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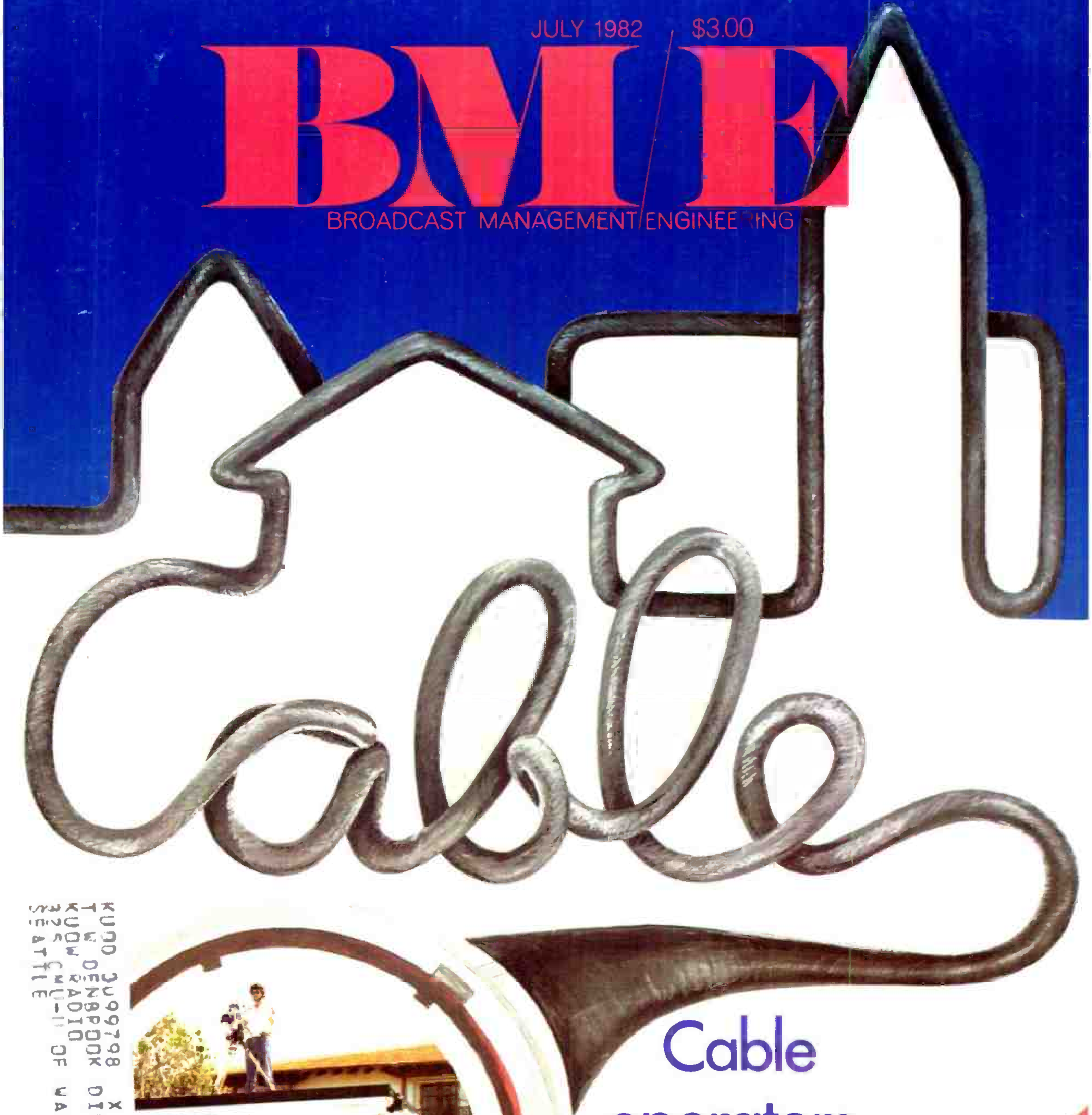
BROADCAST MANAGEMENT/ENGINEERING



Cable operators plug into local origination

RF, Mobile Vans at NAB

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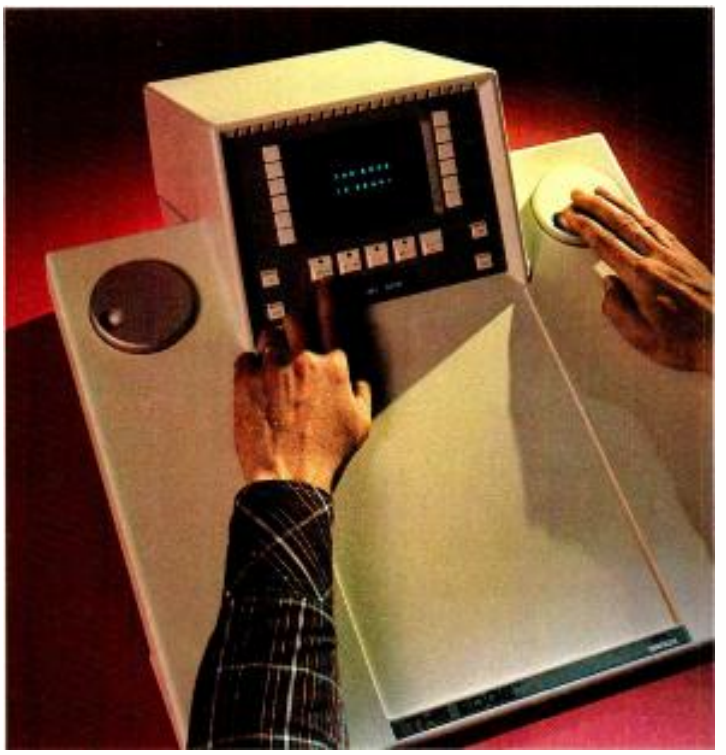

The Human EDGE Veteran editors and beginners alike quickly adapt to THE EDGE because its SMART KEYS™ and layered screens take you easily through the editing process as you direct it. You set your own pace. Frame accurate time code or pulse count editing lets you concentrate on creativity and increase your productivity dramatically.

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"OUR NEW SONY ALL KNOWN

"Finally there's a ¾-inch recorder that doesn't just inch along," says Fred Rheinstein, president of The Post Group.

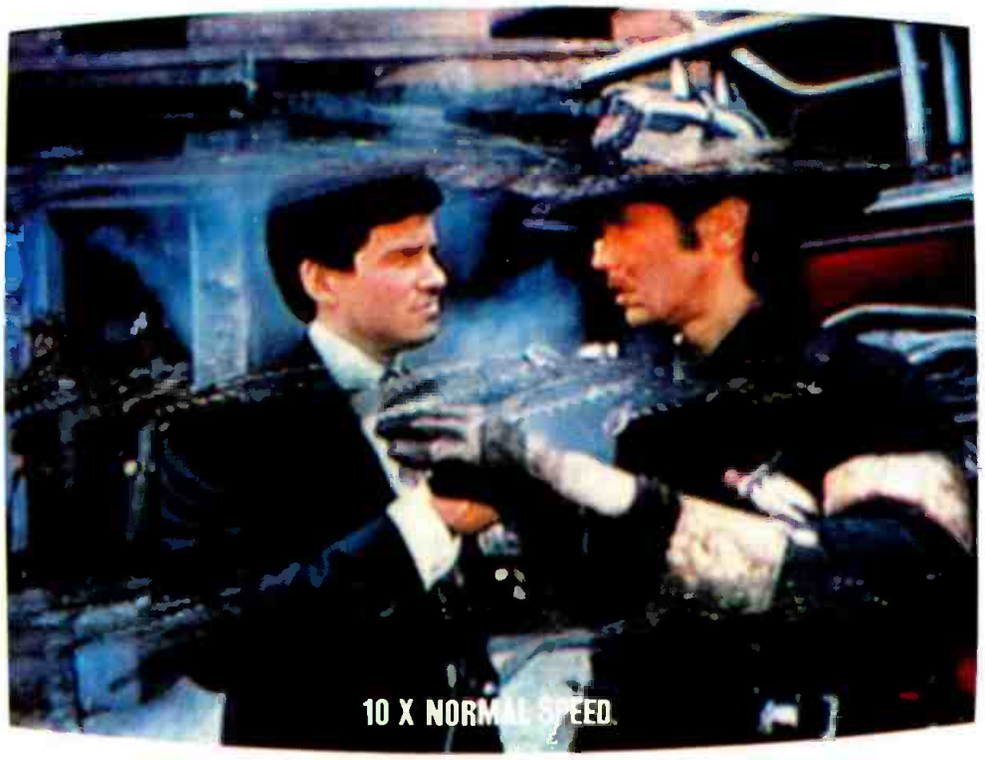
A major post-production facility in Hollywood, The Post Group counts among its clients all three networks, PBS, and major cable TV and syndicated production companies. It will edit the new syndicated children's show "We're Moving" entirely on the BVU-800.

"The 800 is amazingly fast. To be able to go backward and forward at 40 times play speed means you can search for your edit points—and find them—more than twice as fast as ever before," continues Rheinstein. "And this machine goes from its highest speed to a still frame. Instantly. Without slewing or breaking up.

"It also has a direct-drive system, which promises greater reliability and accuracy.

"We have extremely critical clients," says Rheinstein. "They're used to the best performance, in terms of picture quality and in terms of flexibility. This new Sony can deliver it.

"It's the perfect combination of U-matic economy and broadcast quality. It's a true mastering process; with the BVU-800, there's no need to transfer to one-inch and lose a generation in order to edit your tape."



U-MATIC BREAKS SPEED RECORDS."

Fred Rheinstein, THE POST GROUP

Other breakthroughs incorporated in the BVU-800 include its ability to make machine-to-machine cuts without a separate controller; its adjustable, removable edit control panel; and its narrow, front-loading design, which makes rack mounting possible.

"We've always bought a lot of Sony, because we can depend on the company for reliability and innovation," says Rheinstein. "Now, with the BVU-800, Sony makes its competitors look like they're operating in reverse."

Sony makes a full line of 1-inch and ¾-inch broadcast equipment, including cameras, recorders, editors and digital time-base correctors.

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*When used in conjunction with the BVT-2000 digital time-base corrector.

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Cablecasters look more and more like local broadcasters as they turn to local origination for program sources. Here, Cox Cable of Santa Barbara, CA, uses a Centro designed and built EFP van for one of its many remotes. Cover illustration by Saija Osis.

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JULY 1982/VOLUME 18/NUMBER 7

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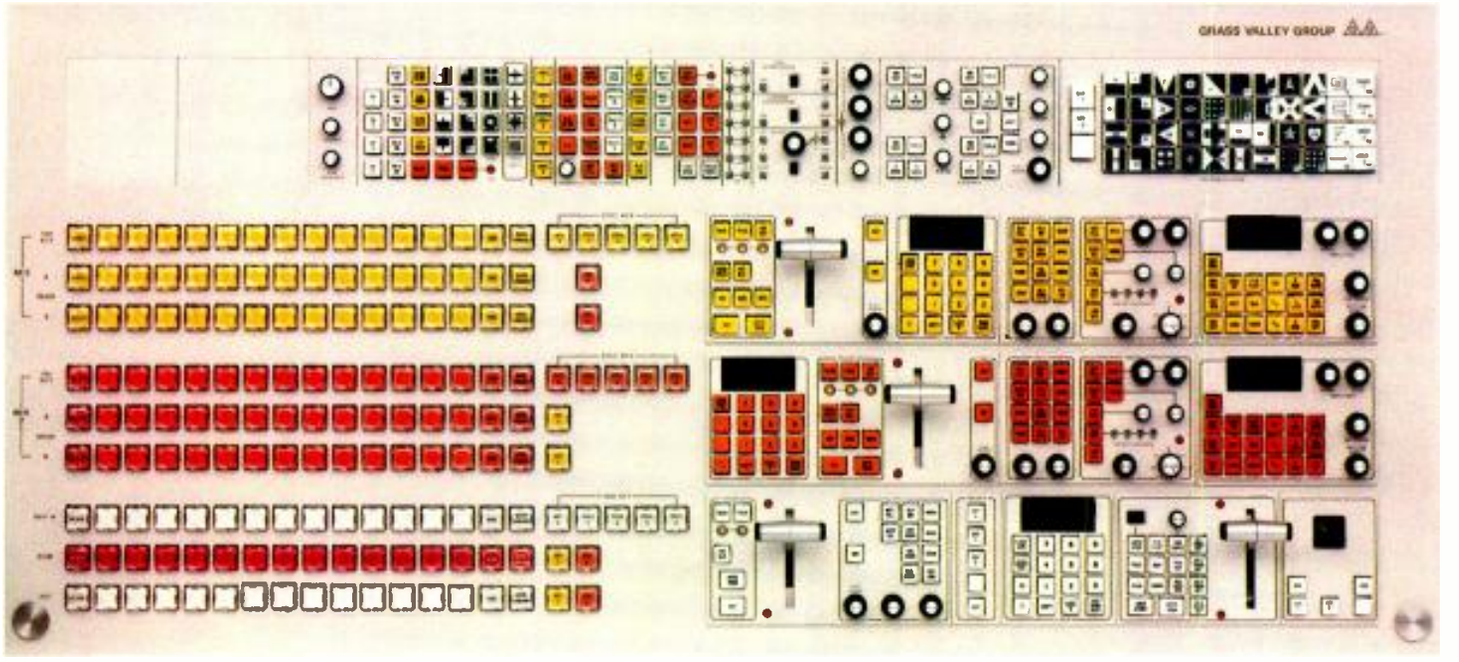

New 300-2 Production Switcher Is Good News For Local Broadcasters!

More Than 100 In Service

Over 100 broadcasters and production houses are now enjoying the versatile 300 Switcher in the industry's most demanding production environments. Now, local broadcasters can have the power of the 300 in a size more suited to local needs and budgets. With two full featured mix/effects systems, a program/preset mixer, downstream keyer, and optional MkII Digital Video Effects, the 300-2 is the answer to your news director's most ambitious plans to improve that air look.

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Each 300 Switcher includes a powerful E-MEM effects memory system, *with Effects Dissolve and Sequencing*, in each mix/effects system. With E-MEM storage you can preset effects for a tight news format and use sequences to recall your openings and bumpers at the push of a button. Other standard features, such as automatic external key selection, chroma key memory, independent lever and title auto transitions, look-ahead preview and up/down unlimited re-entry make the 300 very responsive to fast paced production.

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EDITORIAL

Cable TV Hears Footsteps

IT WASN'T LONG AGO that broadcasters were fearful of the impact cable TV was having on their markets. Cable operators were gaining in financial strength, and new entertainment or news services—sparked by pay cable attractions—were gaining considerable attention. At the same time, the regulatory climate for cable was becoming more and more favorable. Broadcasters felt threatened.

But now, it seems, the cable industry is hearing footsteps from new multichannel services coming up from behind. Just as technology made cable a viable alternative to broadcasting, technology has created viable alternatives to cable.

Subscription TV, multipoint distribution systems, direct broadcast satellites, and subscription master antenna TV are taking aim at some of the lucrative audiences that the cable industry is spending millions to wire up. A study sponsored by the National Cable Television Association and discussed at the recent cable industry convention in Las Vegas predicts that these newer services could siphon as much as 20 percent of cable's subscribers.

The study brought out some harsh conclusions. For example, it noted that consumers do not put a high value on the large number of channels available on the advanced cable systems. Therefore, the notion that 100 channel capacity must be twice as appealing to the franchise as 50 channels appears to be false. What about consumer loyalty? The study indicated that a fifth of subscribers would jump from cable to three-channel STV if given the opportunity.

This last point underscores another observation—that STV is doing a better job of advertising its services on television than cable. Forty-five percent of those polled had heard of STV from watching TV, while only 16 percent had learned about cable from their home receivers.

While cable companies fret about the new competition, all is not calm internally. At another NCTA convention session, suppliers of basic services delivered to franchises squared off with cable operators. Each side chided the other for doing a poor job of marketing their services. Each side also complained that there is no market research, no regular audience surveys, and extremely poor sharing of the available viewer preference information. Meanwhile, the program suppliers are in a battle for survival amongst themselves. This has been a year for introducing new programming services. Next will come an inevitable shake-out, separating the winners from the losers.

What does all of this turmoil mean? We agree with FCC Commissioner James Quello, who participated in another NCTA panel on making cable policy. Commissioner Quello acknowledged that the future of the communications industry has become too complex for anyone—including the federal regulators—to comprehend. He admitted his own bewilderment and wondered how the muddle of competing services could be sorted out. In short, it was a call for help in trying to regulate this hugger-mugger marketplace.

Quello suggested a presidential commission to study the entire communications industry, including its international ramifications, and come up with some sense of what the future will bring. It is easy to brush off such a suggestion with the knee-jerk reaction that presidential commissions do not accomplish anything constructive. This is not entirely true. Perhaps the jumble is too great to sort. Or maybe it is too early to predict with any real accuracy. But one thing that such a commission would do is focus attention on the issues. It could set an agenda and define how the competing technologies fit into the overall needs of society. A thorough, unbaised (the operative word here) study may not be able to come up with the guidance that Quello requests, but it could dramatize the importance of a national communications policy.

What better time to start this idea than while having a former broadcast-industry star in the White House? It's not a bad proposal after all, Commissioner Quello.

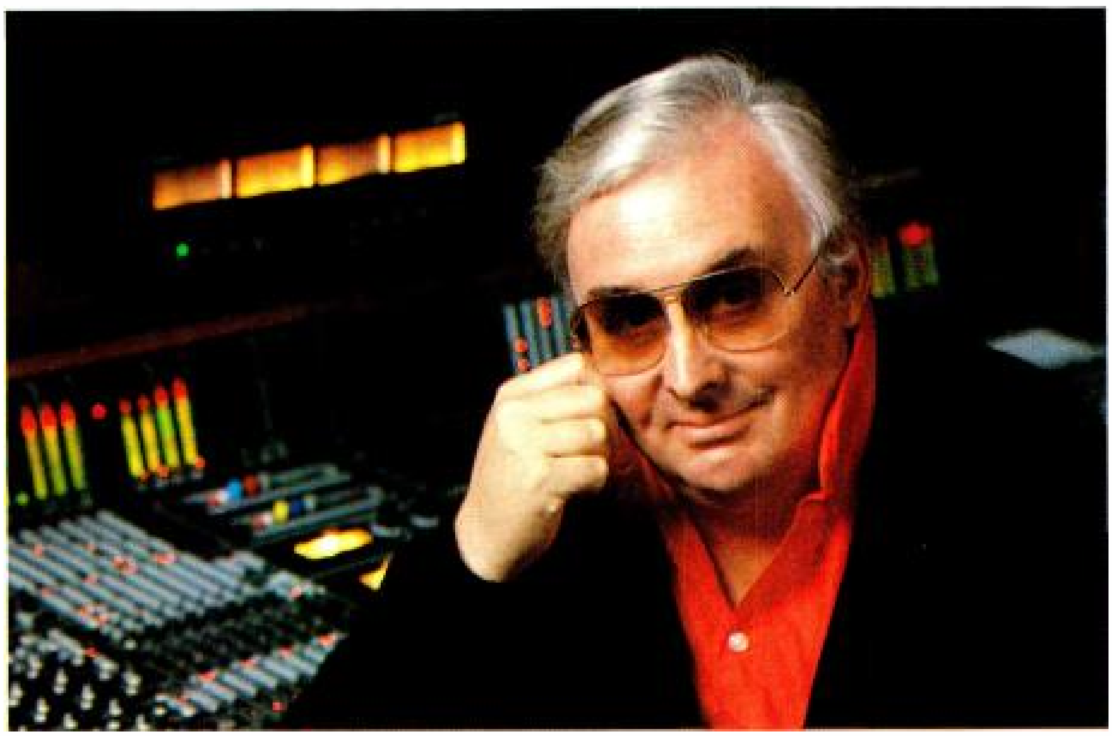
"It has what we need."

Harrison

John VanFrey knows what he needs. He is the supervising rerecording mixer at Walt Disney Productions and has been involved in just about everything Disney has done during his nineteen years there. He has had the opportunity to work with three generations of post production consoles.

"When we installed our Harrison post-production console three years ago, we had very specific requirements, and we needed a console that was reliable. Harrison was able to supply that console. It is very well thought out and technically excellent. It's dependable. It's quiet. It has what we need."

John VanFrey, Walt Disney Productions



Harrison Systems is known for its music recording consoles, but for the past couple of years we've been quietly building a reputation as a major supplier of sound post production consoles. Disney, Compact Video, Warner Hollywood (Samuel Goldwyn Studios), and others are using our PP 1 for motion picture sound.

Now, we are introducing two new consoles: PP 3 for film sound facilities, and TV 3 for video sound production and post production.

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ABC's STV Proposal Gets Wide Affiliate Approval

At their annual meeting in Los Angeles, ABC Television affiliates overcame their initial hesitancy and found favor with the network's innovative new STV plan.

To be known as Home View Network, the service will send scrambled pay-TV programming—mostly movies—into subscriber homes from 2:00 to 6:00 a.m. Monday through Friday. Program material will be scrambled on videotape before the affiliates receive it, so that no modifications to the transmitter will be necessary. In the home, viewers would tape the programming on VCRs, then view them with the aid of a decoder.

Technology for the encoding and decoding system was developed by Sony Corp. and Sony Corp. of America. Cost to the consumer will be $19.95 per month, plus a $100 installation fee. ABC will also rent VCRs to customers who don't have them for a monthly $29.95.

Response to the proposed service at the FCC was positive, with both chairman Mark Fowler and Broadcast Bureau chief Larry Harris giving ABC high marks for creativity.

Affiliates' fears apparently were quieted by ABC officials, who spent plenty of time and energy at the meeting extolling the virtues of HVN. ABC has already filed for STV authorizations for each of its five TV O&Os, and hopes to persuade many of its affiliates to carry HVN. According to one estimate, revenues from HVN could hit $79 million the first year and $800 million by the fifth.

House Nixes "Radio Marti"; Cites Interference Danger

Taking a tip from broadcasters, the House Telecommunications Subcommittee has voted to bar the Reagan administration from using the AM band for its proposed news and information radio service to Cuba, known as Radio Marti.

The move came in the form of an amendment to H.R. 5427, the bill that authorized the proposed service. The amendment, sponsored by representatives Thomas Tauke (R-IA) and Al Swift (D-WA), specifically prohibits any frequency allocated to nongovernmental radio broadcasting, or within 10 kHz of any such frequency.

The administration had originally planned to broadcast Radio Marti on 1040 kHz, an AM frequency used by a number of U.S. broadcasters. NAB had testified before the subcommittee that Cuba was likely to respond to Radio Marti by "counterprogramming" at extremely high power levels on the same frequency. This could cause massive interference to U.S. stations, NAB claimed. NAB had proposed using frequencies at the high or low end of the AM band, but the amendment goes a step farther by prohibiting the band entirely.

That leaves the government with the prospect of using the shortwave band for the proposed service. The full Energy and Commerce Committee was expected to go along with the amendment.

UPI Reveals Coding Scheme

UPI, in a recent communique, has revealed the "invisible" coding scheme used on its low-speed broadcast news wire service to sort stories into categories such as National News, National Sports, State Copy, and so forth.

The coding is invisible since it does not print out on a teletype and instead uses shifts and other nonprinting instructions. The data can be manipulated at the station, however, and used for interface with newsroom computer systems.

The technical specifications for the low speed wire are as follows:

Transmission:	7.5 bits (asynchronous) 1 start bit 5 data bits 1.5 stop bits
Code:	TTY baudot
Level:	5 level
Speed:	45 baud

Here is the sequence, in baudot code, from the start (SOM) to the end (EOM):

1—SOM	cr cr
2—Service designator	l or f, minimum of three (3) and maximum of six (6) alphas and numerics Example: l abc123, f 123abc.
3—Category designator	cr l cr l f
4—Category code	(six code characters)
State copy	l l l l f l
National news	l l l l f f
National sports	l l l f l l
National financial	l l l l l f
National weather	l l l f f f
Audio billboards	l l f l l l
Other copy	l l l f f l
5—SOT (text)	l lf five (5) spaces
6—EOM	cr ls lf lf

cr = carriage return
f = figure shift
l = letter shift
lf = line feed

Mitsubishi Introduces Digital Multitrack Recorder

Jumping headlong into the professional digital audio market, Mitsubishi Electric Sales America, Inc. introduced its new X-800 PCM audio recorder at a press conference at the studios of New York City's A&R Recording, Inc.

The 32-track recorder, which the company says is the first such unit to use the new 48 kHz sampling frequency standard, operates with one-inch tape at 30 ips and has separate tracks for SMPTE time code, error correction, and analog audio signals, plus a spare channel for computer data storage and other future developments. The company says the X-800 can be used with its X-80 two-channel mastertape recorder to form a complete PCM recording system.

All event locating abilities of the X-800 are under microprocessor control. Pressure switches allow control of individual

channels, groups of channels, or the entire board, with LEDs identifying the operation. An automatic crossfade function eliminates punch-in and punch-out clicks by balancing fade functions. The X-800 is available immediately in the U.S. at a list price of $170,000.

TEK 690SR
COLOR PICTURE MONITOR

There are some products by which all others are judged.

Tektronix introduces a new standard of reference for judging color picture quality. And color picture monitors. Look at the 690SR for an accurate, honest picture, every time. High resolution, precise convergence and stable color make it your best basis for subjective picture evaluation.

You're not looking for retakes. That's why you should be looking at the 690SR for the correct rendition of your input signal.

Engineered to be best. A true high resolution tube offers a sharp, accurate image. Superior for both subjective picture evaluation and camera registration analysis.

Set-up is simplified, with logical, noninteractive convergence controls. And maintenance needs are minimal. Modular design makes troubleshooting simple.

Judge for yourself. The 690SR is built in the Tektronix tradition of commitment to excellence. And backed by a worldwide service network and proven technical support.

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Circle 155 on Reader Service Card for Sales Contact

Sharp FCC Nomination Faces Senate Challenge

The nomination of Stephen A. Sharp, FCC General Counsel, to a seat on the Commission was facing the possibility of trouble in the Senate at press time. Sharp, a conservative with a strong pro-marketplace stance, had been heavily promoted by FCC chairman Mark Fowler to replace the outgoing Abbott Washburn, whose term expired June 30.

Senator Ted Stevens (R-AK), however, has opposed Sharp's nomination and some observers feared he might try to hold up Senate confirmation. Stevens, the majority whip, sits on the Senate Commerce Committee, which holds hearings on confirmations. His choice for the post had been Marvin Weatherly of his state's Public Utilities Commission.

Still, confirmation of Sharp seemed a good possibility at press time, with strong support from the White House and in conservative circles. Sharp is even endorsed by the right-wing Moral Majority. He is likely to give Fowler more consistent support than had Washburn, who was a frequent dissenter in recent FCC decisions.

WBTV Goes On Line from Knoxville

Already deeply committed to its newsroom computer system with 17 terminals at its Charlotte, NC studios, WBTV took a terminal on the road to feed stories back to Charlotte from the opening of the World's Fair in Knoxville.

Believing it to be the first time that such a hookup has been attempted, the station regularly provides coverage with the Jefferson Data Systems terminals in its Washington, DC and Raleigh and Morganton, NC bureaus.

For the Knoxville setup, producer Barry Ahrendt set up the Jefferson Data terminal in his hotel room, then communicated with the central computer at the station over standard telco lines.

CCIR Adopts Standard for Digital Television

The International Radio Consultative Committee (CCIR), at its fifteenth Plenary Assembly in Geneva, unanimously adopted a recommended standard for digital video production and post-production that had been proposed by the SMPTE (see *BM/E*, January 1982, p. 97).

Known as Recommendation AA/11, the proposal calls for: component coding based on the luminance signal and the two color difference signals; the evolution of an "extensible family" of compatible digital coding standards to meet differing applications, such as electronic newsgathering; a 4:2:2 standard for major digital studio equipment and for international program exchange, with sampling frequencies of 13.5 MHz for luminance and 6.75 MHz for the color difference signals for both 525-line and 625-line systems; uniformly quantized PCM coding using eight bits for each component signal; and identical numbers of quantizing levels for the luminance signal and each color difference signal in both systems.

Although the CCIR recommendations could serve as a path to international standardization of program production and post-production, they do not affect transmission standards and will not obsolete present television receivers.

Adoption of the digital standard may also aid development of high definition television since digital techniques may allow substantial bandwidth compression. With standardization, digitalization of production facilities may

Ampex Announces the Practical End of Video Jitters.

Video Jitters can drive you up a wall.

It happens when you've repeated an edit over and over. You want it perfect. Now, everything's cued up just right. You hit the edit button, and what do you get? A glitch. A shaky picture. A sour stomach. Video Jitters.

The culprit is stiction—friction build-up so bad that the tape actually jerks across the heads and scanner. Humid conditions can make it worse.

But not if you use Ampex 196 One-Inch Broadcast Video Tape.

Every batch of Ampex 196 has to pass the toughest test in the industry—stiction-free operation at the extreme environments of 90% RH and 90° F, to guarantee that you have consistent stiction-free operation under all conditions.

Ampex 196. Less friction, because who needs it?

Ampex 196 One-Inch Video Tape.

AMPEX

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I want to end the Video Jitters with Ampex 196 One-Inch Broadcast Video Tape.

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BME

proceed more rapidly, increasing the quality of the programs produced.

ACT Sues FCC for Failure to Issue Kidvid Decision

Action for Children's Television (ACT), the Newtonville, MA-based advocacy organization, has filed suit in the Federal District Court for the District of Columbia against the seven FCC commissioners and the Commission itself. The suit charges that the commissioners' "failure to issue a final decision [in its children's television proceeding, begun 12 years ago] . . . is arbitrary, capricious, an abuse of their discretion, and not in accordance with law."

The Commission has taken several actions in the proceeding, such as its 1974 policy statement emphasizing broadcasters' obligation to provide children's programming. No final rules have yet been adopted, however, although the FCC published a notice of proposed rulemaking in January, 1980 and held hearings the following October.

At a news conference, Peggy Charren, president of ACT, charged, "The FCC has been foot-dragging on children's television for too long . . . . The FCC has had more than a decade to see to it that broadcasters fulfill their public service obligation to the child audience, and yet program choice for children is now more limited than ever."

ACT further claims that the recent deregulatory push at the Commission has given broadcasters the message that children's programming is no longer important.

WITS Spirits Remain High Despite Vodka-Ad Protest

A letter by citizens groups protesting a vodka advertisement on WITS-AM, Boston, has failed to dampen spirits at the station, according to general manager Frank Tenore. Listeners have apparently not found the ad offensive, Tenore explained.

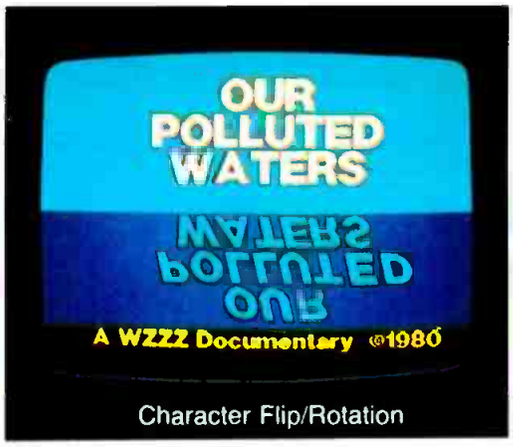
"We're a talk station, so the forum is here for people to call in if they disagree," Tenore notes. "In the almost six weeks we've been airing the spot, we've had a total of three off-air calls to complain"—hardly a stampede.

Liquor ads have long been taboo in broadcasting under the NAB's ad code, which recently was challenged by the Justice Department for allleged violation of antitrust laws. WITS began broadcasting the ad in question (for M.S. Walker, a Boston-area liquor bottler and wine distributor promoting its Cossack Vodka) in April.

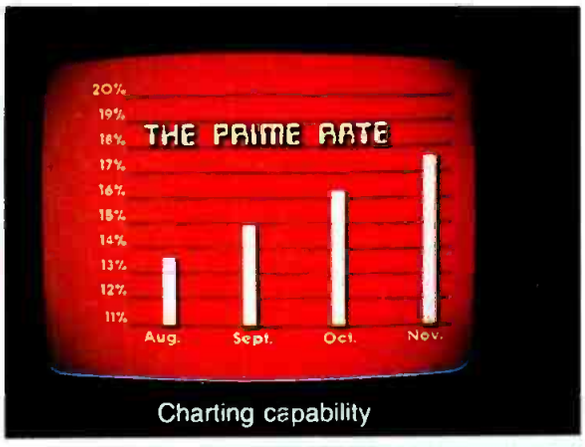
The protesting groups, in their letter to the FCC and the Senate and House Communications Subcommittees, termed the ads "a simple case of a liquor company and a radio station putting profits before the public interest." The groups are the American Council on Alcohol Problems, the Center for Science in the Public Interest, the Media Access Project, Mothers Against Drunk Drivers, the National Citizens Committee for Broadcasting, and Remove Intoxicated Drivers.

Tenore said that WITS was working out a response to the protest, but was unable to divulge the details at press time. He did say, however, that M.S. Walker would remain an advertiser, but that the campaign might take a new direction. One hopeful sign, he said, was that the protesters had contacted the station—which they had not done before they went to the authorities. "They're finally finding out we don't have horns or walk around stumbling drunk all the time," Tenore said.

Dual channel mix



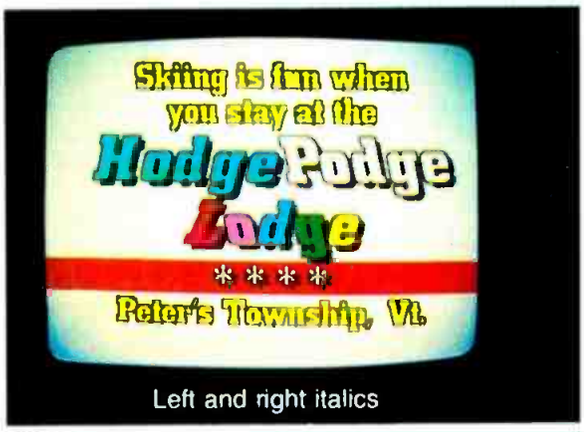
Character Flip/Rotation



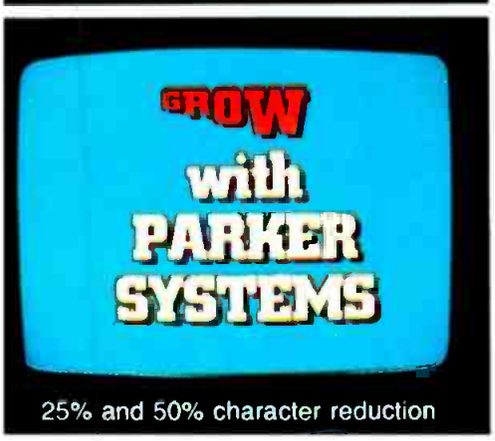
Charting capability

Static headline, changing copy

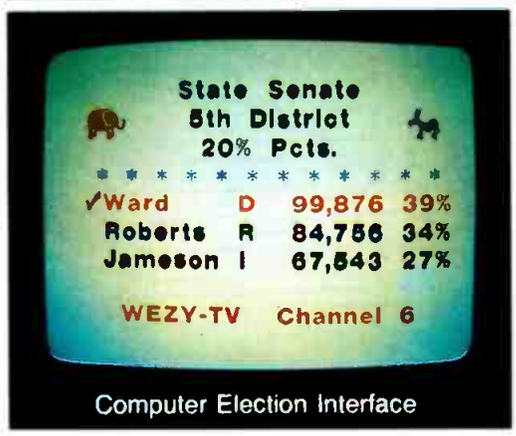
Keyboard logo compose



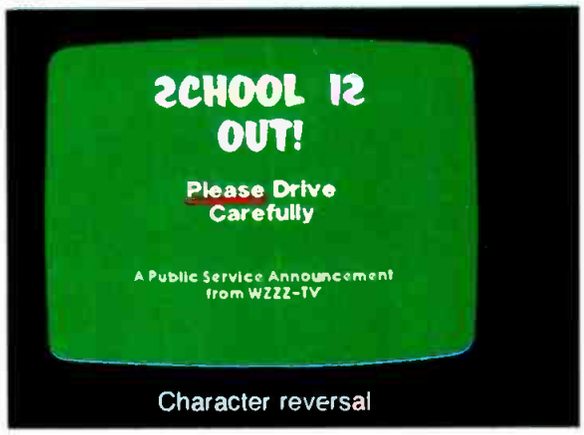
Left and right italics



25% and 50% character reduction



Computer Election Interface



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Broadcast Information Bureau has published *The Radio Programs Book*, a computerized data program of radio services that is stored and continuously updated. It has over 170 pages and contains more than 1200 listings . . . . **Rohde & Schwarz** has released the latest edition of its technical house journal which deals with, among other things, new developments in the mobile HF antenna system AK 501, for worldwide radio communications.

Crown recently released the *Theory and Operation of the Crown Multi-Mode Circuit*. This monograph explains how the company's Multi-Mode circuit functions and the effect it has in maintaining signal quality. . . . Tucker Electronics has published a new catalog listing 3800 reconditioned test equipment components.

General Instrument Corp. has consolidated its TACO division in Sherburne, NY, and its Delhi division in Delhi, Canada to form the RF Systems Division. The new division will market Jerrold brand electronic products relating to earth stations and other signal sources in TV reception.

Asaca/Shibasoku Corp. has opened its new corporate headquarters in Los Angeles, CA. The entire company will relocate to the new site instead of maintaining separate offices in Des Plaines and New York. . . . **Maxell** is installing video lines at its plant in Conyers, GA in order to produce duplicator VHS and Beta cassettes.

CBS-owned stations added more than a million new listeners in the past year, increasing its listener base by one-quarter. . . .**Klein &** has opened a New York office at 59 East 77 St. and will offer graphics technology for broadcast TV advertising.

Videostar provided transmission for 13 domestic broadcasters and for the Korean Broadcasting System during the opening week of the World's Fair in Knoxville, TN.

Personnel changes in the broadcast industry include the promotion of Charles Felder to vice president of sales by Sony Broadcast Products. . . . The new international marketing manager at **Auditronics** is Larry Lamory, who was previously with MCI in both engineering and marketing departments . . . . Tim Roberti has just been appointed national sales manager at **Century III Electronics** and will supervise customer service, field service, and market research.

Blonder-Tongue Laboratories has promoted Edward Curreri to national sales manager. He will be taking on field sales responsibilities. . . .Also newly introduced as a national sales manager is Dick Smith, who takes the position at **Victor Duncan, Inc.**

Harris Video Systems has named Mark C. Gray as director of marketing to develop marketing and advertising strategies. . . .**Oak Communications** has announced the appointment of Douglas E. Howe as director of marketing, and he will be headquartered at Rancho Bernardo, CA.

Audiotronics Corporation, based in North Hollywood, CA has appointed David W. Osedach as video products sales manager for international markets. . . . James S. Twerdahl was appointed executive vice president and general manager of **JBL** to supervise the company's daily operations. . . . JBL's new service manager is George Barmaksezian, who will handle customer service for the professional and consumer product line.

Ramko Research has announced the appointment of Leonard Dont as corporate business manager for developing strategy with new product introductions in the coming months.

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AM Stereo System	Linear - Same Bandwidth as Mono	Upper Frequency Stereo Limit	Compatibility with Synchronous Detector	Difference Tone IM Distortion	Distortion or noise pops at 100% Negative Peak Modulation	Suitable for Low Cost Receivers	Pre emphasis Compatible	Well Suited to Directional Arrays
Harris	**Yes**	**15 kHz**	**Total**	**Very Low**	**No**	**Yes**	**Yes**	**Yes**
Belar	No	7.5 kHz	None	High	Yes	Yes	No	No
Kahn	No	5 kHz	Poor	High	Yes	No	No	No
Magnavox	No	7.5 kHz	None	High	Yes	Yes	No	No
Motorola	No	7.5 kHz	Poor	High	Yes	Yes	No	No

Select the Harris Linear AM Stereo System

HARRIS

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Radio Syndicators Flourish at NAB

AT THIS YEAR'S NAB SHOW in Dallas, radio programming syndicators experienced no exception to the rule that broadcasters came serious and ready to buy—despite the general tendency for programming purchases to occur as much as one year later. There were 15 syndicators exhibiting, compared to 30 last year, still leaving open the question of a "permanent home" for radio syndicators. But all who came reported in subsequent interviews that the show had been "worthwhile" in every respect.

Several syndicators note special factors at this year's show that they believe helped bolster their position. One was AM stereo, which syndicators believe lured many onlookers who would not otherwise have come. Satellite fever was similarly pulling traffic, and when this was combined directly with syndicated programming, the results were explosive, as noted in the report on Satellite Music Network below.

In the new programming announced at the show, some trends were fairly prominent. As noted below, there were several new syndications exploiting the "rediscovery" of the 40-50+ segment of the population, a movement underway for two or three years (see *BM/E*, January, 1980).

Another movement was toward lighter, more "foreground" beautiful music, also a trend of some years' standing. The development of syndication-via-satellite was actual only in the case of Satellite Music Network, but was making strong noises just offstage, especially ABC's Superradio, due to start in July.

Here are brief accounts of what syndicators were showing.

Toby Arnold described its new format, "Unforgettable," aimed at the "forgotten" older people. It uses Big Band music for a broad base and adds contemporary music like that of Anne Murray, the Carpenters, and Carly Simon. Toby Arnold calls its mix "Motivation Mood Programming." A spokesman told *BM/E* that about 50 stations had signed for the format.

Bonneville Broadcast Corp. was selling as part of a joint satellite operation with Satellite Music Network. (Bonneville's beautiful music is one of the five format choices on the satellite signal sent out by SMN.) Bonneville had the "best show in years," according to Marlin Taylor, president. Visitors were serious; several signed contracts at the show.

BPI introduced a new all-classical format, "Heritage Concerts," available in various segments for any time slot from 1½ hours a day to 24 hours. It also introduced "Light and Lively," which is described as lighter than hard-driving contemporary and livelier than the average easy listening format. BPI, with about a dozen formats covering every style of popular music, also reported solid visitor interest at the show

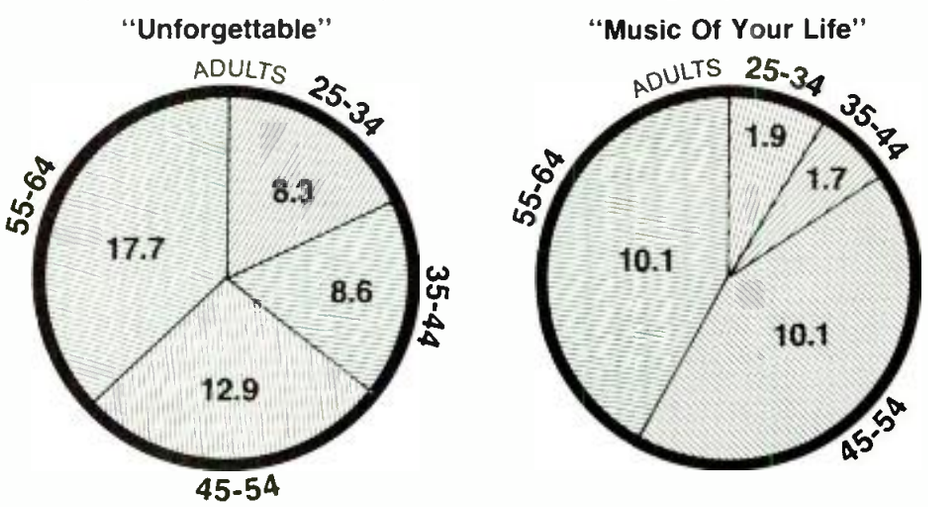
Century 21 was selling a new format, "Music For the Good Times," which uses a lot of Big Band music for another appeal to the older sector. It also brought "More Beautiful," slotted somewhere between beautiful music and MOR. A third new format is "Sacred Music," religious programming. Dave Scott, president, said the show was the best ever for them, with really serious customers coming to the booth.

Scott also described success with a separate venture, the selling of used, reconditioned automation systems. Century 21 has set up an engineering department to carry out this part of the operation. Scott said that sales were very active; finding used systems in good condition has become the difficult part. The new operation is related to the music programming in the sense that a buyer of automation equipment is "set up" to use the music.

Concept Productions offered information and demos on four formats: Adult Contemporary, Adult Rock, Album Rock, and Country. Also shown was a synchronizer developed to interface a separate voice track (carrying customized announcements) with music tracks. Dick Wagner, president, said about 75 of the synchronizers are in use. He called the show "excellent," with both the number and the "quality" of visitors very high.

Drake-Chenault had an elaborate

Competition heats up in 45+ demographics race.



Figures released by Toby Arnold & Associates compared its "Unforgettable" format (left) with Al Ham's "Music Of Your Life" (right) based on cume ratings during Monday-Saturday, 7 a.m. to 12 midnight, in the Dallas/Ft. Worth area, Spring, 1981.

demonstration for a new format, "Hit Parade," aimed at the "untapped 40+ population segment" for which Drake-Chenault invented the title "Middlescence." A well-made film, with VP Jim Kefford as principal narrator, described the format as "great hits of three decades, '50s to '80s." Drake-Chenault also promises detailed advertising, marketing, and sales assistance with the program.

Live Sound promoted two country formats, "Country Beautiful" (unannounced), and "Big Country" (which has a voice track with five experienced DJs, all successful in the Los Angeles market for long periods). The voice track allows individualizing promos, IDs, jingles, and so forth, for a "live-sounding" effect; the result removes any "syndicated" character. Agnes Peterson, president, praised the quality of visitors at the show.

Music Director showed the variety of record services for which this firm is well-known, which range from lists of the best singles each week, chosen by president Budd Clain, to tapings of the hits or of many other categories of recorded music. Among them are "oldies," country, and selected high-interest recordings of various styles, which Clain calls "Damn Good Programmers." Users can choose a service to fill from one hour a day to 24 hours.

Musicworks sold two new formats: "Light 'n Easy," a mix of brighter beautiful music and easy listening for a "foreground balanced flow," and the "Hispanic Music Service," very likely the first all-Hispanic syndication in the country. The latter is programmed by Gustavo Valadez and includes a wide variety of material. President Bill Robinson said both new formats had done extremely well in "serious interest."

Peters Productions, with more than a half-dozen radio formats successfully sold for a number of years, brought a new one—"Your Music," another mix directed to the 40+ listener. Like several others of the breed, "Your Music" has already given some stations spectacular rises in ratings.

Satellite Music Network

This operation is one of the most significant new-technology ventures. Can full-format syndication make a go of it via satellite? SMN's experience at the show (as well as during the period leading up to it) gives a strong "yes" for the answer. George Williams, VP of programming, told *BM/E* that SMN actually signed 22 new affiliates at the show, bringing the total to around 140. He said that the visitors' log in the SMN hospitality suite held more than 800 names at the end of the show. That flow of interested people will surely translate into more business in the coming months.

At the same time that SMN was getting off to such a splendid start, some other similar ventures flopped badly. Enterprise Radio and Continental Entertainment both quit, and there were dark rumors about other satellite nets still in the making. If it is valid to say anything definite at this early stage of the satellite revolution, we might point to SMN's very high skill in radio programming, developed by personnel in years of previous syndication, and the *variety of choice* offered.

Tanner, with a variety of syndicated formats in wide use and probably the largest jingle and commercials operation in the industry, chose to emphasize new collections of production music for both radio and television at the show. The "Video Service" brings background music for both television and cable, and in addition video spot material such as cartoons and computer animation. "Music Traxx" is music of all styles for radio background use. It is distributed on discs with six 60-second music tracks on each. Initial shipment is nine discs, with 12 updates a year. Dick Denhom of Tanner told *BM/E* that the show had been "excellent for business."

TM, in a joint venture with EZ Communications (operator of about a half-dozen stations around the country), announced a new beautiful music service designed mostly by EZ to appeal to a "younger demographic," 25-54 years old, called "TM Easy." Pat Shaughnessy, president of TM, said that the new format would "counter the aging audience erosion problem," the shrinkage in number of people in the traditional beautiful music group. TM will continue to market the earlier beautiful music service on its list.

In addition to the format syndicators, programming news was also made by the Associated Press (overnight country music—see our May issue); CBS, with "Byline Magazine," a new news program; CBS' RadioRadio, a flurry of announcements of music, feature, and news specials; and, of course, ABC's satellite operations, "Talk Radio" and "Superradio."

Also on the floor were several background music libraries, which continue to provide well-established, useful services. Companies included Network, FirstCom, DeWolfe, and Valentino. **BM/E**

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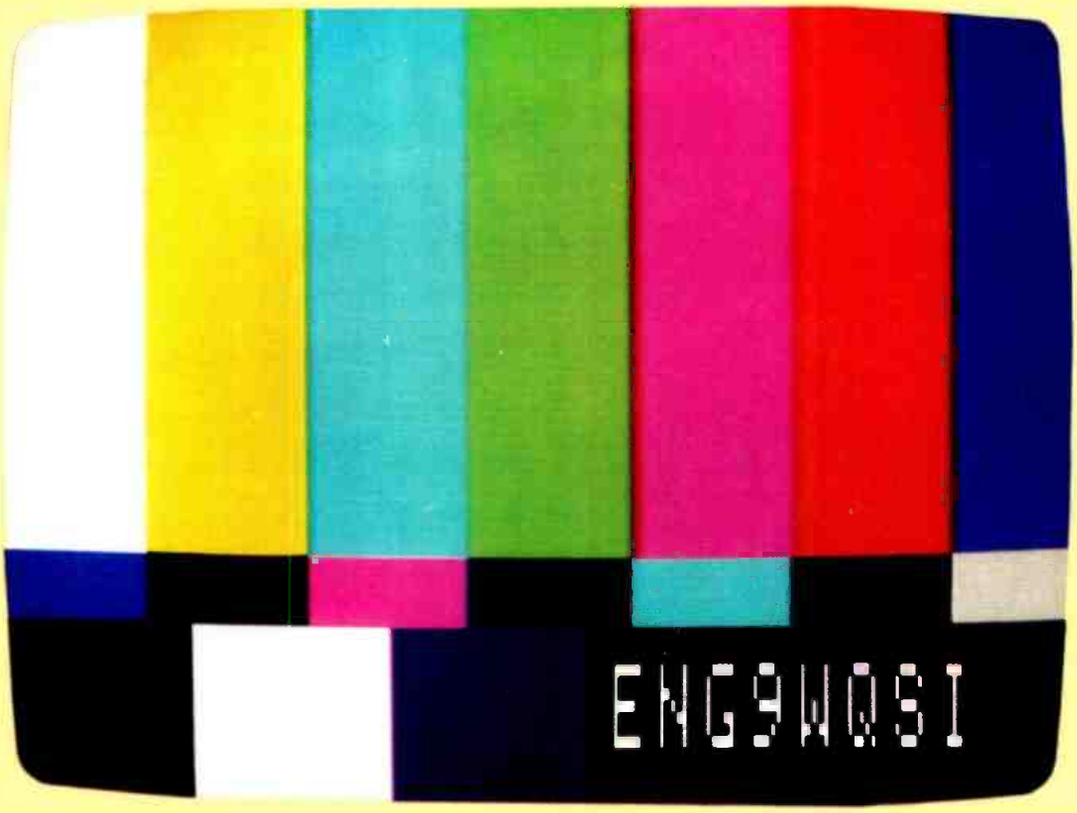

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TELEVISION
programming & production

You Asked For It Encounters More Than It Asked For

YOU ASKED FOR IT, the popular reality/entertainment/nostalgia syndicated program reprised from the Dumont TV Network before it became ABC-TV in 1950, will enter its second year this September, in over 100 U.S. markets and 42 foreign countries. (*YAFI* ran for eight years after it switched to ABC.) The show's producers, Sandy Frank Productions, Inc., have discovered that they got more than they asked for in the way of production problems, especially since the show airs daily rather than weekly, and regularly produces segments fulfilling requests for odd events all around the world.

According to Steve Sterling, operations producer for the series, "In year one we had a maximum staff of 150 people with 33 involved in the post-production process, 25 to 30 in research, and the remaining 75 or so in other phases of production. The first year's budget exceeded $18 million. We fielded 15 crews shooting internationally and delivered 150 original episodes which air five days a week, 52 weeks a year. No other entertainment company has ever attempted a Monday through Friday show with worldwide shooting.

"Now, in our second year, we have discovered that with such a large organization it was difficult to keep track of things, and we have instituted some new systems and procedures to increase productivity. Given these difficult economic times, productivity is the key to success in this or any other business."

YAFI uses a combination of entertainment and ENG technologies, a combination which the production staff took a little time to get used to. "We are trying to put on a very high level entertainment show," says Sterling, "both creatively and technically. And yet we find ourselves utilizing a lot of the same mentality as the large worldwide newsgathering organizations."

Part of this mentality is the extensive global communications network *YAFI* maintains with its crews around the world—both for assignments and for transfer of funds to support the crews' activities.

Another aspect is multi-format origi-

You Asked For It *on location in Alaska responding to a viewer's question about how igloos are built.*

TV PROGRAMMING

laid in with sound effects and sweetening at Canyon Recorders, which is in the process of adding a computer-based effects machine that will store its repertory on videodiscs. The *YAFI* mixing process has been made even smoother lately by the addition of Class Triple A audio lines between Canyon and Editel, which are located about 12 miles apart. Last year, the 36 reels containing some 730 segments mastered on one-inch tape had to be bicycled back and forth between the facilities.

In the new process, however, Canyon needs only a low-quality ¾-inch dub of the program together with its burned-in time code. Canyon then builds the tracks using the videocassette as a reference. When the time for the mixdown comes, Canyon feeds program audio from its Ampex MM-1200 16-track ATR back over the high-quality phone line to Editel, where it is recorded on the one-inch master; time code signals from the master are fed back to Canyon over a Class D phone line to synchronize its ATRs via an EECO MQS-100 synchronizer.

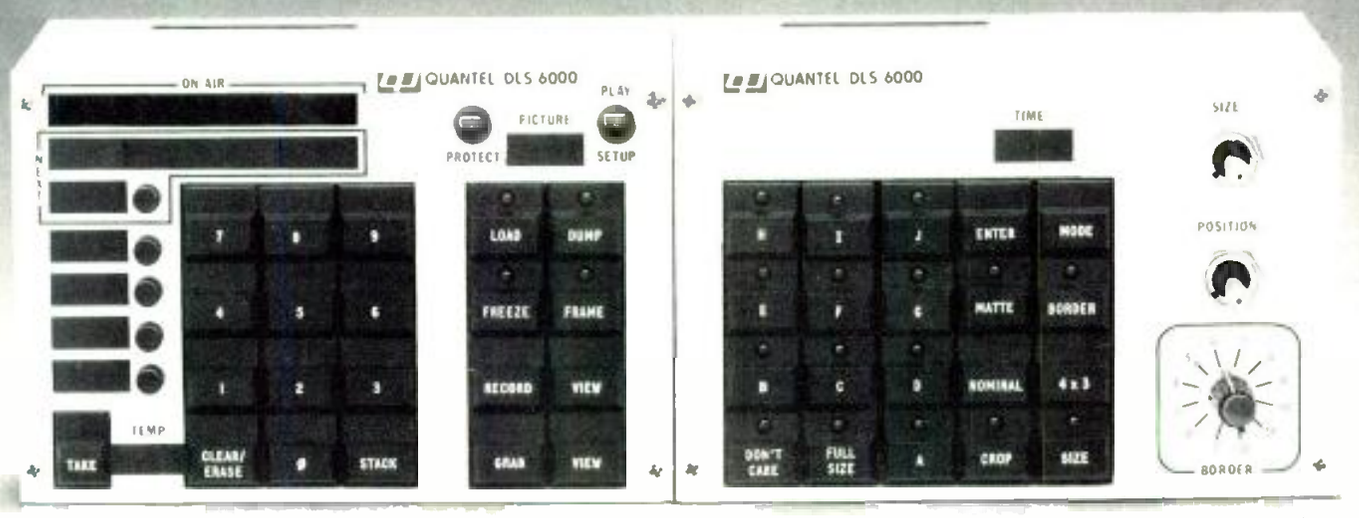
A real innovation in the post-production process, instituted by post-production coordinator Mike Elliot, is the use of Apple computers in an information management system. At present the computers are used not only to track the 7000 to 10,000 letters the show receives each week, but also to keep track of the segments as they pass through the various stages of production, in addition to facilities scheduling and inventories. The system's 20 Mbyte capacity also includes word processing, allowing the generation of individualized status reports for producers, writers, editors, and others involved.

If things go according to plan, the computers eventually will be used for the preparation of edit decision lists during the off-line editing phase, eliminating the current necessity of punchtapes.

"All this is absolutely necessary because we generate 15 to 25 segments a week and will be doing 150 shows for the season," concludes Sterling. "So by the sheer volume of our production we have a problem with information that other programs simply don't encounter.

"The point of all this is the very nature of any television production —to make it better, and to make it work efficiently. The technology serves the needs of the program. Today we're using ¾-inch editing and the Apple. Tomorrow we'll have videodisc sound effects. Whatever the future has in store, we'll make use of that, too." **BM/E**

The Quantel DLS 6030.



Every other way to store stills is obsolete.

Introducing the state-of-the-art in electronic still-storage—the Quantel DLS 6030 digital library system.

Obviously it stores still pictures. Up to 800 on each small Winchester disk drive. And with the quality that is a hallmark of Quantel. But the DLS 6030 goes far beyond still-storage.

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The DLS 6030 lets you browse through its disk library to select the pictures you need, and gives you unprecedented facilities for on-air editing, previewing, and presentation.

Off-loading? You can dump all the pictures—*in digital form*—onto standard videotape. Then reload at the remote site via any VTR. The transfer is digital, so there's no generation loss.

Because Quantel's technology is leading-edge, the DLS 6030 is small—about one-quarter the size of still-stores using older technology—and draws far less power. So it's ideal for mobile operations as well as the studio.

There's nothing else like it. See for yourself. Call your local MCI/Quantel representative. Or get in touch with us directly at 415/856-6226. Micro Consultants, Inc., P.O. Box 50810, Palo Alto, California 94303.

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Prime Time

For information on the products or services mentioned here, contact your RCA Representative. Or write RCA, Prime Time, Bldg. 2-2A, Camden, NJ 08102.

WREX-TV Boosts Local Production With TR-800s

WREX is one of four broadcast facilities serving the Rockford, Illinois market. Says Gerry Meinders, Chief Engineer at WREX, "We had clients taking their production to Chicago because of the editing capabilities there. Now, with our 1" TR-800s, WREX can offer the same capabilities here."

WREX sought the most advanced machine available to meet their present and future production and post-production needs. "One of the reasons we like the TR-800 is that it is the most advanced machine available. Being microprocessor controlled, if we want to add to the system, it will be easily done. It's really a total system package."

The TR-800s are being used for commercial production and delayed playback of network programming. The units are equipped with RCA's Supertrack for broadcast quality playback in still and variable play modes. One TR-800 has the RCA Super Search Editor.

"Our clients definitely like our TR-800 quality and our new editing capabilities."

RCA . . . 30-Year Supplier of Custom TV Mobile Units

Hundreds of RCA mobile TV units are in use around the globe. Compacts and trailers; busses and box bodies. Custom-built by RCA, they come in a wide variety of layout configurations, and with equally varied equipment complements.

A leading worldwide supplier of mobile TV systems for more than 30 years, RCA has the experienced staff and resources to handle any requirement.

The compact van illustrated is a popular, exclusive RCA design. Just under 19 feet long, it is nimble enough to flow with city traffic, and to fit into tight parking spaces. Yet it has the stamina for cross-country travel. Its flexible design accommodates a full range of equipment variations and layouts with every capability required for on-site origination and taping.

The RCA compacts feature a molded fiberglass shell on a heavy-duty chassis, available with 2 or 4-wheel drive.

Before you start the wheels turning on any mobile TV project, check out RCA's *full service plus* capability.

Energy-Saving Options Available for RCA UHF Transmitters

Numerous design improvements and updates have been incorporated in RCA UHF Transmitters for enhanced performance and operating efficiency.

Three optional devices now available (the Mod Anode Pulser; the Aural Coupler and the Variable Visual Coupler) result in substantial savings in transmitter power consumption. They can be supplied in new RCA transmitters or field retrofitted into existing TTU-30, 55, 60 and 110 systems with high efficiency klystrons.

The accompanying table lists the typical power usage and savings for the basic transmitters and for each of the options. For a TTU-110C 110 kW Transmitter equipped with all three of these devices, the total saving is typically 116 kW of power. For details on RCA high efficiency UHF Transmitter products, contact your RCA representative.

POWER SAVINGS WITH EFFICIENCY OPTIONS FOR RCA UHF TRANSMITTERS

Transmitter* Model	Basic Transmitter	With Aural Coupler	And Mod-Anode Pulser	And Visual Coupler	Total Power Savings
TTU-30D	120 kW	110 kW	94 kW	88 kW	**32 kW**
TTU-55C	208 kW	190 kW	160 kW	150 kW	**58 kW**
TTU-60D	220 kW	200 kW	168 kW	156 kW	**64 kW**
TTU-110C	411 kW	375 kW	315 kW	295 kW	**116 kW**

*The models specified are equipped with high efficiency klystrons and solid state exciters.

NOTE: All figures are typical, in kilowatts, based on 10% Aural Power.

HAWKEYE Takes The Lead In Video System Versatility

HAWKEYE is the one multi-purpose matched video system designed to do it all—from field recording to post-production and distribution. Yet, its modular design delivers unprecedented versatility in meeting numerous operational applications and economies. HAWKEYE *is* the most complete and adaptable video production system available today.

Recording Camera Flexibility

Where split-second timing and up-front access to events are the keys to coverage success, HAWKEYE's HCR-1 Recording Camera offers a striking contrast to conventional field systems. Film camera mobility and recording performance approaching one-inch standards deliver highly desirable results in restrictive environments and under less than desirable operating conditions.

Yet, the HCR-1 is versatile. By attaching a feed cable, live output can be aired while recording. Simple adaptors permit the separation of the HC-1 camera and HR-1 recorder, so that the recorder can be slung over the shoulder, carried on a cart or by another individual.

Camera Choices

HAWKEYE's HC-1 Portable Color Camera operates live, or with other format VTR's, in addition to HAWKEYE's HR-1 portable or HR-2 studio recorders.

A multicore adaptor for the HC-1 allows live production remote control via multicore cable at distances up to 2,000 feet. Another adaptor permits remote control over universal triax cable up to 5,000 feet. Rack mounted processing electronics are in a new compact size, and the operator's remote control panel, smaller than standard RCU's, provides all operating controls. A 4.5-inch viewfinder is also available for use in these configurations.

Field VTR Modes

In the recording camera, the HR-1 Portable VTR is directly coupled to the HC-1 camera. A baseband adaptor for the HR-1 permits operation of the recorder separate from the camera in a two-piece configuration. Another decoding adaptor equips the HR-1 for use with a TK-76, TK-86, and other cameras or video sources with NTSC composite video outputs.

HAWKEYE offers new levels of mobility and reliability as a one-piece video production system.

HAWKEYEs camera and recorder operate as a two-piece system or with other cameras and VTR's.

In the studio or in a van, HAWKEYE is ideal for recording, playback, or broadcasting applications

HAWKEYE adapts to numerous editing configurations and applications.

Studio VTR Alternatives

The HR-2 Studio VTR is ideally suited for studio and/or remote productions. It operates with the HC-1, TK-76, TK-86, TK-47 or any camera with composite outputs.

Companion to HAWKEYE recording cameras and field recorders, the HR-2 allows playback of HAWKEYE recorded cassettes for viewing program material. When equipped with the optional built-in HT-1 Digital Time Base Corrector or any TBC, the HR-2 may be used for on-air broadcasts.

Editing Options

Since the HR-2 VTR has standard video inputs and outputs, it can be controlled from a number of editing systems.

In the HAWKEYE editing suite, it serves as the record/playback source for the HE-1 Edit Controller providing control track editing capability. It may be easily integrated into conventional ENG editing set-ups by simply replacing one ¾-inch VTR with an HR-2.

HR-2 VTR's employing TBC's may be linked to a switcher/effects system through a computer controlled editor for sophisticated editing capability. Additionally, a TBC equipped HR-2 can be integrated into multi-format post-production systems, via various time code editors.

To find out how HAWKEYE can accommodate your particular requirements, see your RCA Representative. He'll show you how easy it is to step up to new levels of operational convenience and performance with this uniquely versatile video production system.

RCA

CABLE TV BECOMES A BROADCAST SERVICE

Forget the old view that cable origination rides second class in production value and equipment. A new wave of expansion is moving cablecasting to broadcast quality to help it compete with commercial channels.

"WHEN PEOPLE SAY it's a good local show, we say fine. Nobody can do the local programming that we do better than we do it, because it's ours."

Are these the confident words of a news broadcaster standing outside an ENG van? Or perhaps a producer for an affiliate sitting in the local station's EFP truck? No, the quote above is from cable TV operator Lou Borrelli, assistant to the vice president of Rogers UA Cablesystems Inc., discussing his firm's local origination programming.

This comment underscores the increasingly strong foothold that cable companies are attempting to gain in local programming. And there's a change in the trappings. The accent is on quality—gone are the black-and-white educational-cum-industrial cameras and recorders. The MSOs (multiple systems operators) are going after broadcast-quality production standards, using the latest broadcast equipment. Although the satellite network services delivered nationally to cable operators have attracted viewers, it's the local programming that is capturing their close attention, so it must be good.

Major MSOs have departments devoted exclusively to designing and equipping studios and mobile vans for community broadcasting and for their own local origination. Besides the usual fare of high school football, church services, and American Legion softball, subscribers in metropolitan areas are getting concerts, political debates with phone-ins, documentaries, and even local news coverage. (See "Cable Programming," p. 32.)

Why it's happening

The reasons for this activity vary on a theme familiar to all broadcasters—that localism is good business. What constitutes good business, however, now differs. Cable operators are more concerned with the number of subscribers rather than audience share and with city hall's judgment of performance rather than advertisers' opinions.

This is cable TV? Yes, it's part of the growing effort by operators to promote localism. Above is a Peirce-Phelps equipped van for Warner Amex of Mesquite, TX, shown here with Dualrod antenna by Nurad.

Specifically, cable systems are using promises of elaborate local origination and public access facilities to win franchises or retain old ones. In addition, this type of programming is believed to increase the operator's recognition in the community and encourage people to subscribe. Providing regular access to the local screens to officials and community agencies also makes the operator look good to these same officials when it comes time to evaluate cable service records. Finally, local origination may eventually contribute advertising revenue tied into certain programs.

THANKS TO LOCAL ORIGINATION

Not to be overlooked is the fact that advances in technology and increasingly attractive prices have made the commitment to quality financially possible. In a sense, the MSOs had no choice but to upgrade quality. Viewers flicking through the channels would not likely stop to watch a black-and-white show with pictures tearing and audio crackling with interference.

"In this area," explains Ted S. Jako, director of studio engineering for Cablevision Systems, "people are not going to watch things that don't look professional. The requirements for the equipment are set so that when they [the viewers] flip through their dial they're not going to spot us as the local cable company. They're going to think we are another service on the system, technically indistinguishable from other services and at the same time fulfilling a local need."

This philosophy comes straight from the top at Cablevision, as it does at other major MSOs. Indeed, a policy statement prepared by Gene Linder, executive director of programming for American Television & Communications Corp., states: "Community programming is a priority service consideration for every cable system managed by ATC. The reason is not philanthropic, but pragmatic. ATC's way of business pivots on the recognition and acceptance of the community's wants. We take seriously our responsibility . . . to provide equipment facilities and technical support necessary to facilitate local communications."

Gearing up takes money and ingenuity

Simply stating a responsibility for local origination and community programming is not enough without financial investment and the people to go with it. The money is there, and the results, while not yet on the scale of the networks, are impressive. ATC, which is the second largest MSO, with some 1.9 million subscribers and 4.7 million homes in its franchised areas, now has over 50 studios in place around the country. The firm has acquired 22 vans, and four more are due for delivery this year. Besides the nine-person community programming staff at corporate headquarters, ATC has 70 personnel in the field dedicated to operating the studios and vans and, more importantly, training local groups to produce their own programs.

ATC's Linder, who had some 25 years' experience in commercial broadcasting before moving into cable, is responsible for purchasing vans and equipment, tracking amount and content of community programming, and exchanging ideas among cable franchises. His annual equipment budget runs into the millions of dollars, as new franchises with ever-more elaborate studio and van requirements are being built.

"The commitment dates back to 1976, when we determined to clean up our act and put quality first," he recalls. Centralizing evaluation and procurement has benefited the company, in Linder's view. When buying cameras and switchers from Philips, tape recorders from Sony, or ENG cameras from JVC, the company has more clout than an individual franchise could bring to bear. The Englewood, CO home office also tracks equipment performance—first through three-month field trials to evaluate new equipment and later through maintenance reports submitted by the local franchises. The company holds three regional franchise conferences a year, with some sessions devoted to reliability and field maintenance experience.

"We cannot afford to be down when people have worked to prepare a program and arrive at the studio to do it," Linder adds.

A large number of Cable Access Vans (CAV-1) have been sold by Wolf Coach to operators. This CAV supplied to Continental Cable can carry two to three ENG cameras, plus tape machines, a character generator, and possibly on-board editing equipment.

Broadcaster influence

Another trend in cable TV that has no doubt speeded the introduction of broadcast-quality local origination is the growing influence of broadcast companies in the industry. Since the recent acquisition of Teleprompter Corp. by Westinghouse Broadcasting (now Westinghouse Broadcasting and Cable), the cable operations of broadcasters hold the number three (Westinghouse with 1.7 million subs); four (Cox Cable Communications with 1.2 million); five (Storer Cable Communications with 922,400); and six (Warner Amex with 907,300) slots of the top 50 systems operators. Of the three, Storer, according to industry observers, is in transition between being primarily a broadcast company (where a large percentage of revenue is made) and a cable-dominated enterprise.

Cable TV Becomes a Broadcast Service Thanks to Local Origination

The influence of the dominant broadcast wings of cable operations is likely to be informal rather than formal. Such is the case for Hal Mitcham, production engineer for Storer Cable, headquartered in Miami, FL. Storer now has nine 27-foot mobile units, six 16-foot step vans, seven 14-foot trucks, and five Econoline vans, loaded down with the latest equipment. The newest, constructed by Midwest Corp. for the Loveland, CO franchise, is said to be better equipped than similar trucks operated by network affiliates in nearby Denver. In setting up these facilities, Mitcham swapped ideas with one of the chief engineers for a Storer broadcast station.

Mitcham is about to inaugurate a unique system for fitting franchise needs to franchise budgets based on his recent experiences. Standard equipment lists are the basis of the system. He has grouped the equipment into four packages and 10 subsystems and when completed will have a programmer crank the whole thing into the company's computer.

Programming: Everyone's in the Act

Cable operators may be trying to upgrade the quality of the equipment used for local origination and community programming, but what about the quality of the program content? A surprising amount of ingenuity has gone into developing these programs, both by the operators and the people using the studio facilities.

Of course there are some staples. Local sports is always hot. These shows cover Little League, high school, and local college sports—especially schools that get no national attention. Another regular is local government, sometimes involving phone-in questions from citizens addressed to politicians. And let's not forget parades as LO favorites.

But cable outfits have concocted a number of unusual ways to use local origination. Here are just a handful of examples:

- Rogers-UA Cable in Westchester County, NY had a phone-in show last Christmas featuring Santa Claus, with kids calling up to speak to him. This same operator did a concert of Aaron Copeland's music, during which the composer attended and conducted a short section with the local musicians. The show had inserts of an interview with Copeland, who lives in the area.
- The ATC franchise in Jacksonville, FL televised, with local participation, wheel chair basketball games promoted to get the handicapped involved.
- Rollins Cable TV has started a five-days-a-week program by and about women that it uses as a lead-in to the nationally syndicated daytime women's show done by USA Network.
- The Memphis, TN franchise has started its own local level version of *Saturday Night Live*, which has subscribers laughing.
- Thanks to its interactive, split-screen system, Berks Cable TV has featured a number of unusual programs. In one, high school students studying labor history asked questions of senior citizens who had been local labor organizers and company managers about events in the county during the 1920s and '30s. In another, people were able to testify live at televised city council hearings, instead of submitting written statements. Another interactive show is conducted in English and Spanish for the Spanish-speaking audience.

Because of the variety of programs and the small fraction of subscribers to which many of them appeal, cable "narrowcasting" is in some respects like radio, with its specialized ethnic, religious, and musical interest programming.

When your friends and neighbors or social group are on TV, the attraction is powerful.

Interior of the Midwest M-20 van built for Storer Cable TV shows the broadcast quality audio and video equipment now going into local origination vans.

When a franchise submits a proposal for outfitting a studio, the computer will have a ready-made equipment list complete with prices to match the size and budget for the project. The lists cover cameras, camera support, audio, lighting, and the like. With the computer programmed, it will be simple to update the shopping lists as new prices or new products are announced.

"I just got tired of doing the equipment research over and over. I thought this was the kind of information that could be programmed into a computer and organized into different packages. There are so many items that the lists have to be done by computer," Mitcham explains.

Double duty equipment

A large part of cable's growth is centered on the new programming transmitted nationally via satellite. Best known are ESPN, the all-sports channel; Cable News Network, Ted Turner's venture; and more recently, Playboy/Escapade, the adult entertainment service. In the case of Cablevision of Long Island, an editing suite built for the use of Rainbow Programming pay services—Bravo (cultural), Sports Channel for the New York City area, and Playboy/Escapade—has benefitted local origination.

Thus, when the local franchise needs to edit one of its one-inch tape programs, it uses the Rainbow editing suite, which has a CMX 340X working with Sony 1100A VTRs. In the Rainbow studio, Cablevision has three Hitachi FP-60 cameras equipped with 12:1 Canon zoom lenses and ITE pedestals for its use. Also available is a Chyron IV graphics system.

Down in the parking lot is Cablevision's van built by Wolf Coach that Rainbow uses when necessary. It has four Ikegami HL-79D cameras, three with 13:1 Canon lenses with 2X extenders and one with a 25:1 Canon lens. In addition, the truck has ADDA frame synchronizer, two Sony BVU-800s, a Chyron RGU with scoreboard for sports, two Sony BVU-1100s, for slo-mo, plus time base corrector and sync generators.

Cablevision's Jako points out that the CATV franchise alone could not justify the $.5 million investment in the van unless Rainbow also used it. But with some 100,000 subscribers on the system, a quality look is important.

Matching equipment to the user

While cable operators tend to separate community programming from local origination, Rogers UA Cablesystems in New Rochelle, NY has melded the two.

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The AC 20 gives you two channels of digital time base correction in just seven inches of rack height, saving space, maintenance, capital cost, cooling, and power. The Production Remote gives you digital switching effects at very little extra cost.

In fact two channels of time base correction with 2:1 digital effects are priced at only $17,500.

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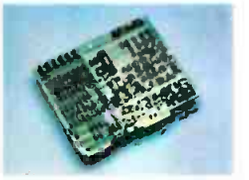
This means that with three VTR's and an AC 20 (with the Production Remote option) in an editing suite, your ENG post-production crew is ready for A/B-roll editing with digital effects, some of which have only been seen on upscale switchers until now. No need to tie up your production switcher. And you can remote the AC 20 to your editor, if you like.



The AC 20 works with ¾-inch and ½-inch V-locked, unsegmented VTR's that accept derived 3.58 MHz feedback. It uses a 16-line store, eight-bit technology, and fourth-harmonic sampling to produce a broadcast-standard output. Its digital circuitry assures that the output signal is the same quality as the video input signal. It is virtually transparent. And it is modular; you can start with a single correction channel and do cuts-only editing; you can add a second channel and move up to A/B rolls. You can add the Production Remote for digital transition effects. And that's just the beginning. The AC 20 TBC is the first of a new family of products that will have a significant influence on the future of broadcast production equipment.

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Cable TV Becomes a Broadcast Service Thanks to Local Origination

Do-it-yourselfer Victor Cognato, video engineer for Valley Cable TV, put $80,000 worth of equipment in a step van "home-built" that he configured for Valley's needs.

Serving some 20 communities in southern Westchester County, Rogers has about 38,000 subscribers on its 35-channel system. One channel is devoted to local origination and one to access plus two or more in each community for educational and municipal use.

Aside from the access channel, the company involves the community by hiring virtually its entire staff as interns. In turn, most of the permanent staff are former interns. Thus, local people operate and maintain the equipment in the LO van, the three company-operated studios, and the two company-supported access studios.

The van was originally built by Wolf Coach and equipped by Peirce-Phelps. As often happens, the chief technician has since altered the contents. It now carries three Ikegami ITC-240 cameras and one JVC KY-2000. It has two new Sony LO-5850 VCRs hooked to a Microtime TVC. For audio, there are eight mic channels, two intercoms, and a 12 x 2 stereo board.

Portability is the key to the studio equipment. Everything goes into cases. This includes a Panasonic 4600 switcher, three monochrome monitors, video DA, plus waveform and vector scopes, so that it is possible to set up a mini-studio out of three Anvil cases.

Do-it-yourself vans

The drive for local origination has been accelerated by the availability of vans. Most franchises have been content to depend on the experience of one of the established van builders such as Centro, Wolf, or Midwest, as well as equipment packagers such as Peirce-Phelps or Tele-Measurements. Some operators, however, have preferred to take the "home-built" route. Such is the case with Valley Cable TV Inc. in Encino, CA and Rollins Cablevision in Wilmington, DE.

Valley Cable needed a truck for local origination and decided on a home-built in order to maintain close control over the equipment installed. In addition, Valley's video technician, Victor Cognato, had experience in designing a TV studio. According to Peter Rafalow, director of local origination, the first step was to draw up an equipment list to get price quotes.

Having to do it all on its own, Valley needed the equipment list in order to make sure nothing was omitted. The list covered everything from JVC KY-2700 cameras to a Tektronix 528 waveform monitor to a Pelco 1 x 10 passive video switcher to an RTS PS-108 intercom to a Ramco SMA-1000E audio power amp. The list included racks, terminal plugs, and rack mounts mounted in the truck. The only item not on the list was the truck itself, which is a 1980 GMC step van with a 14.5-foot bed and dual rear wheels.

Valley spent $12,000 for a step van, $20,000 for interior work on the van, including the addition of a new side door, and $80,000 for the equipment.

"The finished van fits our needs exactly, but it was time-consuming and required a total effort," Rafalow warns. "It took Vic three to four months of hard work."

Rafalow claims that a home-built is cheaper than a turnkey van but eats up a lot of engineering time. Pat Rollins, program manager for Rollins Cablevision, also maintains that do-it-yourself is the less costly way to go. The new Rollins van contains two Sharp XC-700 cameras and has full editing capability from Sony and JVC VCRs.

Having spent $100,000 for the equipment, Rollins says, "The technology has improved so that there are now more things available for the money. We can put together a van to fit our needs."

The big city environment

Most cable operators must devote time and personnel to train people in the community to develop programs and use equipment. This is not the case with Manhattan Cable TV in New York City. Even with the three access, one leased, and one local origination channels, the company is inundated with programming.

The problem here is that some 350 to 500 tapes a week, which add up to 10,000 hours of programming a year, come to the operator from outside sources over which it has no control. In addition, there are six outside studios used in Manhattan Cable's franchise area to insert live programming.

These numerous program sources cause a wide variation in production quality, which the operator has attempted to minimize. In a sense, Manhattan Cable's direction has been toward post-production, that is, taking material produced by others and making it fit into a high quality system.

One of the first steps, explains Fred Ciccone, manager of technical operations, was to upgrade continuity on the

From street to high rise—that's the way Centro designed the van for Manhattan Cable TV's big city needs. Here portable studio equipment is lowered by hoist to go into action in a skyscraper to make good on Manhattan's motto: "The City is our Studio."

channels, i.e., one program ends and an identifying logo comes on to lead into the next program.

"The first thing we addressed was trying to have broadcast-quality switching and continuity," he recalls. "In this area we were pioneers to a certain extent."

The company has just put into operation a 3M computer-based 40X routing switcher and a 6500 machine control system programmed specifically for Manhattan Cable that controls 10 output channels on the cable system automatically, including the six independent studios. As part of the effort, the old ½-inch tape decks have been replaced by a battery of Sony VO-5850s, and all channels are time base corrected.

By the end of the year there will be 120 inputs and 16 outputs, each individually controlled by the routing switcher. Also, there will be professionally recorded audio carts that will automatically kick in over the video for announcements, rather than using nonprofessional control room personnel.

Interactive—the ultimate localism

A unique program to bring the community into the cable TV system is the interactive, split-screen setup, run by Berks TV in Reading, PA. Begun in 1976 as an experiment supported by the National Science Foundation, the system was established to increase the interaction between senior citizens groups and various local agencies. A consortium from the community was formed to carry out the experiment under the grant.

After the NSF grant ran out, the consortium plus others formed a nonprofit corporation to take over the programming. It has been running the system from 12 separate locations since. Berks' parent firm has meanwhile spent $100,000 to upgrade its head end and another $60,000 to $80,000 for new color studio equipment.

The original equipment consisted of low-cost black-and-white cameras, Sony portapacks, Sony SEG, and monochrome monitors. The system was configured so that the 12 locations on the line had the same switchers. The switchers were genlocked to an off-air station from the cable head end so that everyone was using the same sync source, which is the main requirement for the split screen.

The video switchers were modified to allow an adjustment of the horizontal phasing of the video horizontal sync pulse. This permitted the operator to delay the signals coming back to the head end antenna so that they all arrived at the same horizontal line change. The signal was then taken off the cable system and fed to a video switcher that could do a split-screen effect. Thus, centers on the interactive line that were five miles apart would appear on screen as though they were simply using different cameras in the same studio.

Having proved that the system is feasible, the nonprofit corporation has been programming the interactive system for more and more users. In the upgrading, Berks added two NEC frame synchronizers to lock the video signal to a reference source at the interactive site. Each of the synchronizers is driven by the output of a sync generator. There are also two passive switchers so that all the inputs from the 12 sources are available synchronously to each Shintron switcher.

Another important element for an interactive system is an alert, dedicated operator at the antenna site doing the actual mixing and switching.

"That is the person who causes the interaction," explains Bruce Shaak, programming director for Berks. "Not by directing it but by following it. There's a dedicated telephone line that we use as an intercom so that the person at the head end can talk to the people running the equipment at each center and tell them what needs to be done. When someone at a center starts talking, it's the follower's job to make sure that the picture and audio of the person speaking go out on the network."

A future of abundance

Cable TV, even in the days of old 12-channel systems, had often been called the television of abundance. Now, with 55 to 100+ channel systems being planned, there may be an overabundance. The natural question is, what are they going to put on all those channels?

Satellites will be busy pumping programming into these systems, but even these sources are not unlimited. Therefore, local origination will have to become an even more important part of the cable operator's program plan. Community programming will be expanded in the future as well, not only for the new franchises such as Boston, Denver, and Queens, NY, but in locations coming up for franchise renewal.

"When some of these 20-year-old franchises were originally awarded, the city councils didn't even know how to spell cable," one CATV executive points out. "Now they've seen what is possible with the latest technology, and you can be sure they will demand more when it comes time to renew."

"The next five years," he concludes, "are going to be filled with expansion. Millions will have to be invested to upgrade the old systems while at the same time to equip the new state-of-the-art systems."

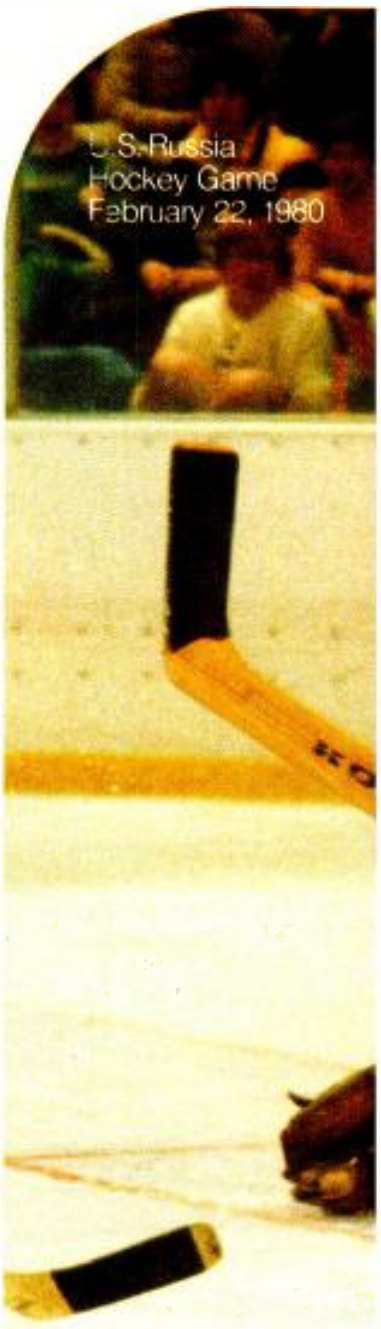
The stakes are high, as are the costs. Where will the big dollars come from? That answer is already in the making in the form of consolidation. The mom-and-pop cable companies are disappearing, and in their places are large enterprises, many linked to even larger enterprises, capable of generating the capital necessary to accomplish the envisioned expansion. At this point, the top 50 operators control over 18 million of the nearly 21 million subscribers on cable. Moreover, the top 10 operators have nearly 11 million subscribers, or about half of the nation's total cable audience. With more and more revenue concentrated in the coffers of the biggest operators, theirs will be the firms with the financial clout.

As another cable executive remarks, "The lines between big broadcasters and big cable companies are blurring. To me the differences are fading. In terms of using the technology, it's all part of one enormous communications delivery system." **BM/E**

Material for this article was supplied by:

American Television & Communications Corp., Englewood, CO
Storer Cable TV, Miami, FL
Cablevision of Long Island, Woodbury, NY
Rogers UA Cablesystems, Inc., New Rochelle, NY
Valley Cable TV, Encino, CA
Rollins Cablevision, Wilmington, DE
Manhattan Cable TV, New York, NY
Berks Cable TV, Reading, PA

IF IT WERE YOUR JOB TO GET THIS ON TAPE, WHAT TAPE WOULD YOU GET IT ON?



It's a complete mismatch. A collection of college amateurs together for only a couple of months against the equivalent of the Russian professional all-stars, a team that has dominated world hockey for a decade or more, a team that has recently embarrassed the NHL All-Stars with a 7-2 exhibition victory. But in the end, the amateurs win in a dramatic showdown for all the world to see at a time in world politics when a victory really counts.

America, like most of the world, will see the game on tape, recorded and broadcast by ABC-TV. In fact, many of the events at Lake Placid will be broadcast and rebroadcast to the world on tape under the most demanding time and temperature conditions. It's a one-chance situation all the way and the stakes are always high.

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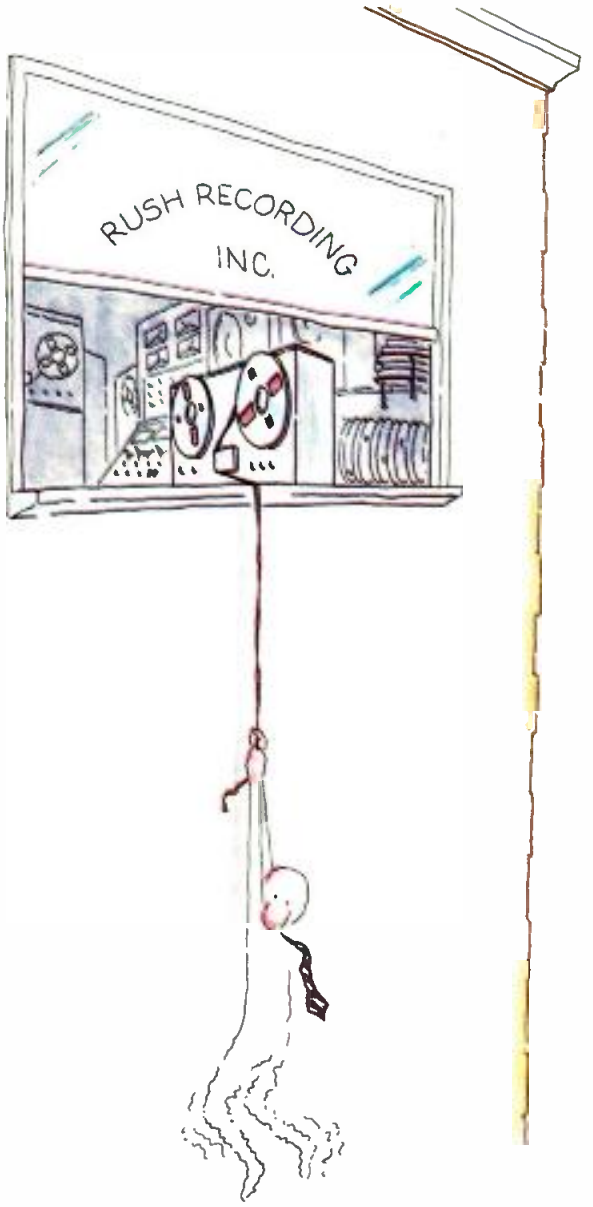

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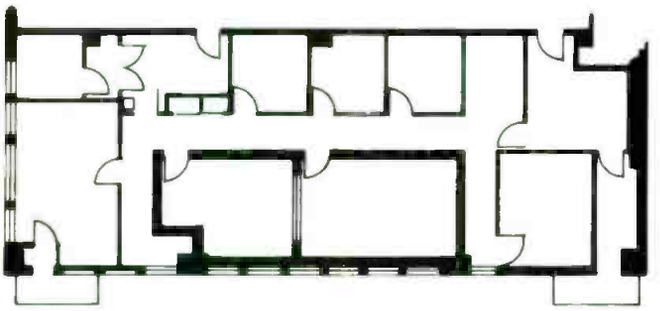
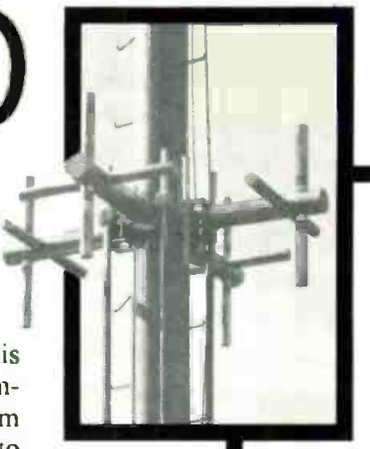


THE OVERALL DESIGN OF A RADIO STATION



This article was prepared with the cooperation of two radio engineering executives with extensive experience in the building and rebuilding of broadcast plants. Harrison J. Klein, director of radio engineering, Westinghouse Broadcasting and Cable, Inc., has 12 radio stations in his care. Kenneth W. Stout, chief engineer of WPAT AM/FM, Paterson, NJ, has been a frequent consultant on radio facilities construction for Capital Cities Communications, owners of WPAT and 13 other stations. —Ed.

A BROADCAST MANAGER who is building a new plant is like a stage director who must take 20 different performers, each with a different style, and make them into a team for a complex show. Even with the highest skill applied to each of the separate operations in building the new plant, the venture is vulnerable to delays, excessive costs, and serious errors unless the management finds effective ways of making the parts into a whole.

This integration of overall technical design should flow from a particular sequence of planning moves that steer the venture safely away from oversights and errors and toward a successful finish.

The main rule to follow is that every important element of the design must be given its full weight in the planning from the beginning, in any case, before actual construction starts. A typical planning sequence includes the following:

■ **Assign responsibility.** One person or a small group must take full responsibility for directing the job and for making all important decisions involved in it. Hiring an architect or engineering consultant to advise the station planners is almost always desirable.

■ **List all the main technical functions.** The planners must list the functions required to execute management's goals.

■ **Make preliminary space assignments and a rough layout.** The space for each of the main functions and for all support operations must be estimated as accurately as possible by the planners, with the aid and consultation of persons assigned to operate each function. With all needed space accounted for, the planners can make a rough layout of the whole plant.

■ **Make a preliminary technical layout.** With the space layout in hand, the planners can make a preliminary technical layout, showing each main item of equipment in place and the major wiring runs needed to tie the plant together and supply it with power.

■ **Find a home for the plant, or design a building.** The space layout will supply a total space figure that will be a principal guide in the search for a home for the plant or in designing a new building to house it.

■ **Make detailed plans.** With a space found or a building designed, the planners must adjust the preliminary space and technical layouts to the actual space to be occupied and make final plans showing every element of the plant in place.

■ **Prepare construction drawings.** These are the precisely scaled, completely detailed drawings that show the contractor exactly how to build the plant, and show the station staff every wire and cable needed to make it operational, plus the placement of every piece of equipment.

■ **Choose a contractor and get the plant built.** The management must find a contractor with the skills to build the plant, and must oversee each step he takes in realizing the plans for the station.

ASSIGNING RESPONSIBILITY

The person with the primary responsibility for directing the design and construction of the new plant takes on a nearly full-time job. He cannot undertake other regular, all-day duties until the plant is finished. He must be the coordinator of each part of the job and of all persons involved in it, being on hand to make decisions when necessary.

In most cases the chief engineer will have this role, since the technical design and choice of equipment are likely to be carried out by him in any case. Each management must decide whether or not to call in outside help in the person of an architect or engineering consultant. The decision will depend, of course, on the complexity of the job and on management's assessment of the skills available in-house.

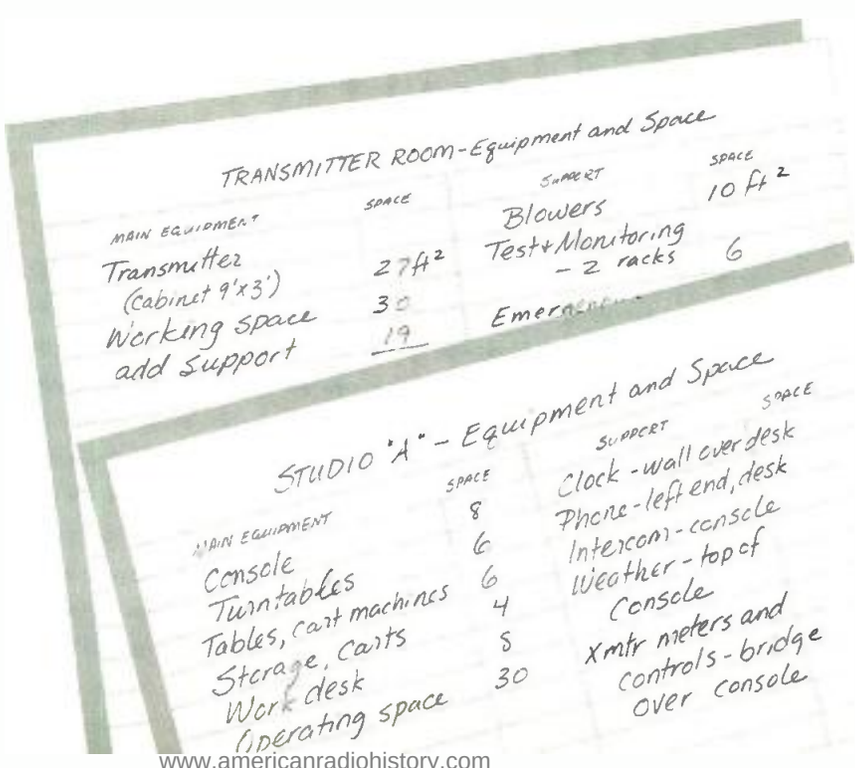
There are certain parts of the job that almost always require outside help, among them the design and specification of building construction details; the design and installation of correct, properly priced heating and cooling equipment; the analysis of existing spaces for their workability and for hidden difficulties and traps; the production of the detailed construction drawings; and the assessment of contractor skills and overseeing the contractor's performance.

In many cases it is eminently worthwhile to have the outside consultant on the team at the very beginning, to avoid planning errors that will be costly to correct. In the case of an architect, he can start with the job and, by agreement, retire from it at an intermediate stage; his fee will be adjusted to the proportion of the job done when he leaves it.

Similarly, an engineering consultant can be engaged for a part of the job, and paid in most cases on the basis of time spent. Again, the best time to have the consultant on hand is in the early planning stages. It is certainly far less efficient, and usually very expensive, to call him in for a "fix" after construction has started and a serious mistake discovered.

TECHNICAL FUNCTIONS

The chief engineer and the engineering consultant (if one is hired) will have firm ideas about the technical functions the plant must incorporate in order to carry out the management plans. The planners must sit down and list all the functions, including all support functions as well as front-line operations.



Preparing lists of equipment required and its location is very important when planning a facility because the procedure forces the planners to remember every need.

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The TVS/TAS-1000 has excellent performance specifications. Crosstalk, for example, is rated at −60dB under worst possible conditions.

And we've designed it to stay that way by confining sources of crosstalk to individual boards. Complexities of installation or aging of components won't affect it. You can expect performance to be consistent. From switcher to switcher. From year to year.

And unlike most switchers, crosstalk in the TVS/TAS-1000 does *not* increase as matrix size increases. This means you can expand your system—in your facility—without decreasing performance.

We check our specs with the industry's most precise automatic testing system. We test all possible signal paths for each measurement. In the case of crosstalk, we measure twice—using two possible worst case selection patterns—and we record the poorer reading.

You get a complete copy of all test data. We keep a copy on file at the factory.

Controls for all requirements

We can offer you more than a dozen different rackmount and desktop control panels for your TVS/TAS-1000 so you can operate the system *your* way. The CP-1500, for example, offers full-matrix control with alpha-numeric displays for quick identification of all sources and destinations. It connects to the switcher matrix via a single coax "party line."

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Want to expand your system even further? You can add dynamic machine selection with our Fernseh TCS-1 machine control system and control up to 100 VTRs, film chains, and related units.

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BOSCH

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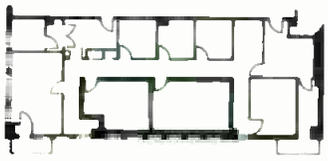


FACILITIES DESIGN AND ENGINEERING

It is essential to include *all* space-taking operations in the plant so that the list can act as a master checklist in the planning. It should naturally include transmitter room, on-air studios, news editing rooms, on-air newsroom, interview room, management offices, sales offices, employee lounge, equipment storage, music library storage, production studio, and all other main-line operations. It is equally important to list all secondary functions: emergency generator, telephone distribution room, engineering shop, intercom center, waste storage, and all other spaces. The planners must examine their preliminary plans to be sure the list is complete.

SPACE ASSIGNMENTS

With all functions accounted for, the planners can move to the next main stages: the determination of floor space needed for each function, and a rough space layout of the whole plant. The floor space figures should be as accurate as possible, arrived at in consultation with the planners and the operating persons for each function. Each operating employee can be asked for his or her space need, followed by an interchange of views that leads to an agreed-on estimate.

This process can be extended for a more detailed attack on calculations in space assignments and studio design. With a preliminary set of the space assignments in hand, the planner and the operating personnel can make a pencil sketch of each floor area and put into it scale models, or flat sectional plans, of the large items of equipment it will hold. The planner can then explore the workability of the studio or equipment space.

He can ask operating persons such questions as "Does this look operable? Can you get around this console? If we put the carts on this wall, will it be easy to handle them? Will you be able to reach every operating control from your chair?" This analysis process will be insurance against such plaints as: "If only we had made that room one foot longer!"

The rough layout, incorporating the spaces estimated, is itself a main item in the planning. It will not contain details such as building materials and wiring runs, but will show the relations of the work spaces to each other. These relations determine the work-flow patterns and are important to the efficiency of the plant. Again, the planner should work closely with operating personnel. Each person must analyze carefully his or her work relations with the other functions in the plant. This analysis will guide the planners in arranging the work spaces so that main work flows are properly accommodated and operations that may interfere with each other are sufficiently separated.

One potentially controversial element of space planning is the position of on-air studios in relation to offices and public spaces in the plant. Some recent station plans put on-air positions "on display" through large windows opening onto public lounges. The obvious gain is heightened public interest in, and respect for, the operation. The loss is the possible diversion of operator attention from the controls.

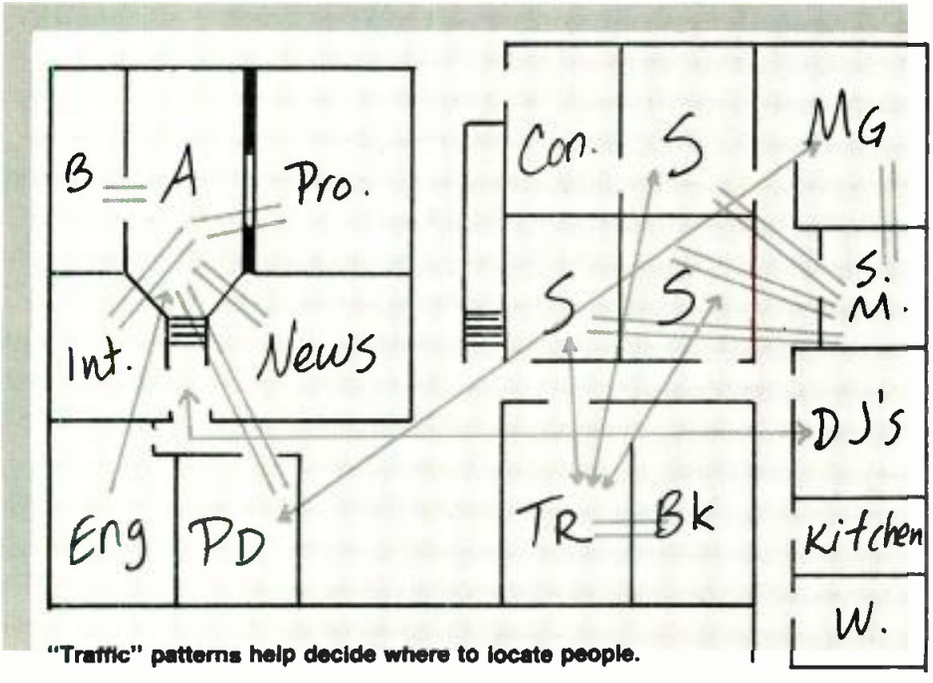
This potential loss convinces other station planners that the on-air studios should be separated, not only from the public but also from all main work flows in the plant. In one example, the studios were arranged in a central square with the offices and other spaces around them. This kept the public far away but made employees circle the studio block on any move inside the plant, so that employee movement proved highly distracting.

Each management must decide, weighing the difficulty of the on-air job and the possibile gain in public interest from a display arrangement, which approach is better. What management should avoid is a studio placement that gains neither public exposure nor the security of total separation.

Should the planner provide a substantial amount of extra space to allow for possible expansion? There is an opinion among some broadcast executives that the more space a station has, the more people the management will hire: the "Personnel Principle" in broadcasting is that people tend to fill all the available space.

The least expensive way to provide for expansion is to be in an office building with offices adjoining the plant that can be taken over at a later date. Also cost-effective is a separate building to which a new wing can be added when it is needed. Probably the most useful rule on this question is for the station planner, in making the rough space assignments, to lean more on the generous side, and to be sure that secondary functions are fully covered.

The rough space layout leads to another key element, the total space needed, which will guide the search for a *home* for the plant.



"Traffic" patterns help decide where to locate people.

PRELIMS

With a copy of the space layout, the planners can make a technical layout of the plant, pencilling into each space the equipment it will hold and showing wiring runs as simple lines. The actual items of equipment will be chosen in most cases by the chief engineer.

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FACILITIES DESIGN AND ENGINEERING

The preliminary technical plan makes it possible to put every important item of equipment and operating system into the plant to find out how they will fit together. Thus it is especially important to include everything in the space alloted, together with indications of the wiring runs each item and system will need. This plan will pinpoint miscalculations of space. It will call to mind support systems that have been taken for granted, but will need space, power, and proper placement for efficient operation.

If the plant being built is a fairly simple one, it may be practical to expand the preliminary technical layout into the final plan and make all the calculations of wiring needs, equipment placement, integration of primary and support systems, and so forth, after the actual space has been chosen. With even moderate complexity, the freedom of working on a preliminary technical layout will probably make that step in the planning worthwhile.

FINDING A HOME

The preliminary space and technical layouts are principal guides in the search for a home for the plant or in designing a building to house it. The subject was covered in detail in Part 1 of this series. (See *BM/E*, May 1982, p. 37.)

The right choices are so vital to the success of the plant that in most cases an engineering or acoustic expert must examine the building in detail *before* the lease is signed. He should be experienced in two areas: the requirements for air conditioning systems, and the assessment of outside noise sources, with some idea of how they can be kept out of the plant.

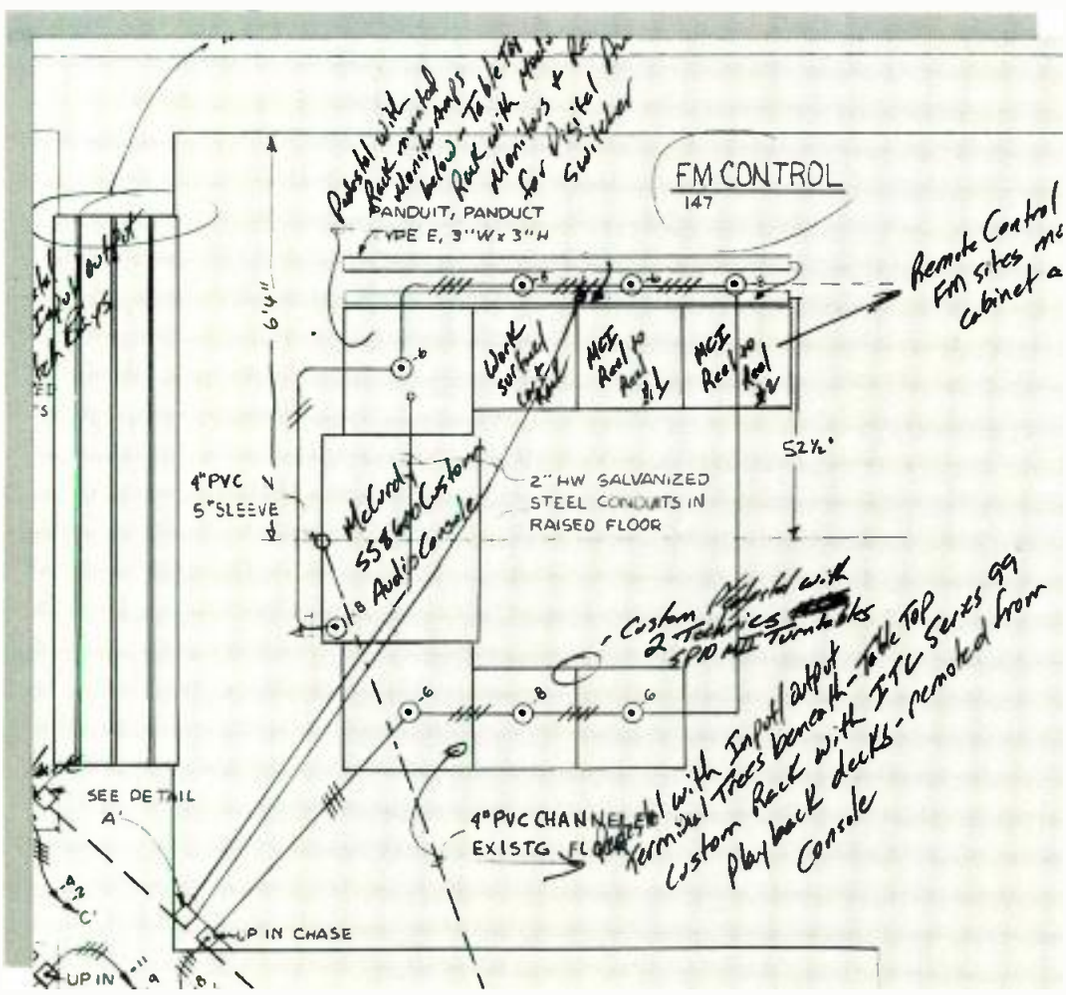
In the search for the home, even though an architectural or acoustic consultant is engaged, the primary planner at the station (usually the CE) must remain in control. What can happen if he is left out of the site choice is shown by an actual case, a large radio station expansion recently carried out on the West Coast. The manager leased a building space that pleased him on many counts: central location, attractive building, and so forth. However, between the studios and the station's remote transmitter were a mountain and two other very tall buildings. The station's STL was totally blocked. An elaborate special system with a pickup station on one of the tall buildings and an expensive low-impedance feed were needed for the program link. Therefore, add to all the other site questions: is there a "clear shot" for the STL?

FINAL PLANS

With a space chosen, the preliminary layouts can be altered to match the actual space available for the plant. Moreover, every aspect of the technical design can be indicated on the set of final plans.

Making these plans is a very detailed part of plant construction. Some technical decisions may have been postponed to this stage, but they cannot be delayed further without the danger of extra costs and delays. Here are some examples, with advice on handling each.

How will the interunit wiring be carried from room to room and through each room? Several systems are familiar to the industry. Conduits laid in the floor work well but do not allow position change. The raised wooden floor with easily removable panels allows for easy change but is comparatively expensive. The "computer floor,"



Just as there is a floor plan for placing people, there must be a floor plan for placing equipment in the studio to make sure there are adequate line power outlets.

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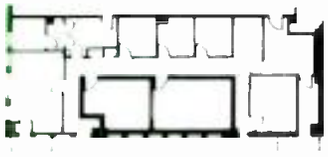

FACILITIES DESIGN AND ENGINEERING

incorporating a mesh to drain off static electricity, has become popular lately, but some users warn that it must be chosen by an expert since some brands have squeaks that are hard to eliminate. If there is a basement, cables can go through the floor wherever needed.

Putting the cables overhead is always a possibility. If the station is on a ground floor and the ground has any tendency to dampness, overhead cabling is the way to go. This choice is especially important if there is any possibility of flooding on the ground floor, since water will inevitably run into the space under a raised floor.

Some widely accepted rules on wiring are worth repeating. Use a heavier rather than lighter wire wherever there is a choice. If there are closed ducts, make them five times, even 10 times as big as your present wiring plan requires; it is proven over and over that it is far better to be much too big on ducts at the start than to run out of duct space later. And a number of engineers recommend wiring the whole plant for stereo, even mono newsrooms. In today's broadcast climate, formats and station plans change suddenly, and those unused cables in the ducts could become vital parts of the operation.

Moreover, keep high-level and low-level program cables well separated, and ac cables even further away.

Two other essential parts of the technical design that must be considered are keeping RF interference out of the studio equipment, and keeping severe voltage spikes and transients from coming through on the power lines. Every broadcast engineer has been in the fight against RF interference since he started his career and has probably won it more than once. But each time a station is built, the battle has to be fought again. A number of front-line combatants have lately adopted total shielding of the studio spaces in extreme cases. There are a number of ways to do this at reasonable cost, if the shielding is part of the original construction plan.

The shielding must be in the floor, as well as on the four walls and ceiling, to make a tightly enclosed "box." Aluminum mesh, carefully soldered together with low-resistance solder at all seams, is one method. A screening material made of an alloy especially designed for the job has recently been put on the market.

Voltage spikes and transients are also longtime enemies of the broadcast engineer, and they are still there, more dangerous than ever if computer equipment is in the plant. The operation of digital circuits can be disorganized by voltage surges (and by RF, too). Voltage spikes can be deadly to motors in tape recorders and cart machines and to regulated low-voltage power supplies. The station planner must get complete surge and spike suppression into the plan. Voltage surges are particularly prevalent in areas with much heavy industry.

We repeat here some advice on the design of the cooling-heating system discussed in Part 1, because of its great importance and heavy cost. Each on-air and operation space must have its own separate system, with controls on the spot. There should be a switchover to a backup system, which can be a separate system that feeds the whole plant. It is also a good idea to have a *third* system just for the offices.

One section of the studio design that planners may be tempted to leave until the studios are built is the disposition of various secondary and support items in the studio, and the wiring for them. Among these items are the telephones, headphones, intercoms, cart machines, delay units for talk shows, weather instruments and readouts, clocks, and other similar systems.

Most of this equipment can be integrated into the design in advance, with many controls actually on the console. This will avoid a tangle of wires exposed in the studio, as well as a collection of "miniboxes" that get pushed from space to space, with bad effects on operation.

In planning the location of the transmitter (if it is in the same building), the planners must know the FCC rules on accessibility of monitoring and control equipment.

CONSTRUCTION DRAWINGS

When the final plan is complete, completely detailed construction drawings must be made that will show the contractor exactly how to build the plant. Because a radio plant is such a complex and specialized job, hardly any contractor has had experience in building one, and the contractor needs the most careful and complete instructions to do it successfully.

An architect with broadcast plant experience or an acoustical contractor is thoroughly trained in making such drawings and knows, for example, how to specify precisely the walls in an acoustic isolation plan. The contractor will not understand the necessity for certain details of the wall construction, and without precise guidance may be tempted to make the wall in a "simpler, less expensive" way.

Similar rationale applies to ac wiring runs. The contractor is used to simply punching a hole at the most convenient point to get a power conduit through a wall, and prefers to put power outlets back to back on adjoining walls. The exact placement of the wiring runs for ac and the methods for getting them from room to room must be shown: holes punched in the wall and back to back outlets are both likely to cause acoustic leaks.

FINDING THE CONTRACTOR

In many communities, finding a competent contractor may turn out to be difficult. With luck, the station planners will discover that two or three firms are accepted by local businessmen as honest and skillful. If the local firms are eager for work, they can probably be persuaded to bid on the job, based on detailed construction drawings.

However, making a bid on such a complex building job is expensive for the contractor, and if he is not eager for work at that moment, he may well say "no" to the bid invitation. In such cases, some form of negotiated price can often be arranged. Methods used for this include contractor's bills "not to exceed" some agreed-on amount, or actual time and materials, plus a fee, with a target figure. If the contractor beats the target, he gets half the savings, the client half; and vice versa.

When the contractor is engaged and starts work, the station planners, preferably with the help of the professional consultant, must watch the job every step of the way. As already noted, with the best will in the world the contractor will not understand the details of the design and may deviate from the plan in ways he thinks unimportant. By the same token, when the job is done successfully, the station management, the professional adviser, and the contractor all have shared in a major triumph. **BM/E**

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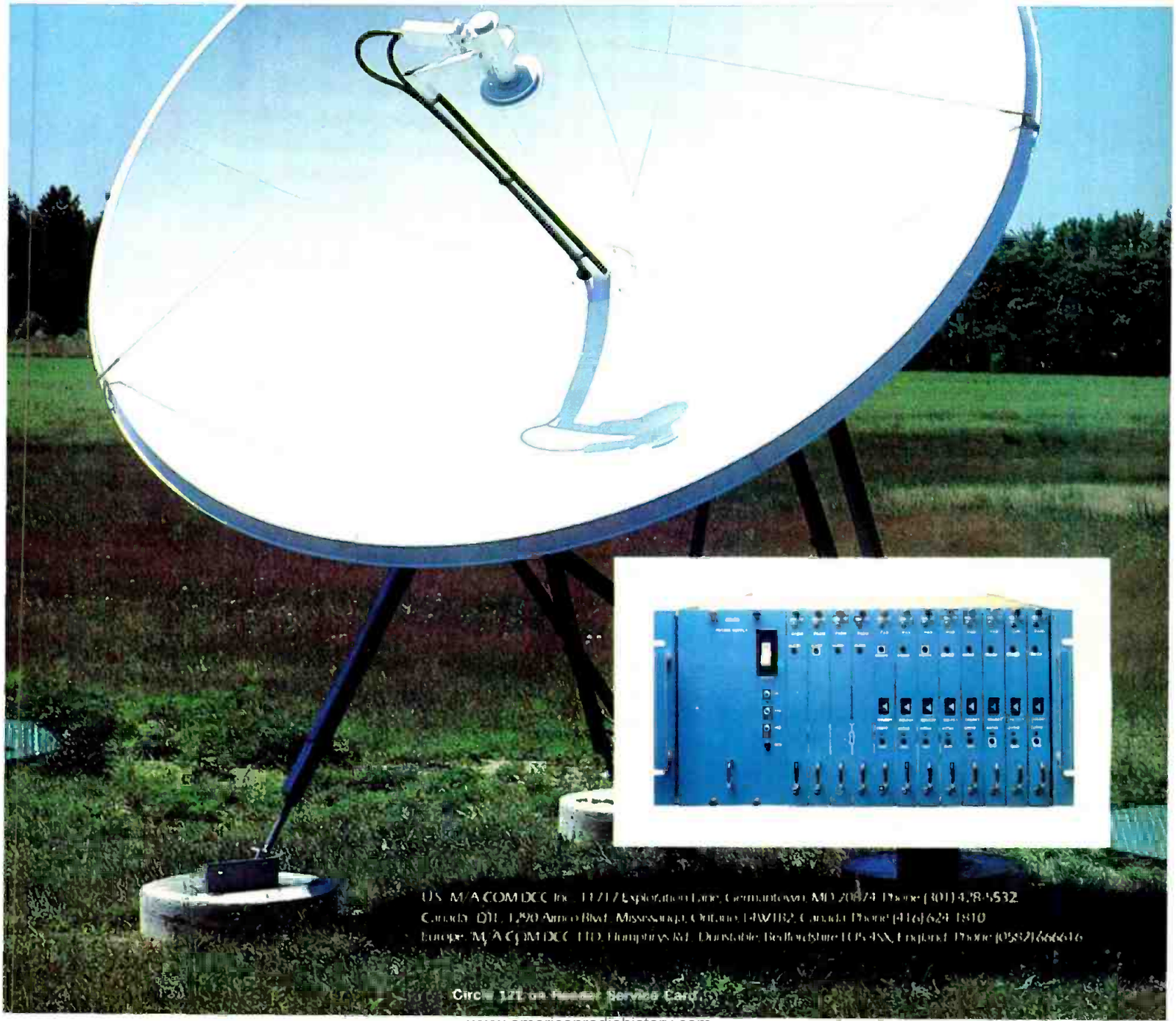

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The BVH-2000 (shown with Type-III control panel).

The BVH-2000 also gives you far greater latitude in setting up your entire recording system. Various remote-control connectors enable you to interface your system in a variety of ways for studio, mobile, and editing configurations. Direct interface with U-matic® and Betacam™ is possible, too. The BVH-2000 also has an optional plug-in time base corrector.


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What's more, the BVH-2000's lighter weight and smaller size (almost 50% less than its predecessor) make it as ideal on the road as it is in the studio.

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The BVH-2000 removes much of the mystery from maintenance, too. It literally tells you about malfunctions—usually well before you'd notice them yourself—through a microprocessor-governed self-diagnostic system.

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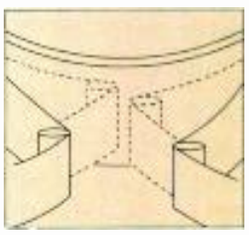
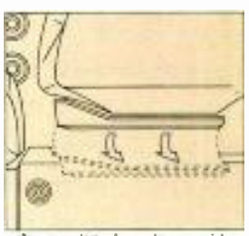
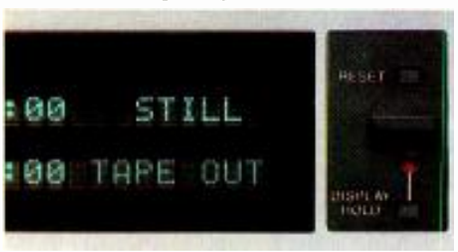


To simplify threading, guide posts automatically move away from drum, and audio head cover opens.

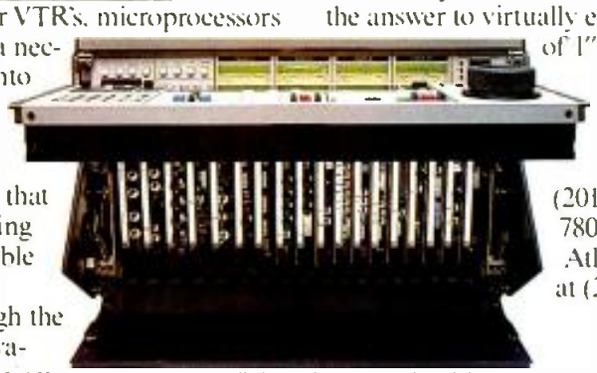
And because the best way to simplify maintenance is by lessening the need for it, the Sony BVH-2000 has been designed to be virtually maintenance-free down to the last detail. For example, only brushless DC motors are used, and all incandescent lamps have been replaced with high-brightness LED's.

Other welcome advances include a greatly expanded dynamic tracking range (from reverse at normal speed to forward at 3 times normal); programmed play (allowing you to vary playback speed across a range of ±20% of normal speed); and video and audio confidence.



Display board for self-diagnostics and other data-processing functions.

Remarkably, these are only some of the Sony BVH-2000's innovations. All of them add up to form the answer to virtually every need ever expressed by the users of 1" video.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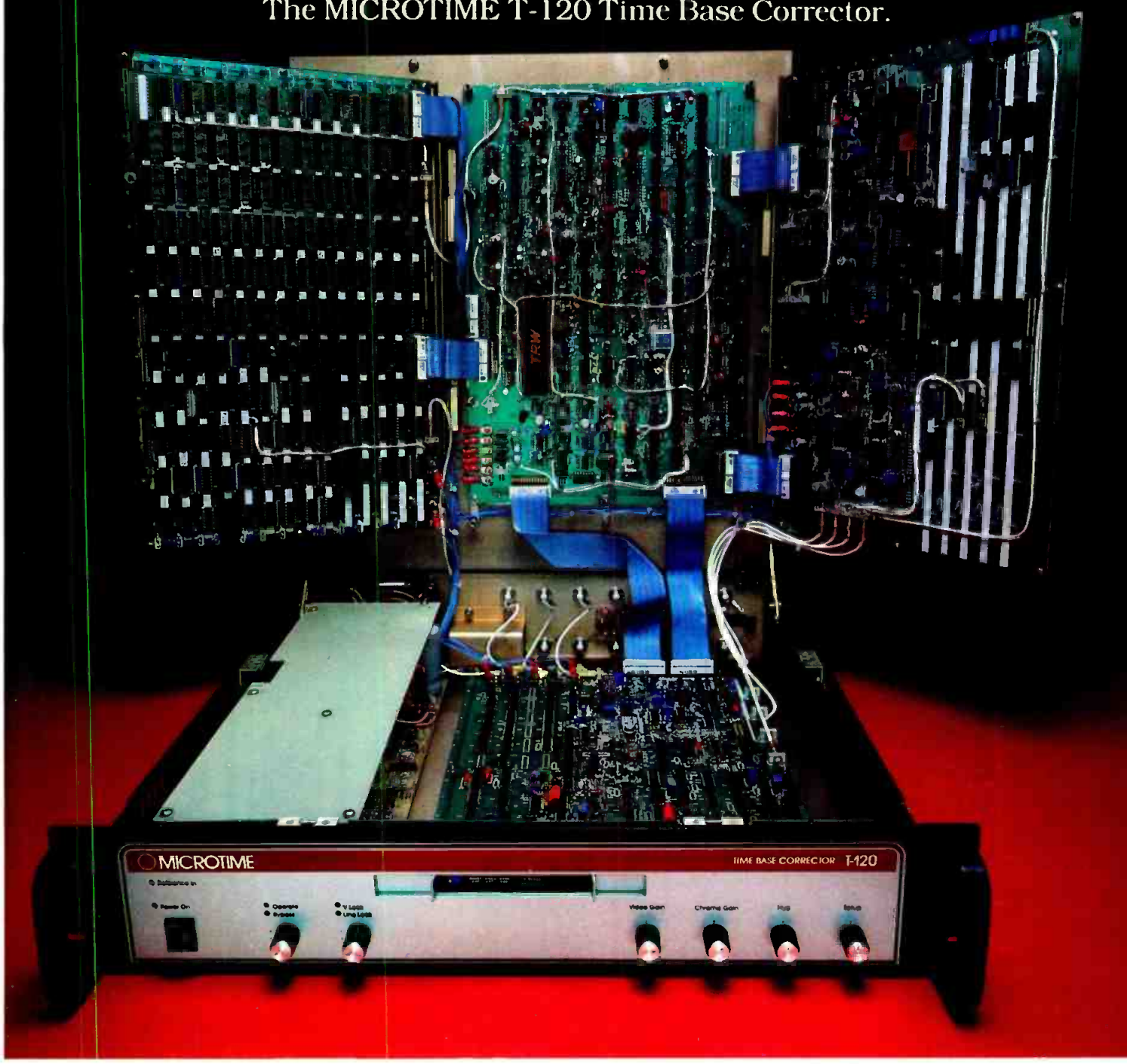

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1982 NAB Show-In-Print

RF

AM transmitters

Certainly a highlight among transmitters exhibited at the 1982 NAB was the new **SX 1-2.5** and 5 kW solid-state AM series from **Harris Corp.,** described in some detail in *BM/E* March, p. 215. Long term stability and reduced maintenance requirements representing a 36 percent savings on yearly power bills were the main selling points of the new series. The units featured built-in diagnostics, preprogrammed microprocessor control, and status monitoring—features now becoming commonplace, particularly on new designs.

Behind the selling points was some new technology, as documented in the March article. The SX series' high efficiency came about as a result of new efficient MOSFETS. Overall efficiency exceeds 72 percent for the 1 kW and 2.5 kW units; over 75 percent for the 5 kilowatter. High performance is the result of Polyphase PDM (Pulse Duration Modulation), four-phase sampling in which the audio input of the transmitter is sampled four times during each PDM cycle.

If it were not for the Harris SX series substituting for polar devices, **Nautel Maine** (whose home office is Nova Scotia, Canada) would have scored a coup, since its bold claim was an unmatched 75 percent efficiency through the use of AM Power FETS **(AMFETS).** As it turned out, Harris could match this claim, at least for its 5 kW unit. But since Nautel turned up with a 10 kW unit—already installed at CJFX, Antigonish, N.S. earlier this year—it won the power prize. In discussing efficiency, Nautel says that except for the 255 watts required for cooling fans and the low power sections, the power losses are proportional to output power. Hence AMFETS maintain high efficiency in excess of 70 percent for output powers as low as 25 percent of rated power.

Nautel, though new to NAB, is not a new manufacturer—it has been making wholly solid-state **RF beacons** in the LF/MF band at 2 kW or better since 1970. Over 1500 are in use globally by 40 countries. The transmitters use 250 W modules combined to produce the required power output.

AM broadcasters still reluctant to go the solid-state route could view two other new AM offerings using tubes—a 1 kW unit from Singer Broadcast and a 25 kW unit from CSI. The **Singer SI-A-1** uses four 4-400AXs—a pair in the Class C power amplifier and a pair in the modulator stage. One of the key features of the new transmitter is a modern solid-state CMOS logic panel for control and overload protection. This logic control panel has been incorporated in all Singer transmitters, many of which were on exhibit.

A hallmark of the new **CSI 25 kW unit** is its time-proven straightforward design. Along with a hinged exciter-panel and other mechanical design features, it offers easy servicing. Front panel mounted circuit breakers, fuses, tuning and loading controls, accompanied by extensive front panel metering, make the unit easy to operate.

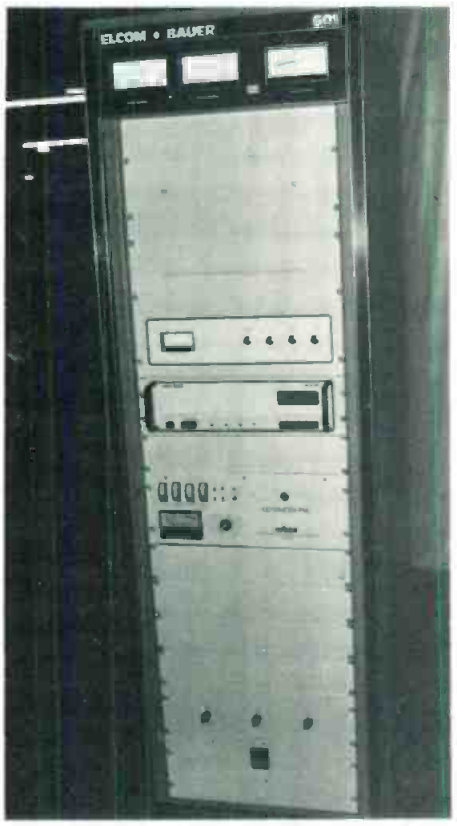
McMartin's BFM-300 FM transmitter.

Other CSI AM transmitters on display included 1 kW and 10 kW units. Also showing AM transmitters but no models, were **Continental, Elcom Bauer, McMartin,** and **Wilkinson.** Continental drew heavy traffic to a corner of its large exhibit that was demonstrating AM stereo (the Magnavox system).

For more information: Harris Corp. *SX series,* **200;** Nautel Maine *AMFETS transmitter,* **201;** Nautel *RF beacons,* **202;** Singer *SI-A-1,* **203;** CSI *25 kW transmitter,* **204.**

FM transmitters

Two new high power FM transmitters made their debuts at the NAB Convention, a 25 kW unit from Larcan and a 30 kW rig from McMartin. **Larcan** is the new company that bought Canadian General Electric's broadcast equipment business. The compact, modular **FMT25F,** featuring easy servicing ac-



1 kW FM model from Elcom-Bauer.

cess, is the company's first entry into the FM market. Design is conservative and all solid-state except for a single 8985 output tetrode operating as a high gain, grid-driven amplifier. The IPA is a broadband 280 W linear amplifier. The solid-state logic control system (which can be manually bypassed in case of trouble) intelligently handles transients and permits full remote control operation. The exciter is by AEG Telefunken/Bayly. Ten and 15 kW versions are available.

The **McMartin BF-30M** series handles power output levels from 10 to 30 kW, using a single tetrode in the power amplifier. It, too, has a broadband IPA. The heart of the BF-30 is the advanced but time-tested (1980) BFM-8000 exciter housed in a single drawer-type cabinet for accessibility and serviceability. A diagnostic center, DC-1, is an option as is an audio processor that assures maximum program loudness with overshoot less than 2 percent. **McMartin** also introduced a low power FM transmitter ideal for international markets, the 300 W **BFM-300.** It's all solid-state, built around the BFM-8000 exciter.

Low power buyers had several other entries to evaluate aside from the McMartin unit. **Elcom-Bauer,** with several solid-state transmitters in its roster already, declared its latest 250 W unit "a new second generation." The **SS-250** consists of a new SS-40 PLL synthesized exciter and a new wide band ferrite splitter and combiner. The unit measures only 7 inches high and is priced at $7950. Elcom-Bauer's exhibit included several larger tube type FM transmitters ranging in power from 500 W to 27.5 kW. At the heart of all of them was Elcom-Bauer's fairly recent 690PLL exciter.

QEI Corp., known so far only for FM transmitters below 500 W, sprung forth this year with a new 1 kW solid-state FMer, along with a 3.5 kW unit using a single tube (triode). Both the **695T1** and **695T3.5** feature PLL synthesizer exciters, adjustable power outputs, extensive built-in test capability, computer fault analysis via a telephone link, built-in harmonic filters, and built-in ATS. The built-in test circuits handle 40 measurements plus 33 status indications. The built-in ATS, which keeps power and modulation at precise levels, does not add to the price. The 1 kW unit is in the $14-15,000 price range; the larger unit is $4-5000 more.

Also showing FM transmitters were Broadcast Electronics and Wilkinson.

BE demonstrated its FX-30 FM stereo exciter and new SCA generator (right).

Broadcast Electronics displayed the production model of a new stereo generator, the **FS30,** shown last year in prototype form. **BE** also showed a new **SCA generator. Wilkinson** spotlighted an updated **FM exciter** featuring a new synthesizer, improved metering, and other features. Wilkinson's exhibit was merged with that of Television Technology Inc., who recently purchased Wilkinson.

For more information: Larcan *FMT25F,* **205;** McMartin *BF-30M series,* **206;** McMartin *BFM-300,* **207,** Elcom-Bauer *SS-250,* **208,** QEI Corp. *695T1,* **209;** QEI Corp. *695T3.5,* **210;** Broadcast Electronics *FS30,* **211;** Broadcast Electronics *SCA generator,* **212;** Wilkinson *FM exciter,* **213.**

TV transmitters

There was no great excitement in the VHF TV area. **RCA** added a high band 35 kW unit, a single-ended **TTG-35H,** to its G-line of transmitters introduced two years ago. **Larcan,** which had built only high band units before, this year added a low band unit, the **TTC30000FL. Acrodyne,** which has gradually been building higher power units from its base of translator/transmitters, this year showed a 12.5 kW VHF transmitter, the **TT-3500VH.** The unit incorporates low-level diplexing (single output tube) and Hypervapotron cooling, techniques pioneered by Acrodyne in the U.S. market. This unit can be paralleled for a 25 kW output.

Perhaps the most significant VHF news was **Townsend's** entry into this market with a single tube 10 kW unit. The audio output (1 kW) is solid-state. Identified as the **TA-10NTL,** the system incorporates redundancy and simplicity. All of the solid-state amplifiers and drivers are powered by individual power supplies. The visual amplifier uses an Eimac 3 CX10000 triode in a CV 2240 or 2250 grounded grid. The exciters (both high band and low band) employ IF modulation and incorporate S.A.W. filters.

The more exciting TV advances, however, were found in the UHF area, as a result of efforts to save energy by increasing efficiency. Both **Townsend** and **Comark** exhibited production versions of solid-state mod anode pulsers for UHF klystrons. **Comark** had a **high power unit** capable of handling 10 kV pulse amplitudes.

Another new item from **Townsend** was the **PERVEAC,** a new beam voltage control unit for klystrons that allows greater ease of adjustment for efficiency purpose.

Pye TVT showed new high efficien-

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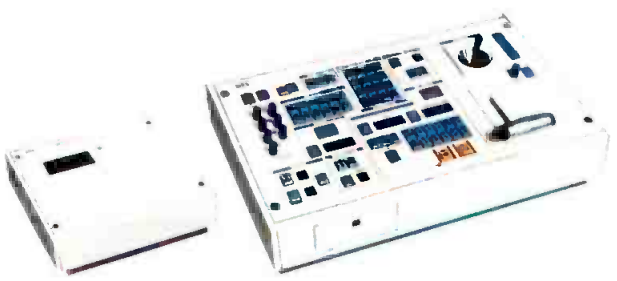

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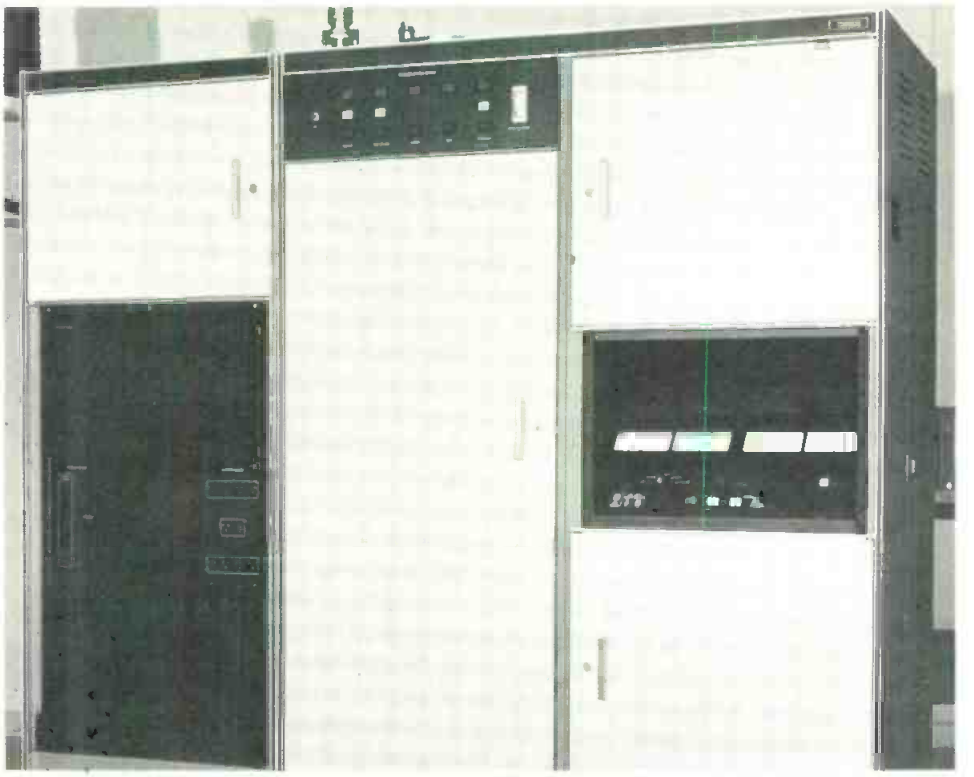

New from Acrodyne was the 12.5 kW TT-3500 VHF television transmitter.

cy **UHF transmitters** in the Central Dynamics booth incorporating annular beam control klystrons (made by Valvo). Pye claims a reduction in beam power in the order of 35 percent as a result of the quasi class AB operation. The Valvo YK-1295 series is rated at 55 kW.

Greater operating efficiency was the claim for a wholly new UHF-TV transmitter line from **Harris,** the **Series "E",** available in 30, 50, 110, and 220 kW models. A new Variable Visual Coupler (replacing fixed types) increases the klystron's efficiency immensely; a $7-8000 annual savings for a 55 kW unit is possible. Type H high efficiency klystrons and a mod anode pulser also save energy. The Series E also boasts improved color performance and reduced maintenance costs.

The **Type H** high efficiency **klystrons** used by Harris are a product of **Varian Associates.** A gain of 35 dB produces 35 to 58 kW peak-of-sync-power outputs with less than 10 W of RF drive power. Peak-of-sync efficiency is 40 to 42 percent. **Varian** also showed an aural output **coupler** for integral cavity klystrons that improves efficiencies up to 40 percent. High efficiency external **cavity klystrons** for TV were also highlighted by **EEV Inc.** Power savings possible with EEV's 55 kW tubes were highlighted.

With speculation running high on the future of LPTV and more MDS channels for commercial users, manufacturers did not miss the opportunity to show their capability in these fields. **Townsend** showed a production prototype of **Phaestar,** a combined transmitter-antenna module for UHF LPTV first unveiled last year.

For both LPTV and translators, **Emcee** came out with a new single-bay TVA-1000 C amplifier. A full line of previously announced translators was shown by **Acrodyne, Emcee, LGT,** and **Wilkinson.**

While high efficiency is especially important in the UHF band as mentioned, increased performance in lower bands is a never-ending goal. **Eimac** introduced no less than a dozen state-of-the-art devices of interest to broadcasters including high output **power amplifier cavities** for the FM band (one triode, two tetrodes), power amplifier cavities for TV (one for low band, one for high band, and four for UHF), plus three new VHF tubes—one triode and two tetrodes. Stressing Pyrobloc grids and Hypervapotron cooling, **Thomson-CSF Components** said it has now achieved 1 MW of output with the TH539 power grid. **RCA's** Power Tube group highlighted four **FM power tubes** with cavities for high gain and high efficiency. **Ceco** stressed a full line of **transmitting tubes,** including solid-state rectifiers.

For more information; RCA *TTG-35H,* **214;** Larcan *TTC30000FL,* **215;** Acrodyne *TT-3500 VH,* **216;** Townsend *TA-10NTL,* **217;** Comark *high power unit,* **218;** Townsend *PERVEAC,* **219;** Pye TVT *UHF transmitters,* **220;** Harris *Series "E",* **221;** Varian Associates *Type H klystrons,* **222;** Varian *coupler,* **223;** EEV Inc. *cavity klystrons,* **224;** Townsend *Phaestar,* **225;** Eimac *power amps,* **226;** Thomson-CSF Components *TH 539,* **227;** RCA *FM power tubes,* **228;** Ceco *transmitting tubes,* **229.**

ENG microwave advances

Nurad, which made a mark for itself through its antennas for ENG microwave applications (Goldenrods, Dualrods, Quads, and Superquads), then power amplifiers, and later airborne ENG systems (Copter Pods and Mini Pods), continues to expand. This year it introduced a transponder series of **IF hetrodyne-type transmitters** and receivers. Receivers (fixed frequency or frequency agile) operate in the 2, 2.5, 7 and 13 GHz bands and are extremely sensitive, says Nurad. Transmitters operate fixed-frequency at 1 W and 2 W. Power amplifiers can be added to some.

To enhance its helicopter transmitting system with forward, aft, left, and right circularly polarized transmit antennas, **Nurad** this year showed **Auto Transmit.** The operator dials in the heading to the receive site, and as the helicopter changes direction, a gyro keeps track of the heading change and automatically selects the proper transmit antenna. For successful ground tracking of helicopters, Nurad offers **Supertrack,** a system consisting of Superquad, a direction-indicating system and controls. This year the antenna, mounted on a new pedestal, featured fully automatic tracking.

Nurad's Supertrack helicopter system.

A new development from **Nurad** in vehicular transmit antennas was **Power Rod.** Essentially a power amplifier is built in the supporting cross bar of a DualRod antenna.

Improved airborne service was the goal of **M/A-Com Video Systems** in introducing its new **Skypod** 2 GHz microwave system, a 25 lb. oval radome unit for quick attachment to the underside of helicopters. Instead of four antennas, an array of eight high-gain elements is arranged in a circle, plus another one pointing straight down. Antenna pattern coverage resembles a circle. ERP is 300 W nominal in one direction when on the beam using the MX transmitter.

Another new M/A-Com product was the **Super 2MX,** a 2 GHz 21-channel transmitter package rated at 12 W. This is a single piece unit, complete with heatsink and minidisc rod antenna for snap-on tripod mounting. The transmitter weighs 5 lbs.; the heatsink another 5, and it's only 4x5x7 inches. There are two separate audio inputs.

Another company offering compact transmitter-receiver packages was **Broadcast Microwave Services.** The **12 W transmitter** without heatsink weighs 2 lbs. and fits in the palm of a hand. The unit works from 28 Vdc internally. The receiver, operating a 7 dB noise figure, is equally small.

For helicopter use, **Broadcast Microwave** was showing 6 dB stacked dipole omni **antennas** and 10 dB horns

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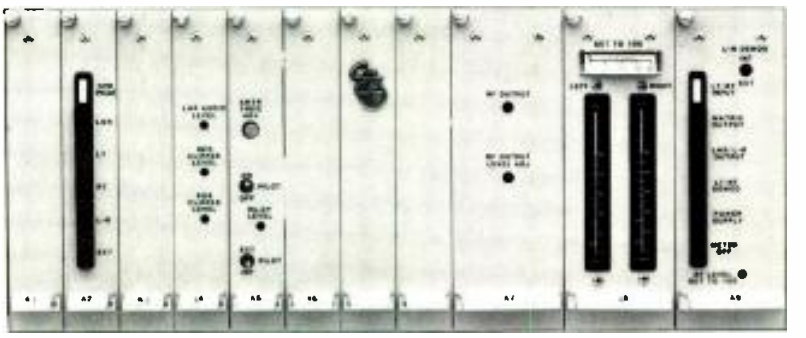

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for longer ranges. A new type antenna for tripod mounting was a 16 dB Yagi.

Pathfinder, a new tracking antenna model RF-2000, was offered by **RF Technology Inc.** for following either airborne or ground vehicles. A dual-mode type, either a wide beam 9 dBi gain antenna for close-in reception or a 25 dBi parabolic beam for long range reception is available. Antennas are enclosed in a small silhouette radome.

Another new system from **RF Technology** was a portable 13 GHz microwave system, the **RF-1300** series. The company says it's the best in the industry, with a 3.5 dB receiver noise figure. The transmitter puts out 250 mW and uses FET technology. Size (with heatsink) is 8x4x4 inches. A third new product was a self-contained **RF-700** power amplifier. Two 5 W linear amplifiers in parallel produced 10 W output. Using galium arsinide FETs, the units are said to be ideal replacements for outmoded TWT amplifiers. In addition to these advances, RF Technology's most attention-getting product was the wireless RF system for mounting on the side of a camera, shown last year.

Ikegami showed a portable camera with a microwave transmitting/receiving system. The **ML-83,** attached to an HL-83 camera, has a 360 degree homing mechanism that keeps the antenna directed to the base station and prevents ghosting. Distances of up to 5000 feet can be reached on any of seven channels. The Ikegami system is bidirectional, meaning the camera (tally, color, and genlock) can be controlled by the base station.

Harris/Nurad Global IX 2 GHz portable.

Harris, too, featured products from its Farinon Division, including the **Global IX** 2 GHz portable transmitter with microprocessor memory for 55 channels in each of 16 different frequency plans. Output is 3 W.

For more information: Nurad *IF hetrodyne-type transmitters,* **230;** Nurad *Auto Transmit,* **231;** Nurad *Supertrack,* **232;** Nurad *Power Rod,* **233;** M/A-Com Video Systems *Skypod,* **234;** M/A-Com *Super 2MX,* **235;** Broadcast Microwave Services *12 W transmitter,* **236;** Broadcast Microwave *antennas,* **237;** RF Technology Inc. *Pathfinder,* **238;** RF Technology *RF-1300 series,* **239;** RF Technology *RF-700,* **240;** Ikegami *ML-83,* **241;** Harris *Global IX,* **242.**

Fiberoptics

Fiberoptic systems continued to show growth at the NAB Convention as feeds to microwave links, replacement for microwave, and replacement for direct wire cable. Growing product lines were shown by **Artel** (an **EN-1000** receiver

for remoting multi-camera setups), **M/A-COM** (interconnections for ENG cameras), **Grass Valley** (numerous applications), **Telemet,** and **BIW Cable Systems.** This year **NEC** entered the market with a new line of optical systems intended for baseband video, FM, wideband, and bidirectional applications. Grass Valley, incidentally, was offering an excellent technical overview to fiberoptics.

STLs, remote control, testing

Using direct FM modulation in transmission and PIN diode attenuator circuits in the receiver to reduce adjacent signal intermodulation, the new **PCP-606** aural STL from **Moseley Associates** ensures the highest performance in hostile RF environments. Also showing new STL gear (**Model 8300**) was **TFT Inc.** Its selectable bandwidth receiver offers good selectivity in a dense RF signal environment, the company said. TFT also showed a new data return STL unit, the **Model 8100.** A new data link, the **TSL-15,** was shown by **Marti Electronics.** Marti added to its regular line of STL gear by adding a 10 W system.

Remote control systems previously introduced but with added features were shown by **Delta, Hallikainen & Friends, Moseley, Micro Control, Potomac Instruments, and TFT.** The latter showed how a personal computer could be interfaced to analyze readings and interrogate the system by telephone. New remote control and telemetry equipment, the **Philips LDM 1984** series, was shown by CDL. With 256 control, 512 status, and 256 telemetry functions and microprocessor operation, the equipment is suited for TV, FM, or AM transmitters.

For intercommunications, **Motorola** unveiled a new portable **base repeater** two-way radio with autopatch, remote control, and a studio wireless communication system.

In the RF test and monitoring area, **Delta** showed a new automatic frequency modulation controller, the **FMC-1. Potomac Instruments** unveiled a brand new UHF field strength meter, **FIM-72. Moseley** showed a new precision stereo **demodulator,** capable of producing original L and R channels. **AM stereo monitoring** equipment was shown by **Belar.**

TV modulators and demodulators were shown by **Philips, Rohde and Schwarz** (Barco), and **Tektronix. Datatek** was on hand showing its familiar **D-701** TV transmitter color phase equalizer and waveform corrector.

Potomac's FIM-72.

A new digital high power wide range **RF calorimeter** covering 1 kW to 80 kW was shown by **Bird. Electro Impulse** had a new 50 kW **dummy load.** A line of Eagle Hill ac **line surge suppressors** was displayed by **CSI.**

For more information: Moseley Associates *PCP-606,* **245;** TFT Inc. *Model 8300,* **246;** TFT *Model 8100,* **247;** Marti Electronics *TSL-15,* **248;** Philips *LDM 1984,* **249;** Motorola *base repeater,* **250;** Delta *FMC-1,* **251;** Potomac Instruments *FIM-72,* **252;** Moseley *demodulator,* **253;** Belar *AM stereo monitoring equipment,* **254;** Datatek *D-701,* **255;** Bird *RF calorimeter,* **256;** Electro Impulse *dummy load,* **257;** CSI *line surge suppressors,* **258.**

Antennas

Some new, but mostly familiar antennas were on exhibit. Among new offerings, the **Andrew TRASAR** is a travelling-wave slotted array design offering smooth elevation patterns and heavy null fill for UHF. Andrew says the omnidirectional pattern is excellent. Beam tilt of 2.5 degrees with no gain loss is possible. Power ratings extend to 136 kW (channel 14) with low VSWR. Wind loading is low, says Andrew.

The **RCA TFU-33JN,** also a new UHF model, was designed for intermediate power ratings up to 60 kW. As a standard unit, it is available on a short delivery cycle, says RCA. Characteristics are similar to other RCA pylons (of which over 500 are in use), including slotted steel pole construction with no protrusions, low wind loading, and immunity to lightning and icing.

Cetec was featuring a new **spiral design** for producing circularly polarized TV signals in the low band as well as the high band (the UHF band is also covered). Cetec says it has considerable data on how to design the angle of the spiral and spacing to handle any channel frequency. The new design can handle high powers and offers reduced wind loading. CP antennas were also promoted by **Harris** and **RCA,** but no new designs were offered. A wide variety of antenna styles was promoted by **Bogner** including high powered UHF types to 220 kW, a variety of slot antennas, and various FM, MDS, and ITFS transmitters, including CP FM types. Bogner aggressively claimed a slot antenna superior to RCA slots.

Low-cost LPTV antenna from Bogner.

FM antennas were actively promoted by many—Bogner as mentioned, **Cetec** (both spiral and dipole), **Phelps Dodge,** and others. **Shively** showed a panel design imminently suited for multi-station use. Shively called it "truly broadband," covering the entire FM band. A number of stations can share a single **6010PB** antenna, and stations can be added wih no change to the antenna. The units have a low VSWR of 1.1:1. A circular (± 2dB) omni pattern can be achieved, or the pattern can be shaped to any requirement. A high strength to wind load ratio is claimed.

A new line of **LPTV antennas** in the UHF band was shown by **Micro Communications Inc.** Because they are of the panel type, custom directional patterns can be generated.

For more information: Andrew *TRASAR,* **259;** RCA *TFU-33JN,* **260;** Cetec *spiral design,* **261;** Bogner *antennas,* **262;** Shively *6010PB,* **263;** Micro Communications Inc. *LPTV antennas,* **264.**

Tower arrays

The number of antenna tower manufacturers and construction companies at NAB was legion, starting with **Allied Tower** and ending with **World Tower.** In between were **Fort Worth Tower, LeBlanc & Royle, Stainless, UNR-Rohn, Utility,** and **V & B Tower.** No new techniques or approaches were shown at NAB, but recent trends were confirmed by Utility Tower, Allied Tower, and others. Towers are going taller but tower faces are growing smaller. Reduced faces interfere less with antenna patterns and cut wind loading. But engineering becomes more important and computer analysis is being used by more and more companies.

Tower guys, insulation sections, and mast stays were shown by **Philadelphia Resin.** The virtues of the continuous filament, flexible but no-stretch **Phillystran** HPTG electrically transparent guys were demonstrated. No ceramic insulators are needed with Phillystran.

EG&G's StrobeGuard warning beacon.

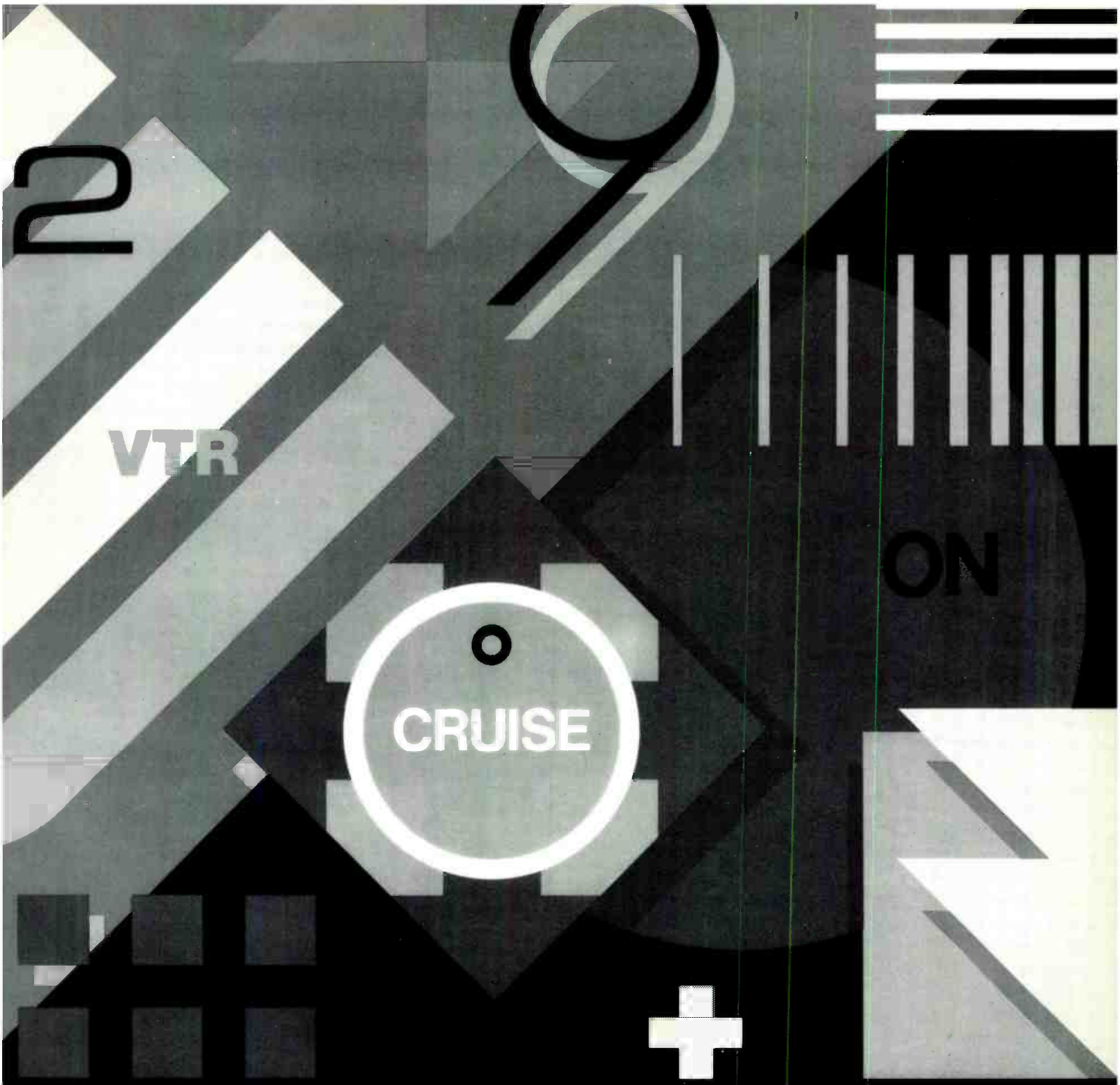
In the transmission line category, the most interesting product was **Micro Communications circular waveguide** for UHF TV. Designed for tall towers, the circular waveguide offers great cost advantage over coax or rectangular waveguides. There is also a ⅔ advantage in wind load over rectangular waveguides.

The secret of circular waveguides is more efficiency. As UHF powers increase, coax diameters have to increase, raising costs. Rectangular waveguides are competitive for tall towers and high power, but wind loading is high. Micro Communications exhibited data showing the price of its new circular waveguides to be less than that of rectangular waveguides or coax. A new spring hanger designed by Micro Communications makes installation easy.

A new transmission line, **Wellflex,** was introduced by **Cablewave Systems.** Wellflex uses a low loss foam similar to that offered by the Andrew Corp. FLC ⅞-inch diameter is currently being made; ½-inch diameter will be available shortly, and ¾-inch diameter is coming.

EG&G and **Flash Technology** both showed flashing lights for towers, but all items were similar to those shown in previous years. **EG&G** did have a new **LS-162** 155 mm self-contained and self-powered beacon to serve as a temporary construction light. **Lightning Elimination Associates** was on hand discussing its **dissipation array** system and transient eliminator family. Some of the most recent additions were surge eliminators for coaxial systems.

For more information: Philadelphia Resin *Phillystran,* **265;** Micro Communications *circular waveguide,* **266;** Cablewave Systems *Wellflex,* **267;** EG&G *LS-162,* **268;** Lightning Elimination Associates *dissipation array,* **269.**



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1982 NAB Show-In-Print

MOBILE VANS

ON THE LOT and on the floor, makers of mobile production units were out in force at the 1982 NAB show in Dallas. The plethora of units of all descriptions indicated that the mobile production market is as healthy as it ever has been.

Most of the companies showing vans, trucks, and helicopters had been at previous NAB gatherings, but nearly all had something new to talk about. One former heavyweight, however, had dropped out of the contest this year, Compact Video.

Outside, it was the big trailers that attracted the most attention—visitors had to wait to get in at the busiest periods. **AVT Television Productions** of Knoxville, TN, brought "The Performer", its luxurious mobile teleproduction studio, designed and built by its own engineers with equipment and engineering assistance from Lerro Corp. (The Performer was described in our April feature, "Convoy!" p. 40.) AVT's Bill Tapp says the company has been very pleased with the eight Hitachi cameras (seven SK-96s and one SK-91, all triax-equipped) and four Hitachi one-inch VTRs (one is a portable) that the truck carries. Other equipment includes a 32-input Yamaha PM-2000 audio board, a 24-input Grass Valley production switcher, a two-channel Chyron IV graphics system, Convergence ECS-104-S editing system, and extensive color monitoring by Conrac and Videotek (black and white monitors are from Hitachi and Sony). The Performer also has an MCI/Quantel DPE-5000 digital effects system.

Getting all that gear inside necessitates an efficient layout, but the designers still managed to leave enough elbow room for work to go on. The control and engineering area in the rear of the truck is L-shaped to allow additional rack and counter space.

A.F. Associates was proudly displaying its Phase Eight tape truck, completed for ABC just a week before the show. The 44-foot trailer (with a box by Gerstenslager) is the second tape truck and the seventh complete turnkey truck AFA has built for ABC, according to AFA executive VP Lou Siracusano. It was built as a mate for the previously completed Phase Eight camera truck.

The tape truck carries eight Ampex VPR-2B one-inch VTRs. The high density of VTRs, Siracusano explains, was made possible by the use of pullout dollies (the "Rick-Rack" described last month as an accessory to the Marconi MR-2B) that allow the recorders to slide out and swivel for maintenance. Each VTR station is equipped with a slow-mo controller.

The rear post-production area boasts a Grass Valley switcher, a small Convergence editor, and two Arvin disc recorders. In the front compartment are two two-channel Chyron IVs.

At the show, Siracusano said that AFA had just been awarded a multi-million dollar contract from CBS for five all-out production trucks.

The third huge truck on the lot was from **Glen-Warren Productions Ltd.**, a production company based in Toronto. The 43-foot "Big Blue" was designed by Glen-Warren. On-board equipment includes six Ikegami HK-312 cameras, six Sony BVU-1100 VTRs, a CDL 480-10 switcher with three levels of effects and key, and a Compositor I character generator. Audio is provided by a Ward-Beck 24-input board and a Revox PR 99 ATR.

On a slightly smaller (though still impressive) scale was a 30-foot truck built by **Philips** for WSJK-TV, Knoxville, especially for coverage of the World's Fair. (Philips, the official TV equipment supplier to the fair, donated the $900,000 vehicle). This truck was a true cooperative venture, with chassis work by Wolf Coach, the actual box built by Jenel Corp. (on a GMC chassis), and engineering by Turner Engineering of Mountain Lakes, NJ. The truck carries three LDK-14S cameras (with capacity for two more) and has full built-in monitoring, tally, and intercom. VTRs are Philips PVR-2Bs, with a TRE-2 editor. The truck also has an ADC switcher, 3M character generator, and a Richmond audio board. All electronics are easily accessible for maintenance, a spokesperson said, and the truck plugs into telco-balanced systems.

Inside the convention center, all the established purveyors of mobile units were showing their wares. **Wolf Coach** had an Econoline-based van at its booth, built for Satellite News Channels, with a TV system by Tele-Measurements. All major components in the van are easily removable, which a spokesperson says will reduce the cost of replacing the van. Racks roll out, allowing a modular design. Wolf, of course, makes a wide variety of vans and trucks to meet different needs.

This Philips truck is now covering the Knoxville World's Fair.

Wolf Coach showed a cable van.

Centro Corp., a Skaggs Telecommunications subsidiary, was displaying a two-camera van built as a turnkey job for a user in Mexico. The 18-foot vehicle, built on a Chevy chassis, is elegantly designed and carries three Sony U-Matic VCRs. Centro is particularly proud of the van's air conditioning unit, which was entirely designed and built in-house; all components are shock-mounted off the frame, which in turn is shock-mounted off the vehicle, for complete isolation. The van has motorized custom-built cable reels that hold up to 500 feet of triax, plus plenty of outside storage space. It has no power generator, but the custom-made power input panel on its side has a tap switch to compensate for voltage variations, apparently a frequent problem south of the border.

Centro also had a tiny model of one of two 45-foot trailers it is building for Triax Corp., an engineering firm, and destined for Nigeria.

RCA, which has kept a low profile that belies its importance in the van business, this year brought a Ford Econoline equipped with a full Hawkeye video production system. According to a spokesman, the van was originally built as a demonstration unit for the show and has been on the road since then, showing Hawkeye to potential customers. The response to the truck has been so good that the company will offer it as a product.

The van carries two triax-equipped Hawkeye camera systems with joystick remote control units, along with two HR-2 Hawkeye studio VTRs and an HE-1 edit controller. Of course, if desired, the cameras can function with the integral HR-1 portable recorder. The van also has video switching, audio, and monitoring systems. It will sell for $175,000 to $250,000, depending on configuration.

Midwest Corp., which last year showed its compact M1 production van, came to this year's show with its larger standard truck, the M20. The ac-

Part of Centro's display.

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tual truck on display, built for Storer Broadcasting and priced at $200,000, was attractively designed, comfortable, and well stocked. (Without equipment but fully finished, the truck runs $63,000.) It can carry up to four cameras (CCU-controlled from the truck) and has two ¾-inch VCRs and a Crosspoint Latch switcher with full wipe and key effects on both M/Es. The character generator is a Quanta Corp. Microgen. The whole system is RS-170A-timed. Monitoring equipment includes a Lenco Videoscope. Audio board is by Yamaha.

The vehicle has separate but redundant generators for utilities and electronics; if one goes out, the other can serve as a backup. All wiring is fully numbered and diagrammed to simplify maintenance. The weatherproof, lockable storage compartments on the outside of the truck have adjustable shelving.

At the **Shook Electronic Enterprises** booth, the featured item was a 22-foot truck built by Shook and equipped by MZB & Associates of Dallas. This no-nonsense, plain-looking truck has plenty of space for work and equipment, with storage both inside and outside and a 6.5 kW generator. The six-foot, eight-inch ceiling height accommodates additional rack space and tall producers. Racks are very accessible, and the production area (14 feet long) is accessible from the cab. The truck has two Ikegami ITC-730 cameras (it is capable of carrying four), an ISI 902 switcher with two M/Es, a Cezar auto assemble editor, two Sony VO-5850 VCRs, and a Laird Telemedia character generator. With all equipment, it sells for $164,950.

A Shook spokesperson explained that Shook custom-designs and builds production vehicles of several sizes on a turnkey basis, and goes to systems houses to have the trucks equipped. MZB, which equipped the truck seen at the show, will be marketing the full line of Shook vehicles, it announced.

Another company known for its custom coach work, **Gerstenslager,** described its range of services at NAB. The company builds for end users as well as systems houses, and has constructed units for all the major networks (witness the ABC/AFA truck outside). One of its more impressive units is a trailer with sides that pull out for an additional four to six feet of width on either side. Gerstenslager outfits its trucks with all air conditioning, duct work, wiring, tiedown plates for racks, special lighting, carpeting, acoustical treatment for walls and ceilings, and power.

A compact ENG van built for KCMO-TV, Kansas City, was shown by **Television Engineering Corp.,** which says the station likes the van so much it has ordered a second. The van has a single Ikegami HL-79 camera and JVC ¾-inch VCRs, along with an onboard 6.5 kW generator, a 42-foot pneumatic mast, a shooting platform, cable reels, and air conditioning. TEC does all the coach work and electronics and will supply vehicles from an Econoline all the way to a trailer.

E-N-G Corp., which makes several different kinds of small vehicles for ENG applications, including a four-wheel drive Suburban, drove its new diesel van to the show from San Francisco. A company spokesperson said that the van averaged 18 mpg for the 1765-mile trip. The 17-foot van carries M/A-Com microwave equipment and has E-N-G's own pneumatic tower (the one on this truck extends up to 36 feet). E-N-G is now exporting its vans and has sold units to Chile, Nigeria, and Kuwait, the spokesperson said.

An Irving, TX, systems house with offices throughout the southwest, **Siboney Communications** was out in the parking lot with a 24-foot van it built for Sammons of Fort Worth, a ca-

"Midwest and Ikegami put us on top of the world."

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Vice President, Engineering
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Jim Hart
Vice President, General Manager
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Compact van from E-N-G got 18 mpg on the road to the show.

ble operator. Siboney, an NAB newcomer, builds primarily for cablers but is apparently testing out the broadcast market. The field production vehicle, with coach work by Modular Ambulance, has a full complement of equipment: three Ikegami ITC-730 cameras, a Hitachi HR-100 Type C VTR, two ¾-inch VCRs, a Panasonic AV-700 ¾-inch editing system, Microtime 2525 frame synchronizer, a Panasonic AS-6100 10-input two-M/E switcher, a 3M D-2500 character generator, and a Tapco 7212 audio mixer. According to Don Baughman, manager of Siboney's video systems division, the electronics package runs some $222,000, plus another $30,000 for the body and vehicle conversion.

A production company from Dallas, **Continental Productions,** described its 32-foot remote truck, a trailer that already has racked up a long list of sports productions and several entertainment jobs. The truck is equipped with six RCA TK-760s, two Ampex VPR-2B VTRs, a Grass Valley 1400S switcher, a Vidifont Mark IVA, a Quantum QM 12P audio console, and RTS IFB and intercom.

Not all broadcast vehicles are earthbound, and the helicopter manufacturers at NAB bore testimony to the increasing importance of air power. The biggest bird at the show was **Bell Helicopter's** LongRanger II, seen also at last year's NAB. This copter is so large that its tail had to be removed to allow it to fit into the booth. A Bell spokesperson described the LongRanger II as the smoothest-flying helicopter Bell makes—a boon when trying to shoot a news story from aloft. It is capable of cruising at 130 mph. A large "ambulance door" allows a stretcher

Inside Bell's LongRanger II.

to fit inside (with seats removed, of course) if the station wants to provide some public service during an emergency. (As a company spokesperson noted, proper insurance coverage is a must.) Base price of this top-of-the-line chopper is $495,000, not including electronics.

Sharing the Bell booth was **ENG Helicopter Satellites Ltd.** with its Magic Moment camera mount, seen at previous NAB shows but now in a new version that supports up to 50 lbs. The mount is especially designed to bolt into helicopters, with aircraft-grade hardware throughout.

On the small end, **Hughes Helicopters** was promoting its 300C ENG helicopter, a two-seater piston model that sells in the $200,000 range ($132,000 without electronics). This inexpensive (as helicopters go) chopper is designed to make airborne ENG available to a much larger number of television stations, Hughes states.

Also stressing cost-effectiveness was **Enstrom Helicopter,** which showed a three-seater piston copter with a microwave package from Airborne Microwave Inc. The bird sells for $150,000 and the microwave gear adds another $73,000. A spokesperson said that WGN, Chicago, was negotiating a lease for the helicopter on display. Enstrom will arrange a variety of lease options for its helicopters, as well as lease/purchase arrangements and outright purchases.

Microwave package for Enstrom bird has Tayburn and BMS components.

An attention-getter in the parking lot was the orange **Pumpkin Air** helicopter, a Bell JetRanger III. The Dallas-area company leases helicopters to stations not yet ready to make the financial commitment of buying a bird. Pumpkin Air will also provide pilots if desired, all with ENG backgrounds, and will equip the helicopter according to the customer's request.

For more information: AVT Television Productions, **270;** A.F. Associates, **271;** Glen-Warren Productions Ltd., **272;** Philips, **273;** Wolf Coach, **274;** Centro Corp., **275;** RCA, **276;** Midwest Corp., **277;** Shook Electronic Enterprises, **278;** Gerstenslager, **279;** Television Engineering Corp., **280;** Siboney Communications, **281;** Continental Productions, **282;** Bell Helicopter, **283;** ENG Helicopter Satellites Ltd., **284;** Hughes Helicopters, **285;** Enstrom Helicopter, **286;** Pumpkin Air, **287.**

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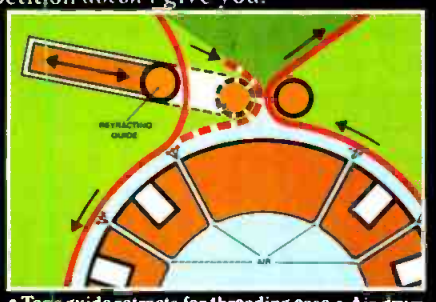

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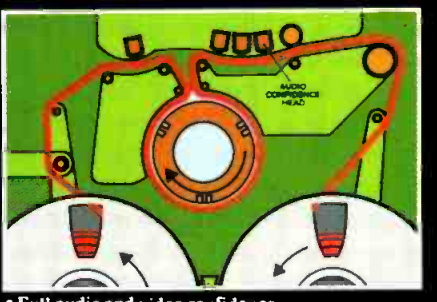

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GREAT IDEA CONTEST

Here's a chance to share your own personal solutions to some of broadcasting's most vexing engineering needs . . .

Each month, *BM/E* presents two engineering problems and invites you to submit solutions complete with diagrams. *BM/E's* editors will read the entries and select the best for publication—giving readers an opportunity to vote for the idea they consider best by using the ballot area on the Reader Service Card.

We will pay $10 for each entry printed. In addition, the solution in each month's competition receiving the most votes on our Reader Service Card will win an engineering slide rule calculator. So put on your thinking cap and submit an answer to either of the problems outlined below . . . and be sure to watch this section for the solutions.

Problem 8: Call-In Indicator

For a call-in talk show, it is desirable to have a system that will put callers on hold until the call can be taken, and also indicate to the operator or host which call came in first. Devise a simple tally or indicator circuit for this purpose.

Solutions to Problem 8 must be received by July 15, 1982, and will be printed in the September, 1982, issue.

Problem 9: 10 Bells Alarm

EBS uses 10 bells on wire service machines to alert operators to an incoming emergency message. Do you have a circuit that will trigger a remote alarm (visual, auditory, or both) when the alert signal comes in? It should be able to reject other bell signals as invalid and be able to respond rapidly to real emergencies.

Solutions to Problem 9 must be received by August 16, 1982, and will be printed in the October, 1982 issue.

CONTEST RULES

1. **How to Enter:** Submit your ideas on how to solve the problems, together with any schematic diagrams, photographs, or other supporting material. Entries should be roughly 500 words long. Mail the entries to *BM/E's* Great Ideas Contest, 295 Madison Avenue, New York, NY 10017. Use the official entry form or a separate piece of paper with your name, station or facility, address, and telephone number.
2. **Voting and Prizes:** *BM/E's* editors will read all entries and select some for publication; the decision of the editors is final. Those selected for publication will receive a $10 honorarium. Each month, readers will have an opportunity to vote for the solution they consider the best by using the Reader Service Card. *BM/E* will announce the solution receiving the most votes and will award the winner of each month's competition an engineering slide rule calculator.
3. **Eligibility:** All station and production facility personnel are eligible to enter solutions based on equipment already built or on ideas of how the problem should be solved. Consultants are welcome to submit ideas if they indicate at which facility the idea is in use. Manufacturers of equipment are not eligible to enter. Those submitting solutions are urged to think through their ideas carefully to be certain ideas conform to FCC specs and are in line with manufacturers' warranty guidelines.

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295 Madison Avenue, New York, NY 10017

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Your Name: _____

Title: _____

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Telephone: (____) _____

I assert that, to the best of my knowledge, the idea submitted is original with this station or facility, and I hereby give *BM/E* permission to publish the material.

Signed _____

Date _____

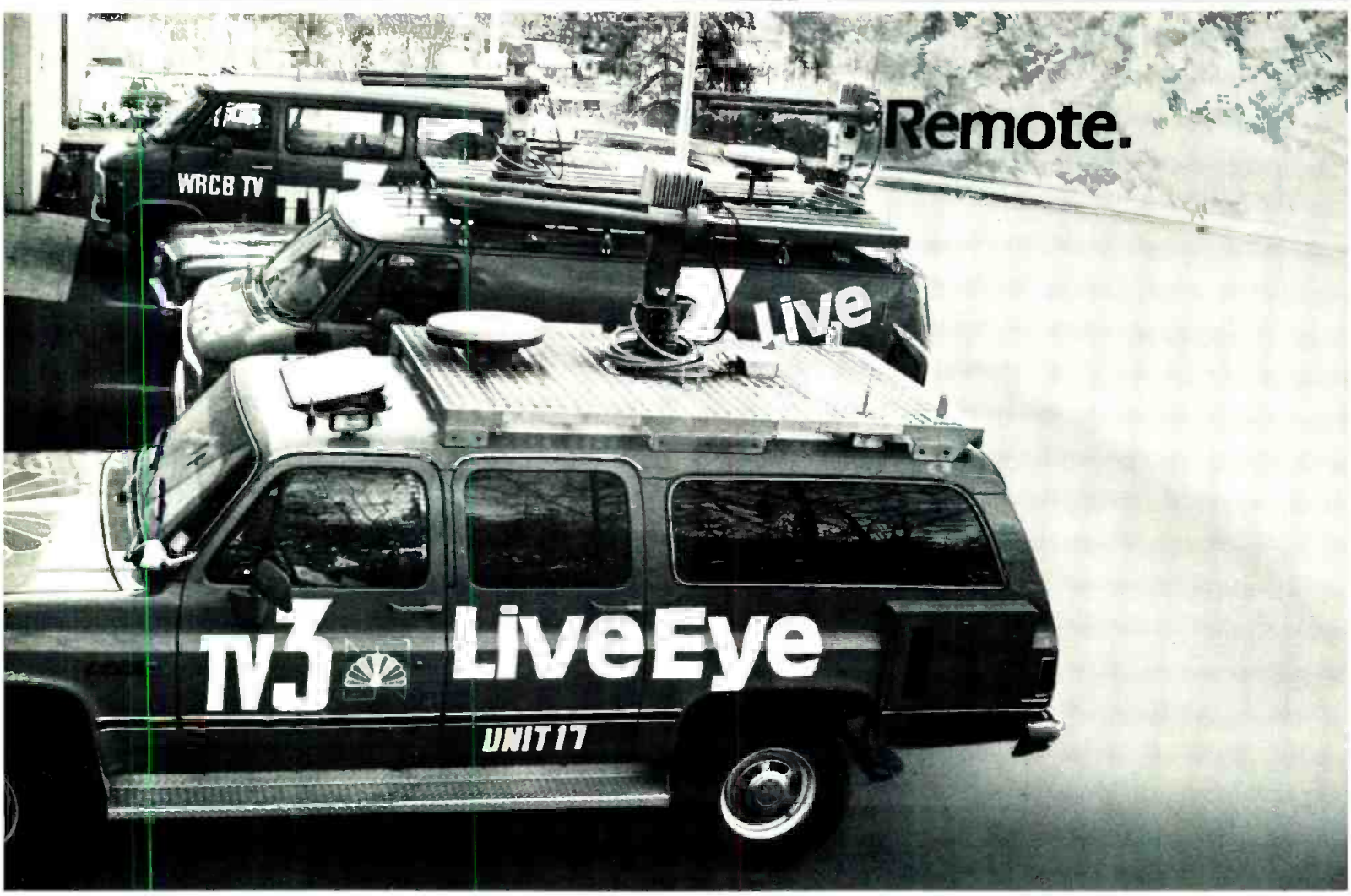
SOLUTIONS to problem 6: Automatic Switchover to Back-up Transmitter

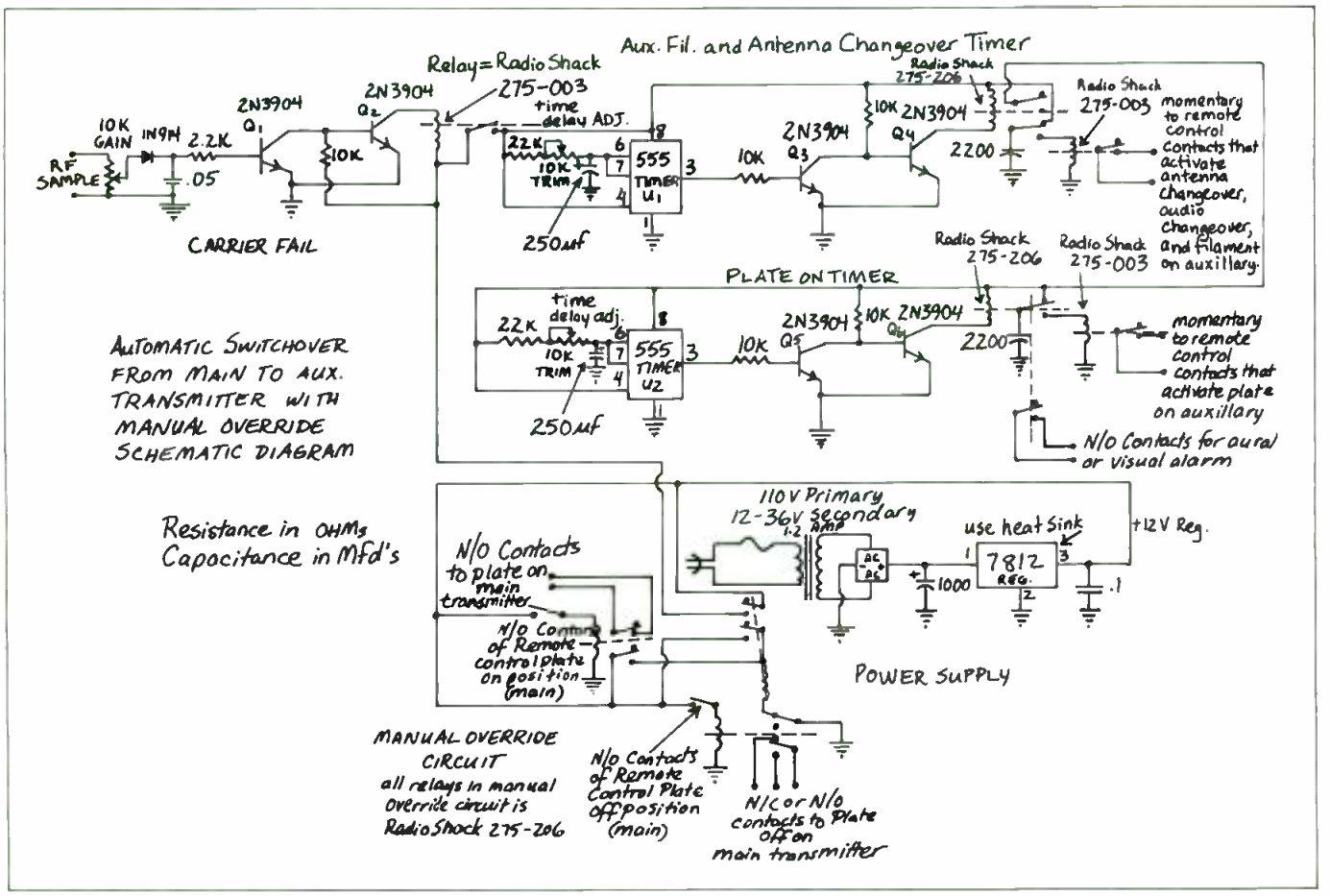
Though we received other solutions to Problem 6, it is the opinion of the editors that this entry by chief engineer Dale Johnson of KWCK, Searcy, AR was the only one that merited printing. —Ed.

This solution is for connection to a modern remote control that has normally open switching. However, easy adaptation is possible for nonremote operations or older remote control devices.

The RF of the main transmitter is sampled through a gain control to a detector, whose output is a dc voltage equivalent of the carrier. This dc voltage gates the first 2N3904 transistor on, which in turn turns the second 2N3904, operating as an inverter, off. Thus the relay is unlatched and the timers are inoperative. But once RF drive is lost, Q1 is turned off, allowing Q2 to be turned on and thereby latching the relay. This relay sends B + to the auxiliary filament and antenna changeover timer circuit and it begins counting. At the instant B + is applied, the output of U1 pin 3 goes high, which gates on Q3 and turns off Q4. When the timer goes through its cycle—15 seconds to allow the main to cycle three times—the output goes low and turns off Q3 and turns on Q4, closing the DPDT relay. On one set of contacts is a capacitor that has started charging at the beginning of the timing cycle. The charge in this cap closes the SPDT relay momentarily until it loses its charge. This SPDT relay operates the antenna changeover switch, which has the filament for the auxiliary transmitter and the audio switching interfaced to it. The other set of contacts on the DPDT relay sends B + to a second timer, operating in the same fashion as the first. This timer also counts off 15 seconds to give the time delay in our Gates BC-1G time to ready the plate circuit. At the end of this second timer's cycle, it activates the relays on its output through Q5 and Q6, causing a momentary contact closure to turn on the plates. Since the main is about as apt to fail in the low power mode as the high, our plate timer is connected to turn on our auxiliary at low power. Also provided is a set of contacts for an aural or visual indication that the circuit has activated. A one-amp power supply is built into the unit.

The maximum worst case power draw is about 300 ma. However, a heat sink is recommended for the 7812 regulator chip. A manual override circuit is provided so that full manual control exists either before or after the circuit has worked. Also, when the main transmitter is turned off, power to the circuit is dropped, thus disabling it. The circuit is reset by either the presence of an RF sample or by turning the main transmitter off and back on again, which should make this a virtually foolproof circuit. **BM/E**





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Enforcing FCC Regulations: Who Pays the Bills?

By Harry Cole

ONE OF THE BASIC, albeit largely unsung, truths of the regulatory field is that the FCC, in many ways, is simply a business organization with the same problems and concerns that face broadcasters. It has payrolls to meet, employees to keep happy, management objectives to achieve, public relations to conduct, and so forth. It even has consumers, although the Commission's clients are frequently more difficult to deal with than the average consumer.

There are, needless to say, some differences. The primary difference historically has been the virtually limitless funds which seem to have been available to the Commission, funds which permitted it to expand and maintain its operations. Lately, however, with dramatic budgetary cut-backs being imposed throughout the Federal government, the Commission has had to be especially sensitive to the limits of its own resources. And that has given rise to an interesting, and somewhat troubling, approach to broadcast regulation.

Essentially, what the Commission is doing is grafting a concern for its own practical limitations onto the "public interest" standard that governs its decision-making. As a result, the Commission, in considering a proposal to impose a new rule or relax an old one, will look not only at the traditional technological and other "public interest" factors, but also at the question of whether or not the FCC would itself be able to cope with the proposed change. A comparison of two proceedings will illustrate what this means in practical terms.

First, consider that legacy of former Chairman Charles Ferris, the low power television proceeding. The Ferris Commission felt that the idea of authorizing numerous low power TV stations would be a great idea, completely consistent with its dominant regulatory theme of maximizing competition within the broadcast industry. Accordingly, having completed its own review of the traditional public interest factors, it moved full speed ahead, inviting LPTV applications even before it had finalized the technical standards to be applied to them. As a result, a tidal wave of applications—some 5000—hit the Commission, which is still bailing itself out. It is not likely to be able to do so in the near future. Even if it had the staff, the computer programming, and the computer time to start immediately cutting into the backlog, the sheer volume of pending applications would take a number of years to completely process. As it is, the Broadcast Bureau's staff is limited, and the LPTV computer program is only now being finalized.

In contrast to the low power TV proceeding, there is BC Docket No. 80-90, another Ferris legacy in which the Commission proposed, in 1980, to reduce minimum mileage separations for FM stations and create two new classes of FM station, thus generating a substantial number of new stations across the country. Again, the idea was to maximize competition. In this case, however, the Ferris Commission did not move as fast as it did on LPTV, and the matter fell into the hands of the Fowler Commission. In many ways, BC Docket No. 80-90 is similar to LPTV: both arose from a desire to increase competition, both inspired tremendous expectations in those wishing to take advantage of the proposed rules, and both inspired fear in others who dreaded the likely onslaught of competition. Last but not least, both created the prospect of an exponential increase in the amount of allocation-related preparations to be made, and applications to be processed, by the staff.

Before approaching BC Docket No. 80-90, the Fowler Commission took time to learn from the mistakes apparent in the handling of the LPTV proceeding. Instead of dashing headlong into the unknown, the Commission considered the effects, on itself and its processes, that adoption of the BC Docket No. 80-90 proposals would have. The result? A Report and Order on BC Docket No. 80-90, apparently drafted in February by the staff, was not brought to the Commission in March or April, as originally scheduled, but was later rescheduled for consideration sometime at the "end of the summer." Its prospects for adoption at that point are far from bright, despite considerable pressure in support of the changes being exerted by those who view themselves resultant beneficiaries.

While the Commission has yet to take any formal action in this proceeding, its reasons for deferring consideration have been made quite clear. For example, Commissioners and Broadcast Bureau honchos alike at the NAB convention last April, when queried about the progress of BC Docket No. 80-90, all indicated that adoption of the proposed changes could result in an overwhelming amount of work. Further, in view of the teachings of the LPTV situation, they thought it best not to let the whole thing get any further along until the Commission could handle the fallout better. And in view of the budgetary and staffing cutbacks that are already taking their toll on the processing

line, this does not appear to be an imminent prospect. Thus, without any formal decision being made or opinion issued, BC Docket No. 80-90 became a backburner item.

A cautious approach to rulemaking can hardly be faulted, of course, especially when the Commission, acting so, is simply trying to save itself and the public needless effort and expense. It is likely that most would agree that everything possible should be done to avoid another debacle along the lines of the LPTV affair. And it is absolutely appropriate for the Commission to consider its own realistic limitations when it contemplates changing its rules. However, it is not clear that the most appropriate way of doing all this is the way the Commission has apparently chosen, *i.e.*, letting the whole thing sit quietly in a corner while the Commission turns its gaze to less problematic matters.

This is especially true in light of the fact that BC Docket No. 80-90 is not the only proceeding that is likely to generate high interest and large processing burdens. The Commission must still confront a significant number of questions underlying such high-profile proposals as direct broadcast satellites, UHF television "drop-in" allocation standards, and cellular mobile radio service. Each of these could create problems at least as great as those expected from BC Docket No. 80-90.

The difficulty in which the Commission finds itself is born of two general developments in telecommunications. On one hand, there is the constantly growing demand for more telecommunications service, arising from both the public that would be served and from those who would provide the service. Together with this growing demand, there have been remarkable technological advances that appear to make the expansion of all types of existing service, and the creation of new services, a realistic possibility.

This situation is not wholly without hope. The Commission has, primarily as a result of its negative experience with the LPTV proceeding, apparently recognized the folly of its old practice of adopting new rules and standards without first considering realistically their likely impact on its own processes. In the past, particularly in areas such as AM allocations, there had invariably been backlogs, freezes on applications, and, ultimately, the creation of "task forces" to shovel the Commission out. Such a practice worked—albeit not smoothly—simply because the Commission had adequate staff to juggle the then-existing demands. Now, however, with decreasing staff and increasing demands for services in almost every area, the Commission has wisely chosen to abandon that approach.

There will be no easy solution to this conundrum. The Commission must accept that its own ability to regulate is a real factor to be considered in the formulation of rules and policies, and it must openly address that factor as part of the rulemaking process. And, more importantly, the Commission must not be reluctant to reject new proposals because of its likely inability to cope with their regulation and administration. **BM/E**

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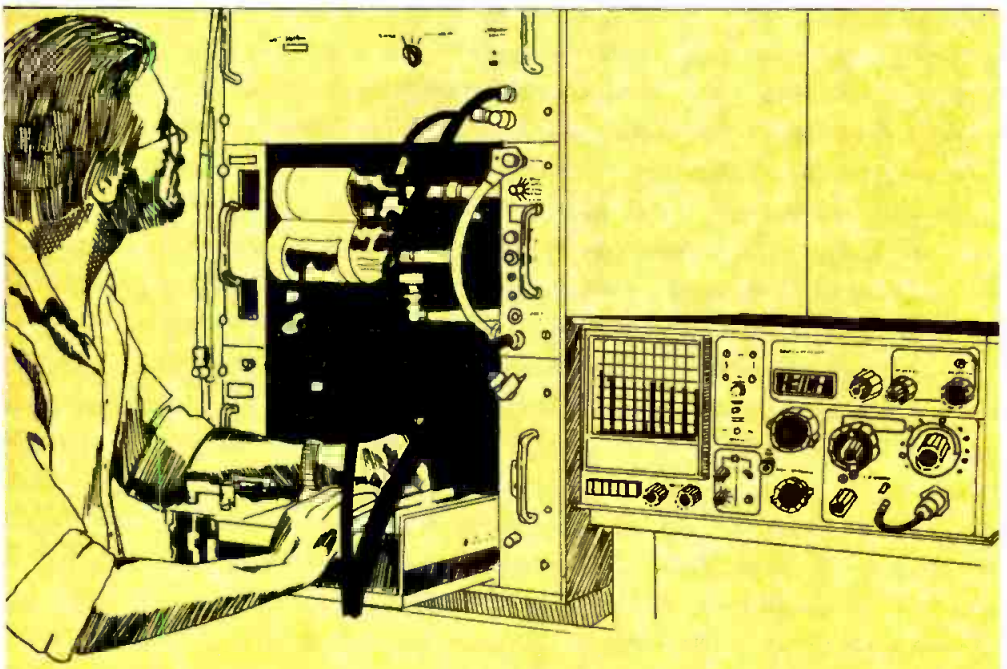

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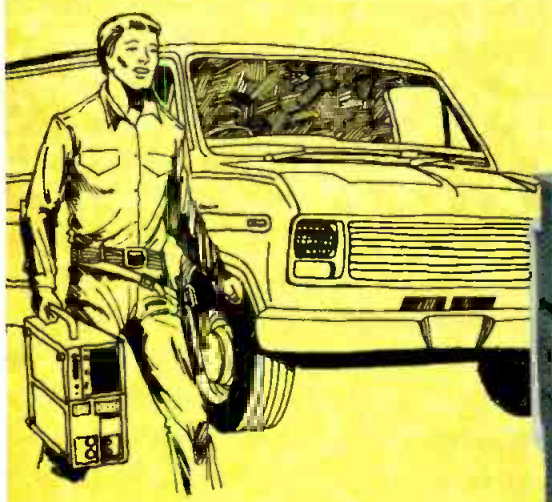

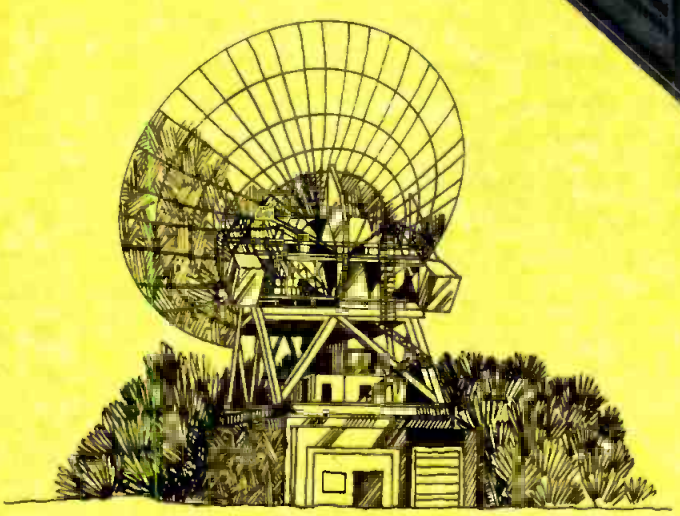

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TAX TIPS for stations

Coping with Interest Costs

By Mark E. Battersby

THE EXPERTS ARE VIRTUALLY UNANIMOUS in predicting that today's high interest rates are going to be a continuing problem. As a result of the high cost of borrowed money, many broadcasters have had to develop a number of strategies for coping with higher interest rates.

For instance, many successful broadcast stations have discovered that a good step toward coping with interest rates is to understand just what that borrowed money will cost. Of course, the interest rate may be clearly stated at a certain percentage; but how much will you actually have to increase your time sales in order to maintain your present profit level?

Obviously, if you must pay $1 in interest costs, you will have to take in considerably more than that in additional sales if you hope to keep your bottom line profits at the same level. In other words, you may have to increase your sales by as much as $10 to pay that $1 interest cost if your net profits are only 10 percent of gross sales.

You can calculate the additional dollars in sales required in order to "break even" with the interest cost of borrowing money by employing a simple formula. This common rule-of-thumb simply involves dividing the interest cost by percent of gross profit on net sales. For example, suppose you borrow $100,000. Using the formula:

$$\frac{\text{Dollars} \times \text{Interest Rate}}{\text{Percent Gross Profit of Net Sales}}$$

At a 10 percent annual interest rate and with gross profits that are 25 percent of net sales, the computation would look like this:

$$\frac{\$100{,}000 \times 10\%}{0.25} = \frac{10{,}000}{0.25} = \$40{,}000 \text{ additional sales needed}$$

This same computation works in a variety of other important business decisions. For example, it can be used when you are considering whether to add another person to the payroll or whether to increase your audience, or when you are thinking about acquiring new equipment or fixtures. Obviously, it is a good formula to know—and use—before making any major purchasing decision. With it, you will have some idea of how many more sales dollars you must generate simply to maintain profits.

Increased utilization, or better working of your assets, is another way to cope with high interest costs. In fact, making your assets work harder is a very good way to reduce the need for borrowed funds.

An important financial ratio that can reveal whether you are using available funds now as well as in the past is known as the "net sales to working capital" ratio. You may never have used this ratio before, but you can be sure that any lender you approach is going to be interested.

Working capital is nothing more than the difference between your current assets and your current liabilities. This working capital is the framework on which your broad-

TAX TIPS

casting business operates. Just as the bones in a person's body support a certain number of pounds of flesh without medical problems, so the working capital available in a business can support a given number of dollars in net sales without creating critical financial problems. If you exceed the capabilities of your working capital framework in net sales, you can expect to have personnel, receivable, and accounts payable problems, in addition to a severely limited or nonexistent net profit.

One easy way to determine whether you are using working capital as well now as in the past is by means of yet another formula. In order to find the net sales per dollar of working capital, you simply divide net sales by the working capital shown on your balance sheet. Comparing the working capital available, the net sales, the net sales per dollar of working capital, and your net profits for each of the last 10 years will give you an idea of the point at which your station was best able to support net sales profitably.

Broadcasting and other service-oriented businesses can no longer enjoy the luxury of low productivity while remaining profitably competitive. The marketplace is changing. Even existing business can often slip away from stations that have taken a wait-and-see attitude. Thus, high employee productivity is a virtual necessity in coping with high interest rates.

Borrowing money has always been an acceptable part of doing business and will continue to be so. However, money is a commodity just like electricity. The cost of money rises and, occasionally, falls with demand. The demand influences the prime rate. So, obviously, controlling the business's need for money can help you avoid borrowing at a time when interest rates are high.

Thus, the first step in coping with today's interest costs involves improving profitability by following such steps as: 1) Understanding and attempting to operate within the business's working capital structure; 2) carefully planning cash flow projections and the all important monthly revisions to help you make early plans to borrow when the figures indicate; 3) bringing your employees into productivity improvements that they can understand with measurements they can accept; and 4) taking the time now to open and/or maintain sound banking relationships so that necessary borrowings can be achieved more favorably.

Number four, above, illustrates that coping with interest rates doesn't always end when you enter the doors of a bank or other lending institution. In fact, the steps you have taken to cope with higher borrowing costs can be used to establish or improve your banking relationships. Take the cash flow plan that you prepared to project your borrowing needs as just one example.

One of the advantages of using the plan is that station management can use it as a reason to visit the loan officer of the bank where it does business. About every other month the cash flow progress can be discussed. There are definitely more favorable times to borrow than others. At times a commercial loan officer can show you when you might save money by borrowing. Lenders also ask for balance sheets and operating statements, as well as cash flow plans when speaking with any loan applicant. They ask one other pertinent question as well: how much money do you need and for how long? **BM/E**

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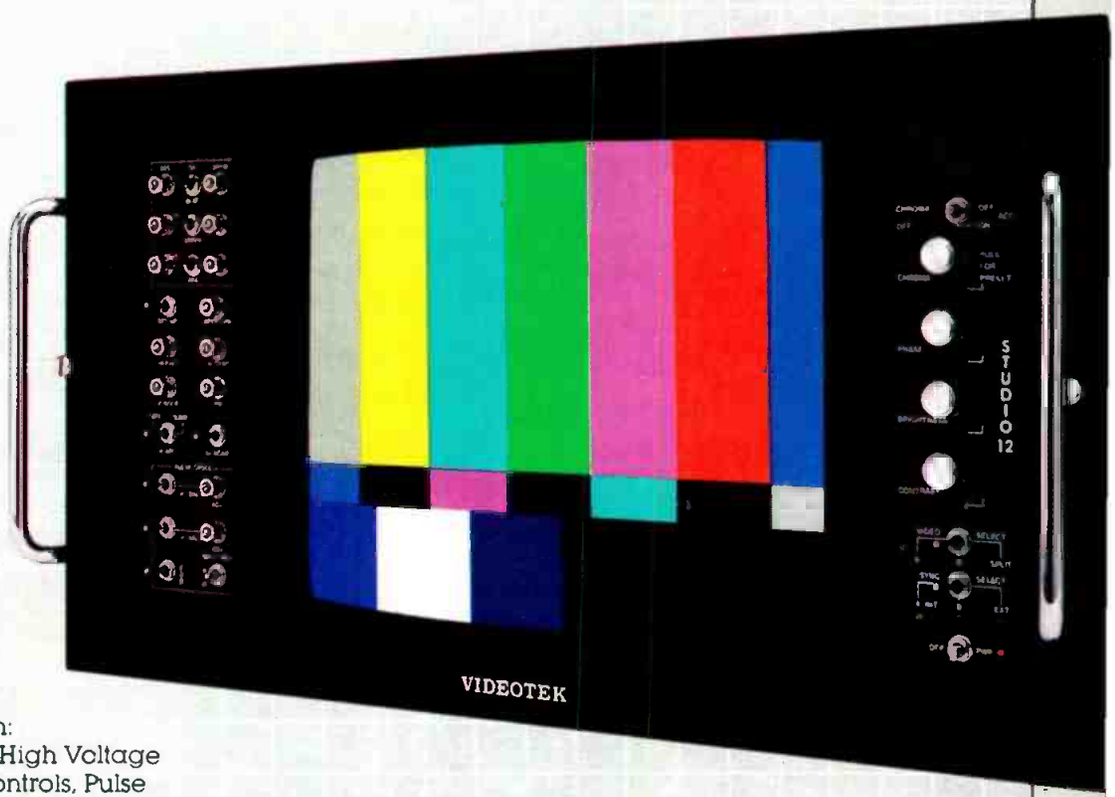

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broadcast EQUIPMENT

TRW Develops Solid-State UHF Broadband Amplifiers 295

Soon to be introduced by TRW Semiconductors is the ATV 5000 Series of broadband power amplifiers. According to TRW, the two new units are the industry's first fully packaged, solid-state UHF broadband linear RF power amplifiers in the 470 to 860 MHz frequency range. They are capable of delivering up to 80 W output power at the 1 dB gain compression point.

The series is designed for use in TV translators and transmitters and incorporates microstrip technology and TRW's linear push-pull transistors. The compact units measure 34 x 134 x 127 mm, have matched 50 ohm input and output impedances, and operate from a single +26 to +28 V supply.

Presently, there are two versions available. The ATV 5020 is an internally biased class A amplifier and has a minimum power gain of 7.5 dB and delivers 25 watts of output power at 1 dB gain compression. Its case temperature operating range is −20 to +80 degrees centigrade.

The more powerful ATV 5080 is the class AB version, which has a power gain of 6 dB and delivers 80 W at 1 dB gain compression. Its case temperature range is −20 to +70 degrees C.

The ATV 5000 Series was designed for television broadcasting, but will, according to TRW, operate in all linear RF power applications, such as instrumentation, high speed control systems, and radio communications. The list price for the ATV 5020 is $1200 and for the ATV 5080 is $1300.

Phase Meter from Grass Valley 296

The new model 3258 was designed for establishing and maintaining an SC/H phased video system. The new phase meter has two video inputs plus a color frame pulse (V1) input allowing measurement flexibility of either video input, a difference measurement between the two inputs, and an absolute SC/H phase measurement to an externally applied house reference color frame pulse.

The 3258 is also useful in identifying and quantifying problems within the video chain that cause instabilities in SC/H phase and color frame identification. Any piece of video source equipment that is a potential problem in maintaining SC/H phase can be measured, including sync to burst phase time base errors.

Console Automation from Sound Workshop 297

The new Diskmix console automation system is a rack-mounted cabinet housing a proprietary dual processor computer system with double-sided, double density floppy disk drives. A separate intelligent terminal controls the system and will interface with major tape-based systems such as MCI, Valley People, and Sound Workshop's own tape-based unit.

Facilities are provided for the multiple storage of mixes, off-line editing of individual mixes, and the storage of session and console documentation. The add-on system was designed as an alternative to expensive consoles with internal automation and to low-capacity outboard systems.

EECO's new VITC products 298

Two new products from EECO, the VITC generator/reader and the VITC reader, are both capable of recovering, decoding, and displaying vertical interval time code with user bits from video at tape speeds ranging from freeze-frame to ±45 times normal play speed. The new units can also switch over to the hexidecimal word format for user bits display, providing the advantage of freeing an audio track.

The units offer indexing resolution down to a single field, providing a time code output for use by external equipment via the serial SMPTE bus interface. The generator function can produce continuous longitudinal time code and VITC with or without user bits.

New Battery Packs from Redlake 299

Two new battery packs offer high voltage with low internal impedance for greater discharge currents needed by high speed cameras and sunguns. The Hypower 30 comes in a carrying case with a dust shield and supplies 32 V and 3 kW of peak power. Switch selectable 115/230 V allows choice of recharging power, and a built-in overnight charger is fully line isolated to allow battery use while charging.

The Hypower 90 provides 96 V and 9 kW of peak power and comes in an aluminum suitcase. Enclosed panel switches allow a check of each 30 V cell. It also contains a solid state regulator to prevent overcharging. Plug-in receptacles accept one 90 V and three 30 V lines.

C-Band Klystron from Varian 300

The new VKC-7936 C-Band uplink klystron offers 24 channel transmission capability, which is, the company

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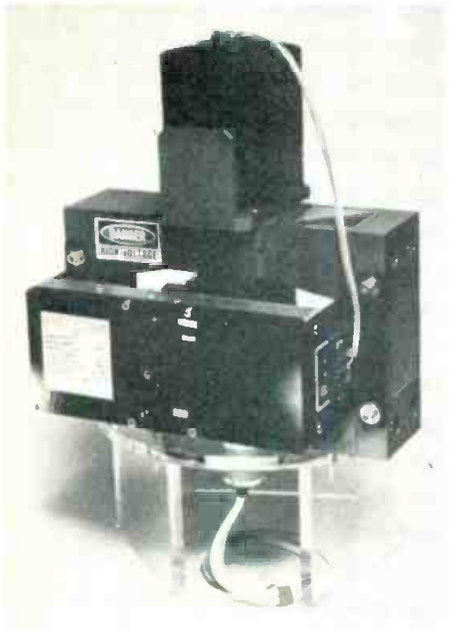

claims, twice the number of tuning frequencies previously available in uplink klystrons. The new unit also offers improved distortion characteristics and linearity for multi-carrier service. There are two output power versions, the 1.5 kW and 3.35 kW. Also offered are 5.925-6.425 GHz with 24 selectable preset channels. A digitally controlled remote tuner is standard along with air cooling.

New digital storage scope from Gould 301

The new unit, designated the DSO4200, has a maximum sensitivity of 100 μV/cm, vertical resolution of 0.1 percent, and horizontal resolution of 0.025 percent via a 10-bit X 4k store. It also has the ability to select portions of stored waveforms in overlapping 1k segments and expand them up to X10 vertically and X50 horizontally. Also provided is a dual-slope trigger window permitting triggering on signals crossing either a positive or negative threshold. It weighs 22 lbs. and has options that allow production of low-cost analog plots of stored waveforms on oscillographic or X-Y recorders.

High Country Engineering's talk show interface 302

Termed The Generic talk show interface, the new device is designed to be less sophisticated and less expensive than some of the more complex units on the market. Installation requires only four connections: one to ac power, one to the telephone coupler, one to a selected console input, and one to the host's mike channel inside the console. There are actually two mic channel inputs on the interface, so another mic can be used if necessary.

Rack-mounted VCA from Protech 303

The 668VCA is designed as a self-contained unit, without the need of wiring in a separate power supply. The new unit is available in two-, three-, or four-channel versions, with or without balanced 600 ohm transformer-isolated outputs. Channels may be strapped for single element control of multiple channels and the unit is designed to provide 100 dB of attenuation. Maximum input is +20 dBv, while maximum output is +18 dBv. Power requirement is 117 Vac/60 Hz, 0.25 amps.

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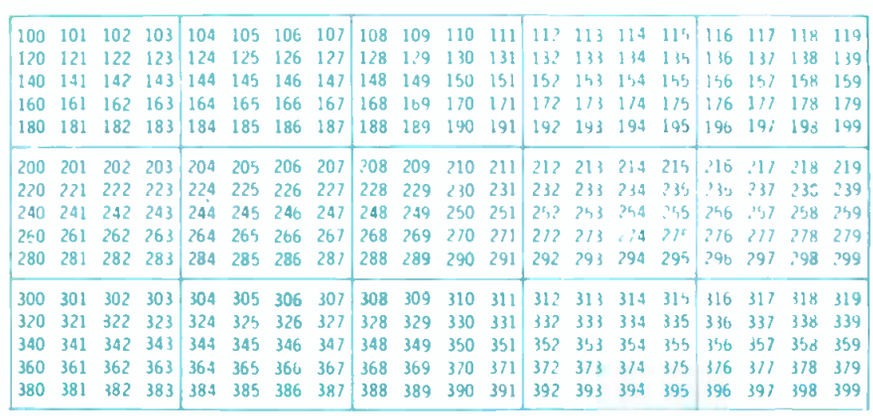

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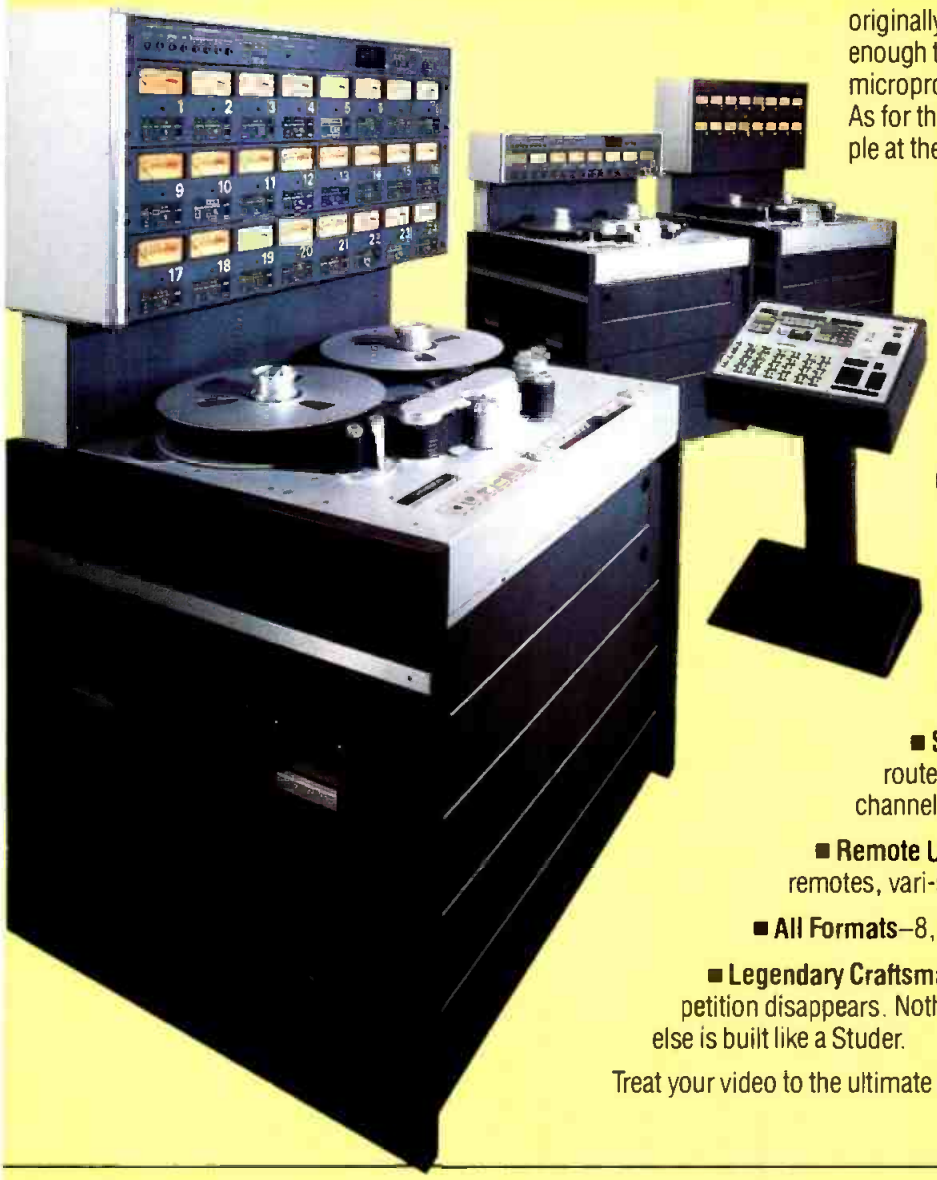
Interesting.



Over the past couple of years, a remarkable number of "first-line" recording studios have bought Studer A800 multi-tracks. And, currently, the A800 is winning over a new group of admirers–video producers. Little wonder. After all, the A800 was originally designed with video requirements in mind. It is fast enough to keep up with the VTR's, and it has sophisticated microprocessor controls for unparalleled production flexibility. As for the sound quality, well, that's what convinced the people at the recording studios!

If you're planning to update your audio, take note of these particulars:

- **Editing System Compatibility**–Operates with Audio Kinetics, Adam Smith, BTX, CDL, CMX, Electro-Optical, EECO, and Studer SMPTE-based systems.
- **Superior Tape Handling**–Accelerates quickly to 400 ips fast wind, slows, stops, and changes modes with uncanny smoothness.
- **Microprocessor Control**–The microprocessor governs all transport functions as well as audio, bias and erase switching.
- **Edit Rehearse**–Used with SMPTE-based controllers, the A800 lets you simulate electronic edits before making the "hot" edit.
- **Separate Time Code Channel**–The time code track is routed through special electronics, not the regular audio channel. SMPTE code-reading in fast wind is standard.
- **Remote Unit**–Options include 20-address autolocator, channel remotes, vari-speed remote, and SMPTE synchronizer.
- **All Formats**–8, 16, and 24-track standard; 4-track ½" on special order.
- **Legendary Craftsmanship**–Lift the top plate off an A800 and the competition disappears. Nothing else performs like a Studer because nothing else is built like a Studer.

Treat your video to the ultimate audio. Call or write today for more information.

STUDER REVOX

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