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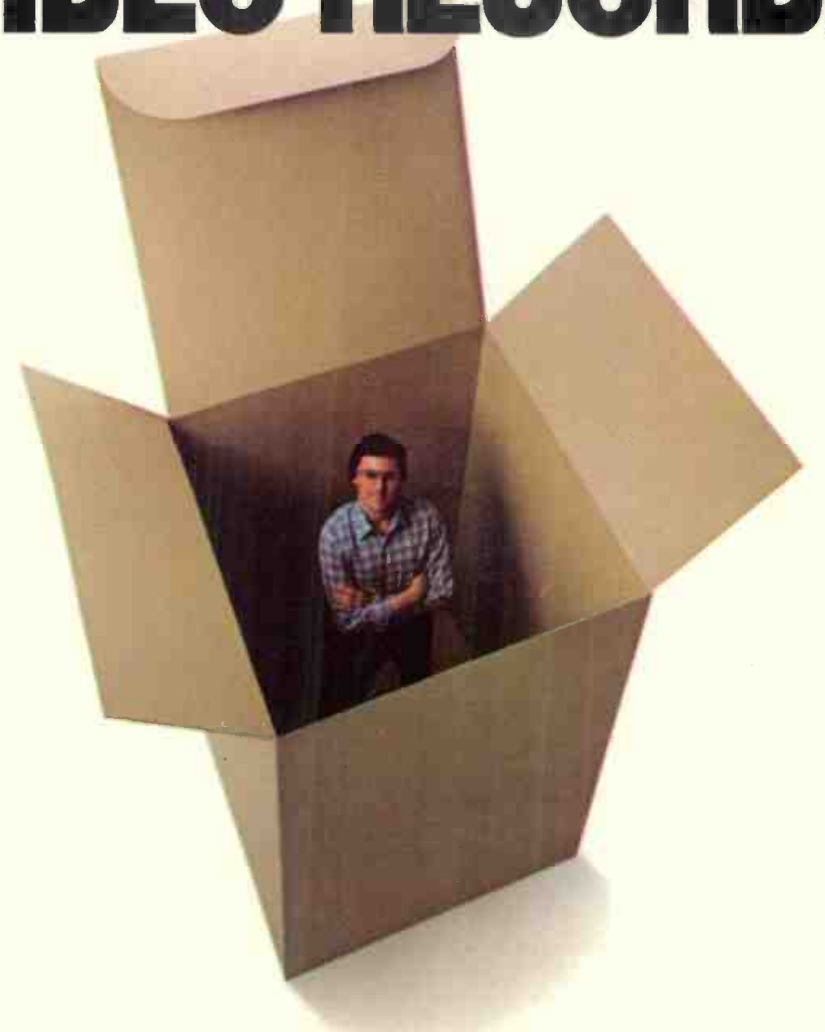

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WHY "BVH-2000" WILL MEAN DIFFERENT THINGS TO DIFFERENT PEOPLE.

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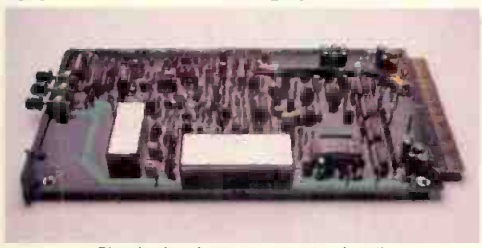
The BVH-2000 actually allows you to "design" the VTR you need for your own particular applications and budget.

You can choose among three different control panels—ranging from a basic model to one with virtually every possible feature and function.

And the tape transport system, signal system, and control section can either be combined into a single unit, or separated easily and installed in a 19" rack or console.

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.


Plug-in time base corrector (optional).

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.

And because of the ever-increasing number of applications requiring longer program times, the BHV-2000 provides up to 2 hours of tape time.

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In the BVH-2000, unlike most other VTR's, microprocessors are used to their full advantage. All data necessary for servo control are channeled into a central processing unit, making the operator's control over all systems and functions simpler and more precise.

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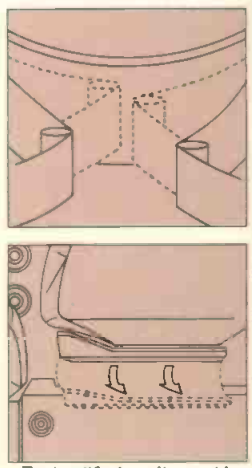
Even the way the tape moves through the recorder has been simplified. One innovation—an extremely precise servo mechanism—permits the entrance and exit guide posts to move about 10mm away from the drum during threading. The result is the easiest threading system ever in a 1" video recorder.

THE MOST ARTICULATE VTR EVER BUILT.

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.

The system includes various alarm functions and numerous checks to confirm that everything is working properly. Most defects can be easily found—allowing for far less complicated maintenance and repairs, and reducing downtime considerably.

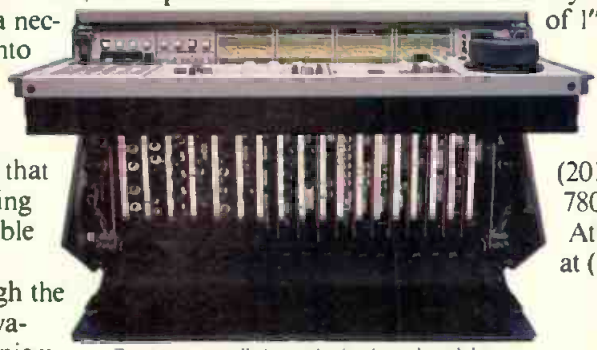

To simplify threading, guide posts automatically move away from drum, and audio head cover opens.

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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MAY 1982/VOLUME 18/NUMBER 5

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EDITORIAL

What Is the "Marketplace"?

TRUE TO THE PHILOSOPHY of the Reagan Administration, the FCC has apparently decided that the marketplace will sort out competing communications technologies. The recent AM stereo "re-decision," reached after the first decision selecting one of the five proposed systems was loudly rejected, indicates that the Commission is prepared to go against the wishes of broadcasters in its adherence to the marketplace doctrine. (Both the NAB and the NRBA wanted a single system selected.)

A similar stance was taken concerning a standard for teletext in which the FCC again put the burden of a decision on the marketplace. Decisions concerning DBS services may also end up with the same fate.

Is leaving the question to the marketplace the best way to settle technical conflicts? Unfortunately, the record is not clear. FM radio languished until a single system was chosen. Some may argue that it was not the best; but once the decision was made, FM began to move—transmission and reception could begin. On the other hand, when quadrophonic sound was left to the marketplace a decade ago, it died amid confusion. As the existentialists might point out, not to decide was in fact a decision.

What will happen to AM stereo is now in doubt. The competing companies are scrambling to line up supporters in an effort to become the de facto standard. Receiver makers are taking a wait-and-see attitude. Ironically, setting the receiver standard may fall into the hands of the Japanese manufacturers since they dominate the U.S. radio receiver market.

Meanwhile, broadcasters are confronted with deciding on which, if any, of the five proposed AM stereo systems to select. It might be nice to wish that this cup would pass; however, if a competing station makes the move and starts promoting AM stereo, what alternative is there? In addition, many AM stations have been gearing up for stereo in anticipation of a decision. It would be painful to let these investments go down the drain. Thus, broadcasters could paraphrase Pogo: "We have found the marketplace, and they is us!"

And decide they must. Despite our dismay about the FCC's cop out, we think that broadcasters now need to accept the consequent confusion and get on with deciding what they want to do. Since the issue is unsettled, we offer the industry an opportunity to find out which way stations are leaning.

Our proposal is a poll using the Reader Service Card in the back of this magazine. If you are evaluating AM stereo systems, circle the manufacturer on the card that reflects your choice. Space is also provided for your comments on AM stereo. We'll publish the results in the hope that the information will aid in the dialogue necessary for the marketplace to decide.

USE THE READER SERVICE CARD TO VOTE FOR YOUR CHOICE IN

AM STEREO SYSTEMS

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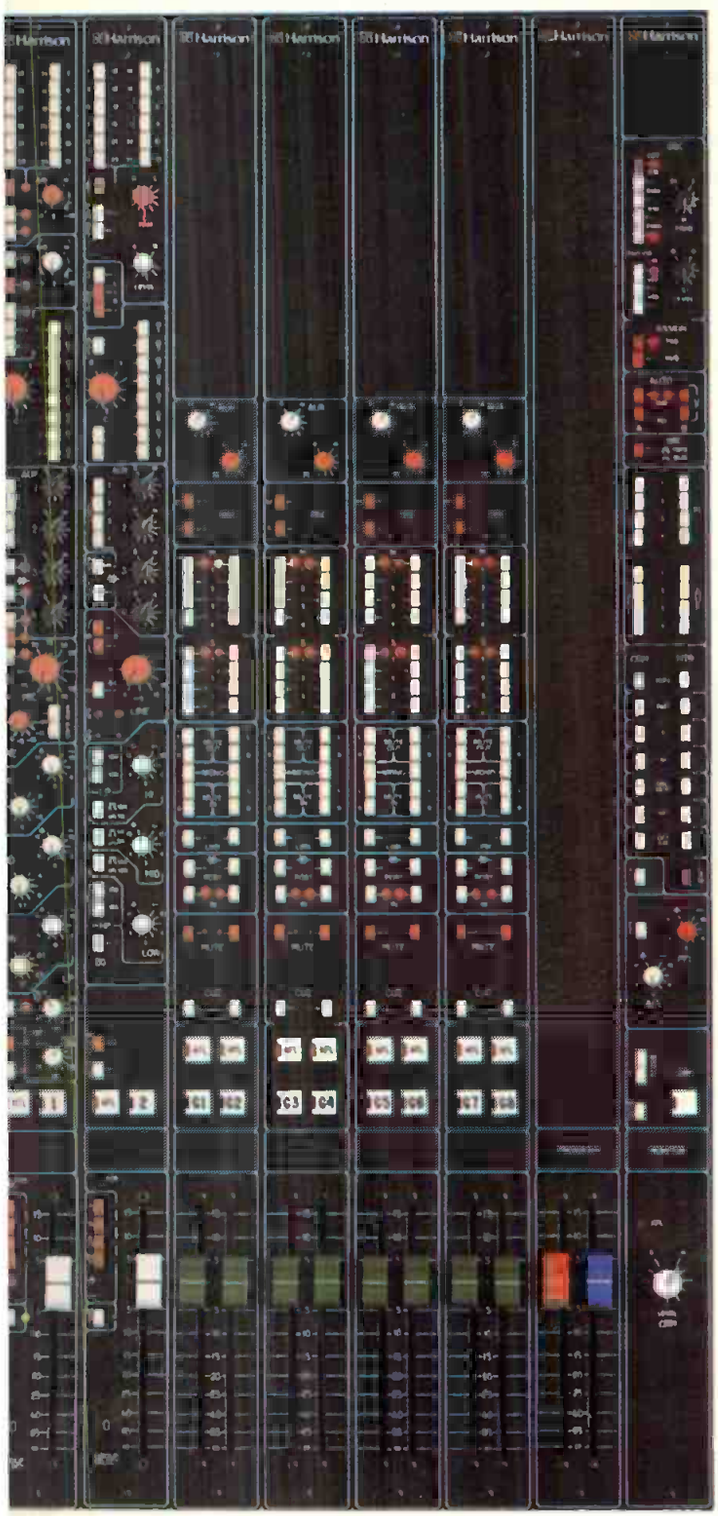
FACT.

TV-3 HAS 8 STEREO GROUPS.



WHY? Any audio console that you purchase today *will* be used for stereo, and a perfectly good 8-bus mono console makes an absolutely awful 4-group stereo console.

FACT.

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The ScotchCart Cartridge design incorporates high-quality 3M recording tape inside a precision-built outer cartridge. Pressure pads have been eliminated and replaced with a constant tension arm that delivers good tape-to-head contact, improved playability and longer life. In fact, ScotchCart Cartridges can last up to three times longer than regular carts.

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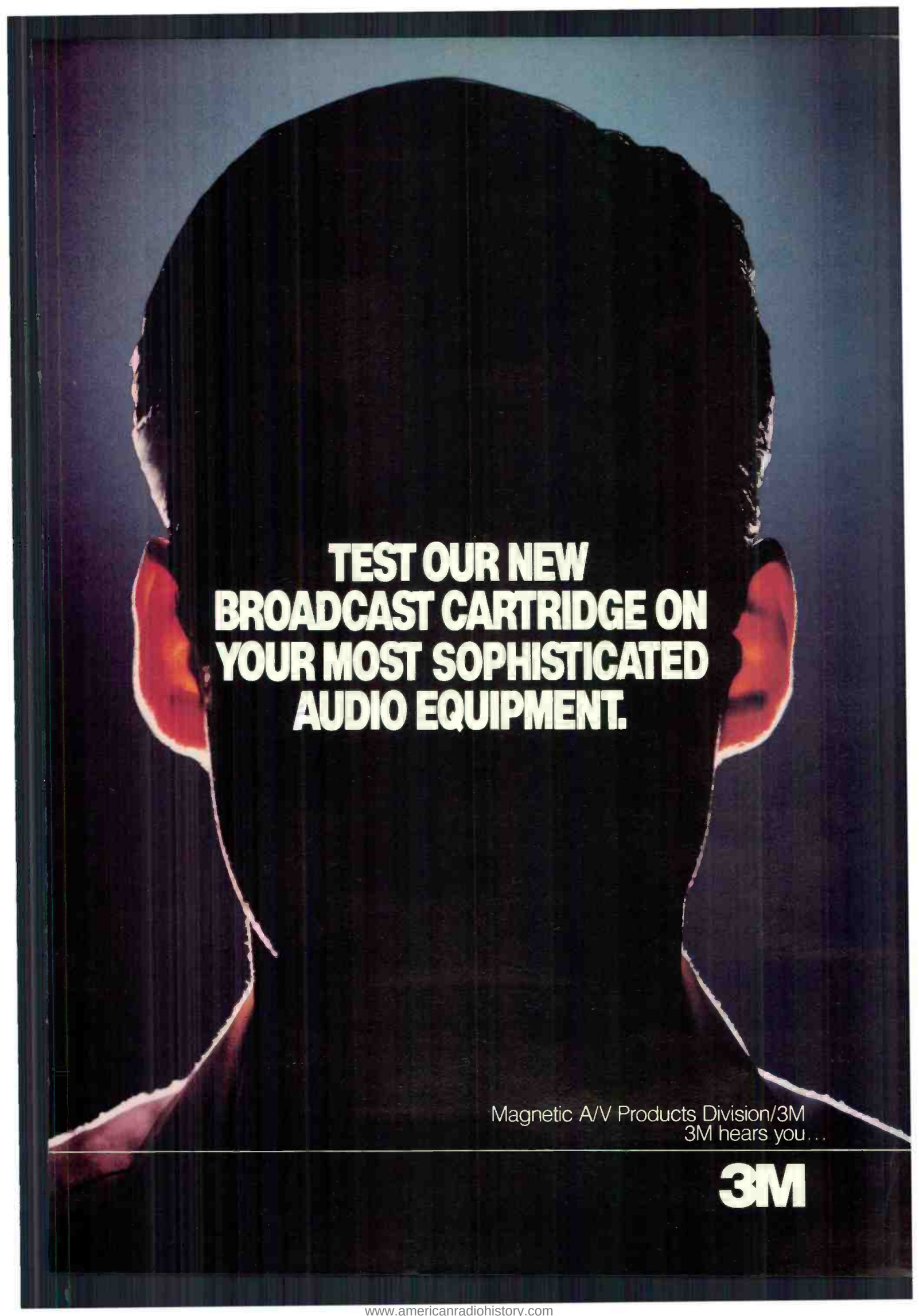

Senate Passes Radio Bill Making Deregulation Law

The FCC's deregulation of radio would become permanent under the terms of S.1629, sponsored by Sen. Howard Cannon (D-NV), which passed the Senate by voice vote March 31. If the bill is approved by the House—which appeared uncertain at press time—it would prevent any future, less deregulatory-minded FCC from reimposing the regulations that recently were lifted. The bill specifically proscribes minimums for news programming, commercial time limits, and requirement program logs and formal ascertainment procedures.

The bill also eliminates the comparative renewal process, stating that the promises of an applicant cannot be meaningfully compared with a licensee's performance.

One of two last-minute amendments to the bill calls for broadcasters to pay fees to the FCC to defray the expenses of processing applications. The other would guarantee RKO General its license for WOR-TV, provided it moved the VHF station to New Jersey, which has no VHF outlet. RKO is reportedly looking with favor on the proposed move; its final bid to save its license for WNAC-TV, Boston, was recently thrown out of court. RKO lost that license, along with those of WOR and KJH-TV, Los Angeles, when its parent company, General Tire, was found guilty of illegal business practices.

AM Stereo Proponents Square Off at NAB

Reflecting the FCC's desire to return decision-making to the marketplace, manufacturers of four of the five proposed AM stereo systems were in full force at the recent Dallas NAB, seeking to line up broadcasters and get their share of the promised multi-million-dollar industry. The four included Harris, Kahn/Hazeltine, Magnavox, and Motorola; Belar demonstrated its monitors at the Magnavox booth.

The aggressive marketing tactic now appears to be attractive lease terms for AM stereo exciters and monitors, which, if purchased, would cost about $10,000. Harris announced an installation program that included checking out antennas (directional arrays pose complex bandwidth tuning problems) and running the required FCC proof of performance. A broadcaster could be on the air with its system in two days, Harris said. The company reported that the Harris Semiconductor plant would definitely have decoder chips available in three or four months and further that Japanese semiconductor manufacturers were studying the Harris decoder chip. For immediate applications, Harris said it is coming out with an adapter to make stereo reception possible on existing receivers. At the close of the convention, April 7, Harris said it had signed up 105 domestic and 10 international broadcasters for its system.

Leonard Kahn, appearing as a panelist on the AM stereo session, reiterated the strong earlier support his company had received from notable U.S. broadcasters (such as ABC) and said negotiations were underway with receiver manufacturers McKay Dymek, Mura, and Radio Shack to build sets to the Kahn/Hazeltine spec. In the meantime, Kahn said that by slightly off-tuning a pair of existing AM sets, his AM stereo signal could be picked up without modification.

Magnavox stressed that neither the broadcaster nor the receiver manufacturer could decide alone and that the consumer was also part of the equation. "Don't market a product until a single standard emerges," said a Magnavox spokesman, who proceeded to argue that the most likely standard will be Magnavox because a decoder chip is already available (from National Semiconductor) and has proven successful in sample receivers by Magnavox, Sylvania, and Philco. This system, said Magnavox, gives very acceptable performance since it was the FCC choice for a standard in April 1980 before reconsideration and still scores highest on the FCC's evaluation matrix. Magnavox demonstrated a working system at the NAB Convention both in its own stand (which included over a half-dozen receivers made with IC decoders or hybrid chips) and at the Continental Transmitter booth, which included Continental-made exciters and Belar monitors.

Although faced with heavy competition, Motorola was not at all intimidated and boasted that if the FCC couldn't set a standard, Motorola would. It showed a working system, announced a lease plan, and handed out spec sheets of an IC chip ideal for its proposed standard. Motorola contends its system has none of the shortcomings evidenced in other systems in terms of distortion and modulation-induced noise or interference. Further, it claims its chip is among the least expensive to manufacture.

Where receiver manufacturers stand

Four receiver manufacturers and one chip manufacturer participated in the NAB panel discussion with Magnavox and Motorola. They were Delco (the

BM/E Fetes Best Station Winners at NAB

Best station recipients, from left to right, Paul Montoya (KBPI-FM), Robert Banks (KBAK-TV), Lloyd Berg (WDBQ-AM), and Andy Butler (KWK-AM/FM).

In the heaviest voting recorded in recent years, *BM/E*'s readers selected broadcast stations in four categories as the winners of the 1981 Best Station Awards Contest. The winners received commemorative plaques at a *BM/E* reception in their honor at last month's NAB Convention in Dallas.

The winners: KBAK-TV, Bakersfield, CA (entry submitted by chief engineer Robert Banks); KBPI-FM, Denver, CO (entry submitted by chief engineer Paul Montoya); WDBQ-AM, Dubuque, IA (entry submitted by director of engineering Lloyd Berg); and KWK-AM/FM, St. Louis, MO (entry submitted by Andy Butler, director of technical operations). All entries were described in the December 1981 issue of *BM/E*.

If you feel your operation is something special and should be entered in the 1982 Best Station competition, let us know. Send a postcard with the station's call letters, address, phone number, and the name and title of the person we should contact. Rules for the 1982 Best Station Awards Contest will be mailed out this summer.

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biggest U.S. auto radio manufacturer) Matsushita (the biggest world producer of receivers), Pioneer and Sony (fifth and sixth, respectively, in receiver sales). The chip manufacturer was National Semiconductor. Pioneer said it preferred the Magnavox system and urged that it become the industry standard, a view shared by National Semiconductor, which decided in 1980 to tool up to make the Magnavox chip. A cohesive move for a preferred system should come soon, said Pioneer, or AM stereo will die from confusion just as quadraphonics died earlier.

Matsushita agreed there has to be one standard and said that the addition of AM stereo should not add more than seven to 10 percent to the cost (a point collaborated by Pioneer) if it is to succeed in the marketplace. There is no great margin of superiority or difference in performance of any one system over the other, said Matsushita, but there is a big difference in cost. Matsushita hoped broadcasters would favor the system that would be cheapest to manufacture. Of the four contending systems, Matsushita felt it could justify making chips for two of them. Although Matsushita would not comment publicly, several sources consider the Harris and Kahn chips to be the most expensive to make.

Sony, on the other hand, said it had evaluated all systems and was prepared to manufacture any one of them that emerged as a winner. Delco was not sure which system it favored but said it was undertaking an elaborate field test to find out if any one system was best for the automobile environment.

Delco is particularly concerned over how sets perform in both overload and fringe areas and about the effects of "false triggering." All the leading proponents of systems will cooperate in these mobile tests, Delco said, and results may be known by the end of July. Perceived quality and cost effectiveness will be the determining factors in making a decision. "By 1983, we may have a receiver of our choice," said Delco.

While there were calls for broadcasters to take a stand in determining a standard system, threats of anti-trust action under U.S. laws curtailed further action.

Copyright Compromise Faces Legislative Battle

Despite passage by the House Judiciary Committee, the future of the CATV copyright bill now struggling through Congress appeared uncertain at press time. A compromise worked out by representatives of the broadcasting and cble industries would broaden TV stations' and producers' rights over their programming while retaining copyright protection for cablers.

Sponsored by Rep. Robert W. Kastenmeier (D-WI), the bill would grant TV stations exclusive regional rights over syndicated programs. CATV operators would still be sheltered by a government-regulated copyright system, exempting them from full liability for their offerings; they would also have the local must-carry rules eased.

Opposition to the bill is strong, however, from elements in the Congress and the White House that feel cable is healthy enough to shed its mantle of protection and bargain openly in the marketplace for program rights. One proponent of full copyright liability for CATV operators is Jack Valenti, president of the Motion Picture Association of America. Valenti has said that program owners should not have to subsidize the large corporations that own huge chunks of the cable industry.

The boards of directors of NAB and NCTA, on the other hand, were quick to endorse the proposed legislation.

YOUR AM STEREO SYSTEM IS READY AT HARRIS!

Harris, the leading broadcast transmitter manufacturer, has the complete AM stereo system*, products and services broadcasters want.

The only manufacturer to offer a complete AM stereo broadcast product line

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For technical reasons alone the Harris stereo system should be your choice.

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- The Harris system permits the same level of modulation as your present signal to maintain loudness.
- The Harris system simultaneously provides maximum stereo and mono coverage.
- The Harris stereo system permits the use of high performance/low cost receivers that will help close the quality gap between AM and FM.

60 years of dedicated service
Harris is the only manufacturer that can put 60 years of service and experience to work to put you on a competitive basis with FM in a cost effective manner.

Act now
Harris is ready to supply you with a complete AM stereo system. Contact us today for full details. Call 217/222-8200. Or write Harris Broadcast Division, P.O. Box 4290, Quincy, Illinois 62305-4290.

*U.S. Patent 4,225,751. Other U.S. and foreign patents pending.

HARRIS

Circle 106 on Reader Service Card

NAB president Vincent Wasilewski commented that the package "serves the best interests of the viewing public while settling the longstanding copyright disagreement."

The Subscription Television Association responded to the new legislation by opposing the relaxation of local must-carry rules, claiming that the change would permit cable operators to drop signals of local STV outlets. As a result, STVA said, "Cable viewers, whose dismantled TV sets necessarily cannot receive any over-the-air transmissions, will be denied these important conventional and pay video alternatives."

In a related move, the NAB has urged the FCC to require cable systems to transmit all teletext transmissions by stations they carry.

Annual Financial Report Goes the Way of the Dodo

The annual financial report, Form 324, required of all commercial broadcast licensees since 1938, has joined the first-class radiotelepone operator's license on the list of extinct FCC regulations. Licensees benefitted from the ruling as soon as it was announced and were exempted from having to file for 1981.

An alternative proposal, calling for an abbreviated annual financial report, was also rejected by the Commission, which said such a report would be of very limited use. On the other hand, the FCC termed the amount of information gathered from the long form to be unnecessary. Information from Form 324 has been used to compile yearly financial data reports for TV and radio. The FCC said that it could save money by conducting special studies to find out any necessary information.

NAB welcomed the elimination of the report, applauding the FCC's "continuing effort to reduce the amount of paperwork imposed by the federal government. The form was neither required by Congress nor was it essential to the Commission's regulatory mission."

Appeals Court Upholds FCC OK of Satcom Tariff

RCA can go ahead with its plan to sell transponders on its new Satcom 4 satellite for $13 million apiece, a federal appeals court in Washington, DC, has ruled. The ruling came after an FCC decision allowing the sale but calling for investigation of the tariff revisions was appealed. (See *BM/E*, April 1982, p. 12.)

Meanwhile, comments on the FCC's notice of proposed rulemaking offering to deregulate common carrier transponder sales show the satellite industry generally backing the concept. As expected, RCA Americom came out in favor of the deregulation; also on the pro side were ABC and CBS (in a joint filing), Hughes Communications, Western Union, Spanish International Network, Turner Broadcasting System, and the Justice Department.

Opposed to the proposal were PBS; AT&T; Hughes Television Network; Satellite Syndicated Systems; Rainbow Programming Services, distributor of the *Bravo* and *Escapade* cable services; Cox Broadcasting; and Wold Communications.

Western Union, Hughes Communications, and Southern Pacific Communications have also applied for tariff revisions that would allow non-common-carrier transponder sales.

Westar Launch Goes Well; Next Bird Flies in June

All went smoothly with the launch earlier this year of Westar 4, latest en-

Ready to shoot. Under $10,000.*

Ikegami's ITC-730 brings high performance ENG/EFP to the budget-conscious broadcaster. This 3-tube prism optics camera delivers a new measure of flexibility and reliability at a price never before achieved. It comes ready to shoot, complete with gen-lock, 10:1 Fujinon zoom lens, ⅔" Saticons** battery pack/charger, AC adapter and carrying case for under $10,000.

Yet, the ITC-730 incorporates the technology pioneered by Ikegami in previous ENG cameras. It offers professional grade components and exceptional features. For example, the fast f/1.4 prism beamsplitter with low-noise preamplifier delivers excellent low light level performance. S/N ratio is an honest 54 dB and sensitivity is 2000 lux at f/4. Bias light reduces lag and dynamic beam stretch reduces highlight trail.

Low power consumption of only 17 watts lets you shoot for hours. And that all-day shoot won't leave you all worn out—the ITC-730 is not only lightweight, but also well-balanced. Its low profile design makes it easy to handle, easy to see over. The housing is a rugged die-cast alloy that can stand daily punishment.

For EFP, add the optional CCU and 5" viewfinder and the versatile ITC-730 can cover your production schedule indoors or out. Call for a demonstration of the ITC-730. Available now, it's everything you'd expect from Ikegami.

Ikegami ITC-730

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trant in Western Union's domestic satellite system. The bird moved neatly into its first geostationary orbit above the equator a week after launch, where it was scheduled to remain for testing until it moved to its permanent position at 99 degrees west longitude, due south of San Antonio, TX.

The satellite takes over the orbital slot of the satellite it is replacing, the eight-year-old Westar 1, which is at the end of its useful life. Westar 4 has 24 transponders—double the capacity of its predecessor—and will assume most of the transmission now handled by Westar 1. Mutual Broadcasting System, one of Westar 1's clients, announced its intention to move to Westar 4 shortly before the launch; Wold Communications has also acquired a transponder on the new bird.

Western Union intends to move up the launch date of Westar 5 to June 8, from the previous date of September 30. The fifth Westar is identical to Westar 4, the company says. Both birds are designed for 10 years of operation and have more powerful transmitters than the first-generation Westar satellites. Westar 5 will replace Westar 2.

WU recently signed an agreement with the Corporation for Public Broadcasting and National Public Radio that will allow the excess capacity of the satellite channels CPB leases on the Westar system, plus NPR's associated ground facilities, to be made available to commercial users. NPR's president, Frank Mankiewicz, stated that distribution of public radio programming will remain NPR's highest priority. The agreement should pull in some much-needed extra dollars for public radio, hard hit by federal budget cuts.

Wildmon's Boycott of NBC Fails to Dent Ratings

A boycott of NBC-TV, called earlier this year by Rev. Donald Wildmon's Coalition for Better TV, has apparently left the network undaunted. First indications were that ratings for the net's strongest series rose slightly during the first week of the "boycott."

The coalition—minus one of its most influential members, Jerry Falwell's Moral Majority—said it had called the boycott in response to NBC's alleged lack of respect for Christian values and promotion of sex and violence.

Meanwhile, the National Coalition on Television Violence found NBC "clearly the least violent" of the major TV networks in its fall-winter monitoring period. According to the group, NBC's programming was only half as violent as that of the competing nets during last January. ABC was billed as the most violent for the period.

Sony Announces Printer for Mavica Still Camera

As it promised when it introduced its Mavica video still camera last year (see *BM/E*, December, 1981, p. 16), Sony Corp. has come up with a hard-copy printer for video images. Called the Mavigraph, the printer will produce a full-color image on paper from any still-frame video signal—including those from NTSC sources.

Mavigraphy, as Sony calls the printing process, produces the images by means of signal scanning and involves no chemical processing. The printer contains four dye-impregnated sheets (yellow, cyan, magenta, and black), which pass one at a time over a thermal printhead to produce the image. As video signals are fed to the thermal head, the head generates different amounts of heat according to differing signal intensities. The heat evaporates the high-speed dye, which is then transferred onto the printing paper.

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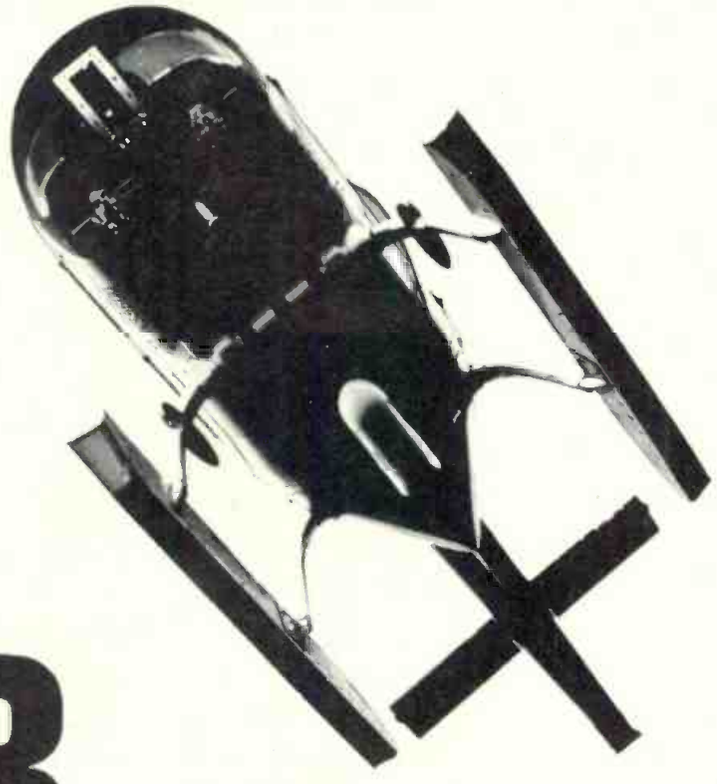

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NEWS BRIEFS

Chase Enterprises will apparently **purchase three Mariner group stations** for over $21 million. Chase presently owns WTIC AM/FM Hartford . . . . Blair Media, subject to FCC approval, has **bought two radio stations** in Tampa, FL, for $14 million cash. Blair represented the stations, WFLA-AM and FM, for years . . . . **Viacom Broadcasting, Inc.**, has completed its acquisition of **WLAK-FM** in Chicago.

Sen. Barry Goldwater has introduced a bill that would allow cities to **own and operate cable systems.** It is the first bill dealing with comprehensive cable television legislation to be taken up by Congress . . . . More legislation is being introduced in congress addressing the **conflict between VCR manufacturers and movie producers.** The legislation would introduce taxes on recording equipment and on blank tapes . . . . The Home Recording Rights Coalition has **hired Charles D. Ferris,** former FCC chairman, to act as chief coordinator and spokesman for the group. The coalition is asking Congress for clarification of current copyright laws that would exempt consumers from copyright infringement proceedings.

A bill to **prohibit pornography** from appearing on all television transmissions, including cable, has been introduced by Sen. Dennis DeConcini of Arizona . . . . NRBA has met with the Senate Commerce Committee to **encourage deregulation legislation** now under consideration and to help with new legislation to be introduced in the House . . . . RTNDA has announced its support of Rep. James Broyhill's bill to **repeal the fairness doctrine** and equal opportunities provisions of the Communications Act and add an amendment to prohibit censorship of the content of any communications.

The FCC has voted to **withdraw its request** to consolidate its headquarters because of concerns about adverse impact on the staff and public. The agency will remain at 1919 M Street NW, and will seek to renew its lease and upgrade its facilities . . . . The FCC has dismissed a petition for rule-making that would have made **joint ownership of AM/FM combinations** illegal.

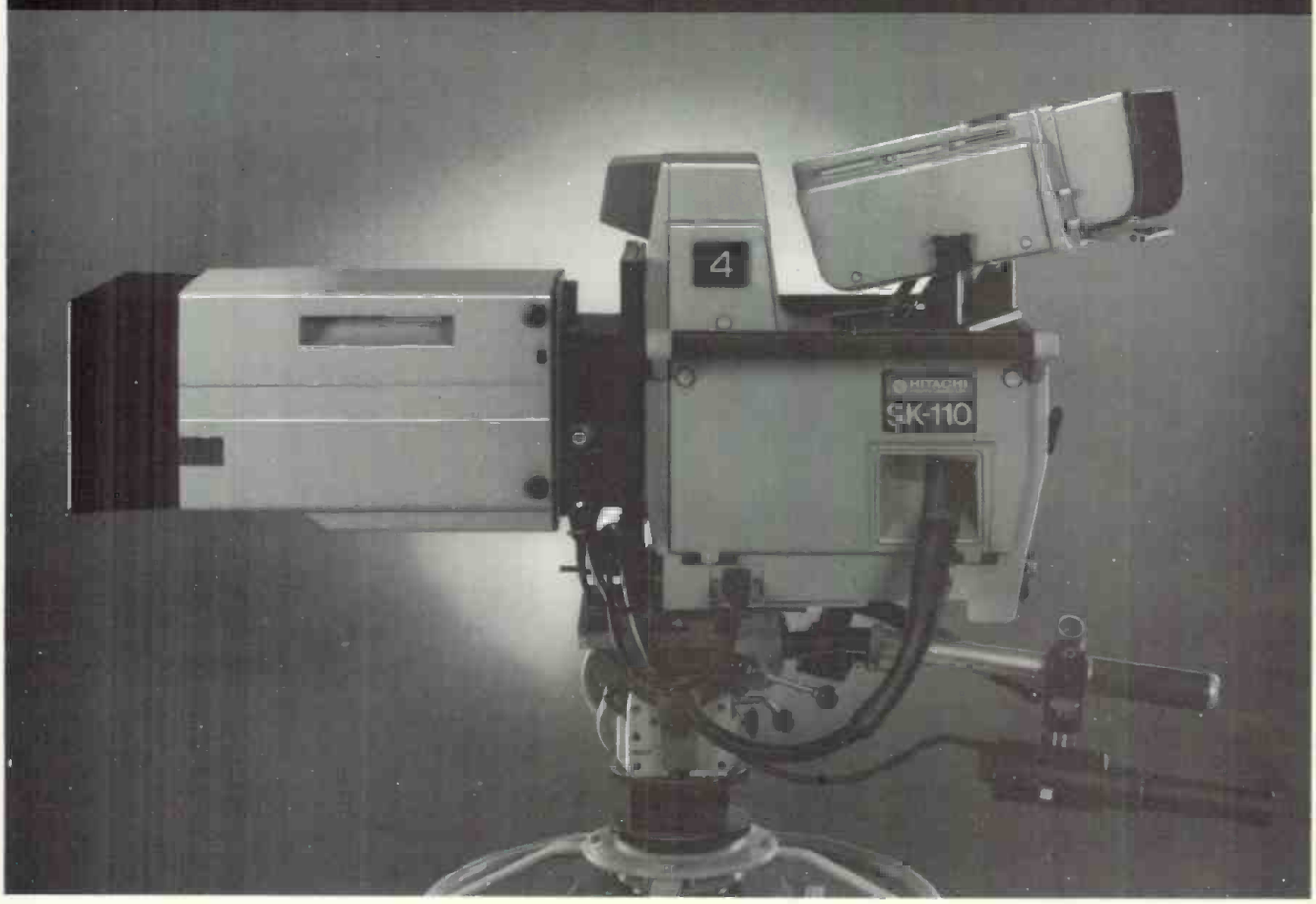
The FCC has retained its exceptions to the **UHF one-to-a-market rule,** providing for a case-by-case treatment of certain UHF television applications that might violate concentration rules . . . . The Commission has also affirmed its decision **approving the transfer of control** of Teleprompter Cable Systems to Westinghouse Broadcasting Co., Inc. . . . . **Molly Pauker** has been named legal assistant to FCC Broadcast Bureau chief Laurence Harris.

The NAB has supported a proposal to **eliminate the three-year rule,** requiring an application for assignment or transfer of a broadcast property owned less than three years . . . . The association also favors an FCC proposal that would permit **additional TV and FM stations in Alaska** . . . . The NAB has announced that it is accepting **LPTV applications and licensees as** associate members.

The number of TV broadcasting stations with **local access to domestic satellite transmission** has reached 161 in the top 50 television markets, according to a study released by Wold Communications . . . . Field Electronic Publishing, Inc., and Satellite Syndicated Systems, Inc., are discussing a **joint venture** to offer a nationwide teletext and news service.

Action For Children's Television (ACT) has launched a national campaign to fight what it calls **broadcasters' neglect of children.** Volunteers will examine program logs at local television stations throughout the U.S.

HITACHI
SK-110
Full-Auto Setup Color TV Camera



Designed to be the "BROADCASTER'S CAMERA," rather than just another camera in broadcasting, the SK-110 offers foolproof operation, versatility, practical features and maximum integration into the studio. The computer listens, analyzes, corrects, diagnosis, and reports each camera's status on command. Further it is capable of doing so, not just with one camera, but with as many as 96 cameras all simultaneously in two minutes.

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BUSINESS BRIEFS

Integrated Technology, Inc., has signed a contract with KIRO Seattle, WA, to install a 10-terminal newsroom computer system in its AM radio facility. The system will serve some wire scanning and futures functions for KIRO's TV station as well. The hardware consists of two 160 megabyte memory drives that will go on line May 1, 1982, and will serve the programming, talk, and news departments.

Audio + Design has become the exclusive distributor in the U.S. of **Calrec** microphones (of England) . . . . **Charisma Productions Ltd.** has been named by **Vidiom, Inc.,** to market its computer generated effects and animation bank in the U.S.

EECO Incorporated has appointed **Hoffman Video Systems, Inc.,** as a distributor for its computer controls for video production . . . . A new audio sweetening facility for video post-production is now located at **First Communications, Inc.,** Atlanta. FCI has recently added a Lexicon audio compressor-expander and quad and one-inch dubbing service . . . . **Systems Concepts, Inc.,** Salt Lake City, received more orders for the month of December 1981 than any other month in the company's history.

Quantex Corporation has reduced the prices of its Digital Video Image Processor Options 01, IEEE-488 computer interface bus, and 03 real-time image processing memory boards for the DS-20 and DS-30.

Nautilus Sports/Medical Industries is expanding its TV studio capabilities with its $1.5 million purchase of **RCA** recording systems . . . . And RCA announced that **WBRZ-TV** in Baton Rouge, LA, will begin circularly polarized broadcasts with the purchase of a new antenna and transmitter valued at $1.1 million.

Ampex sold $1.2 million worth of equipment, including VTRs and its HPE-1 editing system, to RKO General for installation in three stations . . . . The first Ampex **Digital Optics** system (ADO) has been delivered to **The Post Group** in Hollywood, with the second one to be delivered sometime in March. At press time, several network and commercial clients had already reserved time on the system.

Group W Satellite Communications has taken delivery of a **Harris IRIS** digital still store system and 23 video systems 630 frame synchronizers, worth a total of $650,000 . . . . **KSEA FM** in Seattle, WA, recently installed a Harris 903 Program Automation system worth $150,000.

Belden Corp.'s Fiber Optics Group has published a *Fiber Optic System Design Guide*. The 12-page booklet outlines some of the advantages of fiber optic systems and provides guidelines for designing communications links.

Chyron Corp. updates on estimates for the fiscal year ending June 30, 1982, show a 28% increase in sales dollars, and a 2% stock dividend paid February 1 . . . . **Oak Industries** reported a 51% increase in net income on a 32% gain in sales.

Tektronix has announced the establishment of a National Marketing Center in Beaverton, OR, to expand its customer service and provide technical consultation.

Fairview Video, Inc., has also moved to gain more room for its 25-foot mobile unit and larger recording facilities located at 2491 West Main St., Jeffersonville, PA 19403 . . . . **Pacific Video Resources** has opened its new facility at 2339 Third St. M-4, San Francisco, CA 94107. The new facility offers a full complement of location sound gear and lighting equipment. Pacific Video Resources has also purchased **Convergence** ECS-104 and 103A editing systems for the new facility.

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Type "C" broadcast quality on a budget.

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

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

You also get as standard the Ampex exclusive AST™ automatic scan tracking for perfect slow motion and still frame pictures, plus frame-accurate editing with simple, operator-oriented controls. Not to mention table-top or rack-mount versatility and compatibility with the entire family of Ampex VPR accessories. With the VPR-80, everything from setup to servicing can be accomplished with a minimum of effort and time.

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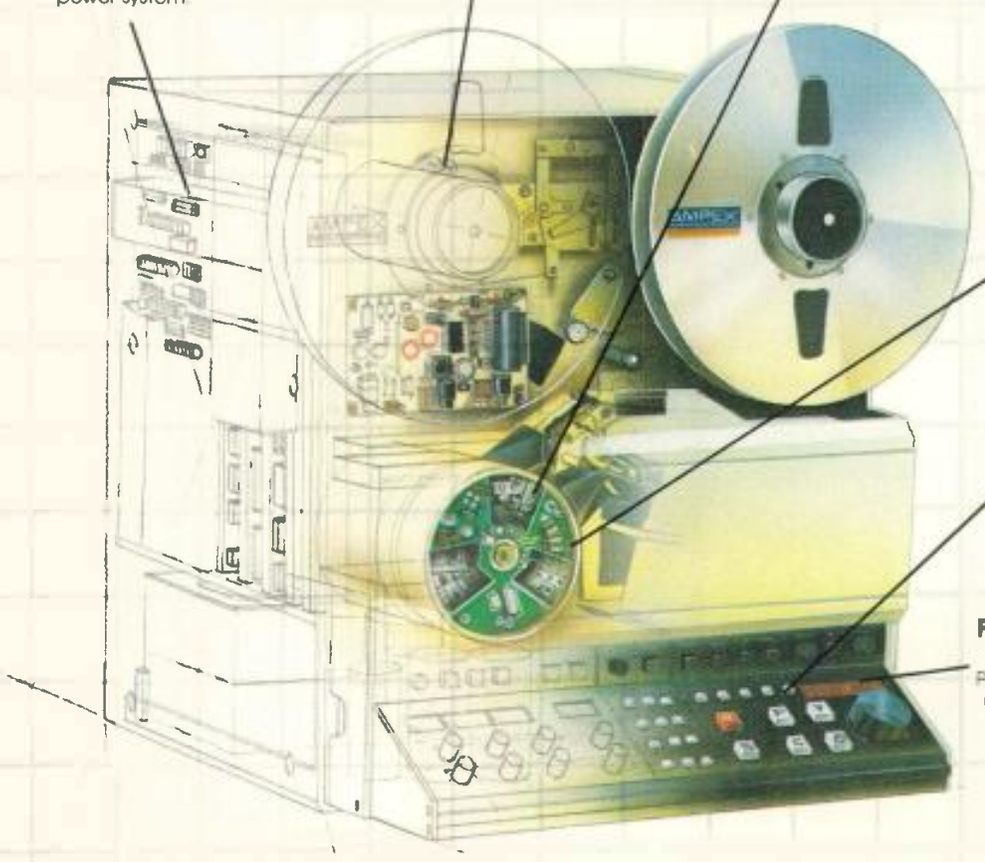

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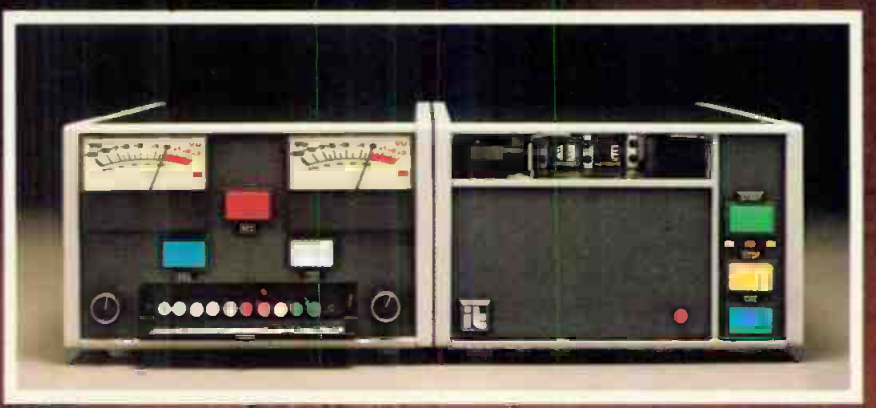

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CBS Spices Up Syndicated News Reports

THE MAGAZINE FORMAT, featuring experts who do regular reports to attract today's news-oriented adult radio listener, is becoming increasingly popular. It's no surprise then that CBS Radio Stations News Service has decided to make its *Byline Magazine* available to outside stations.

Long a part of the CBS O&O news programs, the series of 12 two to two-and-a-half-minute reports covers a wide range of topics, from women to business to music to fitness. A station can buy any number of the reports, but most stations currently subscribing to the service are taking all twelve.

"I thought the whole effort far superior to any other syndication I've seen, and it has the backing of the CBS personnel, which I respect a great deal," says Seattle's KIRO news director Vic Bramer, who subscribed to all twelve reports.

Don Patrick, news director at WWJ in Detroit, also uses all the reports because, "it's the kind of thing that fills out our format in a special way, with the sections on women and fitness getting especially good response."

One of the segments that has enjoyed universally good response has been *On Record*, written and produced for four years by Peter Bekker. It is an album review show done twice a week, appearing on at least ten stations throughout the country, with a weekly audience of well over 3 million.

What this audience gets is a quick listen to some of the songs on the album as a background to the review or interviews with the musicians. The show covers contemporary releases of various musical styles.

For the interviews, Bekker may go to Los Angeles or wherever he can catch up with the artists, sometimes doing the interview right in the recording studio. The editing and post-production work are done in the WCBS New York studios on a McCurdy audio console and an Ampro/Scully full track tape machine. After preparing the show, Bekker sends

Peter Bekker prepares script for his popular and long running segment of On Record.

RADIO PROGRAMMING

William Rukeyser reports on business in his segment of Byline Magazine.

the tape to CBS News headquarters in Washington, DC, where it is distributed to the different stations for its twice-weekly airing.

Among the other authorities in their respective fields are Steve Birnbaum on travel, Anna Mae Sukosky on women, and William S. Rukeyser on business. Offering such a wide variety of shows opens up a great many opportunities for programming sponsorship, such as diversification of accounts. Some of the programs provide a direct appeal to special-interest accounts, while others can be sold to almost any advertiser. The appeal of these shows touches directly on both the potential sponsor and the listener.

Mel Grannick hosts a widely syndicated report on medicine for the syndicated news magazine.

One reason for the full diversity of the syndication is the genesis of the individual shows. There is no particular formula for developing the type of spot or for choosing the on-air talent. More than likely the show will evolve from news directors' meetings in which all suggestions are heard and discussed and the show then begins to take form. A consensus of the news directors is reached, thus filling the needs of a broader demographic.

Another way in which the show might reach full syndication is if it exists only on a local level and is then suggested at the meeting. A tape of the show is produced and a decision is made on its viability in a more diverse market. A conflict may arise at this point if a station is prepared to buy the package, but one of the segments features a personality on a competing station. Still, the segmented nature of the package permits the client to omit that report. This was the case with WTOP in Washington, DC. John Wheeling, news director for WTOP, claims, "We bought all but two of the reports, one because it didn't fit our format, and the other because it involved a competing station, but the rest of the package is a valuable element in our programming philosophy, and the whole fits right into our kind of station."

In the Lyons Den, *is Jeffrey Lyons' report on the theatre.*

As *Byline Magazine* wins over more news directors, CBS hopes to influence the direction of news radio with this cafeteria-style programming. **BM/E**

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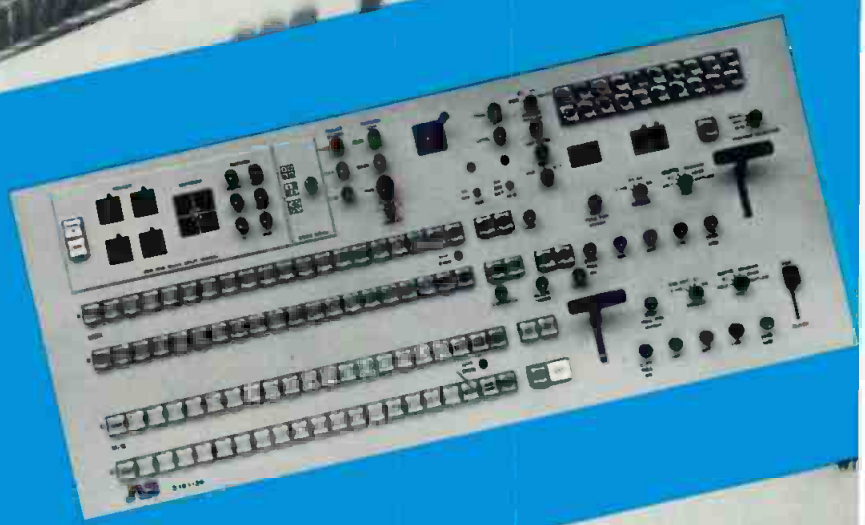

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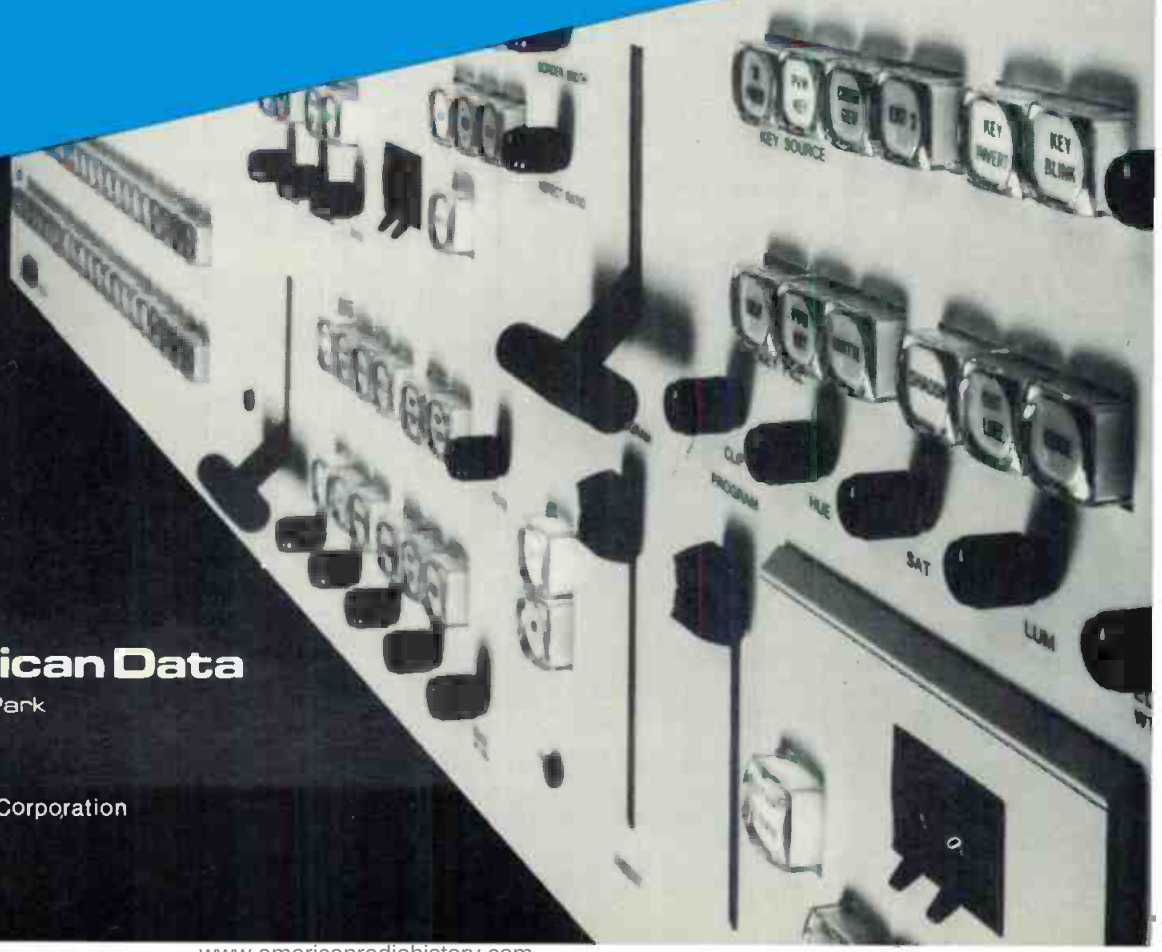

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Iris Awards Honor Local Stations for Top Production

Photographer/editor Greg Droubay and producer Judy Hallet (far right) work on a segment for KUTV's Extra *magazine show.*

On the scene for an Incredible Kids *segment are producer/host Lisa Nee, host Mark Ferree, and photographer Jon Carlson.*

STATIONS INVOLVED in local production know that quality pays off in more ways than one—and one of the more rewarding ways is with an Iris Award. At its annual meeting last March in Las Vegas, NATPE International honored 23 stations with Irises for quality local production.

A full list of the winners—three in each of seven categories—appears in the accompanying panel. Below are profiles of a handful of winners. Their stories illustrate a few of the ways local stations can make the most of their resources with innovative thinking.

Expanding on localism

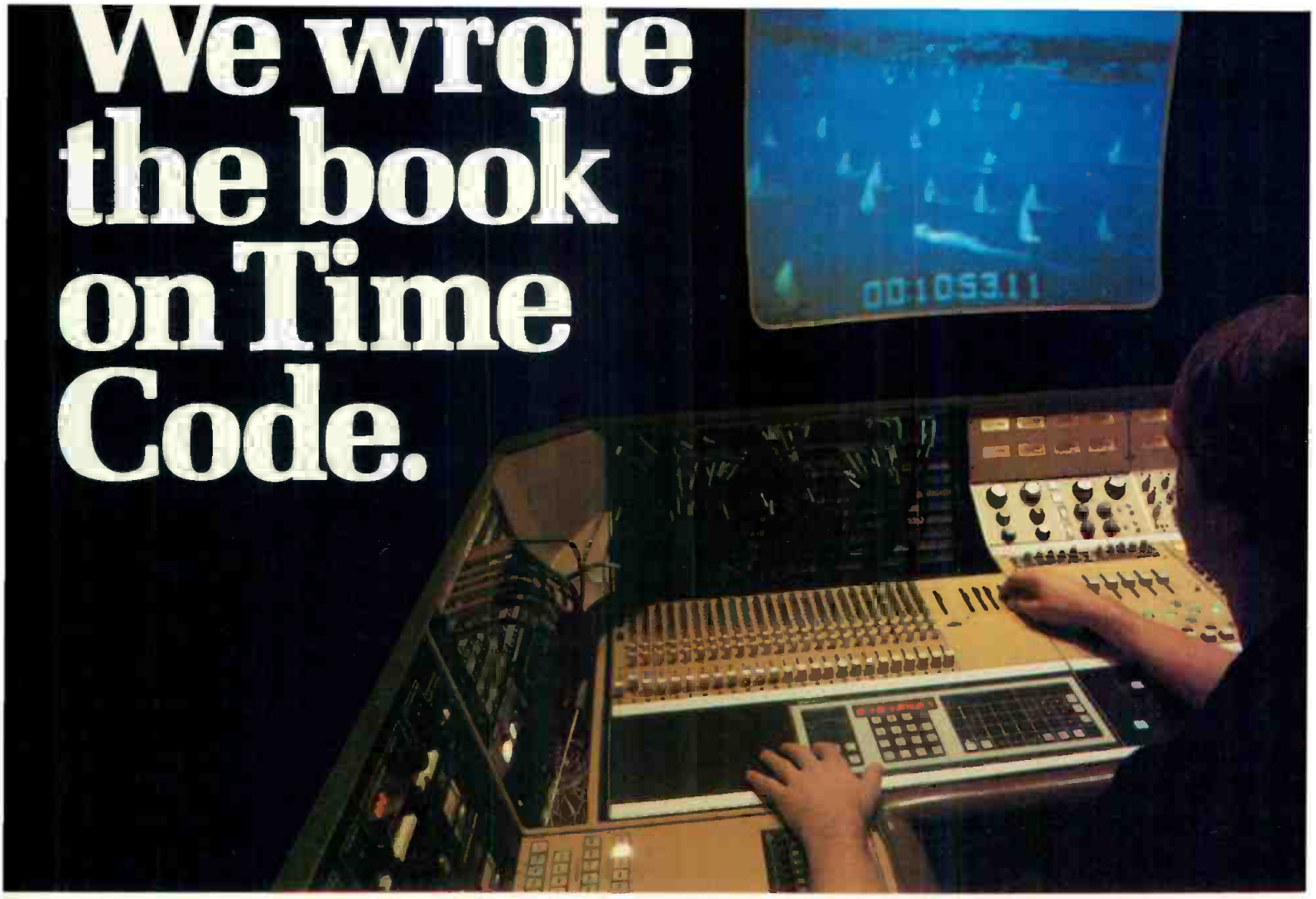
Salt Lake City is ADI 47, but its coverage area extends throughout Utah and into parts of Nevada, Arizona, Wyoming, and Idaho. For this reason, KUTV regards its Iris-winning magazine program, *Extra,* as a regional show, according to executive producer Bill Lord.

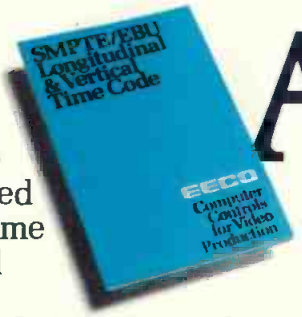
"It's unusual to find such a strong commitment from management for this kind of program in a market this size," Lord says. "We have 10 full-time people, plus all our own gear and our own editing facilities." Those editing facilities are used to the fullest, with each segment for the half-hour show taking eight to 24 hours of editing.

"We're extremely careful in the editing process to make sure that the video and the sound really work," Lord comments. "It's a very high production value program."

Extra, with its news magazine format, covers a variety of topics, exemplified by the installment that won the Iris. The first segment was an investigative report on a neo-Nazi church in Idaho, complete with uniforms, stylized swastikas, and white supremacist rhetoric. The second exposed a local antipornography crusader who, representing himself as being from the Attor-

We wrote the book on Time Code.





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ney General's task force on pornography, went into schools with a slide show detailing "subliminal sex" in magazine ads. This segment, which Lord describes as "hysterically funny," amused everyone except the Attorney General's office, which quickly went after the crusader. The third segment on the winning show profiled the elephant trainer in the Portland Zoo.

As varied as the subject matter are the backgrounds of the *Extra* staff. The crew includes both people with strong journalism backgrounds and those with filmmaking experience, a corroboration "that ideally comes up with the best of both worlds in terms of journalistic value and production value," explains Lord.

All production is done in video using two Ikegami HL-79s, with an RCA TK-76 as backup. Recording is on Sony BVU-50 ¾-inch field decks. *Extra's* three editing rooms are fully equipped with Sony ¾-inch equipment, one with an 800 editing system and the other two with older 200 systems. The show is then dubbed up to one-inch for airing. Chromakey effects for the stylized open (featuring Lord as host) are done through the station's Ampex 4000H switcher.

Audience as jury

WBBM-TV, Chicago's CBS O&O, scored big with its dramatization of a sensational 1919 sports trial. "The Trial of Shoeless Joe Jackson," with a script by novelist Bill Brasher, was an original drama based on the controversial throwing of the World Series by the Chicago White Sox. Six or seven players were involved, but the guilt of one, "Shoeless" Joe Jackson, has remained open to debate.

The station did not attempt to settle the debate. Instead, it produced two endings and threw the question open to viewers, who were asked to call into specially set up 900 telephone lines. Approximately 26,000 called in—a hefty response for a show that aired from 9:00 to 10:00 Sunday night. (The audience, incidentally, overwhelmingly found the player innocent.)

Producer Scott Craig said the show was produced film-style, using a single Sony BVP-300 camera and BVU-110 ¾-inch recorder. The set was a courtroom in Chicago Criminal Court, built a year or two after the trial took place.

"We returned the courtroom to its look of the '20s," Craig explains, "and costumes and all the rest were accurate. We shot it using a Nagra ¼-inch portable ATR, double-system, edited, and then went to Universal Sound and relaid the entire track down, conforming the sound track with a computer,

☆ Seventeenth Annual Iris Awards ☆

Public Affairs Specials

Markets 1–10: WABC-TV, New York, for "Essay on Drugs," program executive Charles W. Larsen and producer Gil Noble.
Markets 11–40: WPLF-TV, Miami, for "Assembly Line Justice," program executive Jim Paratore and producers Clarence Jones and Nancy Solomon.
Markets 41–211: WMTV, Madison, for "Incest: The Family Secret," program executive Laurie Leonard and producer Steven Jandacek.

Public Affairs Series

Markets 1–10: WJLA-TV, Washington, for *Until We Say Goodbye,* program executive Carol D. Myers and producers Paul R. Fine and Holly K. Fine.
Markets 11–40: KATU-TV, Portland, for *Town Hall—Behind Closed Doors,* program executive Robert Kalstad and producer Bob Kalstad.
Markets 41–211: KNTV, San Jose, for *Eastside/Westside,* program executive Stew Park and producer Lawrence Robbin.

Sports

Markets 1–10: WCBS-TV, New York, for "1955 Brooklyn Dodgers: Champs at Last," program executive William C. Lacey and producer Carmine Cincotta.
Markets 11–40: KING-TV, Seattle, for "Hydro Highlights '80," program executive Keith Lollis and producer Steve Wilson.
Markets 41–211: KITV, Honolulu, for "Downwind to Paradise: Transpac '81," program executive Richard Grimm and producer Paul Guanzon.

Children

Markets 1–10: KGO-TV, San Francisco, for "Dudley's Diner," program executive Jim Major and producer Dave Garrison.
Markets 11–40: WCCO-TV, Minneapolis, for "Incredible Kids," program executive Charles Sorlien and producer Lisa Nee.
Markets 41–211: WOWK-TV, Huntington, for "Breaking Away: So That's How It's Done," program executive Paul Dicker and producer Andrew Friedman.

Entertainment

Markets 1–10: WBBM-TV, Chicago, for "The Trial of Shoeless Joe Jackson," program executive Cindy Walker and producer Scott Craig.
Markets 11–40: KTCA-TV, St. Paul, for "Nighttimes: Variety," program executive Larry Morrisette and producer Kathi Riley.
Markets 41–211: KGMB-TV, Honolulu, for "Homegrown 4," program executive Phil Arnone and producer John Wray.

Magazine Format

Markets 1–10: WNAC-TV, Boston, for *More,* program executive John Atkinson and producer Marcie Diehl.
Markets 11–40: KOMO-TV, Seattle, for *PM Northwest,* program executive Patrick Scott and producer Jack Norman.
Markets 41–211: KUTV, Salt Lake City, for *Extra,* program executive Robert Temple and producer Bill Lord.

Other

Markets 1–10: WBZ-TV, Boston, for "Big Boys Can Cry: The Changing American Man," program executive Richard Kurlander and producer Francine Achbar.
Markets 11–40: KPNX-TV, Phoenix, for "Northland: Sky-12 Country," program executive Robert Allingham and producer John Bass.
Markets 41–211: KVOS-TV, Bellingham, for "The 1981 Ski-to-Sea Festival Race Highlights," program executive Robert Louis and producer Lynn Rosen.

International Iris Awards

TV Globa Ltda, Rio de Janeiro, Brazil, for "Vinicius Para Criancas," program executive Felipe Rodriguez and producer Ewaldo Rui.
CITY-TV, Toronto, for "The New Music," program executive Phyllis Switzer and producer John Martin.

equalizing every cut as we went." Video post-production was performed at the station.

Covering the courts

"Assembly Line Justice," which won an Iris for WPLG-TV, Miami, in the public affairs specials category, shows that a foot in the door can be used to good advantage. In this case, the Post-Newsweek ABC affiliate used its entree into the state's courts to produce a portrait of Miami's overcrowded, overworked criminal justice system.

"Our station had brought the suit that allowed cameras into the courtroom," explains investigative reporter Clarence Jones, who coproduced the show with Nancy Solomon of the public affairs department.

"We felt that we hadn't fully used the advantage we had gained. We had three different goals in mind: to use the camera more effectively in the courtroom, to try to explain to the public how the system worked and what it would take to cure it, and to broadcast the show at a time when it would have an impact on the state legislature."

A camera crew camped out in the courthouse for almost two months, with one Ikegami HL-79 set up inside the courtroom and another poised in the hall to capture the reactions of people going in and out. Restricting the producers were court rules stating that equipment may not be set up or broken down while court was in session, and prohibiting the use of any auxiliary lighting gear in the courtroom.

"We did not even use lights in the hallway," Jones explains. "We tried to show everything with a natural light look. For a couple of standups in the hall we used lights, but for almost everything else we used natural light." Uneven lighting in the hallway complicated matters somewhat, Jones notes, but lighting in the courtroom itself was generally adequate.

The hour-long program was recorded on a Sony BVU-110 recorder, edited on ¾-inch, then transferred to one-inch for airing. Limited editing room in the news department, plus the pressure of the legislative deadline, sparked many all-night editing sessions.

"We would start after the 6:00 news," Jones recalls, "and work until we all were comatose at 4:00 or 5:00 a.m."

"Assembly Line Justice" ran as part of a "Crime Prevention Week" the station sponsored, a stationwide project that began in the programming department. Other elements included a quiz on crime prevention and a telephone poll of local residents, conducted by an independent organization. The program itself was immediately followed by a 30-minute live conversation with key legislators in Tallahassee.

Response to the show was strong and positive, and recognition has included not only the Iris but also a statewide Emmy and a grand prize from the Florida Bar Association.

Kids on location

WCCO-TV, Minneapolis, evidently believes that variety is the spice of production. Its award-winning children's magazine, *Incredible Kids*, is produced entirely on location from a small mobile van dedicated to the station's Young People's Programming Group.

The van, which roams the market producing features on "incredible kids," sports and hobbies, and other informational and entertainment material, carries two Sony recorders with playback—a BVU-50 and a BVU-110—along with a color monitor, 110 V power supply, and equipment storage space. The camera is a new Sony BVP-300. According to execu-

Producer/director Scott Craig directs actor Jack Wallace for WBBM's "Shoeless Joe." The station took pains to make the courtroom setting as authentic as possible.

tive producer Ken Reese, the station has about 16 of these cameras and relies on them almost completely.

Other equipment in the van includes Swintek wireless mics, Sennheiser shotguns, and lighting by Lowel and Colortran. Production is entirely on video, Reese explains, with everything, even the intros, done in the field. Editing takes place back at the station on WCCO's ¾-inch editing system, which includes a Sony 500 editor and BVU-200 recorders.

Staff for the show includes Lisa Nee, the full-time producer and cohost, full-time photographer/editor Jon Carlson, part-time producer and cohost Mark Ferree, a part-time assistant producer and school coordinator (a teacher from one of the local schools), and a full-time intern. Additional support occasionally comes from the recently established local programming department, which Reese heads.

The 30-minute program, which airs once a month, has included such items as a feature on a Minnesota farm boy who is a national karate champion and one on a 10-year-old boy who is a DJ on a local radio station. A local children's theater group makes regular appearances. The show is directed toward a broad audience, ranging in age from about 10 up to 18 or 19.

Local response to the show has been excellent, Reese says. Before each monthly installment, the station mails a program outline and study guide to some 900 teachers.

"This allows teachers who wish to participate to use the program as a tool in the classroom," explains Reese. "The response has been very good, and many teachers would like us to have the show on more often. Also, the programs are available to the schools from a lending library we maintain at the station, which has all of our kids' shows, our news specials, and our documentaries."

The success of *Incredible Kids* has inspired the station to several related productions, Reese notes. These have included dramas for children and

TV PROGRAMMING

adults, as well as a weekly one-minute spot, *Know the News*, directed at young audiences and aired during *PM Magazine* each Monday evening.

Fast boat to Hawaii

KITV, the ABC affiliate in Honolulu, was, along with KGMB-TV, one of two stations in its market to win Irises this year—significant because no Honolulu station had ever before won an Iris.

"We didn't think we had much of an opportunity because we're so far out here," admits program executive Richard Grimm. He points out, however, that distance from the mainland has encouraged stations in his market to go heavily into production. "I think the market here probably does more production work than any other our size."

KITV won in the sports category with a half-hour special, "Downwind to Paradise: Transpac '81." Transpac is an annual boat race from Los Angeles to Honolulu; multihull boats such as catamarans compete in even-numbered years, and monohull boats race in odd-numbered years.

The production was given a special dimension by the participation of KITV cameraman Brian Smith as a crew member on one of the craft. Although the station is all-ENG, it reinstated a Cinema Products CP-16A film camera for Smith because of the rough weather expected in the race.

"We didn't have any means to waterproof our electronic equipment," Grimm explains, "so we decided we'd better shoot it in film." Smith, who had never shot newsfilm before, needed a crash course in film technique.

The station also covered the race from land in LA and from land and helicopter in Honolulu. This time the crew depended on its RCA TK-76C cameras, taping on Sony BVU-50 and BVU-110 ¾-inch machines.

For editing, all film and ¾-inch tape was transferred to one-inch and edited on the station's Ampex VPR-2s. Some effects available on the Grass Valley 1600 switcher were incorporated; "but nothing fancy," Grimm says. The various visual elements were combined with music, ambient sound, and some narration to complete the segment.

Production is a mainstay for KITV, which has a strong news operation and produces many investigative reports. These are frequently presented as eight- to 10-part series during the news program, then reedited into the half-hour format for later airing.

How does it feel to be one of the first Honolulu stations ever to win an Iris? "It feels fantastic," says Grimm, with a smile. **BM/E**

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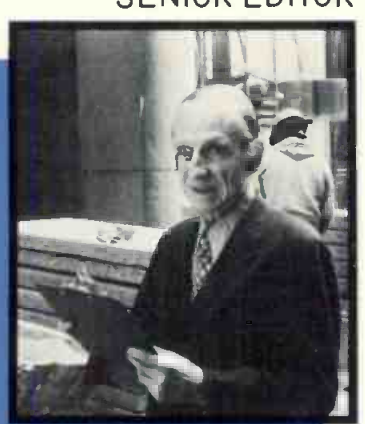
FACILITIES DESIGN AND ENGINEERING

A NEW SERIES BEGINNING IN THIS ISSUE

EDITED BY
ROBIN LANIER
SENIOR EDITOR



Designing and engineering a modern broadcasting station is a complex venture that can end in improved operational and financial rewards, or can be plagued with costly mistakes and compromised objectives.

There is in the industry a vast store of expertise on every aspect of plant design and construction. Until now, however, no comprehensive guide has been available to help station managers and engineers with the job—no "how to" for plant construction that analyzes all the decisions to be made and warns of hidden traps.

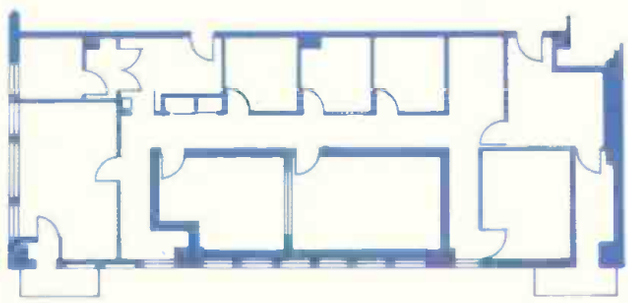
BM/E has undertaken the job of assembling such a guide. Beginning with the debut article in this issue, the guide will be done as a series of feature articles, each prepared by an expert and detailing a specific aspect of broadcast plant design and engineering.

The series begins where most stations begin: the architectural design of the building and the building space. It was prepared with the assistance of Justin Henshell, AIA, a New York-based architect with extensive experience in design of broadcast plants, among them WNCN, WHN, and WNEW in New York City; WPIK in Alexandria, VA; WHYI in Fort Lauderdale, FL; WKCI in New Haven, CT; and WFTQ/WAAF in Worcester, MA.

In future months, articles will deal with the nuts-and-bolts specifics of the theme: overall technical design and station layout; choice of transmitter and its location; choice and installation of transmitting and microwave antennas; studio wiring schemes; lighting design for TV studios; acoustical wall treatment and soundproofing; furniture and decor selection; equipment for test, measurement, and monitoring; TV station pulse timing distribution; ENG and remote pickup equipment and use; the post-production facility; remote control and STL principles and applications; satellite earth station site selection and installation; telephone interfaces; and much more.

Intended to be a practical, down-to-earth guide, this series will pinpoint the critical decisions, the important equipment, and the necessary brain power needed to design and put into operation today's broadcast station. Look for the distinctive "floor plan" logo used to distinguish each article to keep up with this valuable new series.

PART 1



WORKING WITH THE ARCHITECT

THE FIRST STAGE IN ANY STUDIO BUILDING OR REBUILDING PROJECT IS FINDING AND WORKING WITH A COMPETENT ARCHITECT.

New home for KOCO-TV, Oklahoma City, designed by Rees Associates.

A WELL-THOUGHT-OUT CONSTRUCTION PLAN CAN SAVE THE COSTLY PROCESS OF CORRECTING ERRORS AFTER THEY HAVE BEEN MADE.

WHEN A STATION makes the decision that launches it into the building or substantial rebuilding of a broadcast plant, the first order of business is choosing the experts who will be needed to help the project through, generally the architect and consulting engineer. Management may dispense with either or both of these experts, since good stations have been built without them. But the number is small compared with those constructions that were both more costly and less successful that they would have been with expert help from the beginning. Many times the architect is called in as a kind of "station doctor" to straighten out problems after construction was underway; in every case the problems could have been prevented and extra cost saved if straightforward architectural expertise had been applied in the original planning.

CHOOSING YOUR ARCHITECT

Since broadcast station design is highly specialized, the architect you pick should have substantial experience in building stations of various sizes. He needs this experience in order to interface successfully with the station's engineering staff or with the consulting engineer (if one is hired), as well as to come up with valid solutions for a host of building problems.

It is most helpful to the venture for the architect to have on his staff experts in planning and installing mechanical and electrical equipment, since heating and cooling equipment is a substantial part of the cost of a modern broadcast plant. Proper electrical power and lighting design, at reasonable cost, is also a must. Emergency power (of which more below) must be included in the supply power design.

The architect can perform an important service at the very beginning by helping the owner choose a site, so bring him in *before* the site is settled. He has valuable advice on whether the owner should put up a brand-new building, renovate an old one, or rent space.

The architect's primary function is the development of the work-space layout, the horizontal flow pattern, which he must do in collaboration with the owner and the engi-

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neering staff (or advisor). This fundamental part of the design must flow from an understanding of the owner's objectives and way of operating.

To make interchange effective, a person or a small group in the management must be assigned the authority to deal with the architect, to explain problems, and to approve the architect's solutions to those problems.

The architect, when his design has been completed and approved, will prepare the construction drawings that show the contractor how to build the station. The architect will observe the construction process to varify that it is correct in every detail (though he cannot guarantee the construction performance).

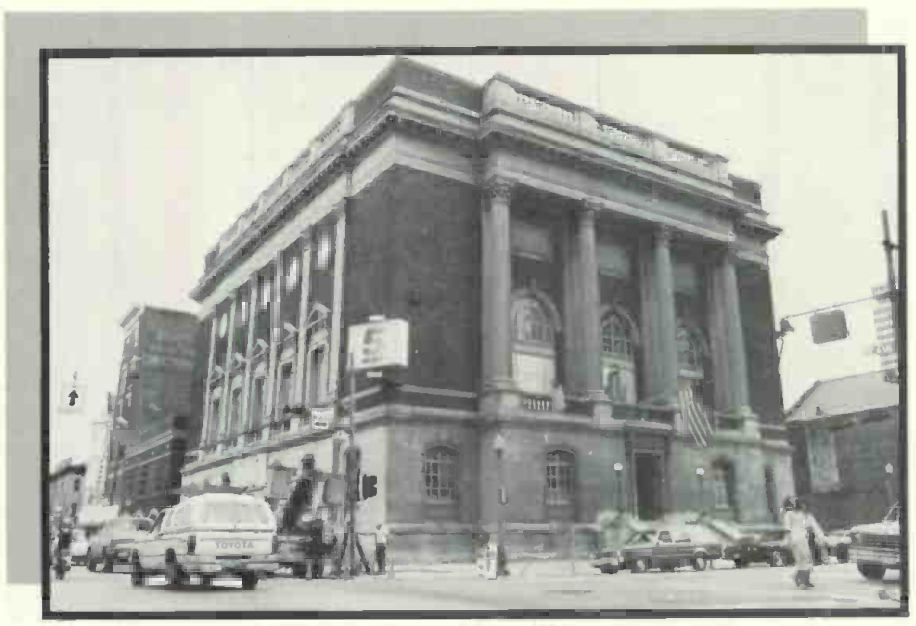
Having this specialist in charge will most likely save the owner large sums of money. Persons without professional knowledge of building processes are often wrong in their ideas of how to do things, ignorant of building codes, and not well informed on comparative costs. One example of how "common sense" may mislead you: it often costs more to remove, rehabilitate, and reinstall such items as lighting fixtures and doors than it does to buy new ones (which would probably fit the new quarters better).

SITE SELECTION DETAILS

A site must, of course, have enough room for the operation, including ample room (with some possibility of expansion) for parking of staff and operational vehicles. A station with a large ENG and remote pickup operation will have several vehicles. If it is a television station, the vehicles are likely to be large. They have to be housed properly at the plant. If there are helicopters "on staff," they of course need a pad next to the building.

An element of the space no one can overlook these days is that for a satellite earth terminal. It is clear that the earth terminal will be virtually universal in three to four years, so make room for it now—it will cost you far less than space added later.

It is wise to avoid a site next to a highway, especially if there is an upgrade where trucks change gears and labor noisily uphill. Also unsuitable is a site where trucks come off the highway, stop at a traffic signal, and start up again. Keeping the noise out of the plant is very costly, and it frequently saves money to put a broadcast station building in a quiet neighborhood. Downtown locations are attractive for many reasons, but they may need expensive noise control. Proximity to fire houses and hospitals should be avoided.



Completely renovated downtown studios of WLWT, Cincinnati.

The grand opening of CFMT, Toronto's renovated studio complex.

WHAT KIND OF BUILDING?

A station owner who wants his building to make a strong visual statement to the community must usually put up a new plant, with an architect whose style pleases him. If an original exterior is not a prime requisite, using an older building (such as a pre-1960 factory) of strong construction, in good condition, is nearly always a better idea today than building a new one. New construction solid enough to house a broadcast plant properly is now extremely expensive.

The floor load capacity is a factor often overlooked; it should be checked by an expert in every case.

One special type of building that often works well as housing for a broadcast plant is a large garage or small warehouse with cement floor, well-spaced columns, high ceilings, and heavy walls. Floor loading is not a problem and the exterior walls minimize external sound. Usually the interior space is unobstructed with load-bearing walls, and can be divided into the needed station spaces at moderate cost.

There are some other matters you must check out before committing yourself to a building. It must have 24-hour access (in a multistory building, as noted below, the elevators must

be operating 24 hours, seven days a week). There should be, for radio stations, at least 10 feet of clearance between the lower edge of the ceiling and the floor. This allows the cooling and heating ducts to be hung from the ceiling, and the floor to be raised for the plant cabling as described in detail presently. Television stations need at least some areas with much more clearance, 20 to 30 feet, for hanging lighting grids.

The main studios in a television plant are most easily serviced if they are on the ground floor, with a ramp to bring in large sets directly from the street. In some cases the studio can be designed to allow large trucks to back in at one end. This is advantageous not only for set delivery but also for consolidating large mobile studios into the plant with a plug-in arrangement.

If the TV studios must be above the street level, you will of course need large freight elevators for the operation.

Traffic area at KTVU, Oakland, designed by Walker Associates, Inc.

THE MULTISTORY BUILDING

In choosing space in a multistory building, it is wise to avoid the top floor. The servicing of elevators, air conditioners, and such on the roof is likely to have mechanics opening your ceiling or tramping through your studios. But, for better security, it is also wise to avoid the street level.

You must examine your prospective neighbors on the floors above and below. Strong vibration from printing presses or other heavy machinery is a no-no. So is a medical office with diathermy machines—unless the proprietor will let your engineer come in and apply RF suppression.

You must check for adequate space to put your heating and cooling units, and be sure your architect knows the building and fire codes that apply so you will know if a convenient space is completely legal. You cannot depend in any circumstances for heating and cooling services from the building. Additionally, expect that heating and air conditioning will be shut down or reduced at night and on weekends. (More on this in the next section.)

Also check the location of other tenants' heating and cooling units to see if they will cause a noise problem just outside your windows. If you must have that space, be aware that keeping the mechanical noise out of the plant is going to be expensive.

Very critical in many cases is finding space for your emergency generator. There are likely to be spaces where you will not be allowed to put your generator with its fuel tank. Your architect must know the local fire code intimately so he can guide you on this. Work this out before you sign the lease!

BUILDING AND SUPPORT EQUIPMENT

Here are some highlights of good practice in building layout and support equipment design. They are simply a few *examples* of the kind of direction the architect can give the enterprise.

To repeat, the station has to have its own heating and cooling systems, designed carefully to handle the load. The station ideally needs three separate delivery systems. One is for the sales, traffic, and management people who are on the job 9 to 5 during the day; this may be already available in the building. The second is for those areas that will often be occupied at night or on weekends.

The third is for all the on-air studios, the production areas, the newsroom, and music library, which need controlled temperature and humidity 24 hours a day, seven days a week.

Proper humidity is an essential part of this, both for a healthy environment and to prevent static electricity buildup. The studio system should have multiple units, each capable of delivering 75 percent of the load so that servicing and repair do not cause total shutdown.

Noticeable but draft-free air movement is essential in the working studios. Psychologically the feel and very slight noise of air movement in small, windowless studios reduces that "boxed-in" feeling.

The heating load in the sound-isolated areas will be small because the insulation required for sound isolation also cuts down on heat loss. Heat from lights, personnel, and equipment usually requires cooling 10 to 11 months a year. The occupant should be able to adjust the equipment, as mentioned above, to get the conditions most comfortable to individual needs.

The duct work for the heating/cooling systems will be hung above the acoustic absorbing ceilings throughout the plant. In the studio complex, it may be above or below the solid sound isolating system. Below, in the cavity between the two ceilings, is frequently better.

Reducing the noise created by the air conditioning system must be planned with the utmost care before the equipment is installed—or even bought. The noise has several elements. One is the "speaking tube" effect, with the sound carried from one space to another through the duct. This is usually controlled by using duct lined on the

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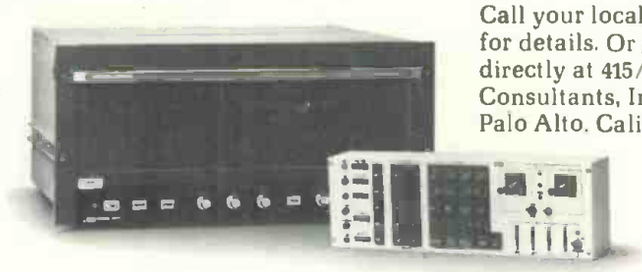

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inside with sound-absorbing material.

The lined duct also works against another element of the noise—that of the moving air, including the fan noise that may travel all the way from the air conditioning machinery. A part of the basic design that helps with this, too, is the use of a large quantity of very slowly moving air: the slower the air moves, the quieter it will be.

A third element of the noise is mechanical vibration from the air handlers, carried by the metal of the ducts. The standard cure for this is a "soft" coupling between the duct and the machinery—the mechanical vibration cannot cross the soft boundary.

In the multistory locale, never depend on the building toilets for your personnel. You must have your own, close to the working area so personnel can duck out and be back in a hurry. And they should be able to hear the on-air program in the bathroom.

Properly treated, windows can add a feeling of openness to an office.

The local building code in each locale will specify how fire exists must be placed in relation to the work areas. This must be checked out early in the planning stage, because altering the location of an exit after construction has started is sure to be costly. It is illegal in some areas, for example, to make the occupant of a space go through more than one room to get to the fire exit. Or the code may require two exits for each working space.

You must also verify the need for sprinklers, both from a code and insurance standpoint, and this must be done during the planning stage. Water sprinklers are undesirable in studios because of potential water damage to equipment. Halogen fire extinguishers are a good choice here, but are expensive and require considerable above-ceiling space.

WINDOWS: DANGER!

If there are studio windows on the outside, they need special handling. A clear window allowing the DJ at work to be seen could invite al kinds of trouble. On the other hand, a blank wall is also poor—again for psychological reasons.

One solution is clear glass block. This makes the interior look hazy from the exterior, but gives the occupant a feel for the outside. A second way is to put the studio wall three to four feet inside the outer wall, with windows in both. The space between the inner and outer wall can be thermally controlled to cut the heat-cold load and acoustically treated to reduce noise. And using bulletproof glass is not a bad idea.

MORE ON NOISE

Noise control has already been discussed, but there is more to be said. In a broadcast station, noise is like a sea held back by a dike with small leaks everywhere.

Familiar defense against exterior and building-carried noise and vibration is the "room within a room" construction, with the studio a totally separate "box" isolated by soft mountings from the building. The experienced architect will know when this is necessary, usually when there is some inescapable heavy vibration in the building itself or loud street noise outside a multistory building. The construction techniques involved are now fairly well standardized. Later articles in this series will describe the acoustic design of broadcast studios in more detail.

A "noise" sometimes overlooked in the design is the sound from the monitors in the studio itself. The rock DJ tends to turn the monitors up to deafening levels and the music, especially the strong low bass prominent in rock music, will go through into the adjoining area as noise.

Reducing this problem requires, at least, taking the speakers off the wall and putting them on soft mountings that isolate them from the building structure. A complete solution may require a small reeducation of the DJ, to persuade him to play his recordings at a more moderate level.

A place where noise control is often overlooked is the production room. There will often be an open mic, if on-air material is taped there. The room needs isolation from external noise and control of internal noise.

Even the corridors in the studio section should get sound-absorbing material on the walls and ceiling. The sense of "quiet" a person gets in walking through such a corridor is a strong inducement to maintain silence. The staff doesn't jabber, visitors fall silent, and the operation benefits from reduction of hall noises.

WORK-SPACE RELATIONS

Noise control is also one of the considerations in the placement of the studios with respect to other work areas in the plant and the disposition of corridors and doors. The overall work-space plan should group the on-air studios in one general area and the offices for management, sales, and traffic in another. This obvious division keeps office and visitor traffic away from the studios, but it must be done in such a way that vital work flows are naturally accommodated.

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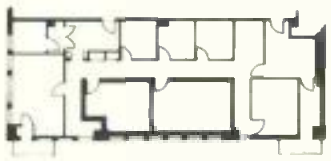

FACILITIES DESIGN AND ENGINEERING

The actual specifics of each work-space plan must be developed in close consultation between architect and management. A beneficial side effect of these talks is that members of the staff have to think hard about how they actually operate and how they relate to others on the job. This task may clarify job functions and the efficiency of the operation.

There are some secondary points on which inexperienced space planners often go wrong. Look out for underestimation of storage space, especially for waste materials. For example, the yards and yards of paper that come out of teletype machines can't just be thrown in the corner—a fire hazard. A tightly covered receptacle is needed, away from the working area but not too far away.

Another space error that trips up the inexperienced is overlooking the thickness of the walls when figuring the sizes of the rooms during early planning. In a broadcast station, where at least some walls are likely to be six or more times as thick as the usual wall, the total floor area taken by the walls is substantial and must be allowed for. Similarly, corridors can't be tiny passageways; they must be wide enough for two people to pass and for equipment to be moved.

The plan must also give the staff easy accessibility to every item of equipment that must be serviced.

Decor is an important part of the Rees Associates KOCO design.

WHERE WILL THE TRANSMITTER BE?

A fundamental part of the design, of course, is the location of the transmitter and its antenna. In most cases, when the site is chosen, the owner will know whether or not the transmitter can be in the studio plant or must be remotely placed. Finding a proper remote site is a technical problem that will be considered in detail later in this series.

If the transmitter is going into the plant, the architect may plan the physical space and the basic supply power. The discussion of the technical plant design in a succeeding article will cover the requirements of transmitter installation in detail, including a vital part of the plan sometimes overlooked when engineering staff design the plant: the FCC's requirements on placement of the transmitter and its monitoring equipment with respect to the working studios. The transmitter complex, in the building, may well include microwave receiving equipment and antennas for such functions as remote pickup.

A flow chart of station functions used to define space allocations.

CONSULTATION ON DECOR

The architect will have expert advice to give on another essential part of the work-space ambience: the decorative qualities of such things as furniture, wall finishes, cabinets, and storage consoles. Most valuable will be his experience in getting attractive appearance at attractive cost. The station management may or may not decide to hire a consultant on interior design; if they do, the consultant and architect will work very closely together on the interiors. The architect himself may well supply the direction needed for this part of the enterprise.

Lights in television studios constitute a major technical element to be treated later in this series. Lighting in work areas can be specified quite precisely by the experienced architect according to established rules for adequate illumination. Dimmers are an excellent idea in radio studios, to allow the DJs and news announcers to set the light at the most comfortable level— this is another element of the "good" ambience I referred to earlier. Further, there are a number of inexpensive ways to use lights as decor, to help make the work area attractive. Color filters, combinations of spots with general lights, and other techniques can enhance studio decor at moderate cost.

ESSENTIALS OF EQUIPMENT INSTALLATION

The often-used raised floor system is probably the best way to allow space for the interwiring cables that connect unit to unit and room to room. It is comparatively inexpensive, while allowing instant accessibility to the cables. This accessibility is one of the most important characteristics of a broadcast design. The engineer thinks of a new way to solve an operations problem; a new unit is bought; a new chief engineer comes in and wants to rewire the whole plant. Lifting removable floor panels is all it takes

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to get at any and all cables. Don't overlook the possibility of special fire department regulations applying to the under-floor cavity. The architect must check these carefully and be prepared to adjust to them.

Carpet tile over the floor panels is fairly expensive but pays for itself over and over. It lifts easily and goes back again without being damaged. It also stands up well to heavy consoles and other equipment.

The floor covering should have good electrical drainage to minimize the buildup of static electricity. A good level of humidity also helps to keep the electrostatic buildup low, to eliminate noise in consoles and other gear, as well to minimize the tendency of discs to attract dust.

Access to the raised floor in the studios from the corridors requires a ramp from the lower to the higher level. This makes practical the moving of heavy equipment into and out of the studios.

A part of the plan that must be treated in the early stages—and too often gets left to the end—is the placement of monitors throughout the plant. Monitor speakers inserted into a studio after all else has been planned and built are all too likely to be poorly placed. The exact handling of the monitors in the studio is a part of the technical plan that must be given effect very early in the design effort, in joint discussion between the architect and the technical consultant.

HOW TO PAY THE ARCHITECT

The foregoing gives, I believe, enough samples of what the architect does to indicate clearly the kind of direction he gives the enterprise. His participation can be divided into five stages, according to long custom and to agreement within the profession. The station management should know that the architect's services can be terminated at the finish of any one of the stages, and his fee will be adjusted. Standard agreements prepared by the American Institute of Architects are accepted by virtually every member.

The first stage is schematic design, the production of rough of the work-flow plan that was developed in full consultation between the station and the architect. Schematic design takes the form of a plan, drawn to scale, showing the placement of the main work areas but omitting nearly all detail, such as door swings, equipment placement, and wiring runs.

The second stage is design development, during which the architect and the owner make a complete determination of the operating and support equipment that will be installed in each work area, how the plant will be wired and supplied with water and waste removal, the thickness of every wall, schematic heating and air conditioning, and a hundred other details of the construction. Again, the architect works most closely with the station management and the technical consultant to reach conclusions on every major item of equipment in the plant, where it will go, how it will be connected to the whole.

The third stage is construction documents, which are the fully detailed and precisely scaled drawings that show the contractor exactly how to build the plant. There will be, of course, a considerable number of such drawings, one just for electrical wiring and fixtures, one for the heating and cooling equipment, one for details of wall construction, etc. These drawings will take by far the largest input of the architect's time and staff effort.

The fourth stage is assisting the owner in getting bids from contractors on the job, evaluating the bids as they come in, and helping the owner to reach a decision on the contractor.

One of the architect's most valuable performances, a delicate mixture of diplomacy and battle wisdom, comes into play when the bids come in. They often seem too high to the unhappy owner and he casts about for ways of reducing the cost of his plant. The architect may point out that the owner can give up that private shower in his office and get different carpeting. Beyond that sort of thing, the architect may revise the plan for a little "less" here and there to reduce its cost. But in most cases, when it comes to essential equipment, he must tell the owner that, *no*, he *cannot* get it cheaper elsewhere. These facts of life sooner or later are accepted and the job goes ahead.

The fifth stage is overseeing the actual construction on behalf of the owner, following each detail to be sure the contractor has executed the work in accordance with the drawings and specifications. Included is the approval of payments to the contractor as the job progresses, and a final OK on the job when it is done. In this stage the architect is acting as the agent of the owner, a change in the relationship that comes about as a natural result of the evolution of the job.

A table of the percentages of the total fee payable to the architect for completion of each stage, recommended by the American Institute of Architects, is as follows:

Schematic Design	15%
Design Development	20%
Construction Documents	40%
Bidding or Negotiation	5%
Construction Oversight	20%

The amount due for each stage is shown separately, because in some cases the stages may not all be completed in serial order and may overlap in time.

ON THE AIR!

When the plant reaches a certain point of completion, the transmitter can be fired up, the production people start using the new studios, and the salesmen fan out to business prospects in the community. But there are always details hanging over. The architect, the owner, and the contractor tour the plant, clipboards in hand, to make up a "punch list," a final inventory of everything still to be done or redone. The owner can deduct the cost of errors from his pay to the contractor or get the errors corrected. There will probably be a succession of such lists but eventually, in a few months, even these become obsolete as the plant settles down and adapts to its new space.

But broadcast managements will be glad to know, if they don't already, that the contractor ordinarily gives a one-year guarantee on work and materials. He must repair and adjust any serious fault that turns up within that period. However, if the advance planning has been of the proper kind, these after-the-fact revisions will not mean a further disheartening wait before the plant begins to pay off according to management's hopes. With the right planning from the beginning, the plant will be a source of pride from the moment it goes on the air. **BM/E**

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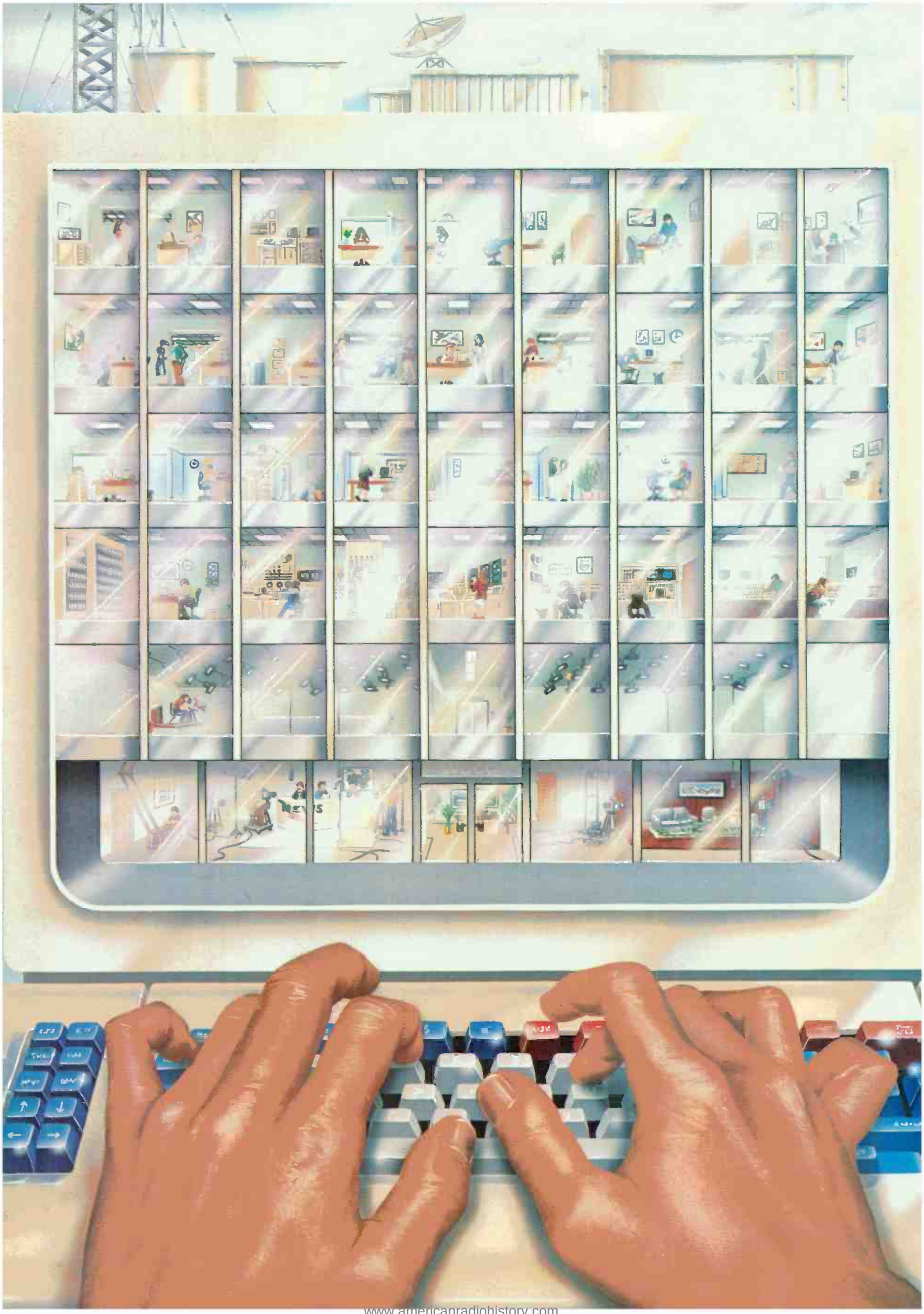

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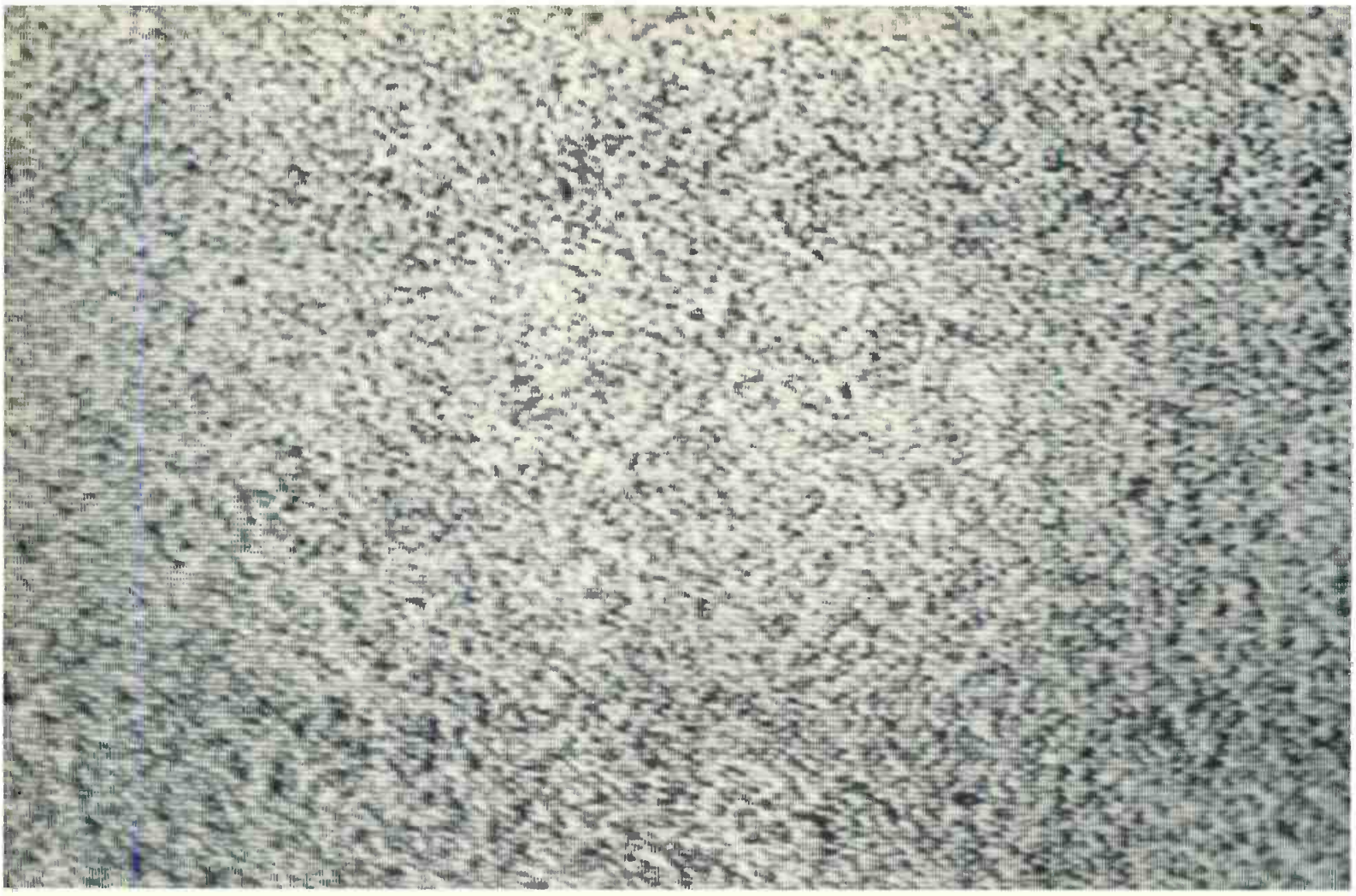

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DBS: CAN BROADCASTERS SURVIVE THE SPACE INVASION?

Direct-broadcasting satellites are on the way, despite misgivings of the broadcasting industry. A full-fledged DBS system—no longer science-fiction—could change the face of U.S. broadcasting.

LIKE IT OR NOT, broadcasters may soon be faced with an attack from outer space, in the form of signals from direct-broadcasting satellites (DBS). With their super-high-power transponders (200 W or more), DBS satellites can broadcast to receivers considerably smaller and less expensive than those needed to pull in signals from the C-band (4-6 GHz) satellites, such as Satcom and Westar, that presently relay most television signals. The small size (less than one meter in diameter) and low cost (as little as $300, by some estimates) of DBS receiving dishes make them financially accessible to large numbers of individuals—putting DBS operators in direct competition with broadcasters and cablers for viewers.

As currently envisioned, DBS would operate on the 12 GHz Ku-band, presently occupied by terrestrial microwave users such as businesses, local governments, and emergency services. These users would have to relocate to another part of the spectrum if 12 GHz were allocated for DBS. The National Association of Broadcasters says that just one of the DBS proposals now before the FCC (that of Satellite Television Corp.) could use up one-quarter of the 12 GHz band "and a similar share of the orbital slots" available for DBS; authorization of several DBS services could easily consume the entire band.

STC, a subsidiary of Comsat, submitted the first proposal for a DBS service to the FCC late in 1980. A slew of other companies jumped on the DBS bandwagon last year, with applications running the gamut of premium pay entertainment services, high definition television, a broadcaster-owned network, and common carrier arrangements. The FCC accepted applications from eight companies, in addition to STC: United States Satellite Broadcasting Co. (a subsidiary of Hubbard Broadcasting), CBS, RCA Americom, Direct Broadcasting Satellite Corp., Western Union, Graphic Scanning Corp., Video Satellite Systems, and Focus Broadcast Satellite Co. (the last application was accepted only in part).

What's in store

STC's plan, for example, calls for four satellites (one for each time zone in the continental U.S.) to deliver three channels of pay TV to subscribers paying $25 per month. The service will be phased in, starting with a single satellite covering the Eastern time zone. Other pay DBS proposals came from Graphic Scanning (a four-channel, two-satellite system) and Focus, which wants to build a single-satellite, one-channel system that would be in part advertiser-supported. The CBS proposal, also supported both by subscriptions and advertising, would be devoted to three channels of HDTV programming. It would involve four satellites. The USSB service, described in more detail below, would be entirely advertiser-supported and would cover the U.S. with two satellites, each with three program channels and one access channel for affiliates.

Three companies—DBS Corp., RCA, and Western Union—have proposed common carrier DBS systems that could function in a manner similar to the existing Satcom and Westar birds, selling transponder space on a first-come, first-served basis. DBS Corp. wants to build three satellites with 14 channels each at a total cost of $725 million. RCA and Western Union have proposed four-satellite systems; RCA's birds would have six transponders and WU's would have four.

Could such a variety of services exist simultaneously? Stanley Hubbard, president of Hubbard Broadcasting Co., parent company of U.S. Satellite Broadcasting Co., thinks so. "The fewer rules the better," he opines. His wishes may soon be answered by the FCC, which is moving swiftly toward authorizing interim DBS service.

"The inclination at the commission," says FCC staffer Florence Setzer, "is not to make judgments about which applications are preferable, but rather to allow a wide variety of services." Still, with a total of over 37 channels requested for a band that can accommodate 30 to 40, the FCC may have to make some choices among the applicants. Setzer predicts that the staff will have a report and order on DBS ready for Commission consideration sometime this month. Broadcast Bureau chief Larry Harris said much the same thing at a press lunch late in March.

According to Setzer, once the report and order is accepted, the FCC will begin to make specific interim DBS authorizations. (All authorizations must be on an interim basis until the June 1983 Regional Administrative Radio

Conference (RARC) for the western hemisphere, which will finalize spectrum allocations for the entire region.) Given a three- to four-year startup period for service, broadcasters could have some new competition by late 1985 or early 1986.

That competition could come even earlier—by next year—from several proposed quasi-DBS services that would broadcast directly to apartment houses, trailer parks, and other multiple-unit dwellings. One such satellite master antenna television (SMATV) system is being planned by STC, which views the two-channel service as a perfect entree into the DBS business. United Satellite Television plans to launch an SMATV service with two basic channels and two pay channels next February. Focus Broadcast Satellite is also reported to be thinking about entering the SMATV field. These proposed systems would use Ku-band satellites, such as Canada's Anik-C (on which United Satellite Television would have 10 transponders), Intelsat 5, the two Satellite Business Systems birds, or Advanced Westar. They would require receiving dishes approximately six feet in diameter. Of course, SMATV systems already exist, pulling down programs from the C-band satellites.

Another early version of DBS is planned by Oak Industries, whose subsidiary, Oak Satellite Corp., has agreed to lease four transponders on Anik-C for a direct-to-home service scheduled to start in June 1983. The satellite will cover two areas in the U.S. with spot beams, one in the northeast and one in the Pacific Northwest. Both areas will receive the same two scrambled channels of entertainment, news, cultural and special-interest programming. The system will also be capable of pay-per-view programming, something Oak has had success with in the past.

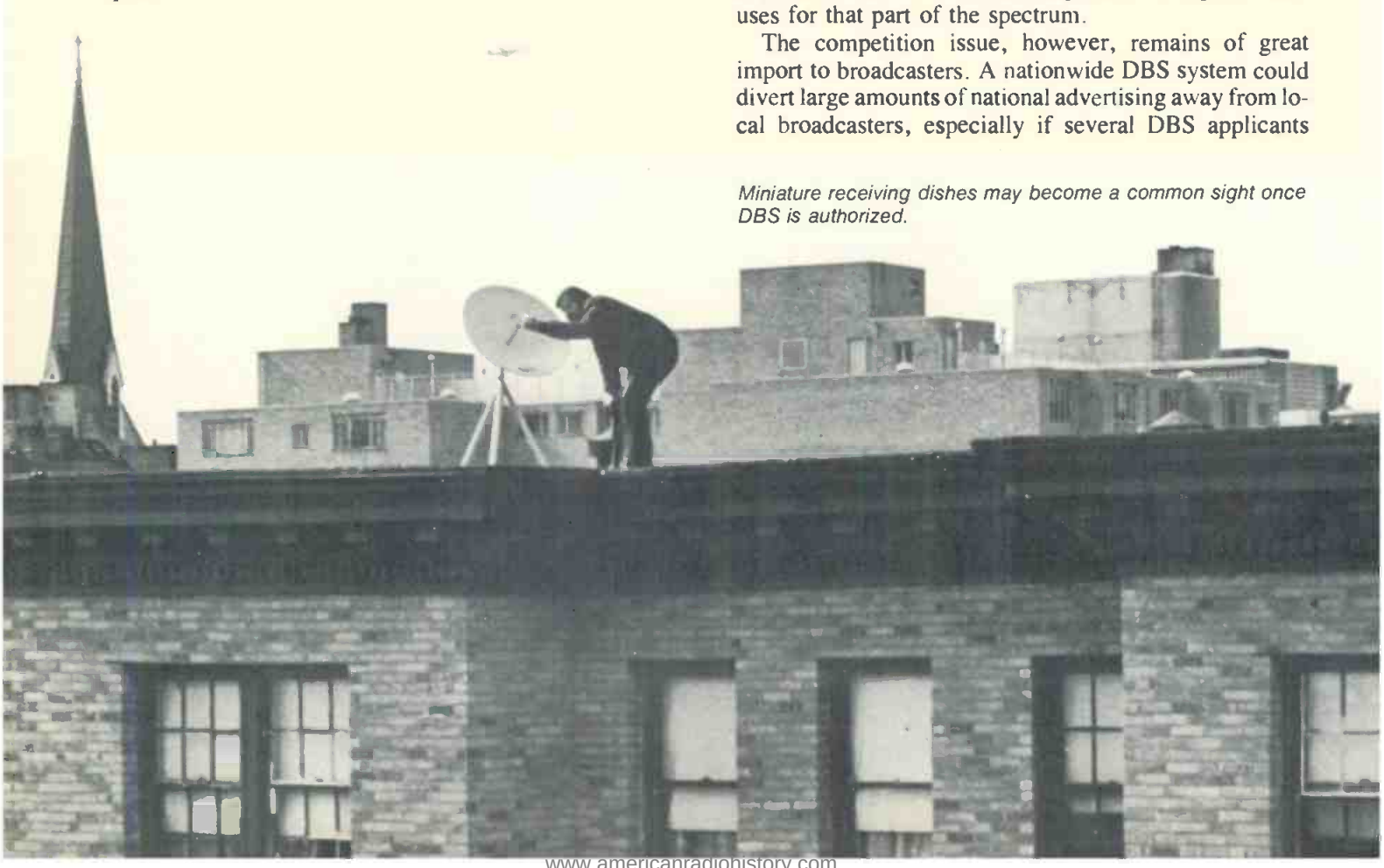
Oak's L. Brian Butler called the plan "the first step of a multistep process to put Oak in the DBS business." Anik-C, to be launched later this year, will broadcast at a frequency just below the DBS band, he said. Receiving dishes will be 1.2 meters in diameter; no agreement has yet been reached with a manufacturer. FCC approval is not necessary for the satellite deal, Butler explained, since the satellite is Canadian. He added that Oak would soon file for FCC approval for the uplink facilities.

Somewhere, over the spectrum

Broadcasters' complaints about DBS started almost as soon as STC filed its original proposal. NAB lost no time in filing objections to STC's plan, and also opposed the other applications. The association has taken the position that DBS would cause enormous changes in the U.S. broadcasting system, and that any authorization by the FCC therefore requires congressional review. It's a misnomer, says NAB, to call any DBS authorizations "interim"; the huge expense involved in setting up a DBS system would insure that any interim authorizations would become permanent.

The obvious starting place for broadcasters' objections is the added competition DBS would bring. NAB, however, is chary of the competition issue. "In the long run, of course," says Marilyn Dimling, NAB's director of media relations, "local broadcasters are concerned that the system bypasses them and they would no longer be the important source of entertainment and information they are now. But our objection to DBS is not from the standpoint of competition." If DBS were to be authorized now, Dimling asserts, it would effectively shut broadcasters out of the area of high-definition television, which could use the spectrum space now under consideration for DBS. NAB also points out that DBS would force 1400 terrestrial microwave users now on the 12 GHz band to find other fequencies and would make it impossible to explore other uses for that part of the spectrum.

The competition issue, however, remains of great import to broadcasters. A nationwide DBS system could divert large amounts of national advertising away from local broadcasters, especially if several DBS applicants



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manage to get their systems in the air. The consequences for television broadcasting as it now exists could be far-reaching. If DBS managed to become the dominant form of national broadcasting, with the lion's share of national ad dollars, local broadcasting could be hurt badly.

NAB has stated, "Local service depends on the local station's ability to present national (network and syndicated) programming and earn national advertising revenues. With DBS siphoning both programming and revenues and thereby eroding still further local stations' audience base, local service could be crippled or destroyed." Local television stations might survive the DBS onslaught by targeting their audiences more precisely, somewhat in the manner of radio stations. They can, of course, offer advertisers and viewers something no completely national system can—localism. Geographically and demographically targeted ad campaigns cannot be conducted via nationwide satellite, and a national DBS system would be hard-pressed to cover local emergencies, elections, and news.

DBS operators will initially look to areas underserved by conventional TV.

Local DBS

At least one prospective DBS operator has an answer to the localism question—Hubbard Broadcasting's Stanley Hubbard, whose USSB subsidiary has proposed a nationwide three-channel DBS system with a local twist. Hubbard feels that the way for local broadcasters to survive competition from cable as well as DBS is to jump on the DBS bandwagon. The USSB system would operate in three ways: as a regular direct-broadcasting system, beaming signals to individually owned dishes; as a broadcaster-owned system, sending its signals to member stations, which would then transmit them to their viewers; and as a supplier of programming to low-power television stations. Member broadcasters would uplink with the system, making their news programming available to other members. The system would be advertiser-supported, with national spots sold by USSB and local spots available for the stations. In addition, it would not be scrambled; anyone who purchased a dish could pick up the signal for free.

DBS, Hubbard predicts, could hurt cable operators more than broadcasters. "The research we filed with the FCC in connection with the license application indicates that 56 percent of cable subscribers would immediately drop off the cable given the opportunity to participate in DBS," Hubbard claims. The smaller number of channels offered by DBS is no problem, he says. "Our research indicates that people are very disappointed once they've subscribed to cable and they find out what's actually there. Instead of seeing one independent station, you're seeing three or four playing the same programming. Nobody can program 100 channels. A hundred channels of what?"

Other observers agree that cable may feel the impact of DBS at least as severely as broadcasters, if not more so. NAB's Dimling comments, "My own prediction is that it all depends on how fast more cities can get wired." While she believes cable offers more to households than does DBS, she feels that DBS, if it gets off the ground quickly, could make a big dent in cable penetration.

Most forecasters predict that cable will still not have reached 50 percent penetration by 1990. Viewers desiring premium programming services could easily turn to DBS, which has the advantage of requiring no expensive cable-laying.

Several factors will affect the ability of DBS to penetrate the market. One is the price of receivers. Mass production could easily bring the price of receivers down to an affordable $350-500—within the reach of potential subscribers to premium programming services. Some DBS hopefuls—notably STC—have said they would subsidize the cost of the dishes, bringing subscribers' costs down as low as $100. Whether this will be attractive enough to potential viewers in areas already served by cable will depend on local cable installation costs and monthly fees. Of course, just as DBS could hook up with broadcast stations (as in the USSB proposal), it could link with cable systems to increase its coverage. Cable operators already pull in large amounts of their programming from satellites; picking up a DBS signal would be no problem.

The most obvious place for DBS operators to seek subscribers remains those areas not served by cable—still a substantial number— and the small number of homes that receive no over-the-air TV service. NAB points out, however, that the STC proposal would start with a single satellite covering only the Eastern time zone, an area with "few under-served rural areas." It seems unlikely that any company willing to invest the huge sum (as much as $1 billion) needed to launch a DBS system would overlook any possible source of revenue, and viewers of over-the-air and cable television may well be courted.

What about HDTV?

The debate over entertainment-type DBS services, with their clear threat to broadcasting and cable, has a tendency to obscure somewhat other proposed uses of the 12 GHz

band. One of the most spectacular—and most publicized—of these other uses is high definition television, alternately described as a boon or a bane to the local broadcaster. One DBS applicant, CBS, has proposed a system that would broadcast HDTV signals; others, including USSB and RCA Americom, include HDTV capability in their systems. CBS was slated to begin last month a demonstration of terrestrial HDTV transmission in conjunction with KPIX-TV, San Francisco, and Telediffusion de France, which is supplying the 12 GHz transmitter.

Proponents of HDTV, including CBS, have argued that the 12 GHz band is the last area of spectrum in which HDTV could be developed in the U.S. According to the NAB, use of 12 GHz for HDTV "may be the only way that the public's local television service can participate in the benefits of this new technology." NAB complains that the speed with which the FCC is moving forward on DBS may preclude meaningful exploration of the possibilities of HDTV. Says Dimling, "HDTV is a technological advancement that could really improve and enhance the system of broadcasting, and this is our chance to do it. If the FCC blows it by giving all the spectrum space to Comsat or the other applicants, we just won't have the opportunity to initiate high resolution in this country."

Whether HDTV could be adapted to somehow fit in with conventional over-the-air television remains open to dispute. The CBS/NHK HDTV system probably would require a bandwidth of 27 MHz, much too large to accommodate on standard 6 MHz channels. NAB has suggested exploring compression techniques that could permit HDTV to be received on existing receivers. The association notes that technical improvements in TV receivers could allow reception of signals 7-9 MHz in width. Even if such compression proved possible—and consumers were willing to pay the higher receiver costs the modifications would entail—the different aspect ratio of HDTV (2:1 or 5:3, as opposed to the current 4:3 ratio) would also affect compatibility between NTSC and HDTV.

Broadcasters need more time to see if they can fit in with an HDTV system, Dimling complains. "We want to deliver a first-rate product, and high resolution can help us do that," she asserts. "What we want is time to experiment and see if we can compress the bandwidth. CBS says it can be done and Hubbard says it can't, but if the FCC gives all the spectrum space to DBS, we won't have time to find out."

Not all observers agree on the benefits of HDTV to broadcasters, however. "If high definition were to be accepted in the U.S.," argues Hubbard, "it would be the end of commercial television stations in America because there's no way they can participate." HDTV technology, with its ultra wide bandwidth, makes sense for DBS or cable but will not work with terrestrial broadcasting, Hubbard insists. "Those local broadcasters who are listening to this scheme and saying, 'Let's find out ways to do it,' are just whistling Dixie," Hubbard asserts.

Dwight Morss, manager of information services for CBS, disagrees. "High definition represents the next generation of television," he states. "It's inevitable. If broadcasters don't do it, other delivery methods will—

cable, for example." He concedes that HDTV will change the way broadcasters transmit their signals, though, and doesn't foresee compatibility between HDTV and NTSC.

"The technical problems are monumental," Morss admits, "but they can be solved. There are a number of alternatives and approaches to making it practical, and we are committed to it. Local broadcasters will almost certainly have to change, and will probably have to add transmitters." HDTV development in the VHF or UHF bands is unlikely, he adds. People on both sides of the HDTV fence will certainly be watching the San Francisco demonstration, which will be one indication of whether terrestrial transmission of HDTV can be feasible.

If Hubbard is so negative about HDTV, why does the USSB proposal include HDTV? "We're prepared to go ahead with DBS on whatever basis the federal government and the FCC decide we should go ahead," declares Hubbard. "The FCC will decide this thing, not broadcasters." Meanwhile, he says, USSB has no intention of being left behind when DBS starts up. "I believe DBS will evolve into a very new and exciting industry," Hubbard says. "I think it's just as exciting as the development of radio was in the '20s and '30s and television was in the '40s and '50s. It offers tremendous promise."

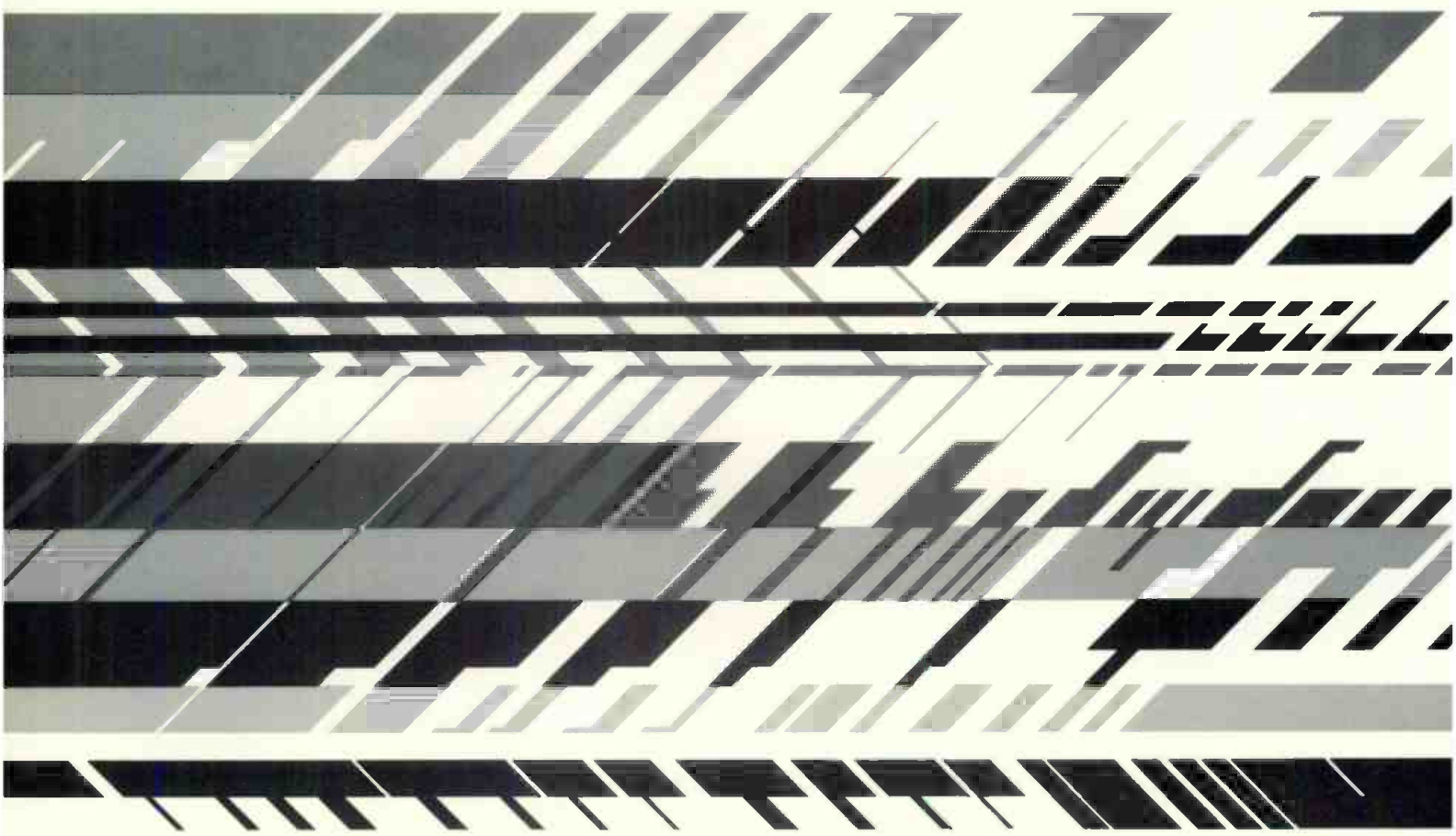
Ready for RARC?

Television signals lack respect for national boundaries, and DBS will naturally be an important topic at the upcoming Regional Administrative Radio Conference, scheduled to convene June 13, 1983. At that time, the countries in Region 2—the western hemisphere—will finalize spectrum allocations for their various broadcasting services. The FCC is working with the State Department and NTIA to prepare the U.S. proposals for RARC; included will be requests for sufficient spectrum for 30 to 40 DBS channels. The Commission recently requested additional public comments on its RARC proposals for the 12 GHz band.

If Ed Jacobs of the FCC's Office of Science and Technology, who is closely involved in working out the U.S. RARC proposals, expects much resistance to the U.S. position from other Region 2 countries, he isn't saying. He explains, "We don't think our position is going to be unreasonable or harmful in any significant way to the other countries in the region. Part of our preparation is to develop proposals that meet our needs yet don't significantly affect the satisfaction of other people's requirements." Many other countries in the region are interested in DBS, Jacobs says, and would be interested in setting aside spectrum space for the service even if their immediate plans don't call for a DBS system.

Facing the future

If Jacobs's predictions prove correct and Region 2 agrees to the U.S. proposals, DBS will be upon us in just a few short years. Even if other countries are less than amenable, it still appears most likely that spectrum space will be reserved for DBS service. DBS, once introduced, could grow very quickly into a powerful force. Mackintosh Consultants of the U.K. released a report last fall in-



The low cost of DBS receivers should bring them within the reach of many.

dicating that sales of DBS receiving equipment in North America and Europe would approach $2 billion by 1990. According to the report, revenues for North American DBS services—including subscription sales and ad fees—would pass $3 billion annually by the mid-'90s. Development of DBS is moving rapidly in Europe, where Mackintosh believes five national DBS services will be operating by 1990. DBS services are currently being planned for France, Germany, and Sweden; in England, the Home Office recently authorized the BBC to move ahead with its plans for a two-tier DBS service that could be operational by 1986.

But will this flourishing of DBS mean the demise of broadcasting? Probably not, although broadcasters may have to roll with the punches for a while. Getting started won't be a piece of cake for DBS operators, either; first they must risk (or find investors to risk) an enormous sum, and then they must compete, not only against broadcasters and cable operators, but against each other. Competition among DBS operators may not be limited to those sharing the same national boundaries, either. Canada, spurred by large rural areas with little or no TV service, is working on setting up its own DBS system; countries to the south may get into the act, too. Their signals will certainly cross the border, perhaps drawing viewers away from other DBS services.

The one area where broadcasters' advantage is clear remains localism. A renewed commitment to the local community may prove to be the best insurance for broadcasters against encroachment by new services. Wherever the chips fall, the stakes in the DBS game are too high for broadcasters to ignore. **BM/E**

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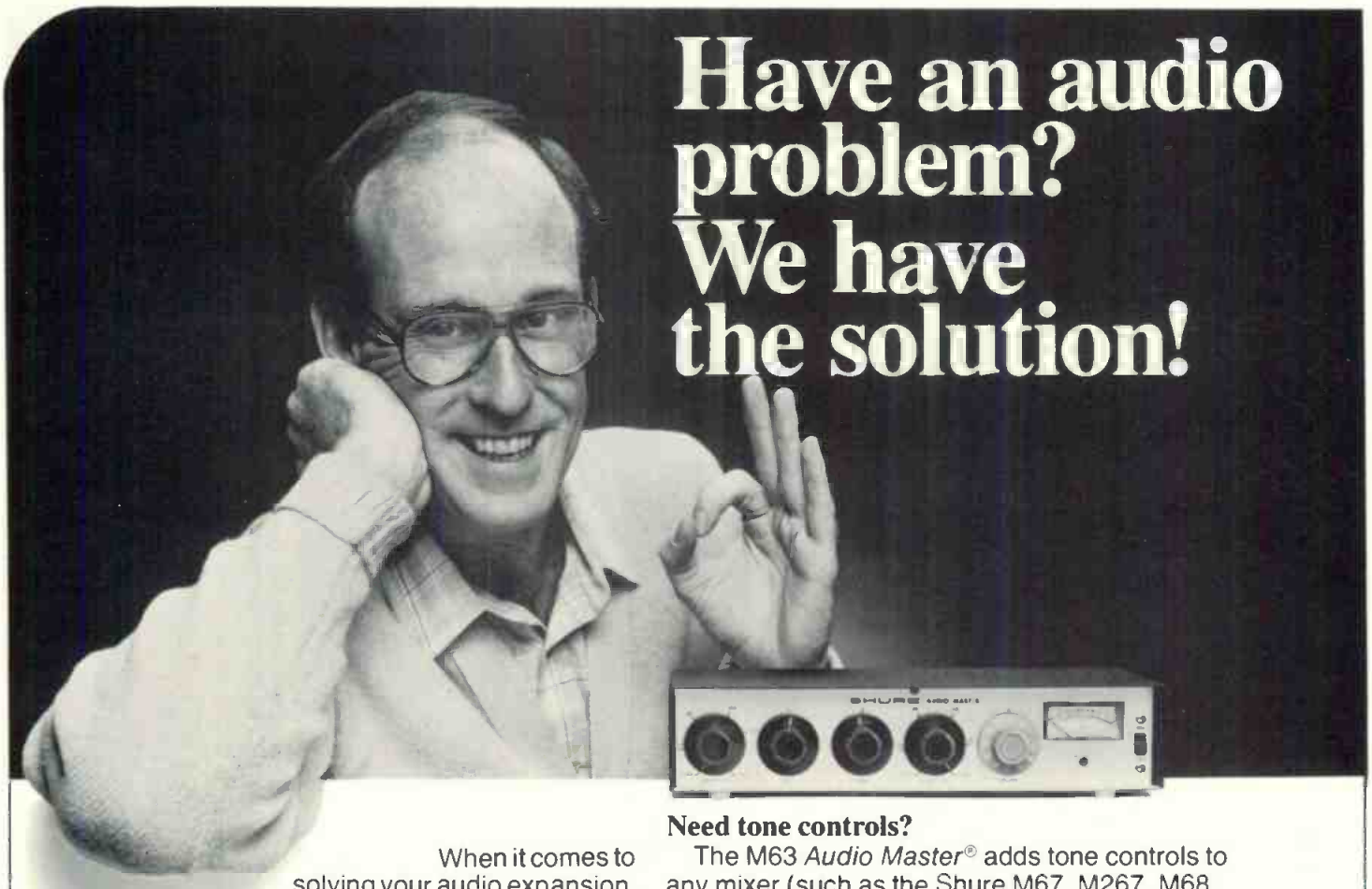

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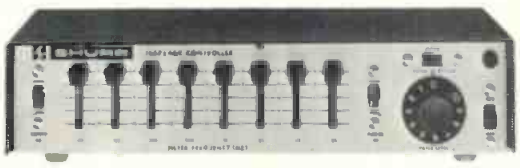

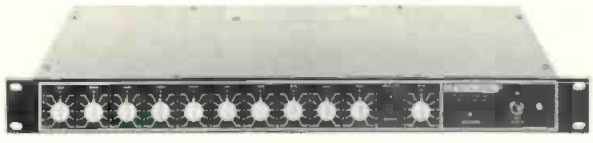

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FULL-FORMAT SATELLITE NET ORBITS INTO RADIO MARKET

A new breed of software operation, the full-format satellite net, is beginning to try for radio dollars. Satellite Music Network was the first in full operation; ABC's Superradio will join in a big-scale effort to establish the new kind of net. In addition, Taft Broadcasting, Cable News Network, and a score of others are in various stages of planning such nets.

KMPC, Los Angeles morning DJ Robert W. Morgan will become a nationwide radio superstar on the new ABC Radio Enterprises Superradio network project.

ONE OF THE BIG CHANGES that satellites are generating in radio broadcasting is the shift to full-format, 24-hour programming on the part of networks, both new and old. For three decades the radio net has supplied mainly the periodic news programming, plus short-span material such as sports events. But the glittering technical and economic opportunities brought by the satellites have the industry rushing toward new modes of operation.

Full-format net programming is one of the new schemes that has great promise, but also a number of uncertainties. Two outfits have reached actual operation with it: Satellite Music Network (SMN) and Continental Entertainment Net. While SMN, gives every sign of succeeding, Continental, with just 13 stations signed on after a September 1981 start, quit cold in February. Pat Robertson, head of parent company Christian Broadcasting Network, said they could not pour money in for the three or four years it would apparently take to get into the black.

In March, ABC Radio Enterprises, a division of the American Broadcasting Company, announced a large addition to the 24-hour ranks: "Superradio," an ABC radio programming operation that will go on line July 1 of this year. Superradio will originate at the ABC headquarters in New York and will be taken up to Westar III, in 15 kHz stereo, by the Robert Wold Company. The program is aimed for market-exclusive FM licensees in major markets.

The signal will reach each subscriber by land-line from the nearest Associated Press earth terminal. More than 400 of the AP terminals are already in operation, and the number grows virtually every day. But David Pollei, vice president for station marketing, told *BM/E* that by 1984 the system would use digital audio transmission to earth

terminals at each subscriber. [See report on satellites at N&B in this issue.]

Adult audience targeted

The music, which will be available 24 hours a day, will be a mixture that ABC calls "Contemporary Entertainment." It includes such elements as Contemporary Adult and Adult Pop, combined to produce music that ABC's careful research has indicated will be strong with the intended audience, 21 to 49.

Although the programming will be sent up to the satellite and back down 24 hours a day, ABC will encourage each station to cut away from the net for the local programming that the station management sees as necessary to the station's success. This will often be the morning drive time, and in some cases the afternoon drive time too.

Each hour of the net programming will allow room for eight minutes of local spots or news, as the local management wishes, and two minutes for the national ads that Superradio will send down the net.

Clearly ABC sees this as the pattern of the future for radio network entertainment programming. ABC's aiming of Superradio toward FM stations is another move in the trend toward programming: FM for music, AM for news-talk-information. The earlier ABC satellite operation, TalkRadio, was explicitly designed to bring a new, viable function to AM stations squeezed out of the music market by FM.

Among the on-air personalities due to work Superradio are DJs with a variety of talents and styles. ABC has picked operators who have already strongly established themselves with the listeners ABC wants. The satellites, among all their other effects, are creating national followings for on-air men who are well known in local broadcasting.

Another part of Superradio is a very detailed advertising and promotion support for stations on the net. This part of the operation will be developed in a collaboration between ABC and advertising agency Marschalk Company. Marschalk and ABC will create for each station the jingles, musical IDs, contests, and promotions judged strong in the market. Marschalk will also get together print and television advertisements for the station and the programming.

At the recent NAB, Harris was among those offering interfaces between automation programmers and satellite-distributed programming.

The risks are high

Has ABC judged the future correctly? Obviously a major investment is being made in Superradio, and the operation needs a great many subscribers in large markets to turn a profit. (The station fees are based on market size.) It will probably be from six months to a year before it is clear whether or not a substantial number of stations in large markets want to operate in this new way.

At this point, the other "old" nets are not going the 24-hour route. Spokesmen at both CBS and NBC told *BM/E* that they have no plans for full-format programming for now. But both are responding on a large scale to the satellite promises: although using wire delivery at the

Digital audio transmission lies in the not too distant future for commercial radio networks, a present reality for public radio services.

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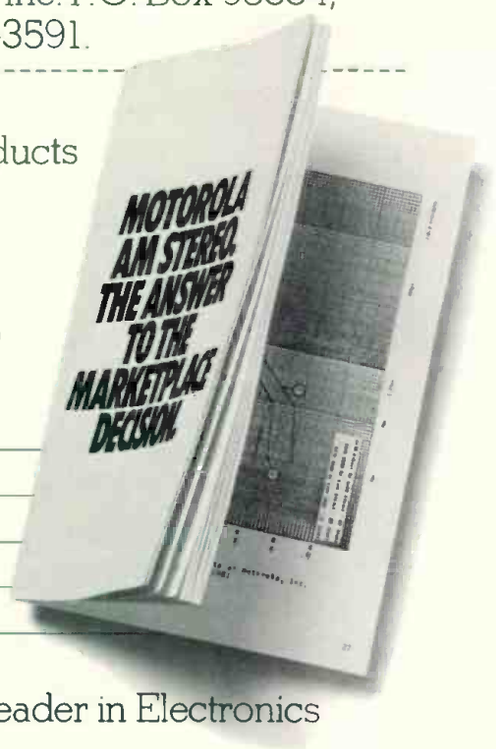

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An automatic local ad inserter, such as the C-150 from Microtime, originally designed for cable TV, could find applications in conjunction with nationally networked radio programming.

moment, they are actively moving toward full satellite operation.

CBS, for its part, is bringing new elements for the programming of both the CBS Radio Net and RadioRadio, the young-adult net put on line at the end of April. RadioRadio is getting many popular-music specials in the pipelines for later broadcast. The special newscasts developed for RadioRadio went on the air when the net started in April.

Further advancing the creation of the net is an agreement between CBS and Scientific-Atlanta, announced recently, for construction and delivery by Scientific-Atlanta of digital earth stations for CBS and RadioRadio affiliates. The construction of the earth stations and other elements of the network will be timed to get all affiliates on satellite delivery by the end of 1983, according to CBS.

NBC, too, is on the way to full satellite delivery for short-span radio net programs. The timing is roughly the same as that for the CBS satellite operation. Carried by the birds will be NBC's young-adult programming, "The Source"; the talk-information programming, "Talk Fest"; and a number of other program segments being planned at NBC.

Spokesmen at Mutual and RKO, both doing well with satellite-delivered short-span programming, told *BM/E* they had no plans at this time to get into full-format programming.

Meanwhile, the industry will be watching the progress of ABC's Superradio intently. If it uncovers a substantial body of radio managements who want the system and believe they can succeed with it, there will be a wave of reassessment.

Outside the established radio nets, full-format plans are spreading rapidly. Taft Broadcasting Company, group broadcast owner with headquarters in Cleveland, has announced a plan to get into the network business full scale with a satellite-delivered full-format programming called "Prime-Time Radio," to be operational "sometime this summer." Taft says the material will consist of "nostalgia" music coming from the "big names of the '30s, '40s, '50s, and '60s." The programming has been on trial at Taft's station WDAE-AM in Tampa, FL, and will originate there when it goes on line to affiliates. It will be delivered in stereo and is aimed for the 35-plus demographic. Taft was slated to give a full rundown on the programming and the delivery plan at the NAB's Dallas show, and that story, as well as other satellite developments at the NAB, are reported in detail elsewhere in this issue. As does ABC, Taft says that stations using the material will get all the advantages of 24-hour music, but with the flexibility they need for local segments to maintain community character.

Ted Turner, the free-wheeling entrepreneur, has also entered the picture with "satellite-delivered 24-hour news service. The audio portion of "CNN2," Turner's hedge against cable operators that got underway yesterday, consists of half-hour news segments around the clock. The radio station signing on the service for a smaller number of the segments, interspersing local material as wanted. Each half hour has breaks totaling six minutes for local spot material.

The series will be sold to one AM, one FM owned AM/FM broadcaster in each market. It is delivered via satellite on a subcarrier of the transponder for Cable News Network, currently Transponder 14 on Satcom 3-R. A Turner spokesman points out that the CNN programs were designed from the beginning so that the audio portion could stand alone and be attractive for radio use.

CNN Radio, of course, comes in as direct competition for the regular news broadcasts, the staples of the old-line radio nets and of all the new satellite-generated nets. CNN Radio differs, as a Turner spokesman points out, in being the only 24-hour news service. Will many radio stations want that much news? Turner's successful planning of Cable Network News is sure to make industry observers at least reserve judgment. And he has going for him the fact that many AM stations will shift to news-talk-information to get back in the game, with FM dominating the music scene.

Most important to the continued explosive growth of satellite networking is expansion in the number of transponder circuits in space. This year will see a major addition to that number. There were about 200 transponders in orbit at the end of 1981; there will be more than 300 at the end of 1982. Western Union's Westar 4, with 24 transponders (against the 12 on earlier birds) went successfully into orbit on February 25. WU's Westar 5 is slated to go up in September; RCA's Satcom 4 in November.

All these transponders will be on C Band (6 GHz and 4 GHz), which has been the area of the superintense scramble for circuits among would-be users as well as old users bumped out of space for one reason or another. However, some industry observers warn against concluding that this acute shortage will continue indefinitely, even though there are now many bidders for every available channel. The following years, 1983-1984, will see more satellites aloft. Moreover, a number of them will be on the higher-frequency K band, which opens channels that do not take any spectrum space from C band—it's a totally fresh space corridor.

Already, Station Business Systems, with two satellites using K band, has had trouble finding organizations to rent transponder space. This is caused in part by the fact that downlinks for K band are still scarce among broadcasters and cable systems. But Scientific-Atlanta has announced a big construction program of K band earth terminals, and this shortage could begin to disappear soon.

In sum, there is a fairly general feeling that there will be enough "room" in space in the coming three to five years, and that satellite networking will not be choked off by an inability to make program delivery. **BM/E**

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Richmond
WRVA**

Savannah
WSGA**

Chicago
WLS*
WMAQ**
WGN**

Boston
WBZ*
WHUE**

Salt Lake
KSL**

Logan
KVNU**

Tulsa
KVOO**

Kansas City
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Seattle
KIRO**
KJZZ**
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The TK-47B refines picture quality and cuts production time.

TK-47B's "Smart" remote control unit doubles the number of video controls. With its memory base, operators can file video decisions for up to 32 scenes and recall any scene at any time and in any order.

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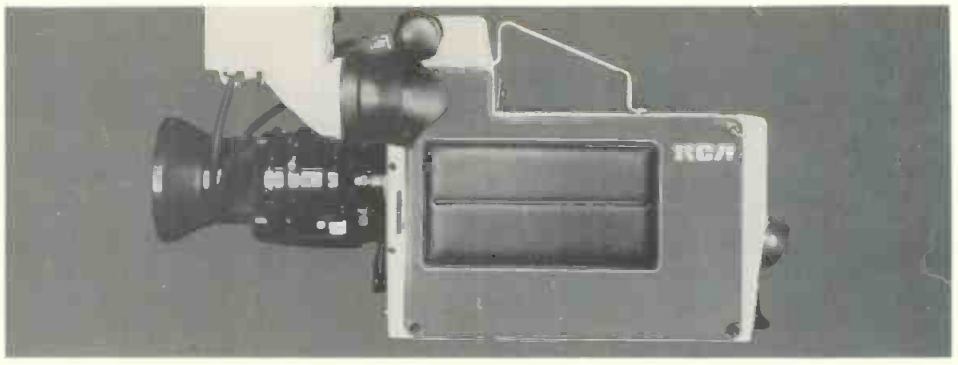


New TK-710 Goes to Work at KETV

"I'm convinced the TK-710 delivers better picture quality than any other camera in its price range." That's the opinion of Chief Photographer Scott Buer of KETV, the Omaha, Nebraska station owned by Pulitzer Publishing Co. The TK-710 is a low cost three-tube camera designed for ENG/EFP operations.

Buer was impressed with the camera's performance during evaluations which included side-by-side comparisons with three other manufacturers' models.

Here's what Buer has to say, "We've got those cameras operating four to six hours a day. I'm really impressed with picture edge definition in marginal light situations. The 6 dB gain offers excellent pictures in low light. The camera has wonderful color registration and low system noise. Subjectively, the picture just doesn't deteriorate in multiple generations."

The TK-710 is designed with the operator in mind. It's small, light, and well balanced. All controls are conveniently located, so it's an easy camera to control in the field. The gain lock switch is particularly handy.

Buer believes that the camera's performance and low price of $12,995 brings his station's objective of operator-assigned cameras within closer reach. "The 710 would certainly be my recommendation for any future portable camera acquisitions."

All American TV25 Airs Show with three TK-47 Cameras

"We put our TK-47 cameras to the test every day." Those are the words of D. K. "Spec" Hart, Chief Engineer for All American TV25, KOKH-TV, the three year old John Blair Company station in Oklahoma City. "The TK-47s have come through with flying colors . . . are doing an outstanding job, day in and day out," is how he sums up the performance of the cameras.

In addition to a heavy commercial production schedule, the cameras are used for the satellite airing of the hour-long Richard Hogue Show produced by the station's production arm, Studio 25.

Mr. Hart, a veteran of 28 years in the business, first saw TK-47s in action at KDFW, Dallas, at the time of the 1979 NAB. He said the newsroom shots were the quietest he had ever seen. Turned out, they were the first TK-47s shipped (Serial No's. 1 thru 4).

RCA TK-47 cameras get daily workout on "Richard Hogue Show".

". . . TK-47s have come through with flying colors . . ."

D. K. "Spec" Hart, Chief Engineer at All American TV 25, Oklahoma City.

Mr. Hart visited the Dallas station to talk to KDFW personnel and get first hand information on the TK-47s. He also conducted comprehensive performance comparisons with four other cameras. Results of all that groundwork ended up with the selection of three 47s for All American TV25 and Studio 25.

"We run the cameras through a daily check—it takes only a few seconds—every day before the live show and we know we're ready to go. The 47s have helped us grab an ever increasing share of production business, too. For a new station, that's a real bonus."

HAWKEYE Now Even More Versatile, More Compact

Applications versatility was a major design objective of the HAWKEYE system. Modular system design the inevitable result. Now the system is even more flexible to meet more of your field and studio needs. HAWKEYE is the most complete and adaptable recording camera system available today.

Compact Recording Camera With Field Playback

The HCR-1 one-person field production system has a built-in time code generator to save valuable post-production time. A new option permits playback of recorded material through the viewfinder for in-the-field confirmation of picture results.

New Remote Control Option

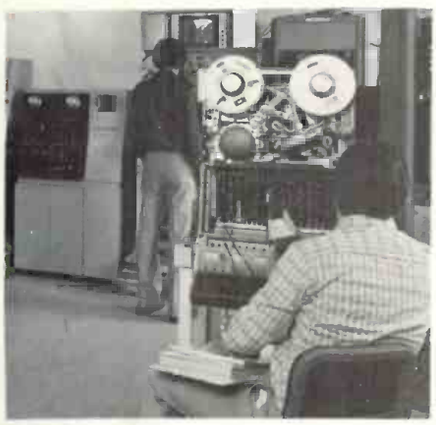
For electronic field production flexibility, HAWKEYE offers triax remote control for the HC-1 camera. A triax adaptor provides power for the camera over cable lengths up to 5,000 feet. NTSC or PAL composite, Y-I-Q baseband or R-Y, B-Y signals may be transmitted between camera and base station.

New VTR Configurations

Field recorders are more compact. A four-channel microphone mixer is built into the baseband adaptor for added audio capability without bulk. The HR-2 studio VTR provides search and jog functions to allow quick location of recorded material. Accessibility is facilitated with a front panel that swings up to reveal all circuitry, even while the HR-2 is in operation.

A new brochure reveals all the HAWKEYE system advantages. Write for your copy today.

TR-800 Field Reports A-OK



Final testing is completed on the latest shipment of customer-bound RCA TR-800 VTRs.

Successful installation reports of the TR-800 one-inch helical scan video tape recorder are arriving daily at the RCA Camden assembly facility. The announcements have come from around the world as the TR-800 proves itself in both the International and United States video production markets.

Multi-Feature Deliveries

Various configurations of the versatile TR-800, from the compact transportable to the multi-feature studio console with monitor bridge, have been accepted at customer locations. To meet specific broadcast and production requirements, many of the TR-800s have been equipped with AE-800 time code editing systems, TBC-8000 time base correctors and Multi Rate Video Controllers. The micro-computer controlled TR-800 will interface with existing RCA Quad and One-Inch recorders providing operations with versatile and cost-effective installations.

New Low Cost UHF Pylon Antenna

Type TFU-33JN designates a new low cost pylon antenna from RCA. Designed for intermediate power ratings (to 60 kW), the new antenna is a standardized omnidirectional which provides uncompromised quality performance at a lower cost.

The new offering is the result of RCA's extensive data bank on UHF antennas—more than 500 of which have been delivered. With computer-filed data, antenna performance is highly predictable; therefore the TFU-33JN requires only abbreviated testing on a turntable to check vertical pattern, null fill and beam tilt to verify performance and assure quality.

The TFU-33JN retains all of the characteristics which have made RCA pylon antennas the preferred year-after-year choice of UHF broadcasters: Simple design; slotted steel pole construction with no protrusions; low wind-loading, and immunity to lightning and icing. It is a highly reliable pylon antenna, offering excellent performance at lower cost.

TR-800 Performs Around the World

TR-800 shipments continue to customers in all corners of the globe. These include:

Arab Republic of Egypt
ATV-10, Australia
Australian TV & Film
Ft. Bliss, El Paso, TX
HSV-7, Australia
KVUE, Austin, TX
London Weekend TV, England
P. T. Taju Puspa Ltd., Indonesia
Radio Equipment, Paris, France
Venevision, Venezuela
WEHT, Evansville, IN
WOR, New York, NY
WOTV, Grand Rapids, MI
WREX, Rockford, IL
WRGB, Schenectady, NY
WTRF, Wheeling, WV

RCA

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HITACHI

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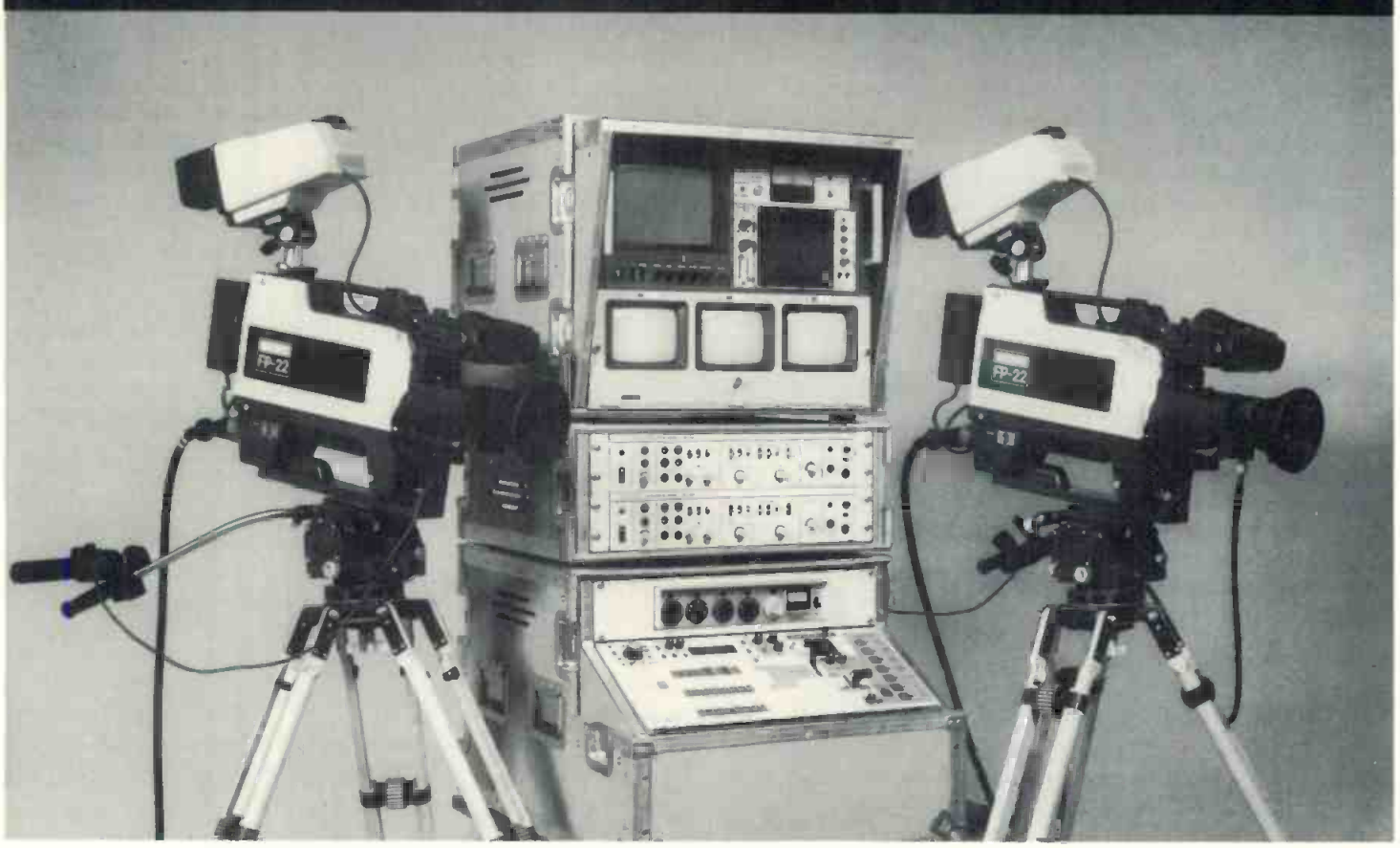

2-FP22-3 Tube Saticon cameras
2-A10 x 11 BRW 10-1 lens power zoom F1.6
2-Operation panels with 50' cables
2-5" and 2-1½" View Finders
2-Lens drive kits
2-A.C. adaptors
1-PVM 8200 8" color monitor
1-WV 5203 triple 5" monochrome monitors
1-M67 audio mixer
1-6142 Crosspoint latch production switcher
1-6006 Sync generator
1-Service manual
1-528 Tektronic Waveform monitor
1-BPM-1 Burst Phase Meter
1-McMartin amplifier and speaker
2-sets batteries and charger
2-Sets wood tripods - O'Connor fluid heads - dollies with deluxe wheels

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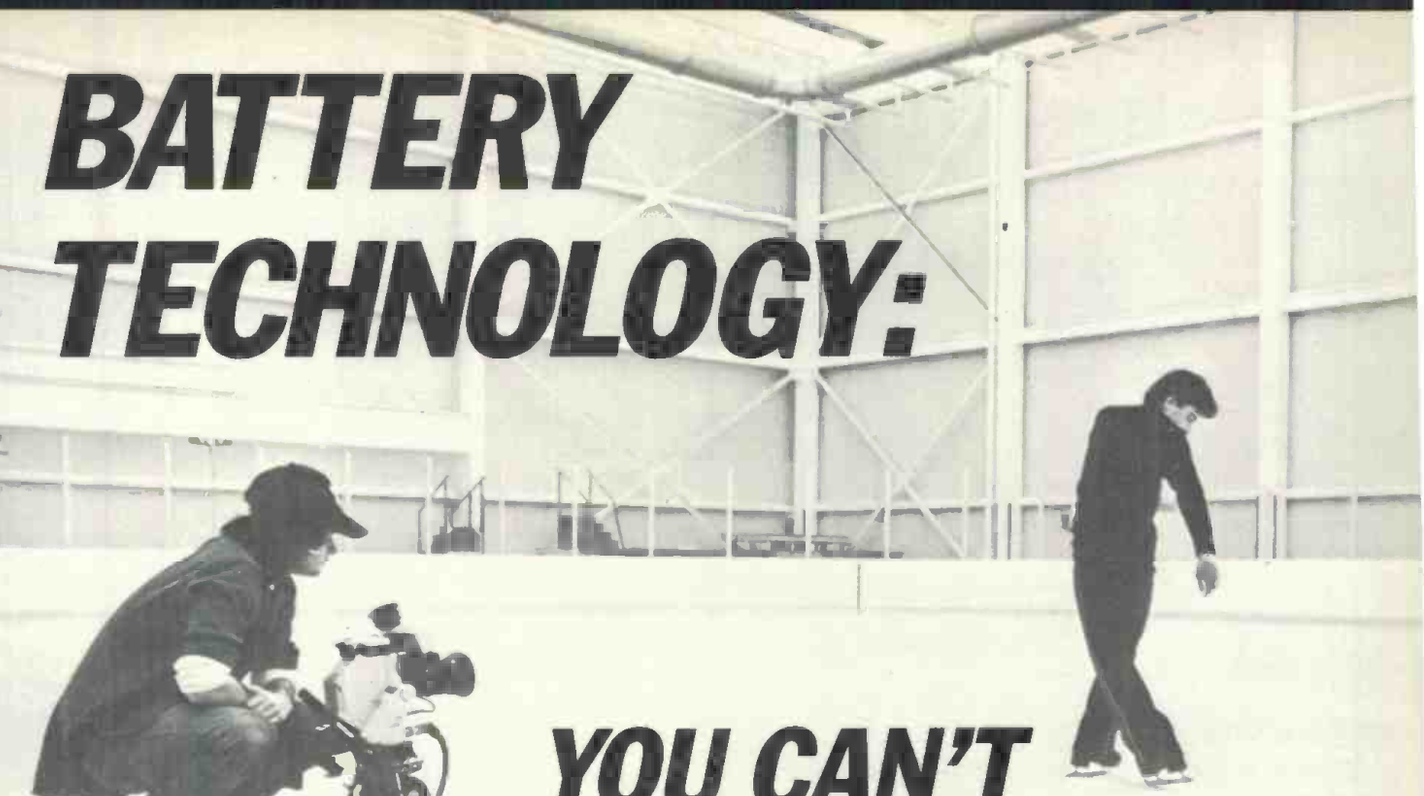


YOU CAN'T CUT LOOSE WITHOUT THAT JUICE!

Cine 60 nicad belt pack powers video camera at 1980 Lake Placid Olympics.

The crucial ingredient in the formula for success in ENG/EFP is the batterycharger system. The right choice goes unnoticed, but a wrong decision will become all too clear when valuable shots are missed because of a power system failure.

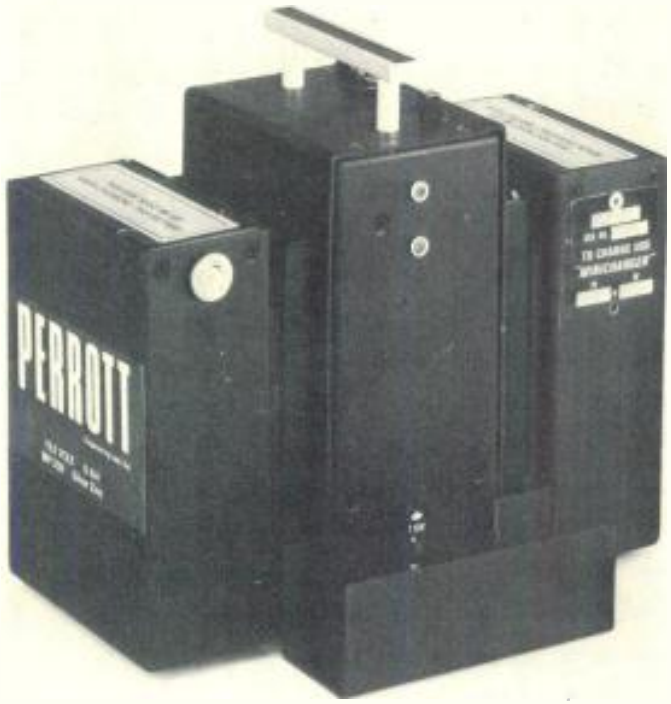
MORE THAN with any other piece of modern field equipment, the effectiveness and practicality of batteries, chargers, and power supplies determine the success of an ENG crew. The battery is the most basic element of any operation, and yet possibly the most neglected and misunderstood. How reliable is it? How much does it cost? How can it be integrated into a news operation? These are some of the important questions that come up when considering power systems.

There is a wide range of battery and charger types from which to choose, depending on which of the above criteria are considered. If cost and ease of recharging are the most important considerations, then lead acid batteries are the ticket. If high power to low weight ratio is the preeminent factor, with cost not as important, then silver zinc is the best solution. And, of course, there is the popular and useful nicad cell, which falls somewhere in between.

Charging the battery is another important consideration when deciding on which type of battery will work best. Is fast charging likely to be important to you? If so, then which type of battery functions best; if not, then trickle charge or pulse charge is what you are after, and there is a wide range of decisions to be made here as well.

There are also some basic technical features of batteries that must be taken into account. For example, the charging capabilities of nicads as compared to lead acid, according to some industry sources, is ten to one. Yet, the lead acid battery boasts economy and greater durability in tough weather conditions. Even with silver zinc offering a three-to-one power density advantage over nicads, its considerable cost and difficulty of handling and charging make it less attractive to some.

Another technical point to consider is the nature of the nicad cell, which consists of a cathode (negative) plate and an anode (positive) plate coiled into a cylinder and separated by a nonconductive material. Part of the cylinder includes a safety vent that can withstand great internal pressure during recharge, when oxygen is produced at the



Perrott's PE 300 charges two silver zinc batteries at once.

anode and absorbed by the extra length of cathode plate, causing heat. It is this heat that is most detrimental to batteries, and that most rechargers try to measure to speed charger shutdown when the battery is charged to capacity. Failing to sense the heat properly, the charger continues charging, overheating the cells, causing a gas leak and eventually destruction.

In addition, nicads have a tendency toward memorization, a type of self-conditioning that causes the battery to perform at less than rated capacity. For example, if a battery with a 10 hour capacity is frequently discharged during only four hours of use, it will begin to become "lazy" and capable of producing only four hours of power. Consequently, a nicad should be discharged fully before recharging it again.

Silver zinc for power

Knowing the requirements of the news department is vital in determining the size and type of batteries to use and, subsequently, which charger. "We use the silver zinc for the cameras and decks because of the superior power delivery," says Charles Wilson at CBS in Washington, DC. Reflecting the price increase in silver, these batteries have increased dramatically in cost; but they possess approximately three times the power density of nicads in a much lighter package than any other battery currently available.

CBS uses the Perrott Engineering silver zinc batteries. Since Perrott is located in Virginia, it is close enough to handle any technical questions that come up and convenient enough so that a trade-in program is possible; CBS receives a steady supply of new batteries while Perrott is able to salvage whatever silver might be left in returned units. This, plus the advantage of light weight, easy mobility, and high power has convinced CBS to stay with the silver in the future, keeping some lead acid batteries for emergency backup. The cost for the backups is less than nicads, and with newer equipment requiring less and less power, the lead acid works quite well.

NBC also uses the silver zinc systems offered by Perrott and Anton/Bauer. A staff engineer at NBC claims, "We went with these manufacturers because they were the only ones we could find at the time who would put the silver cells in a usable package." He, too, finds that the light weight and excellent power delivery are attractive features.

When charged properly, the silver zinc batteries can offer more life in the long run, reducing the overall expense of using this particular battery type. But charging requirements are tricky. One of the main causes of shortened battery life is the amount of abuse by operators, such as recharging a battery when it is too hot. Anton/Bauer makes a digital silver charger employing several circuits that prevent improper charging. It allows direct connection to the battery housing, so there are no cords present and the battery cannot be turned over during charging—a particularly damaging occurrence with a silver zinc cell.

Again, the charging of the silver must be absolutely right or it will be destroyed. This means there is limited choice in what type of charger may be used, since the cells require at best a five-hour charge, or the trickle charge for 14 to 16 hours. Silver zinc batteries generally have some 100 charge/discharge cycles before needing to be re-

Comparison of Battery Cell Types

This chart shows the different characteristics of the three major battery types commonly in use today. All information applies to 12 volt, 4 ampere hour (AH) cells unless otherwise stated. "Watt hours" represents the power available from a particular cell and is calculated by multiplying the discharge voltage by the amperage (e.g. Nicads: 1.2 V × 4 AH = 4.8 watt hours). "Watt hours per pound" indicates the number of watt hours offered for every pound of battery being carried. The "number of cycles" represents the number of times that a battery can go through the discharge and recharge cycle.

	NICAD	SILVER ZINC[1]	SEALED LEAD ACID[2]
average discharge voltage per cell	1.2	1.5	2.0
watt hours	4.8	6.0	10.0
weight per cell (ounces)	5.2	3.6	13.0
watt hours per pound	14.8	26.7	12.3
average number of cycles	500	100	200
average cost per battery[3]	$450.00	$1200.00	$440.00
average cost per cell	$45.00	$133.00	$73.00

[1]Silver zinc batteries are typically 13.2 V
[2]Lead acid batteries typically contain 5 AH cell
[3]Averaged between packs and belts of different manufacturers

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The Ikegami color monitor line consists of the High Resolution Series RH Color Monitors and the High Performance Series 8 Color Monitors. The High Resolution Series RH Color Monitors are available in the 14" TM 14-2RHA and the 20" TM 20-8RH. Both provide precision color reproduction at 600 plus lines for professional studios, control rooms, remote vans, etc., and feature a high resolution CRT with High Density Dot Matrix, a switchable comb filter in the decoder, and the AFPC (Automatic Frequency Phase Control) system to maintain exceptional color reproduction. Both models are rack-mountable, with the TM 14-2RHA featuring plug-in circuit boards for easy maintenance.

The High Performance Series 8 Color Monitors are available in the 14" TM14-8RC, 20" TM20-8R and 25" TM25-8. The Series 8 monitors offer high quality color reproduction, a Shadow Mask Dot Matrix CRT, Pulse Cross Circuit, Active Convergence Circuit, low power consumption, and more.

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placed. For some, the trade-off in performance of this high-quality equipment is worth the greater expense. For others, however, the economy and functionality of nickel cadmium batteries better fit their needs.

Fast charge for fast service

Nicad cells, as mentioned, can suffer from memorization problems and are less efficient at power storage than silver zinc units; but they do offer the advantage of being easily fast-charged—essential if a station cannot afford enough batteries to keep news crews going and also trickle charge a second set of power supplies. And sometimes, in crisis situations, all the batteries have to be ready to go at one time. Fred Heatley, technical crew chief for ENG at WBZ in Boston, has found the Christie Reflex-20 battery and charging systems quite effective. "Sometimes it's necessary to use the fast charge, and when used in conjunction with Christie's HR-1 and HR-2 batteries, we have had very good service," states Heatley. WBZ has used this equipment for two years without any serious problems, even while using the fast-charge system.

The Christie chargers use a "burp charge" to interject controlled negative discharge pulses during the charging process to minimize cell imbalance. This allows full charging in 20 minutes or less.

Dick Perin, engineer at WAGA in Atlanta, also uses the Christie Reflex system, but in a rotating battery plan so that those not in use are being charged. "We've found that with the burp charge there has been no memory problem and there has been longer battery life. They last longer in overall usage," maintains Perin.

Charger versatility a plus

Again, there are cost trade-offs in using a super fast-charging system, and many stations that rely on fast charging are content with the one-hour charging cycle of standard fast-charging units. Fast charging, it should be noted, does not necessarily shorten battery life, though this is often the case. If each cell in the battery were heat sensed for the excessive temperature build-up that leads to battery decay, then the charger could be turned off at the exact moment the cell reached its peak. But the cost of such a system would make it hardly worthwhile for the added battery life it would provide, and most fast-charging systems rely on heat sensing of only a few cells to provide an average reading for the entire battery.

Virtually every manufacturer of nicad cells offers both trickle and fast-charging systems, including PAG Power. It has a microprocessor-based battery charging system that is programmed with data reflecting both the ambient temperature in which the cells are being charged and a characteristic curve on the particular type of nicad battery being charged. In this way, each battery can be provided with the optimum amount of charging time and the system shut down at the very moment critical temperature is reached.

At ABC labs, Phil Godfrey found Frezzolini willing to cooperate on designing a charging system to meet the network's rigorous demands. One of the ways in which this was accomplished was the introduction of a charger and sequencer that will charge several different battery types (up to 13 battery packs) simultaneously, either on fast charge or trickle charge, selectable by a switch on the charger body. The multiple charger is used extensively at ABC, since the network attacks the problem of battery availability by rotating batteries from use to charge, pulling batteries out of service now and then for discharging and stabilizing, then recharging for further use.

Godfrey says it helps if the crews are encouraged to use the battery to its full capacity—to prevent memory problems, facilitate recharging, and to help the battery operate at full power while in use.

Cold weather does affect battery charging performance. The process relies on heat being generated by the cell, and colder ambient temperatures mean the cell has to work harder to produce the heat. At WHO-TV in Des Moines, the weather is a constant factor in reducing the efficiency of the fast charger. The station now uses Alexander BP-20 11A batteries on a slow charger with a steady rotation system, increased inventory, and over-

Anton/Bauer's silver zinc batteries being computer-tested while in use.

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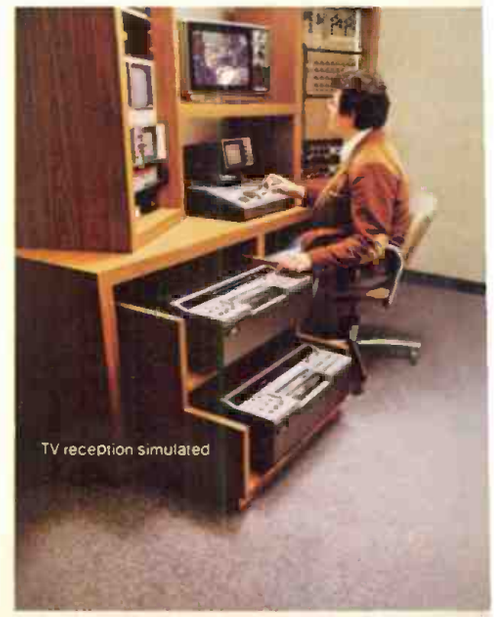

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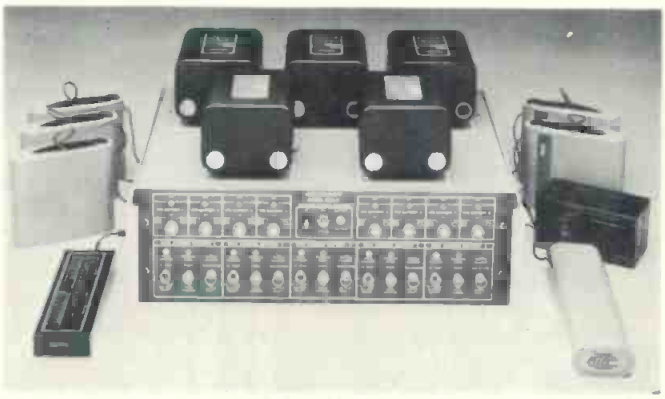


An example of the Frezzolini multicharger used by ABC charging 13 batteries simultaneously.

night charging. "Using the nicads in this way is more economical—better for us in plain dollars and cents, while getting the job done," claims Lyle Shires, technical news supervisor.

Combining techniques for chargers

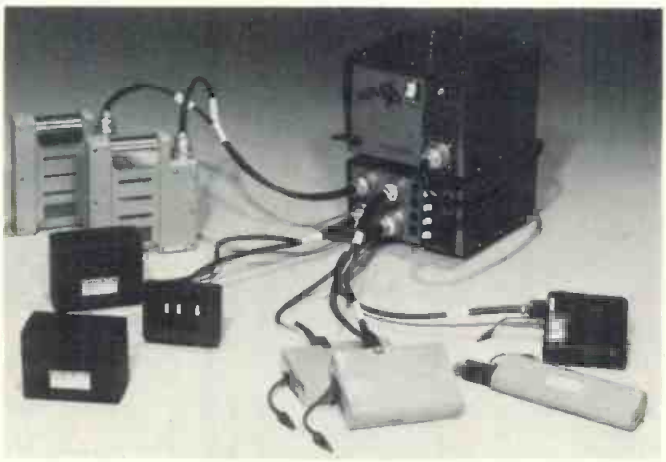
Joe Kaspar, manager of technical operations at WOR-TV, New York, uses nicads exclusively on the station's field cameras and decks, and often a sun gun is included on the camera. These are all powered on Cine 60 fast-charging batteries, allowing the engineers to use less inventory with the batteries going immediately back into circulation.

The ENG crew at WOR is out in the morning gathering information for the noon news segment. At midday the batteries are fast charged, ready to be used again in the afternoon for the shots that will appear on the evening news. This is standard procedure during the week, but on weekends the batteries are put on a slow charge because there is no ENG on weekends at WOR.

WOR also worked with Cine 60 to define discharging procedures to keep power supplies at an efficient high. During discharge the battery is forced to its lowest threshold, then fully recharged again. This has helped reduce the effect of memorization so prevalent in nicads. It is also helpful in maintaining the batteries at full power during cold weather operation.

An alternative solution in the large-inventory-and-battery-rotation or fast-charging-a-small-inventory question is the assignment of batteries and chargers to the crew using the cameras and decks. Jim Lilja, chief photographer at KMGH-TV in Denver, has instituted this system and the results are positive. For its field operation, KMGH uses Film Equipment Associates' PEP batteries and chargers. Sealed lead acid belt packs are the standard power equipment assigned to the operators, who are encouraged to discharge them fully and to maintain them as part of their own equipment.

Christie charger (top) and sequencer recharging nicad batteries in the Reflex 20 system.



Proximity, here as elsewhere, played an important role in the choice of manufacturer, but cost and good service have proved to be just as important.

Another station using the PEP battery and charging system is KBTV, also in Denver. Butch Montoya, chief photographer, claims, "We found that rotation of batteries is not reliable, because, as a camera operator, you never know what has happened to the battery before you get it. It may not work when you most need it." After careful evaluation he also found the personal distribution method best.

Developments continue

As the camera and recorder industries continue to develop, the members of the power supply wing of the business will devise parallel innovations. With the use of more types of batteries, more versatile chargers with advanced circuitry and multifunction capability have come on the scene. Now that recorders and cameras are being designed to require less power than ever before, new battery packs and configurations are beginning to appear.

The on-board nicad by Alexander is hooked to an RCA video camera.

There are also electrochemical materials and designs being developed that promise a greater range of power and mobility. The most recent attempt is to use lithium in batteries. It has a very long life, and is much lighter than silver zinc, while delivering much greater power. The problem: no one has yet found a way to recharge lithium batteries.

Meanwhile, engineers continue to evaluate the currently available models of silver zinc, nicad, and sealed lead acid batteries. Each offers advantages and disadvantages, the deciding factor ultimately being how the battery system will be used in production. **BM/E**

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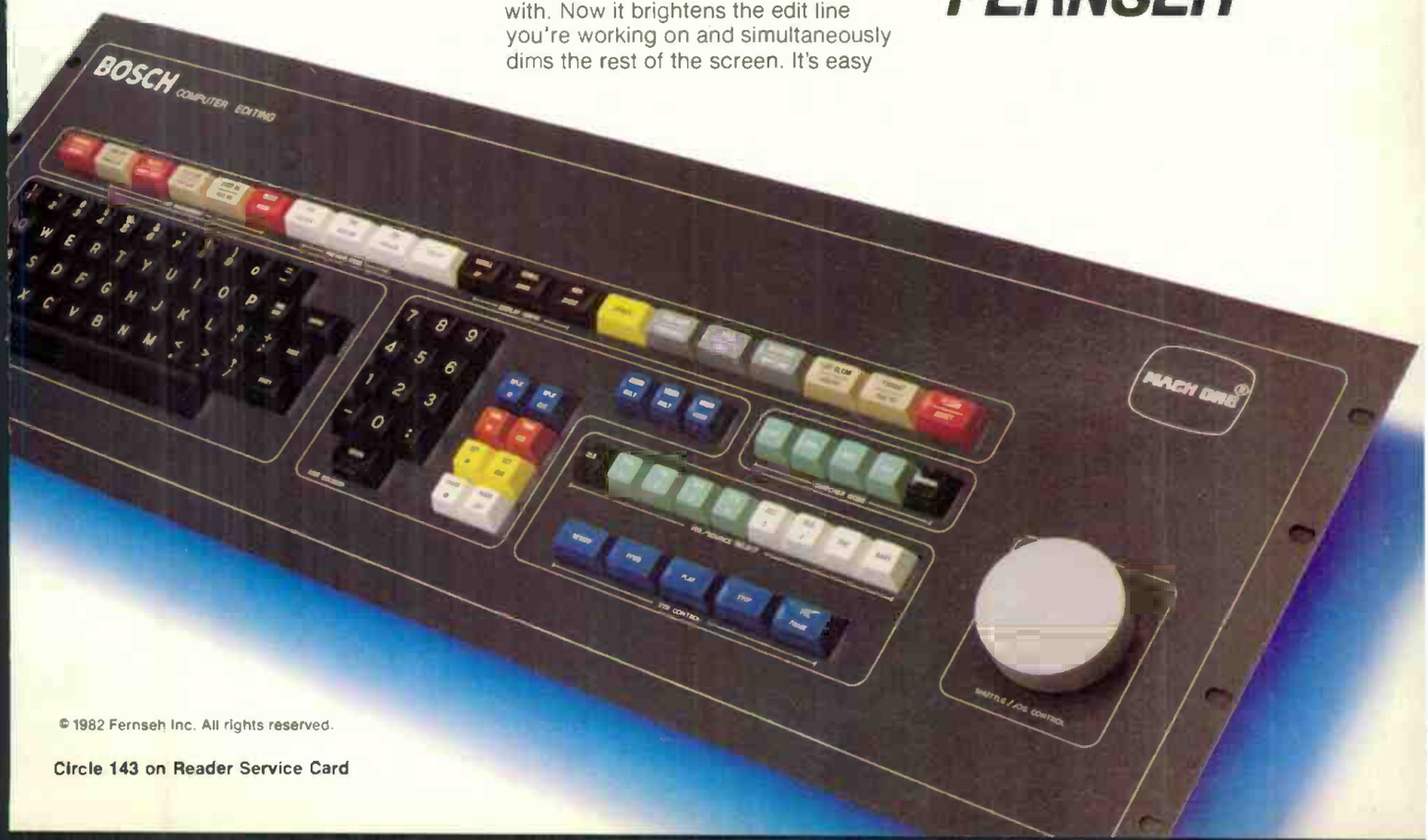

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BM/E
NEWS FEATURE

New Developments in Satellite Technology Dished Up at NAB

THE NAB's 60TH ANNIVERSARY in Dallas provided new evidence of the impact of the satellites on broadcasting. The technology was in action at the show through receiving antennas clustered on a "sat dish lot" outside the hall. Steerable antennas with remote control were the order of the day, and "sat hopping" was a common form of demonstration—every program aloft in the North American satellite arc was repeatedly piped into the exhibit area from one or more of the antennas.

The scene on the lot. Satellite dishes from many manufacturers pulled in signals from the major television satellites.

Three nets go Scientific-Atlanta

A massive advance in radio use of the satellites took shape in announcements from the three old-line radio networks that all were buying a new breed of three-meter earth terminal developed by **Scientific-Atlanta.** The terminal will use digital audio transmission compatible with the RCA "ADDS" system and some 3000-odd earth terminals will come out of this program over the next two years.

Scientific-Atlanta's receiving equipment will handle a combined bit stream of 8.78 MB/s, which can be divided by time-division multiplex into a variety of program channels. It has capacity for 20 audio channel of 15 kHz each (384 kb/s each), or a larger number of channels of smaller bandwidth, Voice or music channels at 7.5 kHz, and data and cue channels at smaller bandwidths, can be used in any combination that does not exceed the total capacity of the system.

Harmonic distortion is pegged at 0.3% and signal-to-noise ratio at more than 80 dB. The digital sampling rate is 35 kHz and the encoding is 15 bits, with a new companding system that compresses the 15 bits to 11 for on-air transmission, and expands again at the receiving end to 15 bits.

In a technical paper presented at the show, Dr. Alan Mcbride of S-A said that the digital system has a number of advantages in addition to very high audio quality and the built-in expansion capability for additional services. Others are resistance to interference from other microwave signals and efficient use of satellite capacity—the uplink

Scientific-Atlanta's booth featured its digital receiving equipment.

signal can saturate the satellite electronics completely, since "on/off" is the total signal. S-A had a receiving terminal on the lot, bringing in the digital signal from an uplink in Atlanta, to an acoustically treated listening room.

AT&T "combined service"

The **Bell System** also put on an elaborate demonstration of digital audio for radio satellite transmission, using a Bell-developed system compatible with the Bell TI terrestrial digital landline system. Bell announced vendor end-to-end transmission would be available about the end of April (if the FCC has approved the tariff) using the digital system in a combination of land lines and satelite hops for regular service throughout the U.S.

The Bell system, though different from the RCA/S-A system, also uses 15 bit encoding with 15-to-11-to-15 companding, for similar distortion and noise characteristics. The total bit stream is about 1.5 MB/s, allowing for multiple channels (though fewer than the S-A system). At the present time Bell has two uplinks usable for the system, one in Coram, NY, and one in Los Angeles. Individual earth terminals by Bell are in development, with availability not yet firm. At the present time the end-to-end service will use land lines to and from Bell's own uplinks and downlinks to reach customers.

Bell had a receiving system on the lot and piped the program into an acoustically treated listening room in the exhibit hall. The quality, like that in the Scientific-Atlanta listening room, seemed excellent in every way.

Automation for formats via satellite

Virtually all the firms showing program automation for radio had new systems, or new software, designed specifically to handle format programming delivered by satellite.

With the main program material coming in from space, the automation system need handle only the local spots, IDs, and similar material that will originate at the station. Thus satellite-format automation is much less expensive than a full radio automation system.

Broadcast Electronic's "Sat 16" Satellite Program Controller has two carousels built in for random-select of 48 items of local material, and complete electronics for feeding the program from the dish into the transmit equipment. The automation unit also has the decoding equipment for the cue tones sent out by the satellite programmer to switch the station automatically off the space segment and onto local spots. Included in the control system is a "direct start" capability allowing the sending outfit to start any specific source at the local station by pushing the right buttons. The system has a 2000-event memory for the sequence of local material set up for a full 24 hours.

An optional addition for the system is a reel-to-reel playback tape machine as a backup for the rare sunspot fade or other interruption in the space path.

The **Cetec** 7000 GLS, also introduced at the show, has a similar configuration, using an Audiofile with 48 slots for the local material. It has a 1000-event memory, expandable to 10,000 events, and can handle up to seven audio sources. Cetec says the system is expandable to full program automation after installation. It has a system self-analysis debug module, silence sense, and closed-loop alarms. Included is a video readout programming terminal with keyboard.

Harris Corporation introduced an earth station facilities controller, Model 9165, which can be used for on-site or remote site applications. It controls both the receive electronics and the antenna positioning for 525 different signal paths, preprogrammable for up to a week. Included can be Harris 6.1, 9, or 11- meter antennas and up to eight frequency-agile Harris receivers. Harris also had a display of the electronics for the earth terminals introduced at earlier shows, with a remote-controller for a model antenna on the exhibit floor.

Harris also showed a version of the System 9000 program automation configured for handling format programming via satellite, with functions much like those of the other automation systems described here. It uses the standard Harris controller plus one, two, or three multiple-cart units, depending on the volume of local material to be handled. Cue tones feed in from the decoder furnished by the satellite programmer trigger the local switching.

Sono-Mag introduced a revision of software in the Mini-Pro live assist system for use of the satellite program and cue tone signals.

UMC announced a "Playmate Satellite Network Control System" using

Harris Corp.'s booth featured a model of its 6.1-m receiver and the Model 9165 earth station facilities controller.

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the UMC cart units for the local material and microprocessor control of switching. A decoder picks out the cue tones sent out by the satellite programmer and effects the switching of local material in and out of the net. It has a silence sensor. The system will handle multiple cuts on one cart, playing two cuts back-to-back.

Other hardware developments

A considerable number of companies, old and new in the business, brought new satellite hardware.

Andrew Corporation, veteran antenna maker, had a new 4.5-meter dish on the lot in active use (electronics from other firms). To show the high signal resolution of the antenna, Andrew had automatic signal-level plotters drawing the curves as the antenna moved in azimuth. Andrew spokesmen pointed out that the antenna would give good results with the two-degree satellite spacing now under discussion.

Anixter-Mark was another firm with a complete receiver terminal on the lot. Antennas are sold in several sizes, including transportable types, along with electronics from other firms. Anixter-Mark is aiming for the backyard market and for the lower-cost broadcast installations as well.

Antenna Technology Corporation is the developer of the "Simulsat" edge-truncated antenna, designed to cover every satellite in a 57-degree arc simultaneously. Maximum diameter of antenna (horizontal) is five meters, and ATC claims gain of 44 dB on every signal in the antenna's window. The system was hooked to complete electronics (from other firms) on the lot and demonstrated excellent quality on every video signal in the 57-degree arc.

Calstar from Fair Oaks, CA, had a fully operating earth terminal on the lot, using an elliptical antenna, two meters by 4.5 meters, with the long diameter placed horizontally. Calstar says this makes a cheaper antenna than a full 4.5 meter circle, but has resolution equal to that of the full 4.5 meter dish. Caltar also had on the lot a five meter transportable TVRO with remote control that scans the full arc in less than a minute. Electronics in the systems came from other manufacturers. Pictures on the Calstar monitors had excellent quality.

Comtech Data Corporation had a five-meter remote controllable antenna with complete electronics on the lot, showing fast scanning of the complete satellite arc. The company showed information on a complete line of turnkey earth terminals with the it's antennas of all standard sizes and electronics. Comtech Laboratories, an associated

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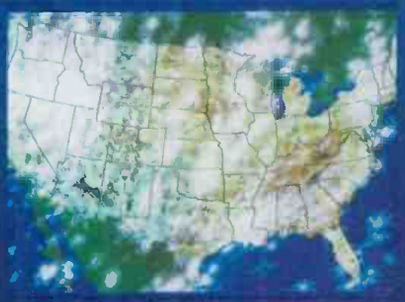

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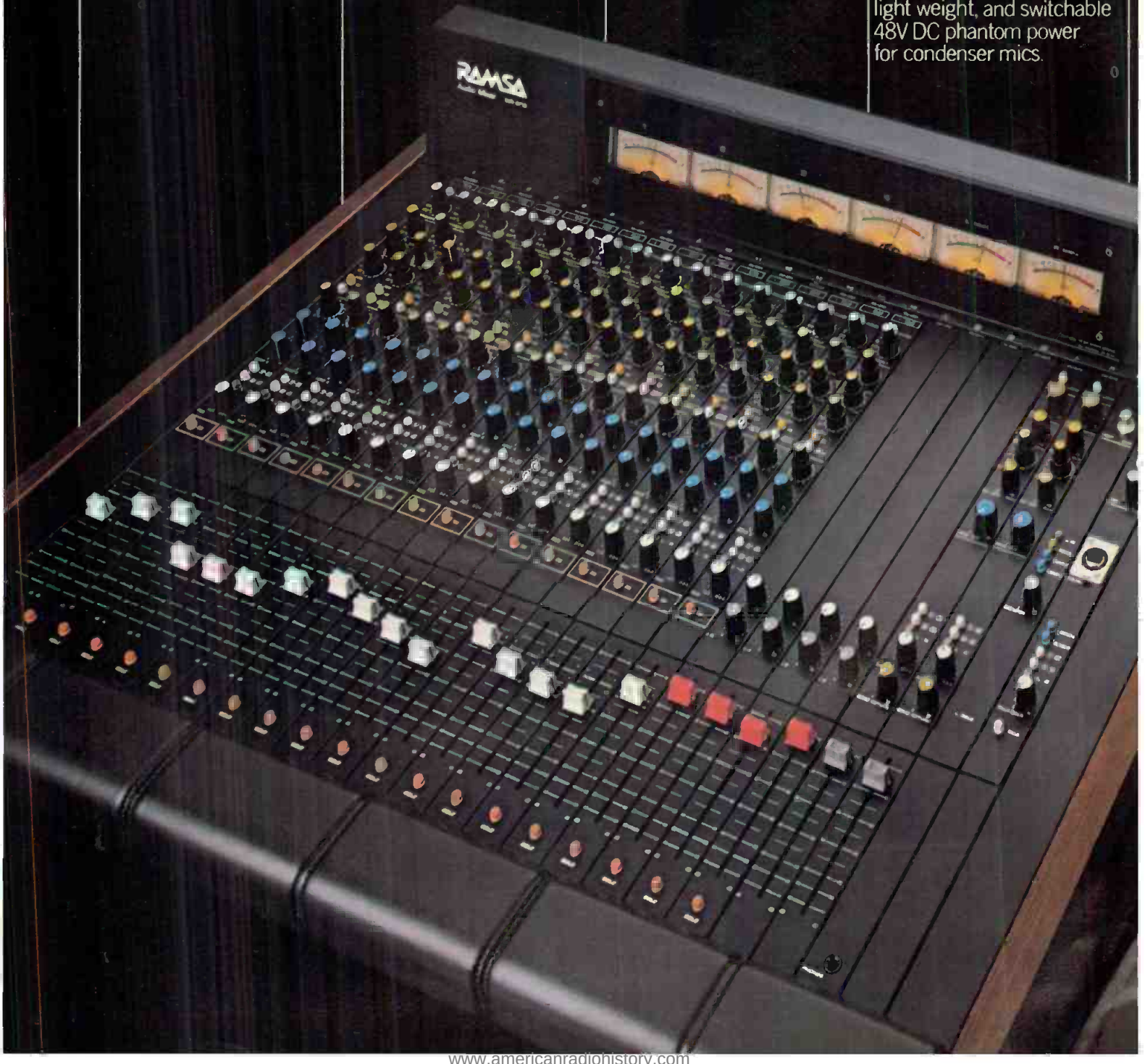

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