

Power Conditioning Gets Real

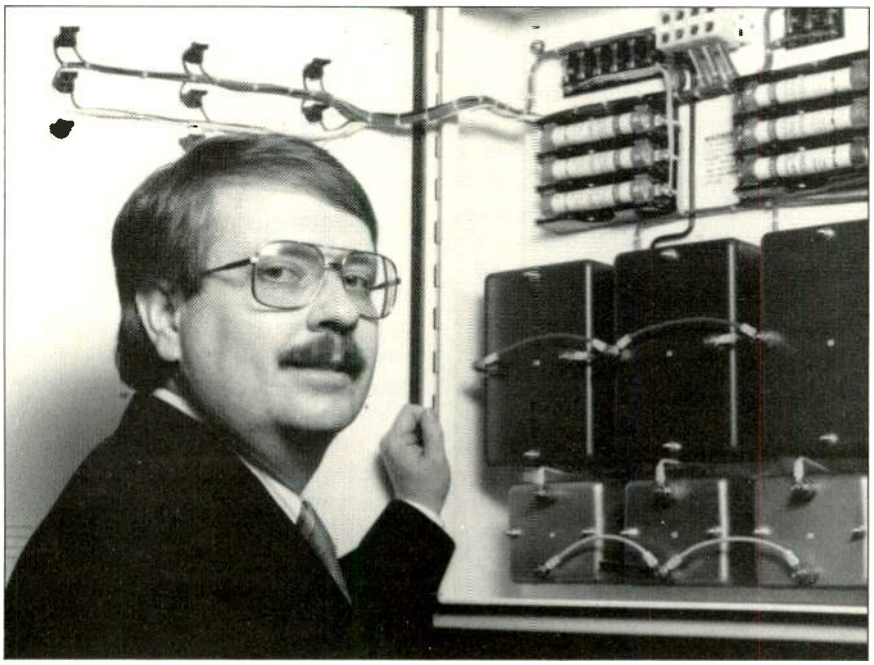
Consistent and clean power is no longer a luxury at TV stations, with extensive computer based hard drive it's an absolute necessity.

By Skip Pizzi

Until recently, no piece of hardware at a station was more sensitive to variations in mains power than the broadcast transmitter. Today, the transmitter seems downright serene compared to some of the station's computer-controlled and digital hardware, devices which can themselves have a deleterious effect on the air signal when they malfunction due to power-line glitches. This equipment may suffer immediate, significant damage, or damage that may not become evident until a later failure. In the case of computer data, files may be corrupted or lost.

Contemporary systems are fully solid-state and integrated, and operate at high speed. They are sensitive to extremely short-duration power-line events, and are, as one manufacturer quips, "trigger-happy." Digital circuits will sustain damage when their supply voltage hits anywhere from 250 percent to 400 percent above nominal. These variations may be caused by switching transients, lightning-induced spikes on power-line noise, or short-duration "flicker" outages. Studies have shown that 100 to 300 transients per month are common, the higher ranges coming in summer months when thunderstorm activity is high. Spikes can range anywhere from a few volts up to 10 kV, with a few hundred volts being the most typical. The modern power-distribution system supplies a fairly attenuation-free path for many of these high-frequency events, allowing transients and noise to be conducted with a greater efficiency than smaller conductors would provide.

Additional reactive spikes may occur whenever power is lost or returns; this may be caused by transformers in the line or in equipment power supplies, as a result of the impulse response to an external transient of any such inductive device.



Boyd Lundberg, chief engineer of KREM-TV, Spokane, WA, in front of the Northern Technologies TCS 1000-C power protection system.

It is often internally generated spikes which cause system damage or malfunction. The mains condition is often erroneously blamed for immediate or subsequently discovered problems, when the power transformer of the affected device is the real cause. A backup power system is no hedge against "power pollution," since most of these occurrences are strictly dis-

turbances and inconsistencies in the mains supply, not full outages.

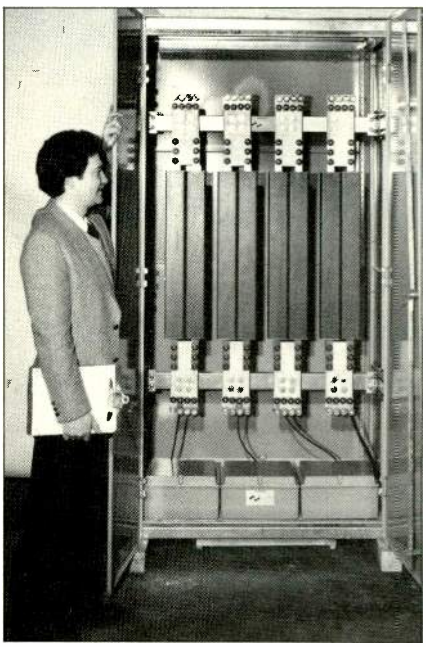
Over the years, several methods of purifying ac supply have been developed. These include filters, transformers, regulators and solid-state shunt devices such as avalanche diodes and varistors. Traditional power-line filters can be effective in eliminating ac line noise, but can't do much about high-voltage transients.

Transformers can also provide some filtering effect but, again, are not much help when it comes to voltage surges. Ferro-resonant type transformers are preferred today because of their higher speed, but their relatively high-output waveform distortion and relatively low throughput efficiency are additional disadvantages. Regulators, on the other hand, can help up to a point in the tolerance of voltage swings, but are generally too slow in reacting to large spikes, and can also be difficult to install in three-phase applications.

The use of dedicated power lines to specific hardware may keep the noise generated elsewhere in the plant from contaminating that hardware's mains supply, but it does nothing for transients and noise created outside the facility. Motor generators, on the other hand, take incoming power and virtually regenerate it locally; as a result, they can be effective in providing stable power from the grid, but won't do much for internally generated problems between the generator and the load.

Most digital hardware units today have internal transformers, filters and regulators; thus, external installation of similar devices at the system level in a facility will typically do little to help. So the industry has turned to the shunt device for help in the critical area of transient suppression.

Common to the operation of all types of shunt devices is their lowering of shunt resistance and/or reactance as input voltage increases, absorbing excess power into their internal elements, thus keeping output voltage fairly constant. In order to be maximally effective, all conductive elements in the shunt path of a suppressor of this type should be as low-resistance as possible. The lower their combined resistances, the higher an incoming voltage surge they will be able to shunt down to a tolerable output voltage.



Control Concepts Corporation's 1200-amp, three-phase "Islatron" power conditioning system.

The most popular of these external devices is the metal-oxide varistor (MOV). As a capacitor begins to pass audio when its frequency reaches a certain rate, an MOV begins to shunt when voltage exceeds a given value. Electrons will cross the junction, or "gate," when sufficient voltage exists to break through its internal resistance.

As with a capacitor, the size of the junction's surface area has great effect upon the unit's operation. The larger the gate, the higher its power handling, the lower its effective resistance, the faster its operation, the lower its overshoot, and the longer its lifespan—all desirable qualities in a suppressor.

Since MOVs are usually discrete, plug-in devices, they are typically small and inexpensive, but exhibit poor performance in all of the size-related qualities mentioned above. A small MOV may lose all its suppression capability after suppressing a single spike, while no indication of its lost effectiveness will be evident.

In contrast to these discrete suppressors, system-based suppression devices have far greater lifespans and effectiveness, resulting mainly from their larger size. These should be installed as close as possible to the equipment being protected. A large facility may need several system-type units at various locations, but it is this type of system that defines the state-of-the-art.

Although power-line noise can really be considered a series of high-frequency, low-amplitude transients, these are usually not removed by typical transient suppressors. Such noise can create particular havoc of a chronic nature with digital equipment, and must be removed for consistent operation.

Most power supplies for digital hardware contain filtering to counter this problem, but it may not always be of sufficient bandwidth to do the job effectively. A power-conditioning system should therefore also contain proper filtering at the system level.

The more sophisticated of today's power-conditioning systems contain "tracking filters," which follow the 60 Hz-power waveform, limiting the amount of deviation from a pure sinusoid. A tracking filter samples the incoming power waveform, steeply low-pass filters it, and uses the cleaned-up sine wave as a reference signal.

When the outgoing power waveform matches this purified reference, the filter does nothing. When the sensing element of the filter detects a deviation of the outgoing power of more than a given amount from the reference (typically ± 2 V), the series element of the filter increases its reactance, and the shunt element decreases its reactance as necessary to suppress the transient. Meanwhile, a power-storage element in the system fills the hole in the sinusoid left by

the removed transient.

In contrast, an MOV limits the maximum overall deviation that a transient can have to a *fixed* limit, but does not contour the limit to the sine wave as the tracking filter does.

Another desirable attribute of today's best power conditioners is the virtual elimination of reactive spikes in the transformers of individual units' power supplies, by virtue of the conditioning system's ramping down and up on cutoffs. Sensitive hardware never sees a hard stoppage or startup of power, so power supplies cannot compound the problem by their reactive surge to abrupt power loss or resumption.

The effectiveness of these systems is hard to deny. Studies in the computer industry have shown 75 to 80 percent reduction in digital hardware problems after such power conditioning has been installed. This kind of performance improvement can easily justify the cost of such a system.

In 1987, Underwriters Laboratories (UL) updated its former standards on transient-surge suppression, UL 1449.

The new UL 1449 includes tests of such systems in the areas of voltage-suppression performance, life and duty cycles, sustained performance at 10 percent overvoltage condition for incoming power (without overheating or malfunction), and ground continuity through the system. In addition, the front end of the system is subjected to a 6000 V dielectric withstand test, which it must pass without breakdown, thus ensuring that such dielectric breakdown is not being mistaken for an improvement in apparent suppression ability.

These high-performance power-conditioning systems are no longer frills at a professional broadcast or teleproduction facility. Every time a new piece of on-line digital hardware comes in the door, the return on a power-conditioning system's investment will increase, both in terms of directly reducing maintenance and replacement costs, and in directly maintaining incoming revenue streams through an enhanced reputation for consistency and reliability. ■

New Products

BME's expanded coverage of the latest developments in new broadcast equipment.

TEKTRONIX

Tek's Component/Composite System Offers Solution to Mixed-Format Test-Signal Generation

Tektronix's new component/composite systems for Betacam (CCS-3B) and MII (CCS-3M) formats are designed to provide comprehensive solutions to mixed-format test-signal generation and monitoring needs at a package price. The systems include the TSG-370 Component/NTSC Television Generator, the new WFM-300A Component/Composite Waveform Monitor and the 1720 Vectorscope. The TSG-370 provides fully independent analog component and NTSC composite outputs for operation and maintenance of facilities where both formats exist. Component and composite test signals can be independently selected. The WFM-3000A has a continuous composite output, regardless of input format, and composite waveform monitoring, while the 1720 Vectorscope gives dual channel display capability.

Reader Service #200

Nemal's New Video And Audio Cables Meet National Electrical Code Requirements

Nemal has premiered the 1570 and 2201A precision video and audio cables for broadcast, video and RF applications. The 1570 is a precision video coax that offers shielding, low loss (0.7db per 1000 feet at 10MHZ), and flexibility. The 2201A is a one-pair 22 ga cable with foil shielding and drain wire featuring a reduced diameter (.135"), crush-resistant construction, and single strip removal of both the jacket and foil. The audio cable comes in seven colors and in multiple pair counts up to 32 pairs. The 1570 is priced at $235 per 1000 feet.

Reader Service #201

F M Offers Digital, Hand-Held Audio Volume Meter

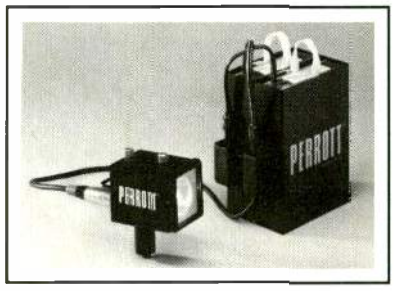
F M Systems has announced the AVM Audio Volume Meter, a digital, hand-held, battery-operated, true RMS audio volume meter calibrated in dBm in a 600 ohm circuit. The unit reads audio levels in a 70dB range from +20 dBm to -50 dBm in 0.1 dBm steps with basic accuracy of ± 1 percent ± 1 digits. Features include balanced and unbalanced audio inputs, and high impedance bridging to lines being measured.

Reader Service #202

Studer Intros Line for Digital Audio Production Systems

Studer Revox has introduced the Studer Dyaxis line of products for hard disk digital audio production systems. The Dyaxis 2+2 is designed for radio, music and post-production demands; the Systems Synchronizer is an advanced master clock module; the Dyaxis Excellerator/DSP Card provides enhanced digital signal processing capabilities; the Time-Scaling Software Option allows length changes of recording without changing the pitch; the DAT Back-up provides digital ports for a DAT machine to use for file back-up restoration; and the Storage Media feature answers the need for increased capacity in time storage. An additional product is a 1.2 Gigabyte 4 mm back-up tape device which uses standard DAT cassettes.

Reader Service #203



PERROTT

Perrott Presents Ni-cad Battery

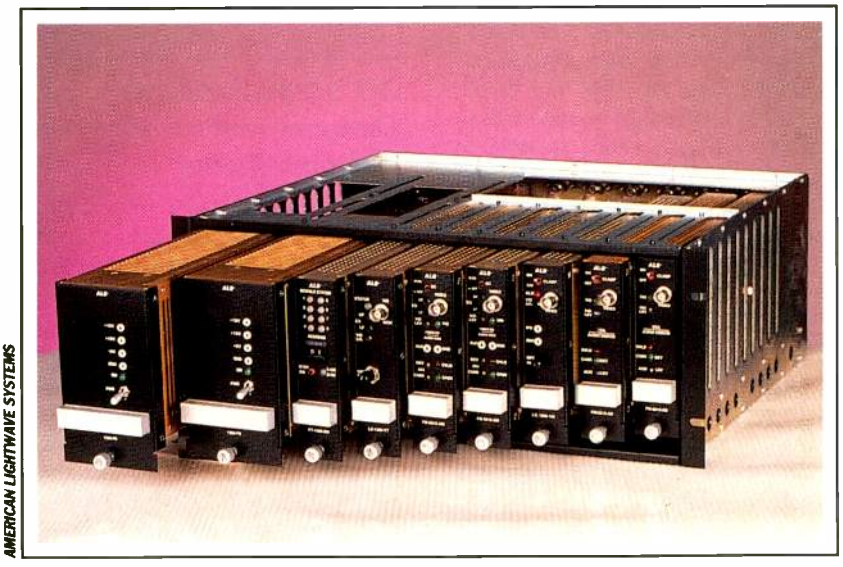
Perrott Engineering Labs has premiered the Super 90, a Ni-cad (PE 90 A) 12- volt 5 AH battery. The unit is a high-energy battery with an increased amount of running time. It has a high-impact Kydex molded case and provides 60 watts, running approximately 2.5 hours, according to the manufacturer. The unit measures 4¾ × 6½ × 1 7/16 and weighs 3⅝ lbs. List price is $295.

Reader Service #205

ALS Intros New Fiberoptics

American Lightwave Systems has introduced the LC series fiberoptic system for transmission of video signals, which is designed to provide studio video performance (67 dB SNR) at a cost equal to other single-channel systems which cannot provide broadcast-quality (60 dB SNR) minimum performance. The system is part of a family of modular equipment for video and audio transmission, installed into universal shelves. Features include interchangeability in the same mainframe, mainframe slide in power supplies that support AC and DC operations, front-mounted optical connections, and test points and indicators.

Reader Service #204



AMERICAN LIGHTWAVE SYSTEMS

Andrew Antenna Upgrade Adds Ku-band to C-band Dishes

Andrew's six-port upgrade allows conversion of 7-meter class earth station antennas from C band only to C- and Ku-band receive and Ku-band transmit. The upgrade is the latest addition to the Andrew Cherry Picker family of earth station antennas. The upgraded feed system gives broadcasters the capability to handle such technologies as hybrid C/Ku satellites, multi-video channels, HDTV and digital TV. Non-Andrew antennas can be upgraded on a case-by-case basis.

Reader Service #206

GVG Unveils Digital Encode System

The Grass Valley Group has introduced the Emphasys Encode System, an all-digital, 10-bit processing system that gives no drift, consistent colorimetry, and stability, according to the company. System setups are precise and repeatable through E-MEM storage and recall. Other features include user-selectable luma and chroma filter combinations and luma boost. Complete system control is provided via front-panel microprocessor commands and LCD response screen, or remotely through GPI or serial RS-422 communications.

Reader Service #207

MacIntosh Launches Studio Controller

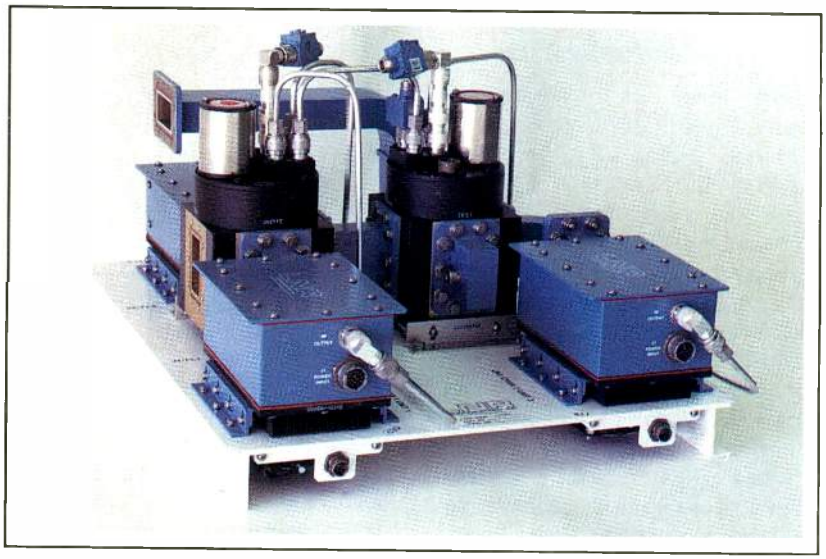
MacIntosh has launched the Studio Controller, which provides a graphic interface to the functions of the Ensemble Design TC400 Four-Channel TBC Controller. The Studio Controller controls video and chroma levels, setup and hue. System timing is directly accessible from a user interface. Features include graphic representation of control settings, off-line storage of TC400 registers to disk, numeric entry for precise adjustments and Multifinder compatibility. List price is $125.

Reader Service #208

Alpha Intros Audio Animation Software

Alpha Audio's the Boss 2 Automated Audio Editor, now interfaces with the Tascam ES-50 and Otari EC-101 synchronizers. Drivers for serial-controlled devices have been added as well. These include: the Studer A730 Compact Disk Player, Panasonic AU-660 MII VTR, Hitachi HR-230 (with Sony Emulation), and the Sony VO-9850 VTR and APR-5003V two-track recorder. Another new driver, the TCGEN, enables the Boss/2 to control code-only chase machines such as hard-disk recorders, sequencers and recording consoles.

Reader Service #209

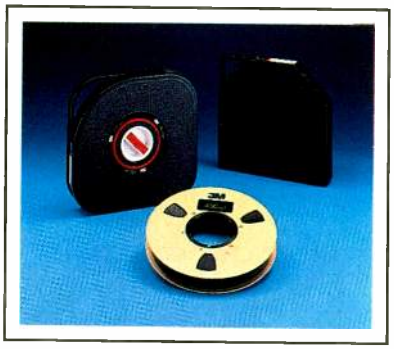


LNR COMMUNICATIONS INC.

LNR's Low-Noise Amplifier Now Features 35K Noise Temperature

LNR Communications Inc. has introduced the CF4-35 low-noise amplifier, an addition to its CF4 series cooled GaAs FET product line. The CF4-35 features true 35K noise temperature at all points in the C-band, hermetic sealing, easily installed single, redundant and TRIDUNDANT configurations, an option for 70 dB gain high-intercept-point (+37 dbm) output, and is available in 3.7–4.2 GHz, 3.6–4.2 GHz and 3.4–4.2 GHz frequency ranges.

Reader Service #212



3M

3M Improves Master Broadcast Videotape

3M's 480XST one-inch helical Master Broadcast videotape is an improved version of 3M's 480 Master Broadcast videotape. The 480XST's smooth surface and exclusive back-coating reduce static and debris, resulting in minimum dropout and color noise. Delivering a higher audio signal-to-noise ratio and a lower distortion rate.

Reader Service #210

Video Logic Debuts Computerized Videotape Logging System

Video Logic has debuted a computerized videotape logging system that combines word processing and VTR control. Features includes speed logging, which captures time-coding automatically and calculates scene durations instantly. The unit is designed to find scenes wanted immediately, and to eliminate the need to retype logs. The system uses IBM PCs, compatibles and laptops.

Reader Service #213

CEL ELECTRONICS

CEL's Tetra Standards Converter Features Four-Field Temporal Filtering

Cel Electronics' P165 Tetra bidirectional broadcast standards converter features four-field temporal filtering for smooth motion, four eight-line vertical spatial filters for line conversion, and eight-field storage with DSP control pipelining. It is intended for high-quality conversion from PAL, SECAM, NTSC 3.58, NTSC 4.43, component, DUB, and Y/C in 525- or 625-line, to NTSC, PAL 525/625 or any world standard.

Reader Service #214

Titus Announces Automatic Stereo Synthesizer

Titus's The Last Word 2 (TLW-2) is designed to correct audio problems such as loss of a channel, loss of signal or reversed polarity. The TLW-2 can automatically insert an internal Dynamic Stereo Synthesizer into an air chain at the loss of a channel, with detection of monaural input audio or remote-user command. The device features two stereo inputs, and user-programmed sequencing, time delays and operating levels. It provides full metering and audio monitoring and can be remotely controlled.

Reader Service #211

Systems Development Group Intros Art Diffuser for Audio/Video and Environmental Acoustics

Systems Development Group has introduced the Art Diffuser, a broadband acoustic diffuser designed especially for areas where room acoustics are a problem and aesthetics a consideration. The diffusers interlock to form diffusion to fit the space, providing an acoustic treatment for small areas, as well as for complete walls. The unit is a total modular system available in two standard sizes, a 15" square and a 15" × 30" rectangle, which interlocks to provide diffusion for the entire space. Features include pattern control and solid wood construction.

Reader Service #215

Barco Unveils AVM Series Broadcast Monitor

Barco, Inc., has launched the AVM Series grade-two broadcast monitor, which offers automatic set-up and alignment of image parameters, color temperature and contrast. The unit is equipped with RGBS, Super-VHS, and Y/R-Y/B-Y analog component inputs. The series is available in several model types, and features include color temperature accuracy, and stability regardless of aging tubes and circuitry. The AVM Series matches colors between monitors, and offers calibrated and preset control memory for all display parameters and control functions. Another feature is the Multi-Monitor Remote Controller, which gives full remote control of all display parameters and functions, along with easy integration into existing CVS/CVM configurations.

Reader Service #216

Philips Announces MSR Lamp

Philips Lighting has introduced the MSR Lamp (Medium Source Rare Earth Lamp), designed for indoor/outdoor filming, stage, theater and studio use. The high-pressured discharge lamp has a short arc length (610 mm), and is filled with rare gas, mercury halides and additives of rare earths. The MSR lamp is a single-ended, dimmable lamp featuring constant color temperature. Features include permissible bulb temperature of 800 degrees C max., permissible pinch temperature of 350 degree C normal condition and 300 degree humid condition. The lamps's color temperature is 5600 k, slightly below the black-body line, and it also features high luminous efficacies between 80 and 91 lm/W, a universal operating position, and continuous spectrum and light center length.

Reader Service #217

API AUDIO PRODUCTS INC.

API Audio Premiers All-Discrete In-Line Recording Console

API Audio Products, Inc. has introduced an all-discrete in-line recording console, which allows configurations of up to 96 inputs and provides 48 track assigns and three stereo busses, with 10 auxiliary sends per module. The input section and monitor sections are identical, allowing for twice the functions within the same module. The console also features the GML Series Automation Environment as standard issue. This automation includes moving faders (1/10th dB), and these updatable switches controlled to ¼ frame accuracy: large fader mutes, EQ in/out and small fader mutes, etc.

Reader Service #218

Sennheiser Intros Supra-Aural Studio Stereo Headphones

Sennheiser has introduced the HD 450 Studio Stereo Headphones, which are a supra-aural Open-Aire model designed to give durability, acoustic accuracy and high impedance. The unit uses neodymium ferrous magnets, which provide a stronger magnetic field than conventional magnet structure. Other features include a durable steel-stranded 10-foot cable terminated in a strain-relief ¼-inch stereo phone plug, and a canvas carrying case. All parts, including driver elements, headbands, ear cushions and cables are field-replaceable.

Reader Service #219

Adrienne's AEC-2 AFV Routing Switcher is HDTV-Compatible

Adrienne Electronics' AEC-2 10x2 Video/Audio Routing Switcher in 1RU is promoted as a compact and cost-effective version of the AEC-1, where more than one level of switching is required. The model is AFV only, and features HDTV compatibility at 30 MHz, remote control, expansibility to 10x10, up to two audio/LTC channels, a tally relay option and a serial interface option. List prices range from $1195 for video only to $3395 for 10x2 component/RGB.

Reader Service #220

Ensemble's TBC Remote Controller Has 100-Setup Memory

Ensemble Designs has introduced the TC400, a remote controller for the proc amp functions of VTR time base correctors which is capable of independently controlling four TBCs. Memorization of 100 different setups in each TBC is allowed. In addition to front-panel controls, the functions of the TC400 can be accessed through a serial port, or by GPI contact closure. The unit also includes an AppleTalk-standard LAN port. List price is $2500.

Reader Service #221

TimeLine Debuts SSL Interface

TimeLine's Lynx System Supervisor Interface for the Solid State Logic (SSL) G Series Studio Computer allows the SSL Studio Computer to talk directly to ATRs, VTRs and film equipment through TimeLine's Lynx system. The Supervisor Interface features control over an expanded number of transports and unlimited master/slave selection, and allows storage of all offset information and cue and mix data on the SSL data cartridge.

Reader Service #222

CMX Upgrades CMX 300 Software

An upgraded software package for the CMX 300 editing system provides both off-line and on-line applications for the CMX 300 editing system. On-line features include slo-mo control, which offers slow-mo, reverse or fast motion speed effects for dynamic tracking VTRs. The upgrade also provides fit/fill, which allows the system to calculate the speed required to compress or expand the length of source material to fit a particular time slot on the master. Other features include auto-split, match-cut calculate, channel assign and, for off-line, autoclean.

Reader Service #223

Vinten's Hawk Pedestal is Now Available in an OB Version

The new outside broadcast version of Vinten's Hawk studio pedestal features optional OB wheels that replace the studio wheels. It also features carrying handles to facilitate simple loading and unloading. Height is adjustable from 21.5 inches to 59 inches. The Hawk has a load capacity of 150 pounds, and center-ring steering and elevation.

Reader Service #224

VINTEN

COMPUTER PROMPTING CORP.

Computer Prompting Corp. Offers Prompting Software

Computer Prompting Corp.'s CPC-1000 prompting software now runs on all IBM-compatible laptops, detecting and adjusting to the laptop's graphic adapter. Scroll speed and direction is provided by a new PC-based mini-trackball, which is included with the package. Other features of the software include nine fonts and a four-hour scrolling capacity. Scripts may be typed on any IBM PC-compatible word processor with an ASCII output. The package also includes integral word-processing software, which runs from a floppy disk, hard disk or RAM disk, and provides printouts with line numbers coordinated with word-processor line numbers.

Reader Service #225

Signature Music Library Unveils CD Volumes of Full-Length Themes

Signature Music Library has introduced three new CD volumes of full-length themes for audio/visual and video program applications. The applications are described as high-tech utility, motivational corporate, mid-tempo training and new-age image usage. The library now contains 121 full-length themes on seven CD volumes.

Reader Service #226

AVS Modular Inserters Impose Graphics on Video Images

The French company Audio Visuel Systèmes has developed the S161 Euro-inserter line, designed to superimpose messages and graphics on transmission-quality video images, with each function fitting completely within a single module. All seven modules are identical in size and appearance, and can be rack-mounted. The system conforms to SECAM, PAL and NTSC standards.

Reader Service #227

Montage Offers Portable Picture Processor

The new Montage Portable Picture Processor packages the Montage random-access editing system into a modular package that can be operated from its own shipping cases. The custom "case-within-a-case" design offers weather insulation and shock protection, and quick setup and teardown. The portable system also accepts feeds from ancillary video-assist cameras.

Reader Service #228

Intelvideo Intros Signal Processor

Intelvideo's Pre-Coder Model IV-5 is a luminance corrector/enhancer/color detailer which is used prior to the NTSC color-encoding process. It provides precompensation for the violation of the constant luminance principle which occurs in conventional color encoders, and it provides dynamic enhancement of color details as a function of saturation and color. Up to 16dB of enhancement can be obtained for certain color details without color-unbalancing black-and-white details. List price is $2900.

Reader Service #229

DSC Presents Digital Disc Recording System

DSC has introduced the DiSC digital disc recording system, which offers 212-second recording capacity, along with the COLLAGE compositing system for building multi-layered effects and sequences. Rev. 3.00c software features shuttle, variable speed play, DiSC record protect, CMX VPR-6 interface, one-frame record, automation and mark in/out. An optional analog interface converts up to eight NTSC sources to D-2, and provides three channels of D-2 conversion.

Reader Service #230

I.Den's Frame Synchronizer/Time Base Corrector is Compatible with Y/C358, Composite Video and Y688

I.Den's IVT-7 Frame Synchronizer/Time Base Corrector is compatible with Y/C358 (Super-VHS, Hi-8), composite video and Y688. Infinite window correction enables it to be used with domestic VCRs and cameras and permits frame and field freeze. A built-in DOC, +/– 20 times shuttle handling and 1H to +2H chroma line shift are standard. The IVT-7 has an ACC circuit, compensating for low chroma level inputs, is one rack unit high and comes with rack ears.

Reader Service #231

Panasonic Debuts CCD Camera

Panasonic's AK-450, an ENG/EFP dockable analog camera, uses ⅔-inch format CCD chips with 450,000 pixels. Resolution is better than 800 TV lines, and signal-to-noise ratio is 62 dB. The camera also features advanced FIT (frame interline transfer) CCD image sensors, negligible vertical smear, dynamic highlight compression, black stretch and shading correction. The AK-450 has electronic shutter speeds of 1/60, 1/125, 1/250, 1/500, 1/1000 and 1/2000, and sensitivity of 2000 Lux at *f*. 5.6.

Reader Service #232

United Media Premiers Multi-Tasking Video Editors

United Media's Multi-Tasking Series includes the MT 30, MT 60 and MT 90. The editors are designed to perform fast, accurate edits using from three to nine video or audio machines, with switcher and either online or off-line SMPTE/EPU time code or control track. Features include up to three different EDL lists in memory, up to 3000 events of EDL memory, delayed dissolves, look-ahead cuing, auto assembly with continuous roll, sync roll and sync chase, eight GPI channels and a 3.5-inch PC and/or industry-compatible disk drive.

Reader Service #233

Winsted Offers Rack-Mount Shelves

The Winsted Corp. has introduced two new types of rack-mount shelves. The Universal Rack-Mount Shelves are designed to fit all 19-inch EIA racks, and will hold lighter electronic equipment up to 17⅜ inches wide and 14 inches deep. Winsted offers four models, from 3½ inches to 10 inches high. The Extra Deep/Heavy-Duty Shelves are designed for heavier, non-rack-mountable VCR and other equipment, and feature adjustable rear supports.

Reader Service #234

Sigma Announces Television Terminal Equipment

Sigma Electronics has announced the Series 2100, designed as a family of products for audio, video, pulse and graphic routing, distribution and fiber transmission. The series of television terminal equipment features mobility—all modules can reside in any mounting frame and in any desired combination. They provide minimized heat and power consumption. In addition, the series is designed with off-the-shelf and multi-sourced components that requires minimal adjustments and alignment.

Reader Service #235

Nalpak Tufftotes Carry Producers', Directors' Gear

Nalpak's Tufftotes are designed for production personnel's paperwork and hand-held equipment. The bags are constructed of 1000 denier ballistic nylon and feature adjustable/detachable shoulder straps with shoulder pads, and top carry handles. Tufftotes are available in Production Attaché and Director's Attaché models.

Reader Service #236

Rapid Systems Offers Laptop Scope

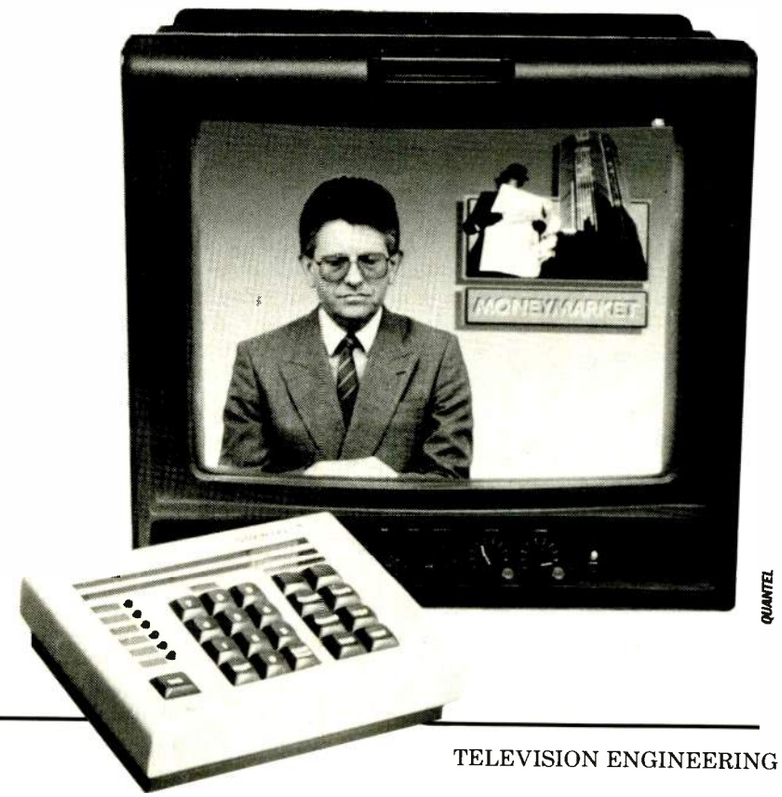
The new R45 from Rapid Systems is a combination FFT spectrum analyzer and digital oscilloscope that uses a Toshiba 286 laptop PC for user input and output. The system allows the user to view both the input signal and its frequency spectrum in real time. It includes a two-channel, 256K data buffer, 10 MHz bandwidth and 20 MHz sample rate. List price is $7995.

Reader Service #237

Quantel's VE Paintbox Features Effects Capabilities

The VE V-Series Paintbox, new from Quantel, is the top of the V-Series line. It includes a powerful effects processor, which allows creation of flexi-curves, instantly shaped and modified by dragging with the pen. The Paintbox also incorporates the corner-pinning and interactive 3D axes features of the Encore HUD.

Reader Service #238



QUANTEL

JVC Intros Three-CCD Professional Video Camera

JVC has introduced the KY-25U, a three-CCD color video camera that delivers 700 lines of horizontal resolution and 60 dB signal-to-noise ratio. The unit utilizes high-density, ⅔-inch CCDs with 380,000 pixels, and a optical system based on spatial-offset technology. It also docks directly with JVC's BR-S410U recorder and MII and Betacam recorders through an optional adapter. The KY-25U provides composite and separate Y/C outputs, and 26-pin connectors. Features include electronic shutters, two-channel preamplifier, automatic setup, adjustable white and black balance and preset white balance for 3200 K. Additional features include the sync signal generator, self-diagnostic system, microprocessor-controlled auto-iris circuit, headset terminal with output level controls, negative-to-positive image reversal, and a "zebra pattern" generator that allows a quick check of the video level of the images being recorded. The unit also uses a variety of lenses. The camera will dock with VHS or MII recorders.

Reader Service #239

Pygmy Unveils Analog-to-Digital Converter

Pygmy Computer Systems, Inc.'s AD-1 analog-to-digital converter is designed to allow the user all the advantages inherent in digital technology, while avoiding the grating, edgy indistinctness associated with current digital recording. The AD-1 uses sigma-delta (single-bit) conversion and digital FIR filters, which possess the linear phase response required to capture soundstage spatial relationships in both music and vocals. The unit has a frequency response ripple of + or -.001db, a dynamic range of 96db and total harmonic distortion (S/THD + N) of less than -88db; it functions with any equipment using AES/EBU and SDIF-2 format inputs and provides simultaneous output of both.

Reader Service #240

Ultimatte Premiers Compositing System

Ultimatte has unveiled the Ultimatte System-6 video image compositing system, which provides shadows, transparencies, reflections, fine detail, blue foreground objects and blue spill suppression. Other features include screen correction, which removes anomalies from the backing, set, and set pieces such as lighting, unwanted shadows, seams, differences in color and glare; a menu-driven remote control; an RS-422 interface and shaft encoders with 10-bit resolution for fine control; and time-code control. The unit accepts SMPTE/EBU time-code input for on-line editing, and stores all analog and switch functions. A RS-232 port is provided on the remote control so that a PC can be used to extract all file information, including the time-code edit list. An optional 3.5" disk drive can also be used.

Reader Service #241

Deregulation Chickens Come Home to Roost

By Harry F. Cole

If regulation is a complex game, deregulation—when properly undertaken—is in some senses even more complex. When an agency is regulation-minded, it can usually achieve whatever goals it sets for itself simply by adding a new rule or requirement here or there. Deregulation, on the other hand, assumes that the agency has something of an integrated, telic overview of its mission, a unified goal which can be achieved by a minimum of governmental intrusion. The ideal deregulated system consists of the bare minimum of rules, requirements and agency intrusion, narrowly designed and implemented so as to achieve only the limited results which the agency deems necessary and not otherwise attainable through non-governmental means. An agency serious about its deregulation should develop a comprehensive notion of where regulation is absolutely essential, and should carefully tailor its regulatory program to address *only* those areas.

We do not, however, live in an ideal world. The FCC has occasionally resembled an amateur plumber trying to fix leaks. Our amateur has dealt with the problem one or two leaks at a time, fashioning ad hoc remedies which may do the immediate job, but which also occasionally cause new leaks to spring elsewhere. We offer two examples to illustrate this phenomenon.

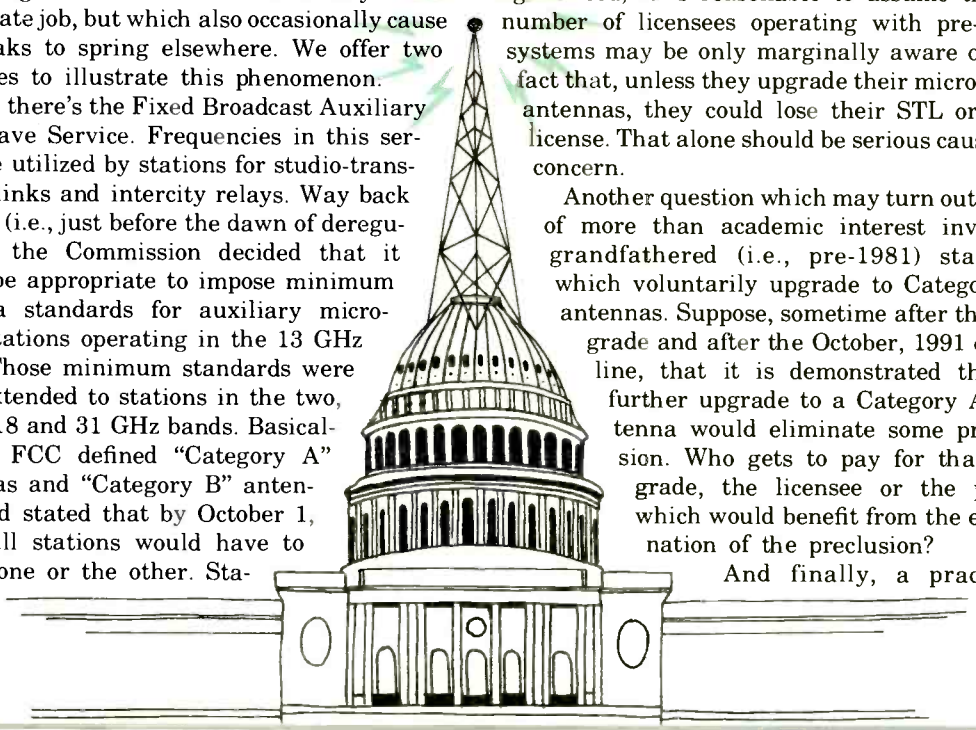
First, there's the Fixed Broadcast Auxiliary Microwave Service. Frequencies in this service are utilized by stations for studio-transmitter links and intercity relays. Way back in 1980 (i.e., just before the dawn of deregulation), the Commission decided that it would be appropriate to impose minimum antenna standards for auxiliary microwave stations operating in the 13 GHz band. Those minimum standards were later extended to stations in the two, seven, 18 and 31 GHz bands. Basically, the FCC defined "Category A" antennas and "Category B" antennas, and stated that by October 1, 1991, all stations would have to utilize one or the other. Stations in "congested areas" would have to use Category A antennas, while stations in areas "not subject to frequency congestion" could use Category B antennas if they chose. Any applications filed after October, 1981 for new auxiliary microwave stations in the affected bands would have to comply with these requirements. Facilities authorized (or applied for) prior to October, 1981, were given until October, 1991, to upgrade, and they were given the opportunity to use Category B antennas in "congested areas" if that use was not preclusionary, or if use of a Category A antenna would not correct any preclusion. According to the FCC back in the halcyon, pre-deregulation days, after October 1, 1991, the licenses of non-complying operations would not be renewed.

Cole is a partner in Bechtel, Borsari, Cole & Paxson, a Washington, DC-based law firm.

Shortly after this new approach was adopted, deregulation fever set in, and little if anything has been heard of the October, 1991 deadline for upgrading. Indeed, it is reasonable to assume that a number of licensees operating with pre-1981 systems may be only marginally aware of the fact that, unless they upgrade their microwave antennas, they could lose their STL or ICR license. That alone should be serious cause for concern.

Another question which may turn out to be of more than academic interest involves grandfathered (i.e., pre-1981) stations which voluntarily upgrade to Category B antennas. Suppose, sometime after the upgrade and after the October, 1991 deadline, that it is demonstrated that a further upgrade to a Category A antenna would eliminate some preclusion. Who gets to pay for that upgrade, the licensee or the party which would benefit from the elimination of the preclusion?

And finally, a practical



question. Back when the October, 1991 deadline was announced, the FCC still licensed auxiliary stations separately from the main station. Nowadays, however, thanks to deregulation, the Commission requires that a licensee seek renewal *only* of its main-station license. All auxiliary licenses are deemed to be just an ancillary aspect of the main license, and no separate application for renewal of those auxiliary licenses is required. But in light of that, how does the Commission expect to be able to identity non-complying auxiliary stations as of October 1, 1991, and how does it intend to implement its threat of non-renewal of such stations? Presumably, the FCC is not inclined to abandon its streamlined renewal process just to try to catch what would probably be a relative small number of non-complying stations. But how else can the October, 1991 deadline be enforced?

Let's also look at another area in which there may lurk some potential dangers, for television broadcasters in particular. It is by now old news that television stations may broadcast in stereo. The FCC, of course, adopted the stereo system proposed by the Broadcast Television Systems Committee (BTSC). That system included protection of the BTSC pilot frequency of 15,734 Hz. The FCC stated that, "Only those systems which fully comply with the BTSC system . . . may use 15,734 Hz as the pilot subcarrier frequency. No other MTS system may provide for subcarriers or continuous energy at 15,734 Hz plus/minus 20 Hz that modulates the aural transmitter more than plus/minus 0.125 kHz."

The FCC rule which implements this requirement—Section 73.682(c)(3)—could be read to mean that a TV licensee is prohibited from *intentionally* transmitting on 15,734 Hz. But it is not at all uncommon that, because of one or more sources of crosstalk between the video and audio channels, inadvertent noise signals on that frequency may appear as, for example, "H-sync spurs" in the aural baseband. Such spurs are not normally noteworthy, as they tend to cause no real harm to the station's signal. However, since they do constitute transmission (whether or not intentional) on the BTSC pilot frequency, they can result in activation of stereo receiving circuits in television receivers. In other words, even though the station is not in fact broadcasting in stereo, the receiver senses the pilot frequency transmission, interprets it as a BTSC stereo pilot, and acts accordingly, kicking in the stereo indicator on the front of the receiver and activating the stereophonic difference circuits.

A couple of years ago, the Mass Media Bureau addressed this question in a little-publicized Declaratory Ruling. There, the Bureau explained that even though no specific rule was adopted, "it was assumed . . . that stations not transmitting any subcarrier information would suppress unintended signals at 15,734 Hz in accordance with good engineering practices." In other words, as far as the Bureau is concerned, if you're not equipped with BTSC stereo equipment, you should be sure not to transmit energy on the BTSC pilot.

This does not appear to have created any major problems thus far. But the fact remains that the Mass Media Bureau clearly announced, more than two years ago, that it interpreted the rules as imposing certain obligations on TV licensees, obligations which may not be immediately apparent in the rules themselves.

In summary, it might be useful if the Commission were to assign a task force to comprehensively review the overall regulatory system as it presently stands, and to apprise the Commission and the affected industry as to what rules and standards are presently in place and how they are going to be enforced. In its headlong rush to deregulation, the FCC managed to plant, inadvertently, booby traps that can come back to haunt it and the industry alike. More importantly, all affected parties—including, of course, the viewing and listening audiences—should be entitled to know what governmental standards are being imposed on broadcast licensees.

Such a comprehensive review is, unfortunately, not likely. The FCC is understaffed as it is, and in recent years, the Commission has not shown any institutional inclination toward self-criticism, much less self-improvement. For the time being, then, affected parties are left to fend for themselves.

At least one individual has made efforts to clarify matters. He is Dane Ericksen, a former FCC engineer-in-charge, who is presently a consulting engineer with Hammett & Edison, an engineering firm in San Francisco. Ericksen requested the declaratory ruling concerning protection of the stereo pilot, and he has presently pending before the FCC a request for clarification concerning the auxiliary microwave antenna situation. Ideally, others who perceive ambiguities, inconsistencies or just plain lack of clarity in the FCC's rules or policies should follow Ericksen's lead, posing questions directly and formally to the Commission in order to get answers. Since the FCC is apparently not inclined to self-correction, self-help by broadcasters is one of the few available ways to guard against unfortunate surprises.

If you have any questions about any of these matters, you should contact your consulting engineer or your communications counsel. ■

BUSINESS BRIEFS

Camera Mart, New York City, has supplied Disney-MGM Studios with video equipment worth $2 million for its grand-opening festivities ... Music Animals, Los Angeles, has added five **Studer Dyaxis** hard disk digital audio production systems to its new jingle-production complex ... The St. Louis Zoo has installed **Sony's** HDVS videodisc player to supply viewers with a bird's-eye view of the earth at Living World's Conservation Hall ... Even Time, the New York City post-production house, has opened a second off-line interformat editing suite ... Editronics Inc., Minneapolis, MN, has installed a **CMX 6000** laser-disc-based, random-access editing system for off-lining feature-length films and national commercials ... CBS affiliate WLNS-TV, Lansing, MI, will use **Panasonic Broadcast's** MII format for playback and multicassette operations.

Shoreline Professional Video Systems, Los Angeles, has installed a **Vinten** Microswift MK3 remote-controlled camera system at Los Angeles City Hall. The system controls six **Sony** DXC-M7 cameras equipped with **Canon** teleconferencing lenses ... Baker Sound Studios, the Philadelphia recording studio, has added a new **Timeline** Keyboard Control Unit and Lynx Time-Code Modules as part of its expansion to a 24-track facility with audio-for-video capabilities.

Ross Video, Iroquois, ON, has named Daniel Beaton vice president of manufacturing and administration ... **Timeline**, New York, has appointed Nick Balsamo national sales manager ... **Audio-Technica**, Stow, OH, has named Gary Elliot national sales manager for its Professional Products Div. ... **HM Electronics**, San Diego, CA, has appointed Bruce Slemmer general sales manager. HME has also named Eunice Davis marketing manager and William Kranzush customer service manager.

Studer Revox America, Nashville, TN, has appointed Jan Hebel regional sales manager and Jim Phillips as its sales representative in the northern region ... **RF Technology, Inc**, South Norwalk, CT, has named Bill Dumm sales manager ... **Electrohome**, Kitchener, ON, has named W.M. Harrold sector general manager for Jazz Systems, and Brian A. Cram manager of marketing and sales. In addition, Joseph H. Buccino was appointed manager of development and engineering for Jazz Systems ... **James Grunder & Associates**, Mission, KS, has named Wesley Wingfield engineering and support manager.

TFT Inc., Santa Clara, CA, has been awarded type notification for its studio-to-transmitter links, in compliance with an FCC ruling that all STL equipment be notified or type-accepted by July 1, 1990 ... Prosonus, Hollywood, CA, has installed **Sonic Solutions' NoNoise** in its Los Angeles digital production studios, and is believed to be the first independent facility to offer the NoNoise service to outside clients ... **John Fluke Mfg. Co.**, Everett, WA, is offering its customers a comprehensive, flexible calibration and repair program, "The Fluke Asset Management Agreements," customized to customers' service needs ... KCCI-TV, Minneapolis–St. Paul, has become the one hundredth member of the **Conus Satellite News Cooperative**. ■

Rick Hayes, chief engineer of Mira Film and Video, inspects his facility's new Sony DVR-10 composite digital recorder. The recorder, together with two BVP-350 cameras, will be used to produce and post a variety of projects ranging from TV commercials to corporate productions, music videos and college sports. "The Sony digital recorder will complement our commitment to digital," Hayes said.

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Our HDTV Focus is Blurred

By Neil Feldman

Some people who ought to know better are claiming that the current versions of HDTV will bring 35mm film-quality images into our homes. The only significant things HDTV does right now is to change the aspect ratio and to improve resolution. However, the improved resolution does not nearly equal the resolution of 35mm film.

Keep in mind that most HDTV demos compare a *component* HDTV display to a standard *composite* display, instead of displaying HDTV next to a high-quality NTSC RGB version of the same scene. That ought to be the way it is objectively demonstrated to the public.

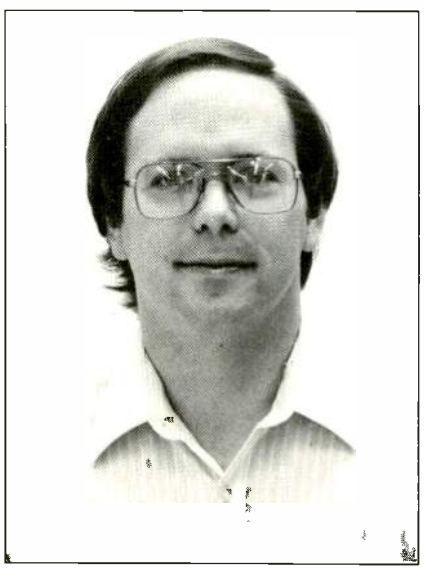
The FCC has made only one decision so far: that whatever system is selected as the broadcast HDTV standard will have to be compatible with current NTSC television.

The U.S. desperately needs to advocate and establish a credible HDTV production standard that exceeds the standards of both SMPTE 240M and Eureka-95. Ironically, such a standard has just been proposed by Eastman Kodak, suggesting 3840 x 2160 pixels as a minimum image format. Kodak claims there would be no reduction of resolution, color or dynamic range to the film image as it passes through its system.

Here's why the U.S. needs this kind of superior production standard for HDTV systems:

- HDTV systems are of no value if they don't deliver a significant, recognizable improvement over current NTSC.
- HDTV is to current NTSC as early FM radio was to AM radio. No one seriously advocated that FM had to be compatible with AM. It was quite possible and preferable, however, to produce radios that were capable of receiving both formats. This same approach is feasible today with any noncompatible HDTV format.
- The decision to force NTSC color television to be compatible with black and white in the early '50s created severe technical limitations that persist within the TV industry to this day. To perpetuate these same limitations will severely hamper the success of *any* HDTV format in the future.
- Every HDTV approach now being proposed is capable of being downconverted to a smaller bandwidth and/or data rate. It is therefore unnecessary to advocate a U.S. production standard that is bandwidth-compressed or compromised at the start.
- No matter what happens, the broadcast industry will not be the first to offer this new technology because of the costs and risks involved. The leaders will be forward-thinking computer-related systems companies, high-end display manufacturers, fiberoptic systems suppliers and/or the telephone industry.

Technology gurus like Nicholas Negroponte, head of MIT's Media Lab, and George Gilder, author of *Microcosm*, predict TV sets with 50 MB of RAM and the power of a Cray computer, and vast networks of digitally switched fiberoptics bringing digital information into the home. Broadcasters and engineers concerned about HDTV need to begin a serious dialogue with the manufacturers of computers and telephone data-transmission equipment. We need to work together now on solving the needs of the next century. We must not confuse this complicated issue any further by limiting our approach to HDTV as if it were only a question of slightly improved TV pictures and a new consumer receiver. ■



Feldman is president of Video Post & Transfer, Dallas, and governor of the Southern Region of the SMPTE.

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Like all professional CD players, the new Technics SL-P1300 is technologically advanced.

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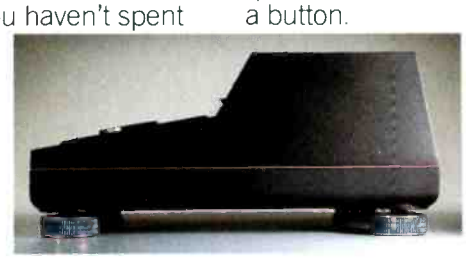

You see, the SL-P1300 is ergonomically designed to give you greater control over playback than you've ever had before.

Perhaps that's because it's built like a recording console. Which means the disc well and all the other controls are right at your fingertips.

First, the control panel features a long stroke sliding pitch control. It's continuously variable with a range of ±8%. In addition, it lets you restore quartz lock accuracy at the touch of a button.

There's also our two-speed search dial with audible pause. Which makes finding your in point extremely easy.

Our professional CD player has other features professionals enjoy working with. Like one-touch memorization by time code, A-B repeat, and our exclusive rocker control search buttons. It's the digital equivalent of dragging your finger on the edge of a record.

A great deal of thinking also went into things like our balanced outputs (−10 dBm nominal into 600 ohms). There's even a port for a wired remote. And separate power supplies for digital and analog circuits. Given this, it's not surprising that its S/N ratio is 112 dB.

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