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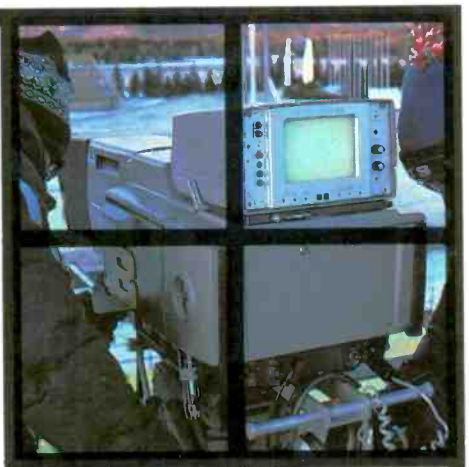

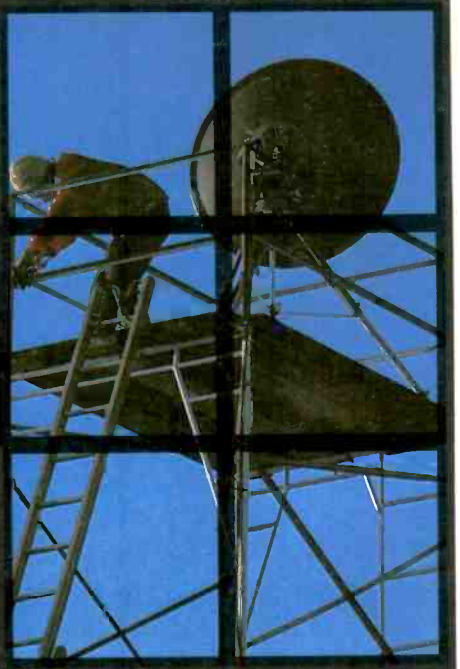

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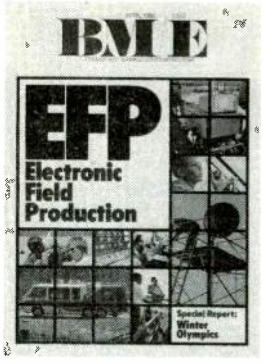

New technologies are putting greater capacity in the hands of the radio and television media as they exploit the possibilities of field production

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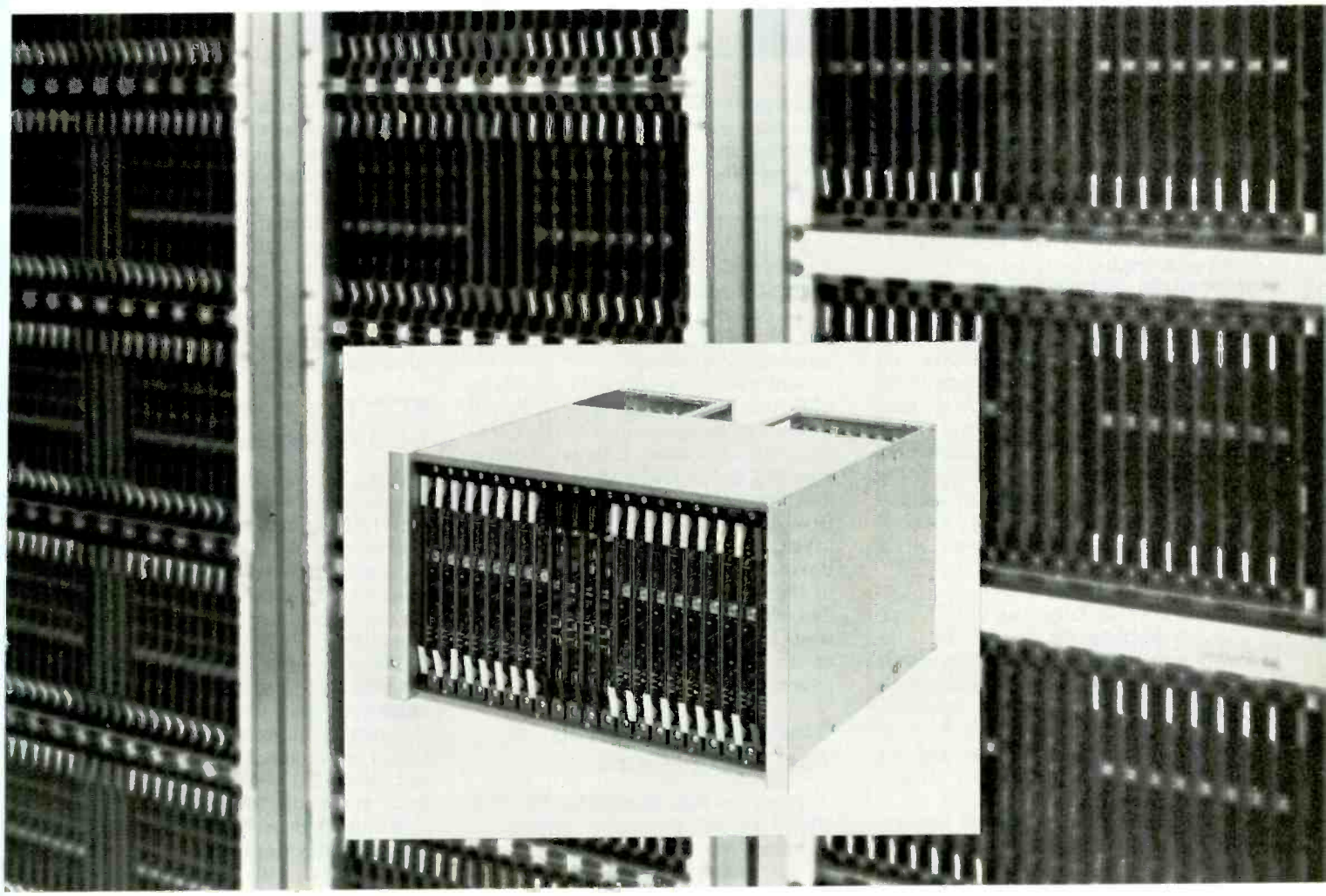

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BROADCAST INDUSTRY NEWS

New Nets Hindered By FCC Goofs, Report Says

Old mistakes by the FCC still stand in the way of the emergence of new television networks, according to reports recently released in the Commission's network inquiry.

Combining to defeat any possible new network, the reports claimed, are the FCC's multiple ownership rules and spectrum management policies. By placing UHF and VHF stations in the same markets, the UHFs have been kept at a constant disadvantage; limiting the number of VHFs per market has also served to limit viewer choices. The spectrum management report accused the Commission of failing to "come to grips" with the problems created by the structural limits it imposed in 1952.

Among the report's suggested alternatives are switching to an all-UHF system or limiting the number of VHF stations a network may affiliate with in order to open up more VHF stations for a possible fourth net. In addition, CATV could be a solution to the technical comparability problem and the limited number of stations per market, according to the report.

Other reports in the network inquiry, also released in February, viewed the prospects for new networks offered by alternative distribution systems — namely, MDS, STV, and CATV. Those three were chosen to be dealt with first because all are currently operational and carry programming-for-pay to subscribers in direct competition with standard broadcast television. Future reports will deal with program distribution via home video (including cassettes and discs) and direct broadcast satellites.

The report cautioned the Commission against "'planning' and attempting to produce one particular outcome for the entire broadcasting industry," urging it to remain flexible. It noted that FCC policies delayed the entry of CATV and pay TV as competitors with broadcast television.

And what of the effect of new nets on old? At least one observer thinks they'll thrive for the new competition. Commission chairman Charles Ferris, speaking in San Diego, rejected claims that the major webs will suffer from new networks or new technologies, saying they "will not only survive but thrive." The FCC can no longer stand in the way of emerging technologies that offer "the possibility of new pathways for programming into the homes of the American public" — the real winner in the battle, Ferris said.

Visual Info Proposed For TV Off-Hours

A proposed rule change by the FCC would permit television stations to broadcast visual information material — for example, news, weather, or sports — during their usual off-the-air hours. Several waivers have recently been granted for such transmissions, and the Commission has decided to issue a notice of proposed rulemaking in the matter.

Under the proposal, the visual information, which could be presented with no audio or with background music, would be restricted to the period between a station's normal sign-off and sign-on. All pertinent regulations, such as station identification, would continue to apply, and advertising would be permitted. Licensees would not be allowed to count the broadcasts as regular informational programming.

Comments were due March 31; replies must be in by April 30.

FCC Toughens Up EEO Guidelines

Starting this month, broadcasters will have to face a more stringent scrutiny of their EEO records when they apply for license renewal. Under newly issued FCC guidelines, all but the smallest stations are subject to toughened standards for equal employment opportunity compliance.

The new rules continue to exempt stations with less than five full-time employees from having a written EEO program. Stations with five to 10 full-timers are required to employ women and minorities at 50 percent of workforce availability overall, and 25 percent of workforce availability in the top four job categories (officials and managers, professionals, technicians, and sales). Stations with 11 or more full-time workers must show employment of women and minorities at 50 percent of workforce availability for all job categories, including the upper four.

Under previous rules, stations with 11-plus full-timers had to show women

Opera Goes Digital In Recording Experiment

Classical stations may soon have more digital fuel for their fires as a result of a pioneering recording experiment. Herbert von Karajan and the Berlin Philharmonic recorded Richard Wagner's *Parsifal* at the Berlin Philharmonic Hall in December and January with 3M Company's 32-track Digital Mastering System. The historic sessions represent the first digital multi-track recording of an opera, according to 3M.

Analog tapes were also made of the sessions, and a decision on which version to release will be made this summer following editing and mixdown. The digital tapes will be edited digitally on the new 3M electronic editing system. The recording used 16 tracks of one 32-track recorder, while a second recorder provided tape overlap for long segments. Anticipated release date is spring of 1981.

The 3M Digital Mastering System, which the company describes as the world's first commercially produced multi-track digital system, was developed following joint research conducted in the U.S. by 3M and by the BBC Research Department in England. Several U.S. recording firms have already installed the system.

Jeff Mestler and Carson Taylor of Audio-Video Rents, professional audio studio in San Francisco, receiving training on firm's new 3M Digital Mastering System

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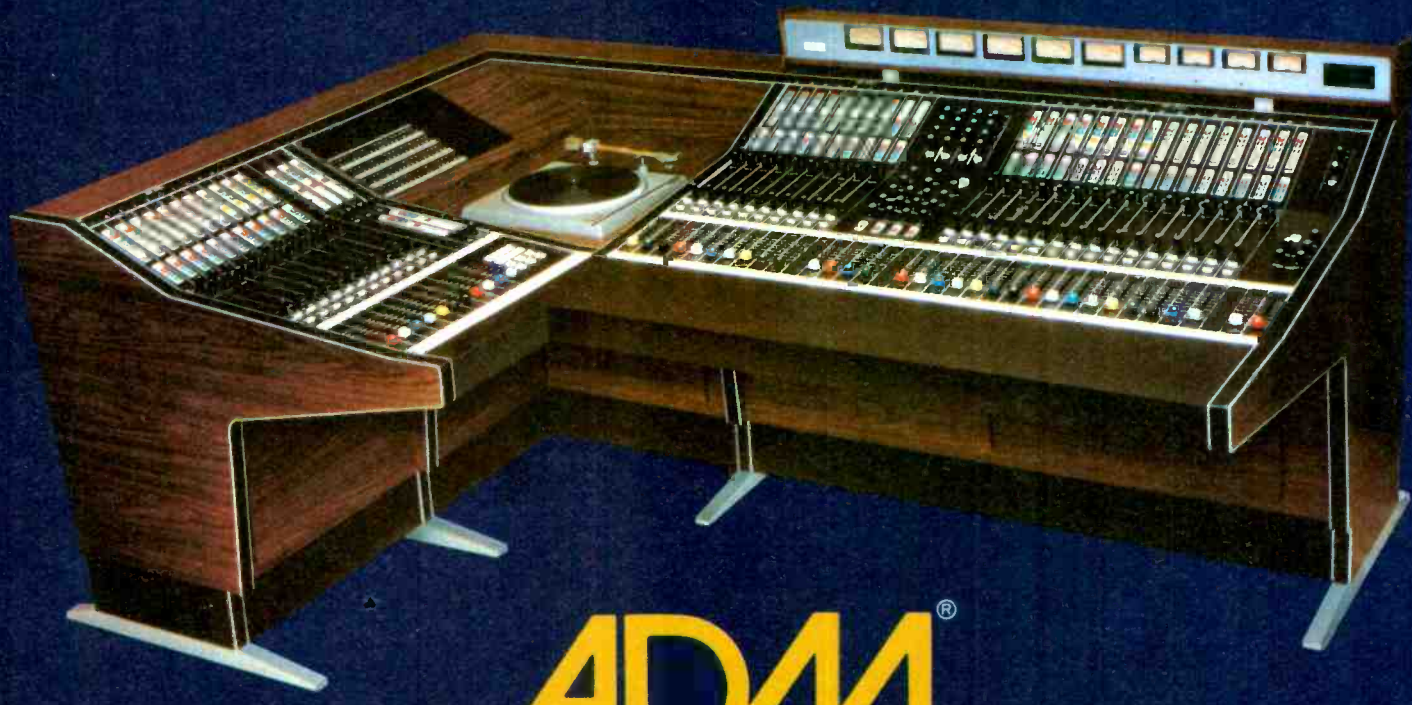

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and minorities employed at 50 percent workforce levels for all job categories except the top four, where the acceptable ratio was 25 percent. Stations with five to 10 employees were subject to EEO review only if they had employed no women or minorities during their license terms, or if no women or minorities held upper-four jobs.

Also called for under the new guidelines is EEO review for all stations employing 50 or more full-timers.

The FCC noted that its action was made possible by the recent reorganization of the Broadcast Bureau and the establishment of an EEO Branch in the Renewal and Transfer Division.

In a separate action taken the same day, the Commission, "reluctant to impose further financial burdens on broadcasters," decided to leave handicapped workers off the list of minorities protected by its EEO compliance rules. It did, however, appoint a coordinator for broadcasting and the handicapped who would attempt to encourage hiring of handicapped workers by operating an information clearinghouse program.

Neither were the networks spared in the FCC's sweeping EEO campaign. Reiterating its belief that there is a direct relationship between a broadcaster's employment practices and its programming practices, the Commission ordered the Broadcast Bureau to conduct a survey of employment practices at the three major TV nets. The primary objective of the review, says the FCC, is to see to what extent women and minorities have penetrated decision-making positions, especially in programming. The action comes in response to petitions for rulemaking from the Citizens Communications Center, in behalf of the NAACP, and the National Black Media Coalition.

FM's Audience Share Still Growing

FM radio continues to outdistance AM in audience share, according to a CBS Radio analysis of RADAR 20 (spring/fall 1979) data. In every daypart except one, FM draws a larger share of the total audience than AM — and the one exception has increased 46 percent over the last four years.

The data shows FM commanding 52.4 percent of the nationwide audience of persons 12 and over, Monday through Sunday, total day, average-quarter-hour. This represents an increase of 1.9 percent over the last RADAR figures (fall 1978/spring 1979). The strongest daypart is 7:00 p.m. to midnight, when 59.5 percent of listeners tune in FM stations. FM pulled ahead of AM during the overnight segment (midnight to 6:00 a.m.) for the first time, with 52 percent of the audience. Midday brings FM 54.3 percent of total listeners, and afternoon drive scores 54.7 percent. Morning drive is still dominated by AM, but FM registered a five percent increase over the last survey with 43.9 percent. FM's highest audience share is achieved Saturday and Sunday evenings — 61.9 and 60.1 percent, respectively.

RADAR is a syndicated research service whose studies are jointly sponsored by the CBS, ABC, Mutual, and NBC radio networks.

FCC Won't Restrict Canadian Prerelease

The FCC has refused to impose a general restriction on the prerelease of U.S. programs over Canadian television, despite strong objections by ABC and certain affiliates. A petition filed by ABC urged the Commission to exercise its authority to prohibit such prerelease, which can result in a program being shown by a Canadian station in a border market before a U.S. station in the same

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market can air it. In addition, KOMO-TV, Seattle, had asked the FCC to adopt a rule prohibiting cable carriage of prereleased programs.

In denying the requests, the Commission claimed that some of the stations filing comments in the proceeding had provided no information about how much of their audiences were diverted by prerelease, and others submitted only "sketchy, incomplete data." No station showed conclusively that reduction in local news or public affairs programming was due to Canadian prerelease.

There was therefore no basis to assume, the FCC continued, that the practice was damaging to the involved stations. Besides, it noted, if prerelease were banned Canadian stations could substitute other attractive programming and thereby maintain their audience shares. The ABC petition, which requested the FCC to regulate physical delivery of program material into Canada, was denied on the grounds that the FCC's authority extended only to wire and radio transmission.

Commissioners Washburn, Lee, and Quello dissented, with Washburn issuing a statement detailing the reasons for his opposition. The decision, Washburn claimed, "violates common sense" by allowing prerelease while other Commission rules offer protection against simultaneous duplication of network programming. Denying protection against prerelease undermines stations' ability to provide local public service programming, while offering dubious benefits since "the cable systems . . . produce virtually no local programming services."

SMPTE Investigates Digital TV

The SMPTE announced after its recent Television Conference, held in Toronto, that it would look into two aspects of digital television technology.

The society's Study Group on Digital Television Tape Recording has completed a user survey, to be sent to more than 1000 broadcasters, film and videotape producers, post-production services, and major private TV users in North America to discover their needs and priorities for digital video recording. The survey will query respondents on organization type and current VTR usage, priorities for operational features, transport and tape format priorities and objectives, video and audio performance objectives and priorities, and miscellaneous system considerations.

The Working Group on Digital Video Standards, in a meeting preceding the Toronto conference, called for a task force to investigate the possibilities for a world-wide component digital TV standard. The group, currently at work on a draft for a composite NTSC digital format, called European efforts toward a common PAL/SECAM digital format "extremely significant"; support then grew to extend the concept to world-wide compatibility.

Recognizing the timeliness of the working group's action, the society's Committee on New Technology's steering committee promptly established such a task force, chaired by Frank Davidoff.

RCA Plans Expanded CATV Service After Satcom Loss

RCA Americom appeared highly motivated to make up for past failures at a February 20 news conference when it outlined plans to expand its service to CATV customers.

As described by RCA Americom president Andrew F. Inglis, the first phase of the plan calls for RCA to lease 11 preemptible transponders on

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AT&T's Comstar D-2 satellite. These transponders will form the basis of a second cable network, CATV-2. RCA's first CATV net will remain on Satcom I until late next year, when the new Satcom III will go into service.

At that time, the 20 CATV-1 channels will be transferred to Satcom III, along with two additional channels formerly belonging to CATV-2. CATV-2 will then be reduced to nine channels, located on Satcom I. An in-orbit spare will have 22 preemptible transponders to provide insurance against "catastrophic" failure of any entire satellite; the remaining satellites will each carry two preemptible transponders. A fourth Satcom will be put into service in early 1982; the company plans to keep a ground spare "at all times."

AT&T will lease the "emergency" transponders to RCA for $70,000 per month, while customers will pay RCA the regular tariff rate of $40,000 per month. RCA's financial loss will be covered by its insurance settlement after the Satcom III loss. Inglis stressed, however, that RCA's action was "taken voluntarily in an effort to provide a service that is in great demand. It is our concept of a public service responsibility." He predicted approximately a $5 million loss.

Even so, Inglis continued, the action was "a hard-headed business decision" to encourage satellite use by the CATV industry.

Because service on the AT&T satellite is preemptible, there is no guarantee that it can be restored if one or more transponders fail during the lease period — a likely possibility, according to AT&T. The service is also interruptible for sun outage protection and routine maintenance.

The fate of the errant Satcom III was still unknown at the time of the press conference, Inglis admitted. Looking into the question was a committee headed by an independent scientist; the group's report is expected early this month.

Comsat Authorized To Provide TV Service Direct To Programmers

A recent decision by the FCC has authorized Comsat to provide international TV service directly to programmers such as the three major networks and others, for example the Spanish International Network. The action permits Comsat to compete with AT&T and the International Record Carriers (IRCs) for international TV business.

The decision followed a determination by the Commission in 1978 that such competition among Comsat, AT&T, and the IRCs (ITT, RCA, and WUI) would serve the public interest. Comsat was at that time instructed to file an application to provide international service directly to customers. At the same time, preparation was made to end the rotational system by which AT&T and the IRCs took turns providing all international TV circuits.

Under the previous arrangements, a customer for international TV service placed an order with the "carrier-of-the-week," which arranged the appropriate terrestrial links. The carrier then placed the user's service order with Comsat, which in turn placed the order with Intelsat. Under the new decision, which also terminates the weekly rotational system, a user may either choose any one of the IRCs or AT&T and proceed as before, or place its order directly with Comsat. If a user chooses to deal directly with Comsat, it is required to arrange for its own terrestrial links.

According to the Commission, Comsat plans to offer service to both individual carriers and individual users on the same basis.

Blue chip ENG on a budget

If you thought that an Ikegami ENG camera's been beyond your budget till now, take heart. The HL-78A approaches the high performance standards of the HL-79A. But the price is encouragingly lower.

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And with studio options like 4½-inch electronic viewfinder, remote paint box, program microphone and intercom, it does double duty. What's more, it meets EIA Std. RS-170A including SC-H phase criteria, with adjustable H&V blanking pulse widths to meet FCC limits. Put the HL-78A on your ENG team. See your Ikegami dealer/distributor or contact Ikegami Electronics (USA) Inc., 37 Brook Avenue, Maywood, N.J. 07607; (201) 368-9171. West Coast: 19164 Van Ness Ave., Torrance, CA 90501 (213) 328-2814; Southwest: 330 North Belt East, Suite 228, Houston, TX 77060 (713) 445-0100; Southeast: 552 South Lee St., Americus, GA 31709 (912) 924-0061.

Ikegami HL-78A

News Briefs

A **black TV network that would cover nine states** has been proposed by Applied Communications Technologies, headed by New York attorney Angela Shaw. The net would own 10 developmental translators in southern cities and would provide black-oriented programming to the area; the proposal has been filed with the FCC . . . . **TV news staffs are growing**, according to data compiled in RTNDA surveys from 1972 to 1979, but radio seems to be marking time. A typical TV newsroom counted 13 full-time employees last year; it had 10 in 1976 and only nine in 1972. Radio stations, on the other hand, averaged only one full-time and one part-time worker in 1979. A jump occurred between 1972, when many stations had no full-timer, and 1976, when news staff growth leveled off . . . . RCA Americom has announced a joint effort with Viacom and Post-Newsweek stations to **test its SMARTS program**. First station to participate will be WFSB-TV of Hartford, Conn.

The NRBA and national radio publication *Radio & Records* will **co-host NRBA's Los Angeles convention**, to take place October 5 through 8. NRBA pres Sis Kaplan called the union "a very exciting and positive move for radio in the 80s" . . . . NAB and RTNDA will jointly sponsor an **advanced management program** for news directors, to be held June 22 to 28 at the University of Pennsylvania's Wharton School. For information, contact Ron Irion, director of broadcast management, NAB, 1771 N Street NW, Washington, D.C. 20036 or Len Allen, managing director, RTNDA, 1735 DeSales Street, NW, Washington, D.C. 20036.

The NAB and the EIA have formed a **National Radio Systems Committee** to investigate and recommend ways to improve AM and FM transmission and reception. Former FCC chief Wallace E. Johnson will chair the committee, whose initial consideration will be AM stereo and FM technical standards; the group will meet April 15 during the NAB convention . . . . **Use of a "silent channel"** utilizing aural subcarriers should be allowed TV broadcasters for instructing remote news crews, NAB urged in a recent filing with the FCC. Suggestion originally came from Boston Broadcasters, Inc.

RKO Radio Network has started delivering programming from its **new custom-designed studios** in New York City. The February 1 initiation of the new facilities allowed the net to begin offering material 24 hours a day to its affiliates via satellite. Before the move, it transmitted 14 hours of programming from the New York studios of WOR . . . . The hard-of-hearing got a boost in March when **ABC, NBC, and PBS kicked off closed captioning** for selected shows. PBS now offers 10 hours of captioned programming weekly; ABC and NBC each offer five . . . .The International Electrotechnical Commission (IEC) has announced an **international standard** for mechanical and electrical measuring methods for professional and home recording equipment. The standard, IEC Publication 94-3, lays down minimum performance requirements for magnetic tape recording and reproducing gear.

SMPTE will hold its 122nd **Technical Conference and Equipment Exhibit** this November 9 through 14 at the New York Hilton. Information about the conference is obtainable from SMPTE Conference, 862 Scarsdale Ave., Scarsdale, N.Y. 10583 . . . . "Video Communications: The State of the Art" will be the theme of the twelfth annual **ITVA Conference** April 16 through 20 in Las Vegas. Over 50 workshops will center around the three areas of production, programming, and management.

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Ikegami has its eye on the 80's

In 1976, two pioneering ENG cameras revealed to a rapt world the shoot-from-the-shoulder delegate's view in color of the Democratic and Republican national conventions. Those two, the Ikegami HL-33 and the HL-35, soon became the ENG workhorses of the industry. The HL-77, Ikegami's first self-contained ENG camera, contributed to a major expansion in the use of ENG. And the current HL-79A, which opened up the era of the one-person ENG camera crew, has become the standard of the broadcast industry.

In 1977, Ikegami made a major contribution to the performance of studio cameras—the first microprocessor-controlled automatic-setup camera, the Ikegami HK-312. With hundreds of HK-312's now in use, Ikegami has expanded microprocessor control to its HK-357A field/studio and HL-53 EFP cameras.

Ikegami enters the 80's fresh from its triumphs at the Winter Olympics where 50 of its cameras contributed to the spectacular coverage of this event.

And while Ikegami enters the 80's with a record of meaningful innovations and solid accomplishments during the last decade, what's most exciting are the products in the Ikegami engineering labs. So keep your eye on Ikegami. Ikegami Electronics (USA) Inc., 37 Brook Avenue, Maywood, N.J. 07607; (201) 368-9171. West Coast: 19164 Van Ness Ave., Torrance, CA 90501 (213) 328-2814; Southwest: 330 North Belt East, Suite 228, Houston, TX 77060 (713) 445-0100; Southeast: 552 South Lee St., Americus, GA 31709 (912) 924-0061.

Ikegami

Business Briefs

Sony has established its Palo Alto **Video Technology Center** as a separate corporation that will soon go into manufacturing in addition to its current R&D responsibilities. The center is Sony's first R&D facility to be located outside of Japan . . . . CBS has formed a new division to manufacture, produce, and market programming for the videotape and videodisc markets. Cy Leslie will be president of the new division, **CBS Video Enterprises** . . . . **VCI Satellite, Ltd.**, has been formed as a subsidiary of Video Communications, Inc., to offer satellite services to the audio/video and audio nontheatrical markets on Westar III. VCI recently completed extensive remodeling at its Tulsa, Okla., facility.

Bloomington Broadcasting's Computer Division and Automated Business Concepts have agreed in principle to merge into a new organization to be known as **Broadcast Management Concepts**. The firm will maintain offices in San Diego and Bloomington, Ill.; it will offer computer-based broadcast management systems for radio and TV stations . . . . Edward A. Schober has formed a new broadcast technical consulting firm, **Radiotechniques**, specializing in services to radio stations and equipment manufacturers. The firm is at 402 Tenth Ave., Haddon Heights, N.J. 08035 . . . . **Datatron, Inc.**, has acquired a new 61,000 square foot facility in Orange County, Calif., to house manufacturing and administrative operations for several of its divisions. Move-in date is mid-summer of this year. The company recently purchased design ownership and exclusive manufacturing rights to **Dytek Industries'** line of video switchers, routing switchers, and controllers.

Amperex Electronic Corp. has expanded the production capacity of its Rhode Island manufacturing plant to meet increased demands for its ⅔-inch Plumbicons®. The one million dollar improvement gives Amperex the largest clean-room facility in the U.S. — some 13,000 square feet . . . . Yves Faroudja, Inc., has moved to new, larger facilities at 946 Benicia Ave. in Sunnyvale, Calif. 94086. In addition, the company has changed its name to **Faroudja Laboratories, Inc.**

Sintronic Corp. has doubled the size of its manufacturing and administration facilities in Lionville, Penn., to respond to the increased demand for its broadcast transmitters . . . . **Digital Communications Corp.** is now settled at its new address, 11717 Exploration Lane, Germantown, Md. 20767, tel. (301) 428-5500.

Ampex has begun deliveries of its new ATR-124 multi-track audio recorder; 23 units have been ordered by U.S. customers since its introduction late last year. The company recently raised the prices of its full line of professional audio and video equipment by eight to 10 percent . . . . WBT, Charlotte, N.C. will install a new **Harris** MW-50A 50 kW AM transmitter, to be used with its existing MW-50 in an alternate-main configuration . . . . Chronicle Broadcasting stations KRON-TV of San Francisco and WOWT-TV of Omaha will upgrade their technical facilities with **RCA** VTRs, telecines, and ENG cameras. The deal totals morethan $900,000.

Comsat reports that its net income for 1979 was up 17.4 percent over 1978 levels, mostly attributable to greater earnings from Intelsat services and Comstar services . . . . **Chyron's** net income from operations increased 137 percent for the first six months of the current fiscal year, to last December 31 . . . . **Ampex** third-quarter and nine-month figures for earnings, sales, orders, and backlog are the highest in the company's history.

Kozo Hirayama has been appointed chairman of the board and chief executive officer of **NEC America, Inc.** Hirayama's former post was president and CEO.

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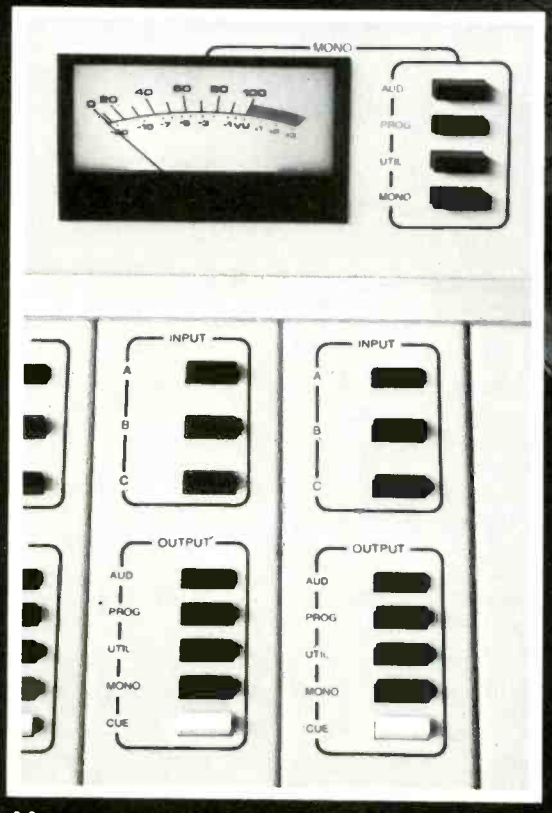

Mono mixing buss *plus* stereo summing.

RADIO
PROGRAMMING & PRODUCTION FOR PROFIT

Choosing Shorts

MORE AND MORE, the programmer of a radio station will face the problem of picking out what works for his station, if anything, from the flood of short programs pouring onto the market. This flood will grow to a vast inundation when the satellite nets really get underway and when some large proportion of radio stations have earth terminals, which now seem sure things.

This department from time to time has noted short programs that look interesting, and the response from readers has been especially strong. This month we describe briefly several more, with disparate topics. In future issues *BM/E* hopes to put together lists or surveys of syndicated shorts, grouped according to general subject.

Progressive info/entertainment

Can short news spots be informative, serious, and entertaining at the same time? The Progressive Radio Network says that a new syndicated series it is launching about the time this appears in print will have all those qualities. *News Spots* will explore "environmental concerns, consumerism, politics, advances in science and technology, profiles of exciting people, and international trends." Twenty-four of the spots will be issued each week, aimed for the 18-49 audience.

The Progressive Radio Network has produced for several years the *News Blimp* and *Sound Advice* series—*News Blimp* won *Billboard's* Best Syndicated Program of The Year award. Ohio State gave PRN an award for "contributions to the advancement of the art of broadcasting." *News Spots* is clearly worth a listen. To get demos write or call Progressive Radio Network at 321 Rider Avenue, Bronx, New York 10451, tel. (212) 585-2717.

Free news about Africa

HABARI is a Washington-based outfit devoted to collecting information about Africa for American broadcast and print media and for politicians and other influencers. A variety of transcripts and special reports are issued to subscribers, at modest fees. Radio broadcasters can get, free, a daily two- to three-minute news program by phone which covers global African affairs, Congressional activities on Africa, African domestic and international economic affairs, meetings, people, cultural events, and so forth. The audio spot is available at any time of day by a call to (202) 659-2529. It is changed late each night, except on weekends. There are no restrictions on when or how it is used: the radio programmer can air it directly or record it for later broadcast.

"HABARI's newscasts have a breezy tone. Produced by 17 volunteers, they are compiled from overseas radio broadcasts, the daily press, Congressional reports, and some first-hand reporting," said the *Washington Post* in 1977. The radio programmer who needs something special on Africa can listen to HABARI at the cost of a long-distance call.

Super-rock and super-talk

O'Connor Creative Services, one of the oldest and most active producers of syndicated shorts, keeps adding new series to the long list assembled over the years. Announced last fall were six new music specials, each a two-hour stereo recording on open-reel tapes. The six programs feature, respectively, the Bee Gees, Donna Summer, Fleetwood Mac, Paul McCartney and Wings, the Who, and the Eagles. Each program is a "words and music profile, revealing the superstars behind the image." The material is arranged so that the only voices are those of the musicians and of the local station's host, for the "it's-right-here" feeling.

Another two-hour special is "The Rod Stewart Story," in which that rock star talks about "his friends, his life, and the singers who have influenced his music most." Plenty of the music is played, and the format is again one that lets the local station host take over the central role.

A third new series from O'Connor is called *The Senators*. Aptly named, it will present members of the U.S. Senate in 2½-minute talks on subjects of their own choosing. The idea is to let the senators "communicate their concerns, insights, and solutions to problems facing the American people." Already committed to the series at the time of the announcement, last fall, were Henry Jackson of Washington, William Armstrong of Colorado, and John Stennis of Mississippi. Invitations are out to all members of the Senate.

For more info on any of the O'Connor programs, write to Box 8888, Universal City, Calif. 91608, or telephone (213) 769-3500.

Radio Programming

Short-shorts on sports, etc.

Series consisting of 1½-minute specials evidently have a place on the radio agenda. Gert Bunchez & Associates have produced a number of these short-shorts on many topics. Announced early this year were several new ones that radio programmers ought to know about.

A Moment in Sports brings Andre Baruch, widely known for many sports and other programs over the years — *Your Hit Parade*, *The U.S. Steel Hour*, *The Shadow*, the Brooklyn Dodgers games, and others. In the new series he will relate memorabilia of sports greats: accounts of their great moments, life histories, and so on.

Another new Bunchez series is the *Baruch Department of Hysterical History*, with Baruch and his wife, Bea Wain, herself a media star as a singer. Each program will cover a moment in history with considerable humor.

Gardening Tips will be just that, with Bob Thomson, already seen on a gardening program on public TV stations. *Critic At Large* is 1½-minute movie reviews by Frank Hunter, entertainment editor of the St. Louis *Globe-Democrat*. *Earning Money Without a Job* consists of tips on spare-time work from Jay Levinson, author of a popular book on the subject.

Bunchez has a considerable list of other spoken-word series. For info, write them at 7730 Carondelet Street, St. Louis, Mo. 63105, or call (314) 862-5250.

Prime-time talk

A new program series that seems to shoot for time-format innovation is called *Coast to Coast*, and will originate in San Francisco as a live interview show, three hours long each night. The show will start at 7:00 p.m., San Francisco time, and be distributed live nation-wide, according to the developer, the Woodruff Organization.

The show will be built on an interviewer, Rick Forrester, who will invite in the whole range of "interesting people," the traditional mix of newsmakers, political and business leaders, authors, stage and screen stars, foreign dignitaries, heavy thinkers, and so on down the line. Forrester is known for interview programs on KIRO in Seattle, and KSDO in San Diego.

The show will also have experts on family and personal problems, again the standard mix of health, finances, consumerism, and romance. Will a viable number of radio stations want three hours of talk starting at 10:00 p.m. (on the East Coast) every night of the week? It is an interesting question, and the show seems to put the whole talk idea to a heavy test, perhaps unfairly heavy. Programmers who want more information should write the Woodruff Organization at 453 Roosevelt Way, San Francisco, Calif. 94114, or call (415) 621-6035. **BM/E**

BM/E's Program Marketplace

Syndicators For Radio

Southcott Productions
Suite 213
5827 N. Sepulveda Blvd.
Van Nuys, Calif. 91411
Tel.: (213) 388-4938

"THE EIGHTIES are bringing with them a rediscovery of true, adult MOR," says Chuck Southcott, founder and president of Southcott Productions. He is adding more expert testimony to the existence of a large upswing in attention to the over-30 listener. Several of the radio and advertising executives interviewed for *BM/E's* February "Strategies For The 80s" made this point, and moreover said that programming is still scarce for the "older" listener who has been neglected for so long.

Southcott welcomes the reestablishment of the adult in the priorities of radio demographics because he started Southcott Productions in 1976 with the purpose of putting out just one kind of music, an adult MOR. His single format, *This is Music*, carries out this intention completely. A sample of singers from one stretch of *This is Music* includes, among many others, Andy Williams, Ray Coniff, Wayne Newton, Al Martino, Sergio Mendes, Bobby Goldsboro, Neil Diamond, Perry Como, Simon and Garfunkel, and Helen Reddy — there are a lot more, but that will show the pattern.

Southcott came to his choice of material from strictly personal imperatives. As a 15-year-old disc jockey at WSTA in the Virgin Islands, he learned the business mainly on the MOR programming the station relied on. Later, after finishing his education in California, he had a two-year DJ stint starting at age 20 with a rock station in Bakersfield, Calif. "I found that after two years in rock . . . I still couldn't pick the latest Danny and the Juniors or Olympics hit from a miss . . . but I knew Vince Guaraldi's 'Cast Your Fate To The Wind' would be a smash."

So, following his own star, he went to KGIL, in the San Fernando Valley, where he established himself firmly in the leading echelon of radio programming: he was named "Disc Jockey of the Year" by the Los Angeles *Times* in 1967. He became the program director of the station in 1968, and held that spot through 1975. During that stint, in 1971, he won the title "Program Director of the Year" at the Bill Gavin Conference. And the station won "Radio Station of the Year" in 1974 at the *Billboard* Radio Conference.

All this led very sensibly to Southcott's next objective: his own business as a programmer for radio stations, using adult MOR, naturally. Southcott Productions got underway in 1976. He says he wanted to keep the business to a size that would allow him to work with each subscriber on a close personal basis. At the time of writing he had 20 clients, making Southcott Productions a viable entity. Southcott says his intended maximum is approximately 30 subscribers, the most he could give the ". . . service which I choose to provide myself."

This is Music is a full-service format, with initial material provided on 7½ ips tape for a station's total format needs. It is updated at regular intervals on a schedule worked out by Southcott with the station management.

In addition to the music, a subscriber automatically gets free copy service, custom-produced station promos, format jingles, an operations manual, reel rotation charts, and individual assistance with daypart planning. The tapes are all duplicated at one-to-one, and the programs are available either announced (for automated systems) or unannounced, for "live assist" operation.

If the station wants them, Southcott will also supply custom time announcements and network join reels.

Southcott comments further on his music, speaking of the instrumental numbers that are part of it: "Of equal importance is a return to the adult, aggressive instrumentalist, the brightness of Herb Alpert . . . the great strings of Michel Legrand and Percy Faith, the biting brass of Kaempfert . . . the classic guitar work of Wes Montgomery and Charlie Byrd." When you feel that way about what you are doing, the job is going to be excellently done. Chuck Southcott seems likely to get those 30 stations he will be content to live with. **BM/E**

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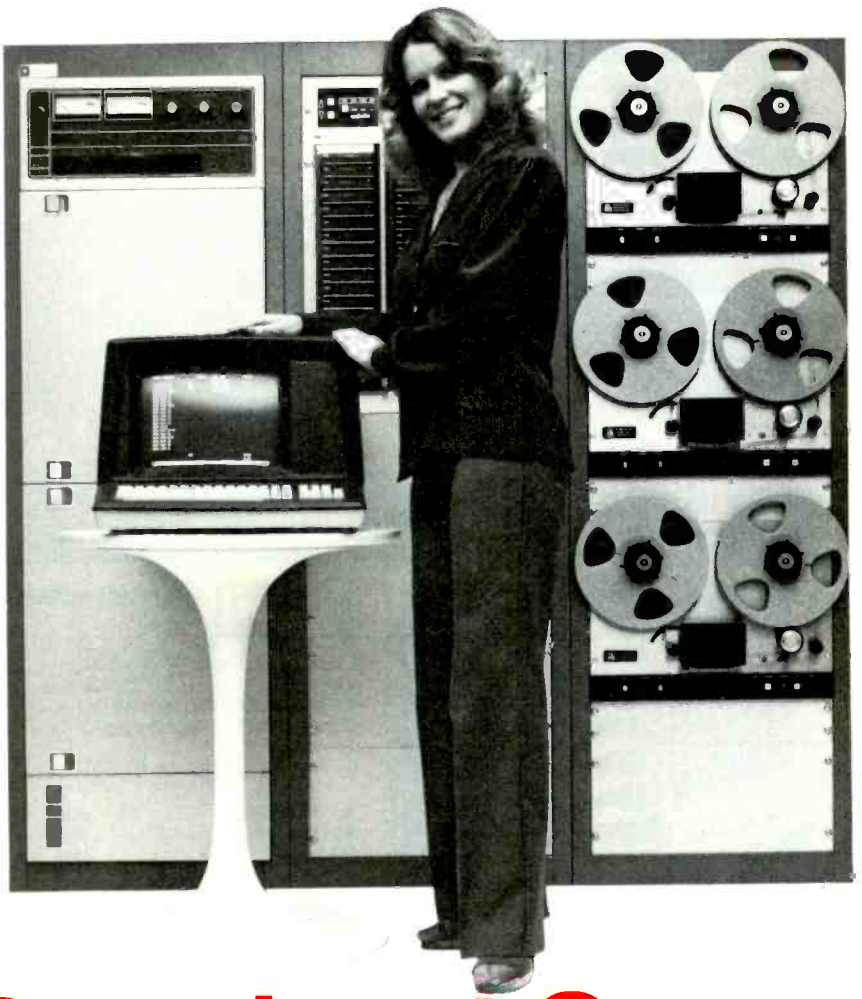

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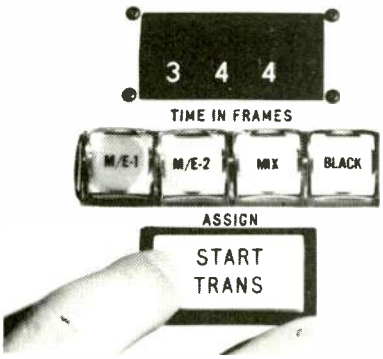

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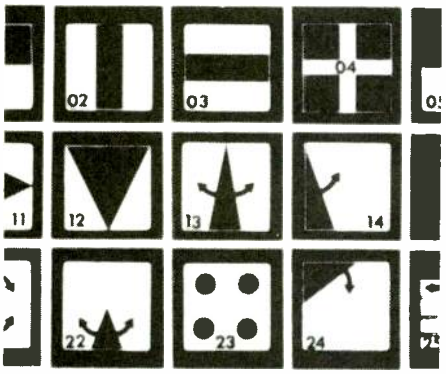

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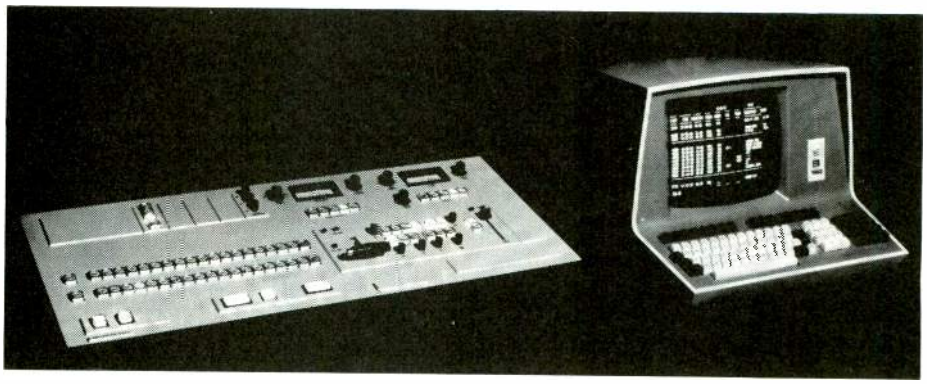

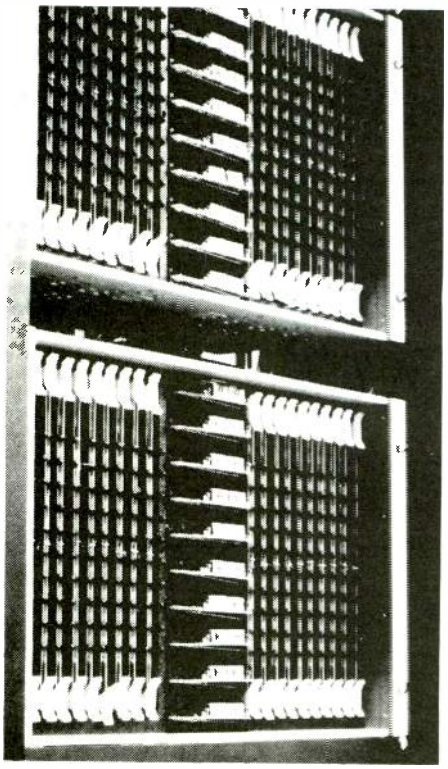

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NATPE: Programming Dilemma For Stations

FROM THE EVANGELICAL keynote address by Richard O'Leary, president of ABC Owned Television Stations, to the petulant remarks of programmers from the floor, local station program executives called for "new forms and new ideas" and expressed dismay that this demand was not met in San Francisco.

Few of the record 251 suites, most occupied by syndicators, offered local program executives more than game shows and a spate of new talk/variety programs. Said WABC program director and NATPE president Chuck Gingold as he chaired one panel discussion, "I think we've perfected something — mediocrity."

The absolute demand for program material, of course, found many syndicators expressing glee over the sales made during the six-day annual convention of the National Association of Television Program Executives (NATPE), held at San Francisco's Hilton Hotel and Tower. Program executives may not always like what they buy, but they must fill those dayparts with something. Traditionally, prime time access (7:30 to 8:00 p.m.) has been where the action is, but the spectacular success of *PM Magazine*, the Group W cooperative, and the decision of many stations to strip game shows in that slot turned attention to other dayparts during this meeting. Morning and especially early fringe got the greatest attention this year.

NATPE president Chuck Gingold (WABC, New York) suggested that the bulk of syndicated programs had achieved "mediocrity"

While syndicators promoted their shows with some version of "the programs of the 80s," many of the record 3939 attendees (2637 paid registrants) expressed exasperation at facing the new decade with the same dilemma: "We are being urged to provide 'qual-

KGUN-TV's Jack Parris accepted two Iris Awards for his Tucson station's programs "The New Reporters" (children) and "Sports Page Nine . . . Tucson Rodeo" (sports). Hal Linden (right) was MC for the awards ceremony

Iris Award Winners

Market size 1 – 25:

KBTV, Denver
"Every Child Has a Beautiful Name"
(public affairs)

KING-TV, Seattle
"Evergreen Express"
(public affairs series)

KBTV, Denver
"Don Cherry Rocky Hockey Picture Show"
(sports)

WSB-TV, Atlanta
"Super 2"
(children's)

WCKT-TV, Miami
"Showcase (Yacov Noy)"
(entertainment)

KING-TV, Seattle
"Reflections on China with Jean Enersen"
(other)

Market size 26 – 65:

WAVE-TV Louisville
"School Daze"
(public affairs)

(tied with)

KGTV, San Diego
"Traffic in Sight"
(public affairs)

KSL-TV, Salt Lake City
"Dimension Five"
(public affairs series)

WCPO-TV, Cincinnati
"What's It All About"
(sports)

WWBT, Richmond
"Jack and the Juke Box"
(children's)

WRAL-TV, Raleigh
"Burger Baby"
(entertainment)

WHIO-TV, Dayton
"One Giant Leap for Mankind"
(other)

Market size 66 – 212 & Foreign

KVOA-TV, Tucson
"Target Tucson"
(public affairs)

KSHO-TV, Las Vegas
"Close Up"
(public affairs series)

KGUN-TV, Tucson
"Sports Page Nine — Tucson Rodeo"
(sports)

KGUN-TV, Tucson
"The New Reporters"
(children's)

KVOS-TV, Bellingham
"Vancouver Bach Choir: Handel's Messiah"
(entertainment)

WMT-TV, Cedar Rapids
"Who Is Johnny Mann?"
(other)

TV Globo of Brazil, Rio
"Malu, A Woman"
(foreign — episode from miniseries)

ity programming,' but damn little of it is being produced.'' More and more station managers seemed to be giving greater currency to Post-Newsweek president Joel Chaseman's exhortation ''to do it ourselves'' as the week wore on.

A panel discussion chaired by John Goldhammer, KABC-TV, Los Angeles, entitled ''New Trends In Syndication,'' revealed more about the root causes of exacerbation in this area than it did about new trends.

Len Koch of Syndicast Services, New York, blamed stations to some extent for the paucity of ''quality programming,'' pointing out that stations have traditionally been unwilling to finance program development with up-front money. Madelyn Goldberg of Time-Life, New York, put some of that blame on advertisers. Frank Tomeo of J. Walter Thompson took the floor to remind the syndicators that while plenty of money is available for program development from advertisers, advertisers ''would not spend money to develop programs for audiences or dayparts that are not important to them.''

Post-Newsweek's Chaseman took the floor to suggest that, perhaps, the panel should consist of producers rather than syndicators if the object was to develop creative programming. Koch suggested that the problem wasn't the absence of good programming ideas but the absence of financial support from stations for the development of such programs. Said Koch, ''How can you judge something on an overnight? . . . they used to fix things [and] until we're willing to stick with it . . .'' good programs are going to fail to develop.

As the ''New Trends In Syndication'' session continued, it became clear that syndicators did not wish to take the risk of producing ''quality'' programs entirely upon themselves; they felt stations should offer up-front support, and would, in all likelihood, continue to produce those forms which had proven successful and had relatively low production budgets.

Tay Voye, representing Post-Newsweek's syndication effort, gave a pretty clear indication of what his station group is planning to do about this conundrum. Post-Newsweek, which has experimented with a number of children's programs and public affairs programs and has a fine reputation for locally produced material, obviously feels that the hoped-for ''quality'' programming will result from station participation in the development process. More consortia of stations and station groups in Operation Prime Time-type efforts, more cooperative formats like *PM Magazine*, and more local programming efforts independent of the syndication industry are needed. Said Voye, ''I think some of the most creative people in our industry right now are in local stations. Some of these people can do marvelous things.''

Supply and demand = big $

Other aspects of the syndication business producing tension are the supply of desirable programs, the demand for them, and their ever-rising prices. With off-network series such as *Three's Company* and *Laverne and Shirley* commanding $90,000 to $60,000 price tags per episode in the top markets, station managers are seriously concerned about the profitability of such programs even though they may draw large audiences. With networks turning to mini-series production for a couple of years now, and the difficulty of sustaining network series long enough to develop a viable package for syndication, there has been an absolute decline in the amount of this kind of programming available. Product scar-

DEFLECTIONLESS.

O'Connor Hydro-Ped. Computer-designed for maximum rigidity during panning and tilting.

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The Hydro-Ped is the ultimate camera support, designed to replace the conventional tripod and correct the backlash problem inherent in its design.

Backlash often occurs at the end of a pan when the legs of the tripod tend to "unwind" slightly, jerking the camera the other direction. This backlash creates an image deflection subjecting audiences to a visual whiplash. The use of a telephoto lens will tremendously accelerate this problem.

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An early experiment to solve the backlash problem included the filming of a lighthouse through a telephoto lens from a mile away using a fluid head and a conventional tripod. The deflection of the image due to tripod backlash was 32 inches on a ten foot screen.

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In torsion and bending, the Hydro-Ped is four times as rigid as a conventional tripod which hinges at the top of its legs. The Hydro-Ped hinges near the ground and has short legs which lock hydraulically in both directions.

This design not only eliminates deflection, but also enables it to be used in the toughest terrain and tightest places.

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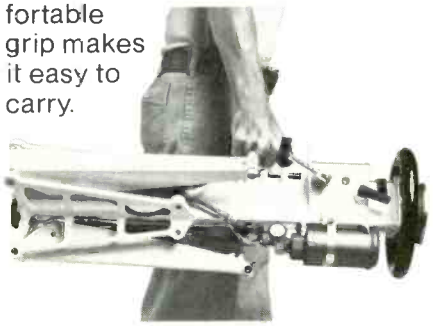
The Hydro-Ped is made of a sturdy magnesium and aluminum construction weighing only 29 lbs. It folds to 30 inches long and 10 inches in diameter. A single centered handle with comfortable grip makes it easy to carry.



STUDIO PROVEN.

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city and competition have ignited bidding wars first among the syndicators going after the off-network series and then among stations trying to buy the programs. Improved financial conditions at independent stations coupled with greater aggressiveness on their part has helped push prices even higher.

In an appropriately titled session, "Can You Afford To Be Number One?" Ellen Sachar, an analyst with Goldman-Sachs, New York, described the syndication market as an ultimate "auction." Sachar implied that there was little hope of breaking the upward spiral of syndicated program cost unless there was either a sharp increase in supply or a sharp decline in demand. While neither of these variables shows any sign of changing, local program production at the station level can have an effect, said Sachar. If stations produced more, either locally or jointly, less dayparts would need to be filled, costs could be controlled, and the auction cycle might cool.

Voye of Post-Newsweek, when asked how the dilemma of the syndicator-station structure might be solved, said, "One of the ways will be station involvement . . . that's one of the reasons we're involved." Post-Newsweek produces some of its own programming, designed for use on all or some of the PNS stations, and participates in consortia productions with other stations, groups, and production organizations. While production is expensive, there are compensatory aspects to this option. Stations can spread the cost of production through cooperative financial backing, participate in the shaping of the program for their individual audiences (to some extent), and "fix" the program as it evolves.

PM Magazine, of course, is the major pioneering effort and one type of program offering some local station involvement. Participating stations not only produce some of their own segments, supply the local hosts, and promote the program as "local," but they also benefit from the wealth of material produced at other stations.

While market exclusivity obviously limits the number of stations that can do *PM Magazine*, other stations are developing their own prime-time access magazine shows. Tom Dargan, executive vice president of Fisher Broadcasting, which owns and operates KATU, Portland, Ore., and KOMO, Seattle, Wash., explained that KATU, of which he is general manager, will begin producing its own access time magazine show. KOMO currently produces such a program, *PM Northwest*, and KATU produces a morning show, *AM Northwest*. There will be a certain pooling of the KATU/KOMO resources and experience, explained Dargan.

"Producing Producers" panelists (top row, right to left) Warren Baker, Phil Arnone, John Hutchinson, (bottom row) Steve Michaelson, Melanie Donahoe, and Ziggy Stone

While many managements are shaken by the cost of local production, others have felt that the dismal syndication picture has left them no other choice. At another session on "A Decade Of Prime Access," a representative of a station in Lubbock, Texas, took the floor to tell how his station, which had been airing *Three's A Crowd* in prime-time access, reached the conclusion that even though the program was getting good ratings, they felt it was in poor taste. "We started our own *PM Magazine*-type program in that slot, and I think," said the representative, "that if we can do it in the 125th market, others much larger can do it, too."

The remark from the Lubbock representative was prompted by a blast from panelist Jeff Greenfield, CBS's *Sunday Morning* television critic and noted freelance writer. Greenfield tore into the delegates for purchasing programs that "demean the human spirit." He said that if programmers didn't buy these "game shows" that are rife with sexual titulation and innuendo, then the shows wouldn't be produced. Television programmers have a special responsibility due to the scarcity of channels, Greenfield charged. He said that such programs in the television medium were like "flashers." To say that the viewer can turn them off is like saying that the victim of a flasher can turn his head. The point is, said Greenfield, that by the time the person turns away, "the injury has already been done."

Saying that because they are watched proves that the audience wants them is no excuse, according to Greenfield. "People will gather to watch a suicide," said Greenfield, "but you wouldn't air suicides or executions as programs."

Programmer, heal thyself

There is an obvious desire on the part of station executives with programming responsibilities to provide the audience with better material. Likewise, however, the program executive must be concerned with his responsibility to provide a profitable program schedule.

The down side on program production usually comes from three areas — the cost of producing, the cost of promotion involved in ballyhooing programs with no earlier reputation or well-known "stars," and the difficulty of acquiring and retaining "good creative people."

The Operation Prime Time approach, which will begin work on its first series later this year, helps solve the problem of promotion. These programs use name talent and are produced by top Hollywood studios. There is often promotable knowledge of the programs since they are based on best-selling novels.

But the cost of such programs requires that they be "prime-time" efforts in order to maximize the potential return on the investment. Since most affiliated stations will continue to take the vast bulk of their prime-time schedules from network, there is a limited role the OPT-type program can play. Other dayparts are not sufficiently lucrative to warrant the level of investment associated with the OPT-type effort. So, with the Group W *PM Magazine* approach in prime-time access, and OPT or similar in prime time, there is still a need for other forms for other dayparts. Voye felt that the talk/variety format was beginning to blend into the magazine approach and thought that there might be opportunities in that format for coop production and localism. A number of people pointed to the new *Hour Magazine* from Group W as suggestive of the evolving talk format. *Hour Magazine* host Gary Collins anchors the studio portion of the show while co-host Pat Mitchell tours the country doing inserts of interesting people, places, and things. Voye promised that Post-Newsweek had some projects in development that would

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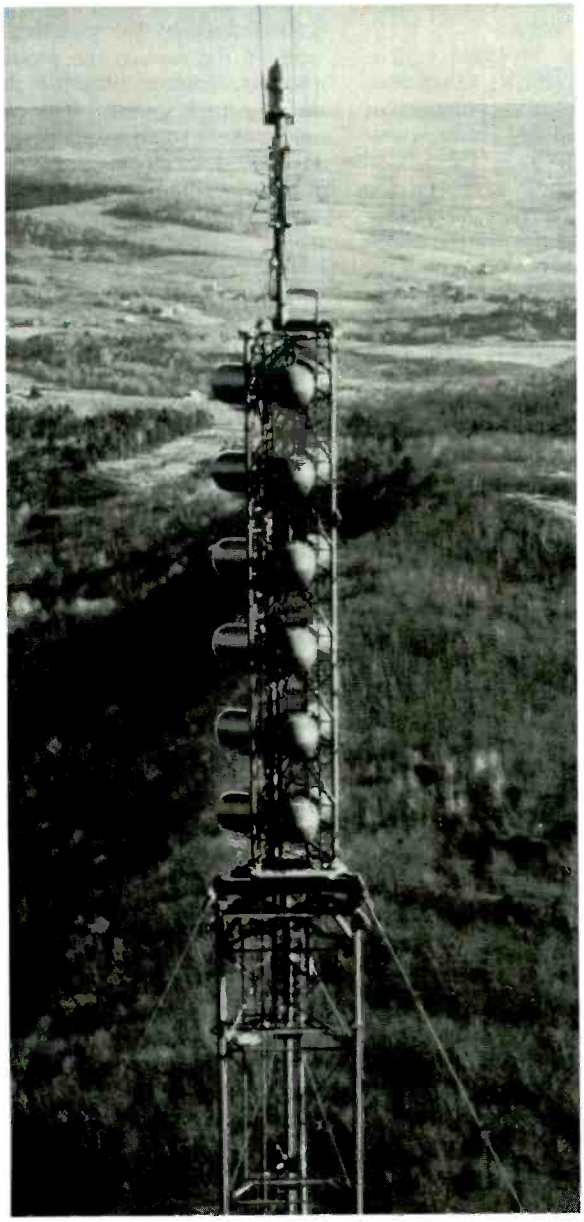

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eventually refine the demand for coop efforts and localism into a viable format.

Producing producers

Assuming for the moment that market conditions and public demand will eventually make local production, or station-controlled production, more attractive, one remaining question is — can stations do it? A key concern expressed at the conference was where and how do stations find good producers.

In a session chaired by Phil Arnone, KGMB-TV, Honolulu, three major methods emerged for acquiring good producers: use outside producers; good producers will find you; and "grow your own."

Steve Michaelson of One Pass Video was the major proponent of using outside producers. It was Michaelson's opinion that while stations have been reluctant in the past to take this tack, "stations are limited in their ability to develop people.

"Outside," said Michaelson, "there are other sources." Specifically, the outside producer can be chosen to fit the task.

Melanie Donahoe, WDVM-TV, Washington, and producer of that station's *PM Magazine*, said that *PM* will assign outside producers to specific segments but insists on using the *PM* production unit and structure to insure conformity with the program style.

B. Ziggy Stone, KRON, San Francisco, whose local production achievements include "In Celebration of Tutankhamun" (see *BM/E*, July, 1979), suggests that finding producers has been no major problem. Most just show up. KNBC's Warren Baker pointed out that in Los Angeles there is, if anything, a surfeit of talented producers looking for work in the television industry. He did point out, however, that there is a split in Hollywood between the "manufacturing community" and the "broadcast community."

Producers in the manufacturing community are often insensitive to stations' requirements for timing, standards and practices, and legal considerations. This notion brought up some discussion of the value of graduates of the film and television production programs given at various colleges and universities. Said Baker, "Give me an English or history major anytime — someone that can read and write." Comments from the floor and by other panelists indicated that graduates of such film and television educations are often "too artsy and impractical." As if to underscore this division between the program manufacturing community and the broadcast community, a producer took the floor to say that many producers from the broadcast industry come to him looking for work in the program industry. These producers from television stations, said the producer, know everything about accurate timing and little about telling a story or production values.

Panelists (left to right) Kenneth Bagwell, Anthony Cassara, John Atkinson, and Robert Kind shared their perspectives on "affording to be #1," while Ellen B. Sachar, a financial analyst with Goldman Sachs, suggested that the spiraling cost of syndicated programs could be eased only through a reduction in demand

John Hutchinson, program operations manager at WBTV, Charlotte, N.C., provided the clearest perspective on the matter of producing producers by stating, "We have to grow them."

Charlotte, not being a mecca for creative types like Los Angeles or New York, has instead addressed the problem head on. WBTV has devoted a lot of resources, both technical and management, to developing a station policy that attracts and develops producers from within.

Hutchinson outlined the program, which includes "hiring over-qualified production people," an extensive internal training program, and an active internship program with several regional colleges "who send in perhaps 12 people a year; the good ones come back."

WBTV's local production is responsible for about a quarter of the programming on WBTV. New people are started on WBTV's sign-on program, an amalgam of news, agricultural features, and cooking and home economics segments. Depending on success, individuals move through WBTV's local program list to ever more complex programs including news, children's programs, and magazine-format shows. Moreover, WBTV produces about 40 local specials per year in documentary and musical formats, among others.

Hutchinson realizes that often his station is producing producers who will eventually move on to larger markets or more challenging enterprises, but notes that the Jefferson Pilot Broadcasting Corp., which owns and operates WBTV, expects this to happen. A surprisingly large number of WBTV producers, however, elect to stay with the station. Much of the credit goes to the station's Human Development Management program.

Donahoe of WDVM said that a lack of feedback at many stations caused many talented producers to defect, but this would not seem to be a problem at WBTV. The station holds a weekly Monday morning meeting for producers. It is a closed-door, open forum-type session where aired programs are critiqued by the producers' peers and on-going projects are discussed.

The need for such sessions was acknowledged by the panelists, who described the role of the producers as a pressure-cooker situation that grows more complex daily. The producer is under great stress as creative manager, financial officer, engineer, coordinator, sometime on-air talent, director, staff psychologist, and more.

The Iris Awards

So while the ruminations continue over how successful local production can be, the NATPE honored 17 stations for 20 outstanding non-network television programs aired last year.

Thirty-eight programs reached the final round of judging, from which the 20 winning programs were selected. The Iris statues were presented to station representatives at a gala ceremony held at San Francisco's Masonic Hall. The categories were entertainment programs, sports, children's programs, public affairs programs and series, foreign programs, and "other." The "other" category turned out to be a potpourri of musical specials, historical programs, current affairs, and other such subject matter not covered by the specific categories.

Each category was further subdivided into small, medium, and large market nominations. *BM/E*, which viewed a number of the nominated programs, found that except for some apparent differences due to available resources, the market size of the originating stations seemed to play only a minor role in the quality of the program. Whether Tay Voye of Post-Newsweek had viewed these programs prior to making his claim that local stations now have some of the most creative people in the business is unknown, but ample evidence supports his claim.

A number of program executives during the conference expressed the idea that when station management begins to give the technical support to the programming department that it has given to its news department, it may find similar success is at hand. **BM/E**

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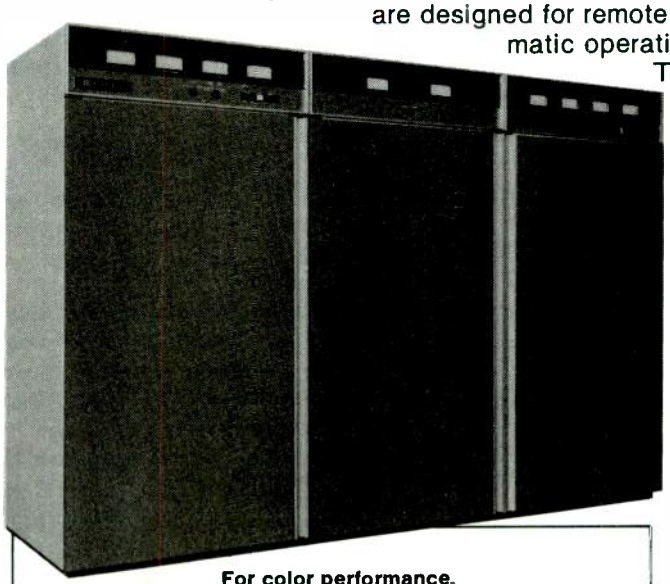

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ABC THE WINNER IN OLYMPICS COVERAGE

Extensive use of microwave, an elaborate communications system, easily transported cameras, elaborate advance planning, and plenty of hard work were responsible for the most successful Winter Olympics coverage yet.

THERE IS NO MYSTERY to good television field production: the right mix of cameras located at strategic points to provide complete coverage of the action; mobile production vehicles with enough controls and capabilities to be able to add the right amount of production value; adequate visual and aural contact with on-air commentators to keep them tuned in to the director's needs; a staff that knows how to carry out the engineering requirements of the particular event; and so forth.

ABC's coverage of the thirteenth Winter Olympic Games, from the hockey game on the night of February 11 through the closing ceremonies on February 24, demonstrated the network's obvious leadership in this type of production. For the casual viewer, the fact that the ABC cameras never missed a shot, that there was always a slow motion replay (often from several different angles) to punctuate the action, the liberal use of on-air graphics to add visual excitement, the constant flood of interviews and "up close and personal" reports to give a personal touch to the dramatic sports confrontations, and that ABC always seemed to be there when something happened all combined to present a program that was eminently professional. The ratings — a 24.0 average during the sweeps period — help prove it.

There is too often, however, the inclination to dismiss the large network presentation as being the result merely of having enough money to make it come out right. Certainly there is no doubt that the money was there. But money was not the only element that made the show a success; more important was the elaborate preplanning, the carefully executed engineering plans, the hard work that made it all come together. From this perspective, even the smallest market station can learn something from the ABC experience with remote field production.

This is especially true when the Olympics are perceived not as a single mega-event, but rather as a series of smaller sporting events, each with its own set of unique problems and each engineered to reflect the most efficient way to provide full coverage. That the events were ultimately tied together into a single program theme by those at the broadcast center (to be covered in the following article) in no way detracts from the work done at the individual venues. Each venue was, in fact, capable of producing its own complete program.

Skating events

One of the busiest units at the Olympics was the team covering the massive number of skating events: the speed skating races from the large outdoor oval in front of Lake Placid High School; the two divisions of ice hockey competition from the new Olympic Center and reconstructed Ice Arena; and figure skating from the Olympic Center. Fortunately, all three areas were located in close proximity to one another right in the heart of downtown Lake Placid so that a single technical/engineering area could be set aside, tucked in behind the Olympic Center, to coordinate coverage from all three.

As was the case with most of the coverage, the complexity of the ABC setup was considerably increased by the necessity of providing top-to-bottom coverage of all events for use by world broadcasters, for whom ABC was acting as the coordinating broadcaster. For instance, while ABC was able to tape simultaneous events and edit them into a single program to air later in the evening, for the world each event had to be presented live from top to bottom.

For this reason, a total of five large mobile production vehicles were assembled into a miniature trailer court behind the Olympic Center. A LaClede truck provided international coverage of speed skating; ABC's Phase 2 production van provided ABC unilateral coverage of speed skating and Ice Arena hockey games; ABC's Phase 6 production vehicle provided international coverage of hockey and figure skating from the Olympic Center; and a van supplied by WSBK, Boston, was used to provide international coverage of hockey from the Ice Arena.

In addition to the mobile vans, several semipermanently installed house trailers were linked together by enclosed, raised wooden walkways to provide office space, a small transmission center/master control area

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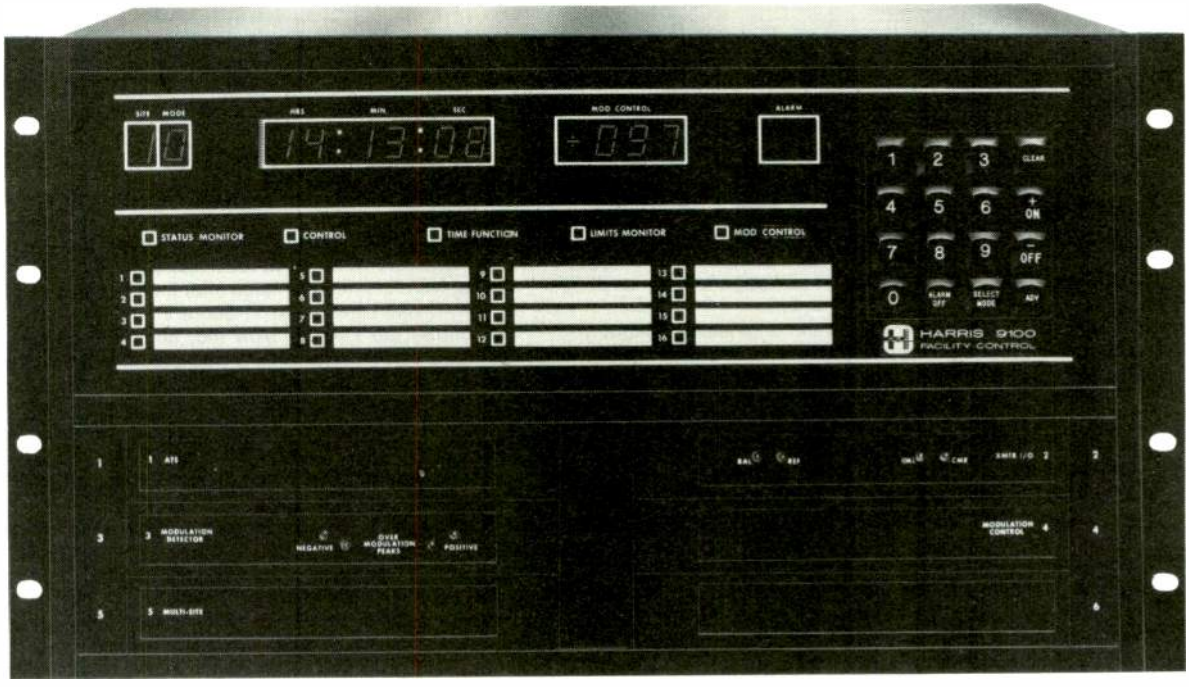

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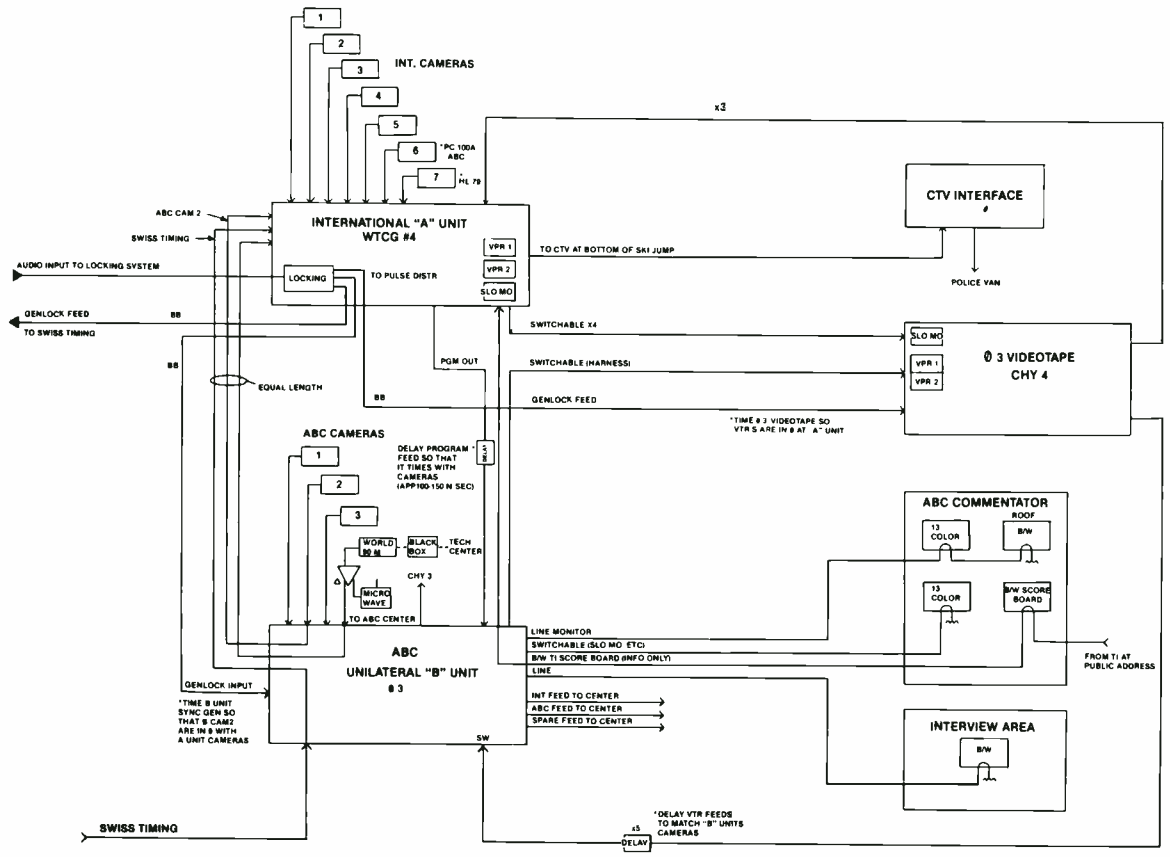
capable of sending seven simultaneous feeds back to the main broadcast center through telco circuits, three ¾-inch editing suites for the ABC O&O crews working in town, and a relay point for live microwave pickups being fed back to the broadcast center from locations in Lake Placid not fitted with standard telco hardwiring.

A total of some 20 cameras were used to cover the events in the three rinks, although the shots of Main Street from a high camera on top of Lake Placid High School and from the camera built into the body of "Rocky Racoon" for candid shots of passers-by were also controlled from this area. Most of the cameras were the standard complement of Philips LDK-5s and Ikegami HL-77s from ABC's production vehicles fitted with Canon 18x and 25x zoom lenses; these were supplemented with several Philips PC-100s, PC-70s, and LDK-14s, and RCA TK-44s and

A Detailed Plan



Schematic diagram of interconnections among mobile production vans, videotape van, commentator position, and interview area at ski jumping venue

Ski jumping was a relatively simple event to cover. Two mobile vans (ABC's Phase 3 and a unit from WTCG, Boston) switched a total of 10 cameras to cover both the 70 and 90 meter jumps for international and unilateral coverage. ABC, of course, added additional coverage to emphasize our own athletes.

As simple an event as it was, the engineering diagram above shows the tremendous attention to detail that characterized the ABC coverage. Five WTCG cameras plus a PC-100A and HL-79A camera fed the WTCG truck with top-to-bottom coverage of the competition. Additional inputs to the switcher in the truck included Swiss Timing; a feed from one of ABC's unilateral cameras; three lines from a tape van with HS-100 slow mos, VPR-2s, and a Chyron IV; a microwave link from the broadcast center looped through the unilateral truck; and results from the Texas Instruments TI-Score computer. The WTCG van also carried its own set of VPRs and disc.

Feeding out of the WTCG mobile production van was an even greater number of signals. The switched program was fed to another van supplied by the Canadian TV network, augmenting the coverage for its own and other world broadcasters' needs. Four switchable lines were fed back to the VTR van for effects, recording, etc. Program out was also fed to ABC's unilateral van, delayed approximately 100 to 150 nanoseconds to be synchronous with ABC's unilateral cameras.

ABC's Phase 3 production van, coordinating unilateral coverage, had three of its own cameras for interviews, staying with American athletes after their jumps, etc. It had its own Swiss Timing and TI-Score inputs. The unilateral van shared the Chyron, slow mo, and VPR units in the videotape van with the WTCG truck, feeding them directly and receiving feeds delay-timed to match with its cameras. From the unilateral truck lines also went out to the commentary booth and interview areas carrying the program, a switchable preview channel for effects, slow mo, and the TI-Score system. Of course, program out was also carried back to the broadcast center.

Keeping the whole system tied together in sync so that the cameras from both trucks and the VTRs in the tape truck were completely synchronous required an ingenious system of genlocking and delay timing. Leitch master sync generators at the broadcast center fed the sync system in the international van with a master locking pulse. The locked sync was then fed simultaneously to the international truck's cameras, the VTR van, and the unilateral truck for genlocking its own cameras. At the same time, a genlock feed was supplied to the Swiss Timing system to insure that its feeds, too, would arrive synchronously.

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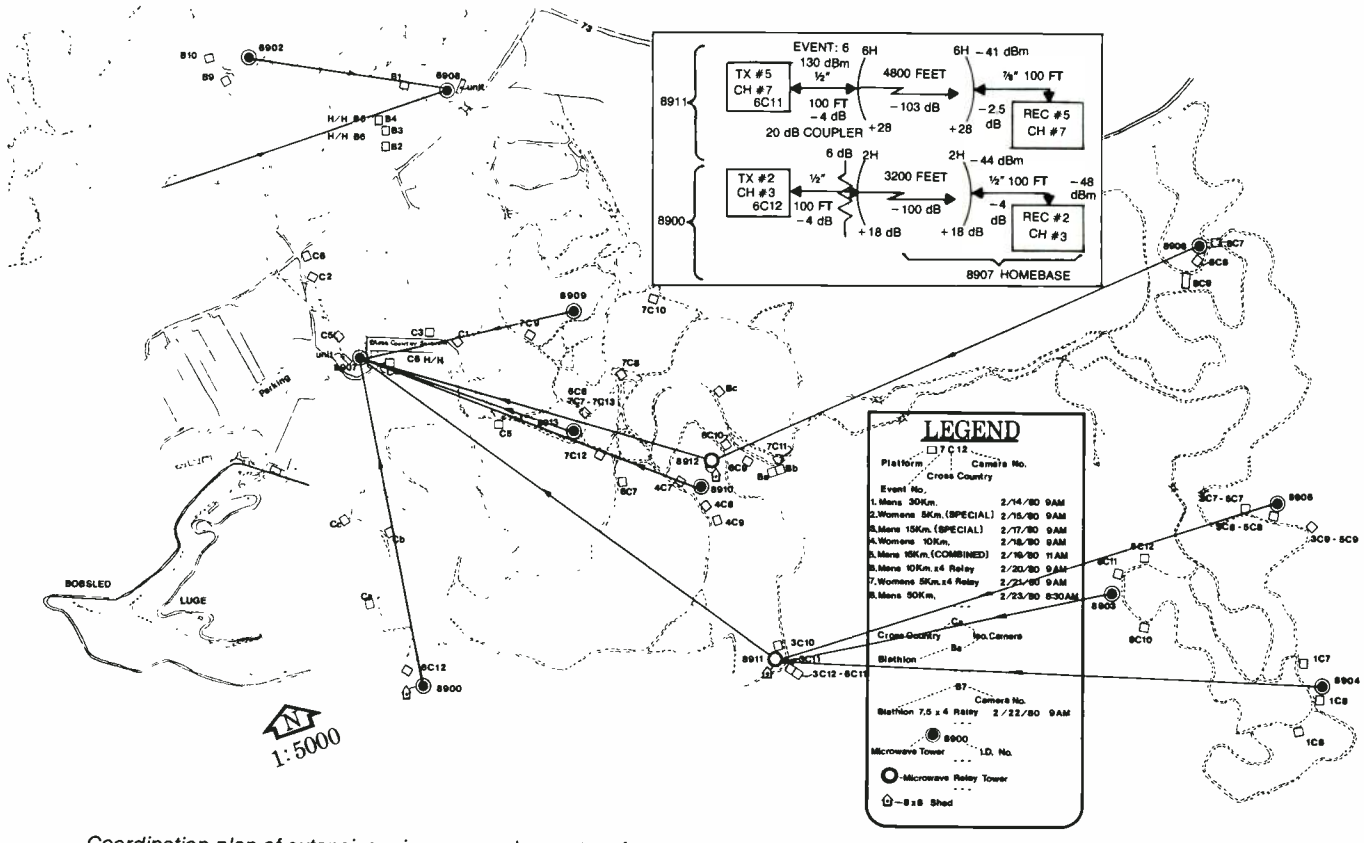

Coordination plan of extensive microwave relay system for cross-country and biathlon events at Mt. Van Hovenburg. Irregular terrain forced the use of 14 relay towers scattered throughout the courses, outfitted with a variety of H and V polarized dishes to enable channel agility on the 2 GHz band. Two snow cats, equipped with three cameras each multiplexed into a single feed, were moved about before the start of each race. Insert (top right) shows typical setup for cross-country event

TK-76s from the other production vans.

Although on paper it appeared that certain cameras were assigned to provide the clean picture and natural sound specified for the international feeds while others were assigned to the ABC unilateral coverage, more often the case was that the cameras were interconnected between the unilateral and international trucks directing each event. The international cameras would be used by both the international and unilateral program directors during the actual performances to provide top-to-bottom coverage of the event. When the U.S. scored a hockey goal, of course, or when Eric Heiden was waiting in the wings to begin a race, or when figure skaters came off the ice and Dick Button interviewed them while waiting for their scores, the unilateral director simply cut out of the performance coverage cameras and used the cameras under his own direction. Plainly the Soviet TV audience, watching the Games through the efforts of the EBU/OIRT Joint Operations Group as it retransmitted the international program, would not have been interested in seeing American fans go crazy and hoist U.S. flags all over the bleachers. Also, it was plainly more important for Americans to watch the replays of the tragic Randy Gardner practice session than to view the performance of the twentieth-ranked East German pair on the ice at the time.

As many events as possible were carried live; since key races often occurred during the daytime, however, extensive post-production was necessary so the events could be presented during prime-time hours. Although Roone Arledge and those at the broadcast center had the primary responsibility of packaging the shows for air, some post-production of individual events was accomplished at the site itself, which then had the opportunity of feeding a tape to the broadcast center over lines, bicycling it over, or rolling the tape directly to air if time pressures mounted.

ABC's Phase 6 tape van served as the principal post-production center, equipped with four Ampex VPR-2s with slow motion capability, three Ampex HS-100 slow mo disc machines, and a Grass Valley 1600 1L switcher. Two additional VPR-2s were configured as another one-inch editing station and three additional HS-100s added to the complement.

An interesting approach was taken with graphics and special effects production. A total of two Chyron IVs and three Chyron IIIs were used to provide identifications, rankings, scores, etc. (The IVs were assigned to unilateral coverage, the IIIs to international.) Although the electronics packages were left in the vans, the keyboards were taken out and grouped together in a separate area. The same was true for the two MCI/Quantel 3100 digital framestores, which are standard on the ABC vans; the control consoles were outboarded and located in the same trailers as the Chyron keyboards, although no effects were added to the international program. Only ABC's Phase 6 production van kept control of its DPE 5000, which was used for on-air, live effects.

Whiteface Mountain a challenge to ingenuity

Those who drew the assignment of covering the downhill, slalom, and giant slalom races at Whiteface Mountain some 10 miles away from downtown Lake

continued on page 40

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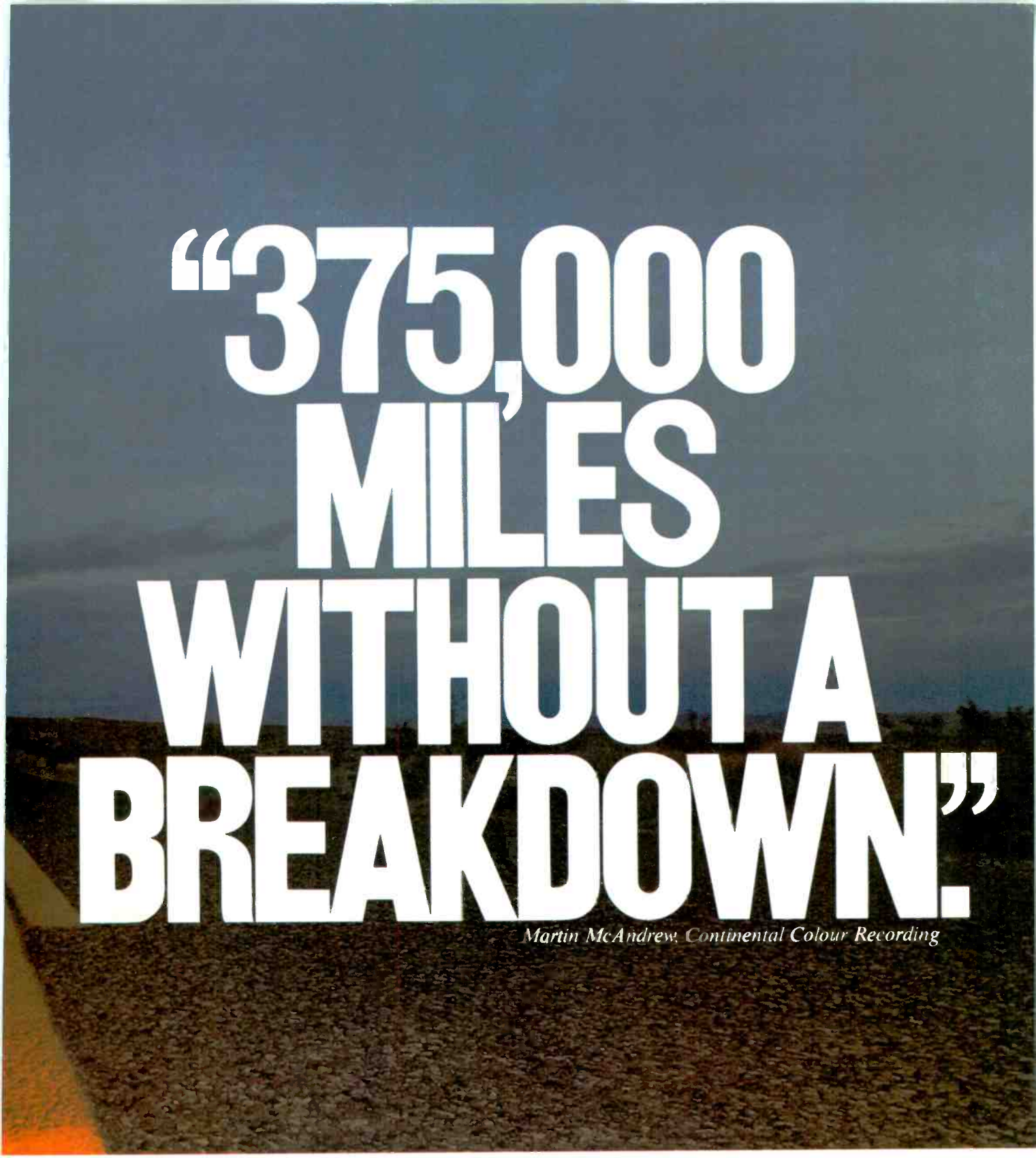

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Placid were like a completely separate production team, linked, of course, by audio and video circuits to the broadcast center but otherwise in a world of their own. The team included the cameraman and engineers who staffed the camera/portable Farinon microwave stations at Little Whiteface and another mountain to provide the spectacular "Litzum" and master shots of the Whiteface trails that preceded coverage from this area.

The two key problems at Whiteface were the enormous scope of the coverage, with literally dozens of miles of ski trails, and a relentless environment for equipment and manpower.

The story of how the first was solved is fairly well known by now. The farthest the mobile trucks could get up the mountain was a small, cleared-out area just uphill and to the side of the finish line. Lest anyone imagine that this was an easy area to reach in the first place, consider that it was already 1000 feet up from the base lodge, near the first ski lift dropoff. Snow cats (tank-treaded vehicles capable of carrying about eight passengers) and snowmobiles were the way the ABC crew traveled to work.

Three large production vehicles were parked in the clearing: a Jefferson Productions truck to handle coverage on the top half of the hill, ABC's Phase 7P to handle the lower half of the slopes, and ABC's Phase 8 to coordinate top-to-bottom coverage between the two.

The cameras covering the starting gates and upper reaches of the various slopes, however, were some 13,000 feet away — a half-hour ride in the complex system of chair lifts. With standard triax cable, of course, the longest distance the LDK-5s could go was about 5000 to 7000 feet — not nearly far enough. Microwave was considered but rejected; each camera would have to have a generator with it, and the engineers would have lost the extensive CCU capabilities of the cameras. Also rejected was the plan ABC had used during the World Cup skiing coverage at Whiteface in 1978 whereby the CCUs were physically taken apart and half of the units moved along with the cameras, with control data sent by serial data transmission. This, too, had involved taking a generator along with each camera and was too unwieldy.

ABC therefore turned back to Philips, who devised a

Highly Sophisticated Production Vehicles

Typical ABC production van (Phase 8) as used at Whiteface Mountain with Grass Valley switcher and MCI/Quantel digital effects

ABC's experience covering the Olympics was certainly nothing new for the network. Its extensive field operations see it almost daily on the road covering sporting events, TV specials such as the Academy Awards, the elections, and so forth.

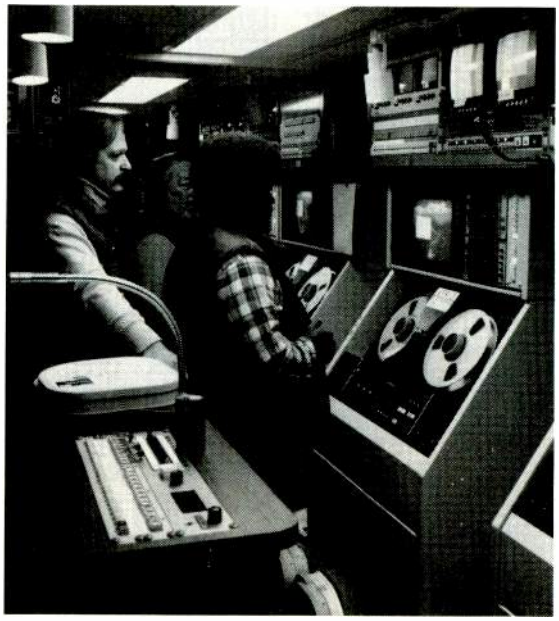
Some measure of the credit must certainly go to its large, fully equipped mobile vehicles, which have been designed to provide field production personnel with all the tools necessary for their work.

The MVC-3P (Phase 3) van used at the ski jumps, completed late last year by A.F. Associates, is a perfect example. The 40-foot custom-built Gerstenslager trailer is divided into three compartments with separate entrances. The first compartment is for production, with stations for the TD, director, producer, and other production personnel, who face a large wall with monitors for eight cameras, color program and preview, and 24 utility monitors. A built-in console contains a Grass Valley 1600 switcher with several aux buses, a control head for an MCI/Quantel 3100 framestore effects system, and an interconnect for a DPE-5000 that the truck shares with its matched-pair tape truck.

Behind the production compartment and separated from it by a large glass wall is the audio position. The mixer sits on a slightly raised platform to afford a better view of the monitor wall. A 24-input Ward-Beck console provides four outputs plus a mono master mix.

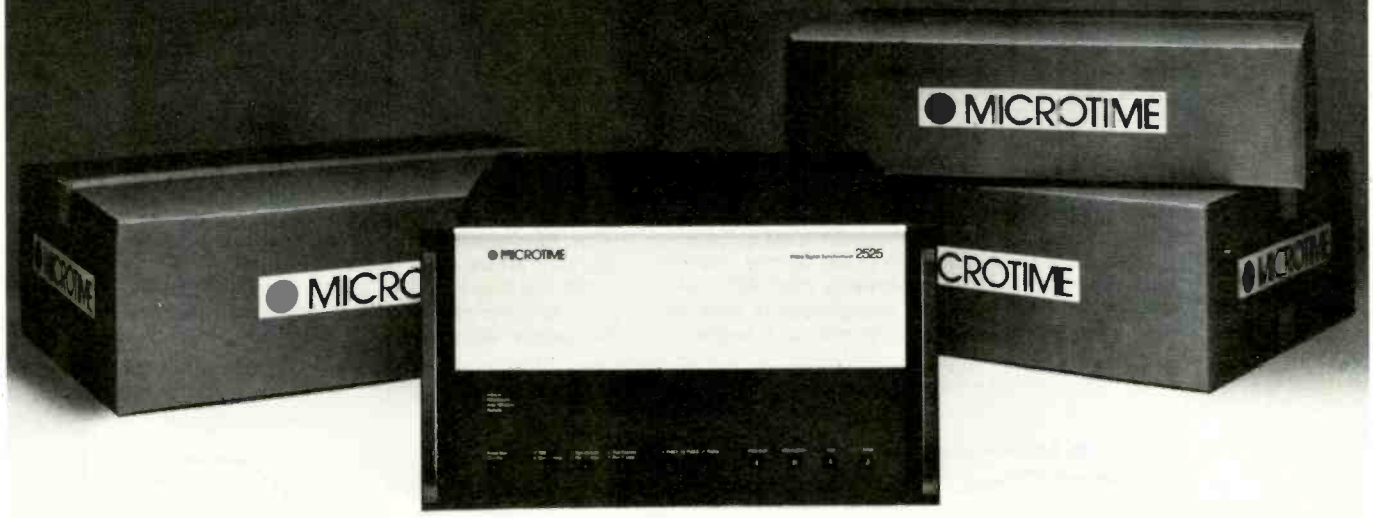
The third compartment back is for video and transmission, with full CCU control of eight Philips studio cameras and two Ikegami HL-77s with base stations. The senior video operator maintains joystick painting control of the cameras, in addition to monitoring the clip levels for chroma keys. The SVO also has control of an aux bus on the Grass Valley switcher for monitoring any input. In addition, he can delegate control of any of the cameras to other video operators, who have their own control boxes.

The matched-half videotape van is designed to be directly interfaced with the production van. A small room in the rear is reserved for three HS-100 slow mo discs and operators. The central area contains a normal complement of four VPR-2s, a small production switcher, and an audio mixer. Forward are two Chyron IVs with keyboards and control heads for either Quantel 3100s or DPE-5000s.



Matched half of Phase 8 videotape van with Ampex VPR-2s. In separate compartment are HS slow mos, and, in another compartment, Chyron character generators

Microtime Introduces Intelligent Products For The 80's



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ABC The Winner

triax repeater system. The repeaters enabled the cameras to be operated up to 17,000 feet, with full power fed from the mobile van. The repeaters, along with some 100,000 feet of 14 mil cable, allowed five of the LDK-5s to cover the upper reaches of the slopes.

Also fairly well known by now are the stories about the "flying cameras of Whiteface." ABC used a total of 23 cameras at the venue — the 10 LDK-5s and two Ikegami HL-77s from each of its production vans, plus three cameras from outside vendors. The cameras covering the lower parts of the slopes, which converged into common finishing lines, could remain in fixed positions from one race to the next. But those on the upper parts of the slopes, which changed from one race to another, had to be moved; there was no advantage in having cameras permanently installed on hills once the races were over.

Several solutions aided in solving the problem. The first was a series of interconnect/junction boxes placed at strategic points along the hills. Some 50 miles of cable had been buried the previous winter in underground troughs to

Electronic Scorekeeping And Timing

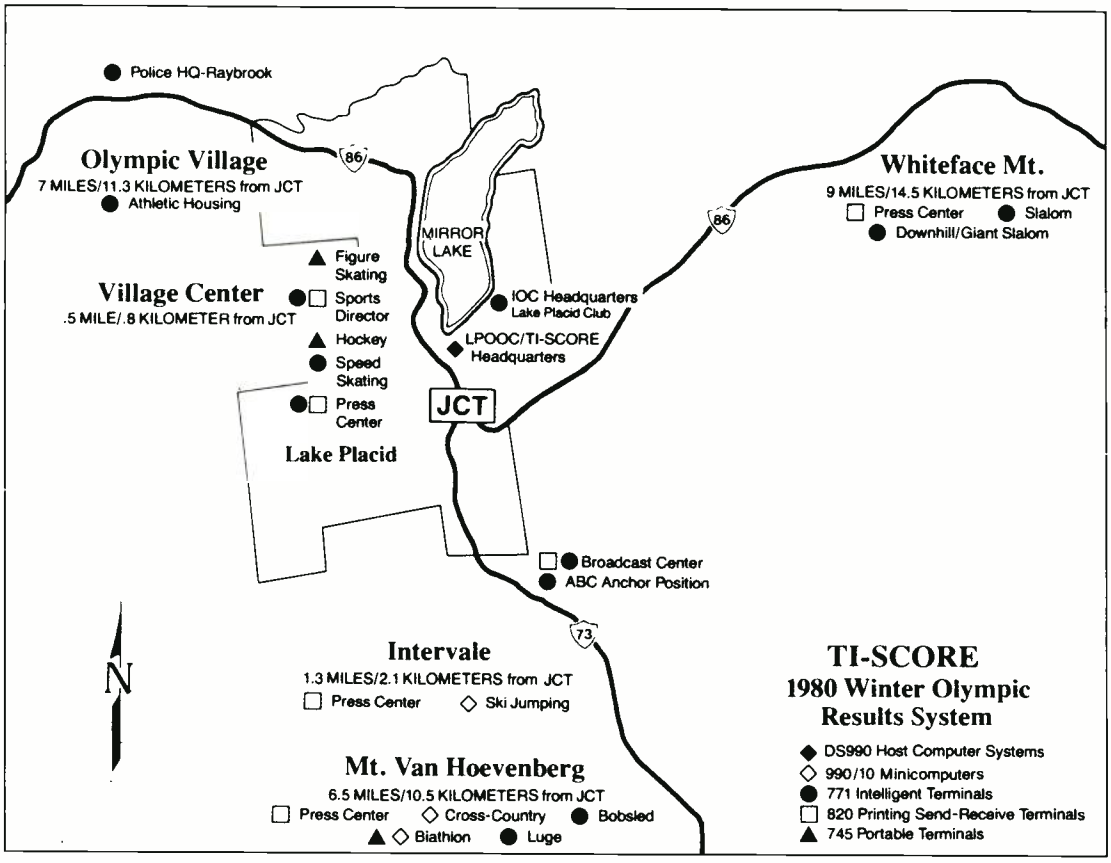
Two systems were used at the Lake Placid Olympics for the first time to present the TV audience with instant timing and scoring results.

The first was an interface with the official Swiss Timing systems at each venue. The same official timing information that was shown on scoreboards and presented to the judges was distributed to the production vans at the venues and to the broadcast center. An interface designed by Texas Instruments fed the timing results to the production switchers as simple camera inputs so that the information could be colorized and keyed into the live image directly. Timings on both the competitor on the course (sometimes with split timings as in the case of alpine ski events) and comparative timings of the leader versus the competitor in progress could be displayed in this way.

Texas Instruments was also responsible for the design and installation of an elaborate distributed data processing system for scorekeeping throughout the Games, with the results distributed to officials, athletes, and ABC alike. Through a combination of dual microprocessor host systems, intelligent terminals, intelligent data terminals, receive-only displays, and keyboard-operated receive/display terminals, data was inputted from each of the venues, computed, and displayed.

For some of the events the software was rather complex. In ski jumping, for instance, the calculation involved computing the "distance points" (determined from the actual distance jumped), averaging the style points awarded by five different judges, adding distance and style points, and re-ranking the competitors based on their latest performance. In figure skating, the system took both technical and aesthetic marks from the judges and computed the all-important "ordinals" to determine the winners.

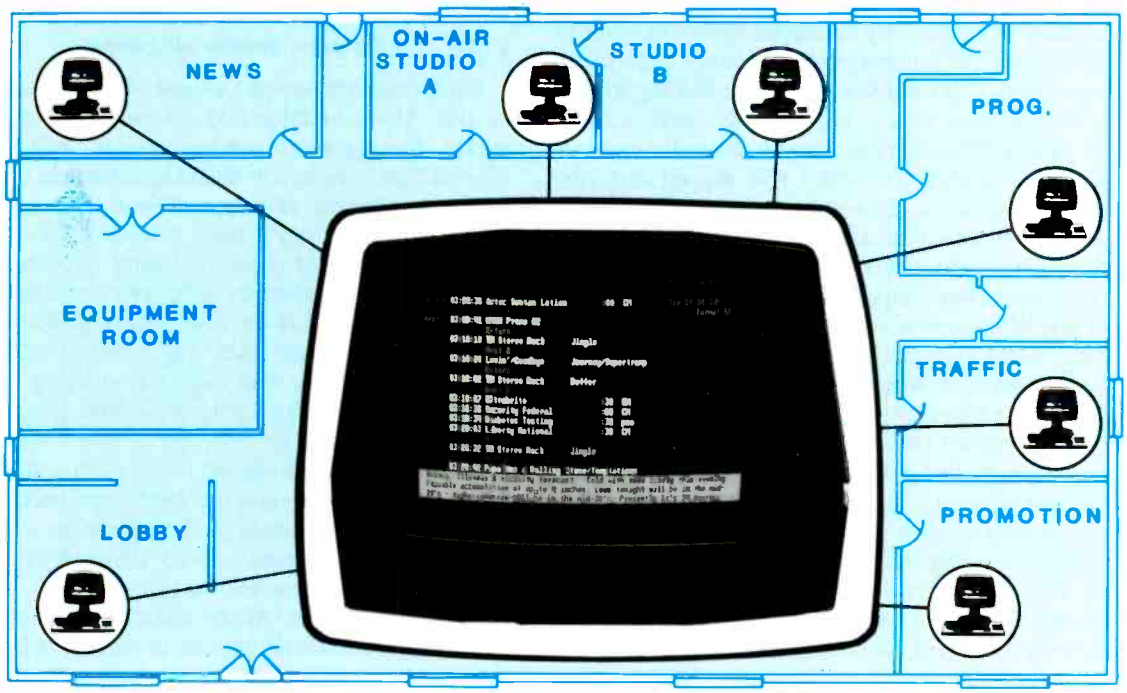
Results of the TI-Score system could be directly inputted for on-air display, automatically formatted. Up to six competitors could be shown at once with rank number, country, competitor name, and other data. ABC was also able to show the standings of other U.S. competitors who had not placed in the top six on a separate page. The TI system also came into play in figure skating, where the judges' marks were automatically inserted into the picture as soon as all the judges had voted.



Texas Instruments TI-Score scorekeeping system linking venues with broadcast center and other locations. System used distributed data processing and various intelligent terminals

One for all...

Harris' 9003 Program Automation System



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COMMUNICATION AND INFORMATION PROCESSING

keep the cables out of the way of skiers. But even this wasn't enough to cable every part of every slope. The interconnect boxes were used, therefore, to provide common cable runs wherever possible. The upper parts of the slopes, naturally, each had to have its own run; but as the slopes converged, common cable runs became more and more practical. Before each race a team of engineers would simply go out to the boxes and patch together the cables that would be needed for the next race.

Along with the boxes was the carefully mapped-out plan to transport cameras by helicopter before the start of each new race. The cameras were securely fastened to O'Connor Model 50 fluid heads and wooden-leg tripods which, in turn, were attached by a sturdy chain to small wooden pallets. When the time came to move the camera, a protective "elephant blanket" was draped over the camera and lens, and a chain at each corner of the pallet brought over the top of the elephant blanket to wedge the camera in place. The helicopter then simply dropped a hook, the cameraman snapped the chains onto it, and the camera was lifted to its new location where another team of engineers was standing by to release it from the hook and plug it into the triax connector. It took but five minutes to move a camera, and the whole changeover was accomplished within two hours.

The elephant blanket was critical for protection against the elements, too. Each camera was fitted with an operating cover to help insulate it from the snow while allowing the operator to see the viewfinder and the lens to see the subject. The cameras were fitted with special internal heating elements, powered directly from the triax. The Canon lenses, too, had special internal heating elements to help prevent condensation. At night, however, the elephant blanket draped around the camera and lens provided protection against the sub-zero temperatures. Cameras were never turned off, although the beams on the Plumbicon® tubes were turned down; the heat generated by the cameras was therefore sufficient to keep them cozy inside the elephant blankets.

Back at the engineering/technical area, those who were fortunate enough not to be out on the slopes still had their hands full. Because the races themselves were effectively divided into upper and lower courses, the ABC coverage was also split, with one production van handling the upper part and one van the lower part of the course. The trucks were effectively independent, each feeding its switched program and isolated cameras to a total of nine VPR one-inch decks. Directors in both trucks had two Swiss Timing inputs (one intermediate, one final composite) and the Litzum shot and master shot from Little Whiteface.

Effectively, both trucks were used for both unilateral and international coverage. For international coverage, the switched program and some isolated cameras were fed to a van provided by a Canadian network that assembled the feeds into a live program fed back to the broadcast center for distribution to other world broadcasters. Because of the extensive amount of post-production required to integrate the coverage of a single ski run from both top and bottom halves of the hill, however, ABC edited all material from Whiteface at the venue rather than tying up the broadcast center. The post-production coordination was accomplished in the third truck, ABC's Phase 8.

During the races, Phase 8 monitored the programs from the other two vans as they were being recorded on the VPRs, and also coordinated shots of the announcers. Following the completion of the races each day, Phase 8 turned into a post-production center with direct interface to all VTRs through its Grass Valley 1600 switcher and Ward-Beck mixing console. Phase 8 also added digital effects through its DPE 5000 and graphics through its Chyron IV.

The venue could feed three lines back to the broadcast center simultaneously and could go live to air, though tapes were bicycled back whenever practical. Pre-prepared interviews and "Up Close and Personals" could be integrated back at the center or edited in at the venue.

Other venues pose similar problems

Each venue presented a unique set of engineering challenges. At the biathlon and cross-country areas, for instance, the big story was microwave. ABC wanted to provide live coverage to world broadcasters of the action along the dozens of miles of heavily wooded trails, changed for each day's race. A total of 35 camera scaffolds were installed in the two areas, prefabricated, and then lowered into place by helicopter since large vehicles were not permitted in the ecologically protected woods.

To get the signals back out, however, an elaborate microwave network was required, utilizing 14 relay towers and powered by silenced gasoline generators, also lowered into place by helicopter. Two snow cats were fitted out with a multiplexed microwave system, built by Farinon to ABC's design, that could send back three video signals and program audio to the home base units covering the starts and finishes. Three Ikegami HL-77s were hard-wired back to each of the two snow cats, providing a total of six cameras. At the end of each day's race, the snow cats were simply moved to their new locations for the next day's events, in plenty of time for the Olympic Committee to prepare the trails for the skiers. A.F. Associates, which outfitted the snow cats, also installed small Crosspoint Latch switchers in the vehicles in case the microwave systems failed.

At the Opening Ceremony's venue there was the successful experiment with a fiber optic link using the Galite Company's fiber cable and newly designed encoders and decoders from Grass Valley. The cable run, some 1600 feet between the mobile van at the venue and the broadcast center, carried four video signals (one to a fiber) and eight audio signals (four multiplexed to a fiber). Each fiber had a 1 GHz bandwidth.

At the bobsled and luge venue, the problem was how to cover, with the same cameras, events on both tracks that occurred within hours of each other. Continental Color Recording supplied two large production vans that coordinated both unilateral and international coverage, providing 14 Fernseh KCK cameras (with ABC supplying four HL-77 hand-helds). The only solution was to simply hand-transport the cameras from one track to another — a total of six times during the Games. Two of the moves had to be accomplished within 90 minutes. Some post-production was also done at the venue on CCR's three Sony BVH-1000s, one of them with a custom-designed computerized slow-motion controller.

In the end, of course, all the problems were solved, and the diversity of the events and the styles of coverage merged into the actual telecast. Somehow, perhaps inspired by the theme of the Olympics, some 400 operations and engineering people managed to act as a coherent, sensitive whole. **BM/E**

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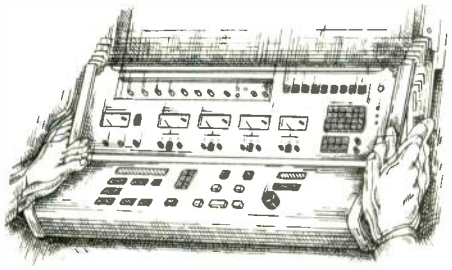

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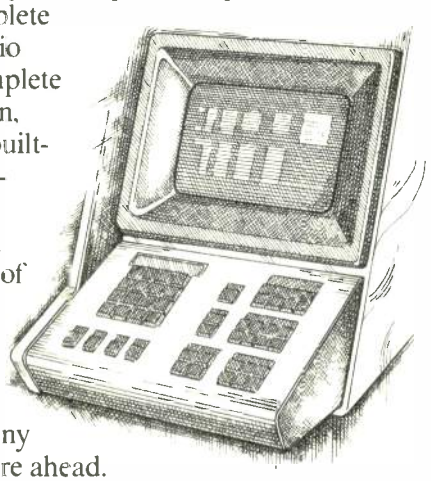

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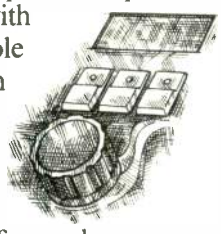

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ABC BROADCAST CENTER AT THE HUB OF OLYMPICS COVERAGE

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The $10 million broadcast center, located at the physical and emotional center of the Lake Placid area, provided the massive coordination required to put 51 hours of programming, much of it in prime time, much of it live, on the air. Extensive communications, special effects, and graphics systems were the key.

WORK HAS ALREADY BEGUN on dismantling the contents of the ABC broadcast center in Lake Placid; the huge structure, once all the electronics have been disassembled and shipped out to ABC's O&O stations and other operations, will be bulldozed out and converted into a school bus garage. For months, however, and particularly during the Games themselves, the broadcast center was the coordination center of the whole ABC operation.

Certainly among the most visible elements of the broadcast center's influence were the graphics used extensively throughout the programs. The graphic material originated from a separate room, just to the side of the main production control room, containing two Chyron IVs and a backup, an Ampex ESS. a graphics camera, two HS-100 slow mos, and two Dubner character/color background generators.

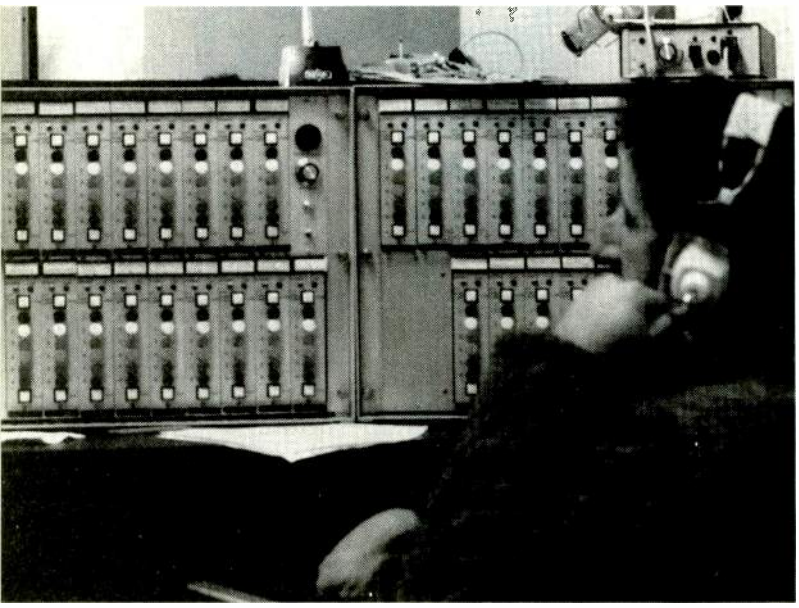
The latter, the result of a joint development program between ABC and Dubner Computer, were used at the Games for the first time. Offering the same operating flexibility as full-blown, computer-based character generators, they effectively allowed operators to "write" with graphic elements as they would normally with characters. The symbols — Olympic rings, the hand holding a flickering torch, flags for each country, maps with American and European cities, gold, silver, and bronze medals, symbols for each event, and so forth — were stored as single characters on floppy discs, loaded into the system as fonts. Single keystrokes could call the characters up, and the software in the system could be used to manipulate the character to position it and even animate it with successive color changes (as was the case with the flickering torch).

The basis of the system is a digitizing technique borrowed from fabric manufacturing. Black-and-white outline artwork is scanned and broken down into a series of "threads," each a few ns long. In the fabric process, the digitizing would be translated into instructions to the weaving machine to throw its range of colored threads into the loom at the appropriate time. In the Dubner system, however, the threads are translated into raster lines and the colorizing accomplished with a palette of 64 colors, each digitized thread capable of being treated separately. The disc-loaded fonts simply store the outline shape, which can then be colorized, positioned anywhere on the screen, provided with three-dimensional characteristics, tilted, and so forth.

Another unique feature of the system is its ability to weave backgrounds together. At any stage during the writing process, the material on the screen can be captured and transformed into a background, enabling other characters or symbols to be written over it. The process can be repeated any number of times to form highly complex images.

Generally, pages created on the Dubners were transferred to the ESS system for instant access as needed,

Production control room B at broadcast center with Grass Valley 1600 7K switcher and Vital four-channel SqueeZoom. Audio position, identical to control room A, had Ampex reel-to-reel and ITC cart decks



Production coordination intercom system located in control room A. Operator-assisted, it linked 57 remote locations with six trunks handling up to 10 conversations per trunk

although certain effects (such as the flickering torch or the wipe pattern with the flag of each participating country popping on or off in a seemingly random pattern) were stored on the Dubner discs. The two-channel ESS system could also be used to wipe from one Dubner-created page to another. Each venue was provided with an Arvin/Echo disc, and material needed at the particular venue would be dumped from the ESS to an Arvin disc for local use.

Digital effects, plus...

Production control room A, the "Roone Arledge room," was the hub of the broadcast center, visible in the background from time to time as Jim McKay delivered his commentary from a small studio with a large, soundproofed glass window. The studio camera complement consisted of three Ikegami 312 cameras. Also adjoining the control room was a small audio announce booth.

The TDs were provided with an array of sophisticated production equipment the rival of any large-market station, even though it was used for only 51 hours of programming. Central to the plan was a brand new Grass Valley 300 switcher with full E-MEM capability; it had never been on the air before the Olympics. ABC TDs were not exempt from the feeling of being overpowered by the almost limitless possibilities offered by such a switcher, and spent several weeks practicing with it and storing moves in the E-MEM. Built into the switcher console as well was one of the touchpad terminals of the Grass Valley 440 64 by 96 matrix routing switcher, which carried video as well as multiplexed audio channels.

Five output-selecting thumbwheels on the switcher console were key elements in another major breakthrough for broadcasting, the first use of the MCI/Quantel DPE-5000 Plus. Handling up to five video channels simultaneously or independently, the unit was preprogrammed with moves that were stored on a floppy disc and could be activated by simply selecting the memory location of the move. The moves described each channel separately and contained information on initial and end positions of the compressed frames, size of the compressed frames, and the rate of change measured in frames. The new system was also able to assign priorities to the compressed frames to allow them to pass in front of or behind one another, and also to assign different degrees of transparency including fade in and fade out in any frame.

Just as much attention was paid to audio capabilities, with two Ampex reel-to-reel decks, an ITC cart machine, and a turntable available to the audio man, who mixed on a custom-built Siemens board. Interestingly, the audio position was not physically separated from the other positions in the room to enable the directors and producers to keep in verbal and visual contact with the mixer.

Not to be forgotten in the design of the broadcast center was production control room B, which served as a backup to the A control room and also coordinated post-production. A Grass Valley 1600 7K switcher was installed, interfaced with a four-channel Vital SqueeZoom. This studio, too, had a small announce booth and an audio setup identical to control A.

One-inch post-production

With the exception of two rarely used Ampex quad decks and an RCA telecine, all broadcast center post-production was accomplished with Ampex VPR-2 one-inch decks on 3M videotape. An important exception was the 12 Sony ¾-inch decks used for editing the ENG material that was originated from the center. These decks also came into play, however, during the power blackout during a biathlon event. ENG crews were rushed out to the venue where they shot on portable recorders (since the mobile vans were blacked out, too); then they rushed tapes back to the center where the power had been restored.

The 21 VPRs, many with forward and reverse slow motion controlled with SMC-60 motion controllers, were configured as seven two- and three-machine editing systems in a separate area of the center, adjoined by an audio layover booth. Editing suites were equipped with the Convergence/Ampex HPE editor/controllers, and three of the suites had Grass Valley 1600 1L switchers. All editing suites naturally had outputs of the routing switcher for both audio and video, and a separate Quantel DPE-5000 was assigned to the cubicles.

Almost all post-production for the telecasts was done at the center, sometimes at breakneck speed if events finished late. An exception was events at Whiteface Mountain, which were edited at the venue itself. Most of the other venues, however, did have their own editing setups — either VPRs or Sony BVHs — and post-production responsibilities were often split.

Communications critical to operation

As important as the broadcast center was to the visual coordination of the coverage, its elaborate communications systems played an almost equally important role in getting the material on the air. If the switching and effects systems at the broadcast center had broken down, the mobile vans could have rolled directly to air; if the communications system had gone down, chaos would have reigned.

No less than four communications systems linked the center and its producers and directors with each other and the production personnel and talent at the venues. In control A was housed the largest of these networks, the production coordination system. The internal-operator as-

continued on page 55

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You can also get a faster edit than with any other ¾" editing system in its class. Thanks to microprocessor technology. And many new and exclusive editing features. Like the NV-A960's ten microprocessor-based, dial-operated, lockable tape search speeds, plus pause. All with picture. So you can find what you're looking for faster. Also the controller lets you edit faster with automated in/out insert and assembly editing, preview, review, fast return-to-in-point and fast go-to-out-point. A valuable combination of features that nobody else in its class has, to help you save valuable time.

Just when you're trying hardest to save time, that's when you're most likely to make a mistake. And that's where our automatic instruction error diagnos-

Shown left to right: NV-A960 Controller, NV-9240 Recorder and NV-9600 Editing Recorder

tics comes in, another Panasonic exclusive made possible by microprocessor technology. It helps you find your errors fast by displaying a code that shows what you did wrong. Error diagnostics can also keep you from compounding your mistakes, to help bring edit time to a new low.

No matter how fast or accurate your edit is, it's all wasted if you don't get a great picture. To help you get it, only the G-2 Series gives you the precision of full direct drive, including the video head cylinder and capstan motors. Plus the strength, stability-of-alignment and long-term durability of our aluminum die-cast chassis. Plus crystal-oriented HPF™ heads. Plus a lot of other high-performance "pluses" that add up to picture quality that's second to none.

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The new microprocessor-based Panasonic 9000 G-2 Series. Compared to anything in its class, it's in a class by itself.

* Panasonic recommended price, but actual price will be set by dealers.

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	Panasonic 9000 G-2 Series	Competitor System No.1: _____	Competitor System No.2: _____
System features:			
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2. Automatic IN/OUT insert editing.	☑	☐	☐
3. Automatic IN/OUT assembly editing.	☑	☐	☐
4. Automatic STAND-BY (with picture) at out point.	☑	☐	☐
5. Edit accuracy ± 2 frames.	☑	☐	☐
6. 4.5 second pre-roll time.	☑	☐	☐
7. Multiple AC voltage applications (100V/120V/220V/240V), at 60 or 50 Hz.	☑	☐	☐
Controller features:			
8. Dial search control with lockable speeds.	☑	☐	☐
9. 10 tape search speeds (5X, 2X, 1X, 1/5X, 1/20X— forward and reverse) plus PAUSE, all with picture.	☑	☐	☐
10. Automatic instruction error diagnostics.	☑	☐	☐
11. Address time indicator for hr./min./sec./frames.	☑	☐	☐
12. Lap time indicator.	☑	☐	☐
13. PREVIEW function.	☑	☐	☐
14. RETURN to in point function.	☑	☐	☐
15. REVIEW function.	☑	☐	☐
16. GO TO out point function.	☑	☐	☐
17. Independent reset of entry and exit points.	☑	☐	☐
Deck features:			
18. Full direct drive, including video head cylinder and capstan motors.	☑	☐	☐
19. Annealed aluminum die-cast chassis.	☑	☐	☐
20. Frame servo and horizontal phase adjustment.	☑	☐	☐
21. Servo lock and frame lock indicators.	☑	☐	☐
22. Relocated head switching to vertical blanking interval.	☑	☐	☐
23. Electronic tape counter.	☑	☐	☐
24. Separated chroma (688 kHz) and luminance for dubbing.	☑	☐	☐
25. Head amp frequency adjustment.	☑	☐	☐
26. Chroma level adjustment.	☑	☐	☐
27. Time code capability (audio channel 1).	☑	☐	☐

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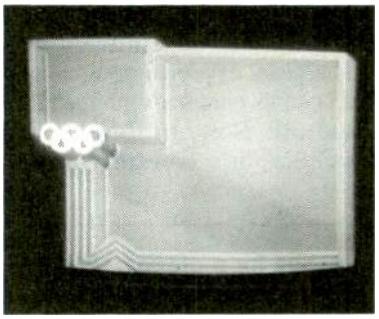
sisted system, running over telco lines, had six trunks that connected up to 10 conversations per trunk at a time from 57 remote locations (including mobile vans, announce booths, and the edit cubicles at the center). Touch-tone pads at each location were used to call into the broadcast center where the operator would make the interconnect or come on the line if additional conferencing was needed. A

"Up Close and Personal" Graphics


A


B


C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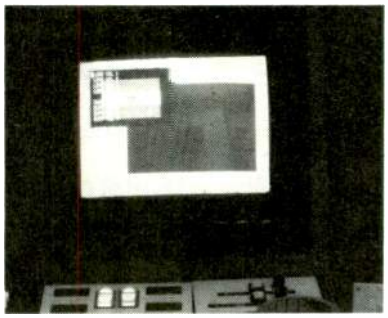
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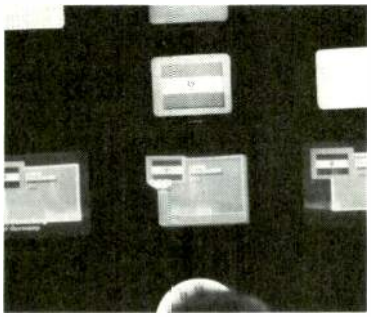
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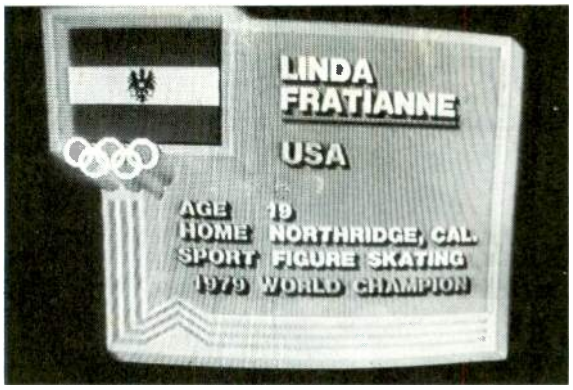

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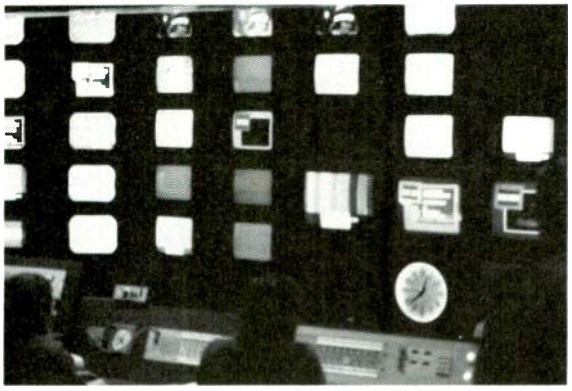

H

The graphics capability of the broadcast center would rival that of any major-market station, with two Ampex HS-100 slow mos, three Chyron IV character generators, an Ampex ESS-2 digital production unit, two Dubner/ABC color background generators housed in a separate area, and a five-channel DPE-5000 Plus and four-channel Vital SqueeZoom in the production control rooms.

Among the most effective uses of graphics were the introductions to the 40-plus "Up Close and Personal" profiles of major athletes. Putting the intros together, done during the week preceding the coverage, required every trick in the book.

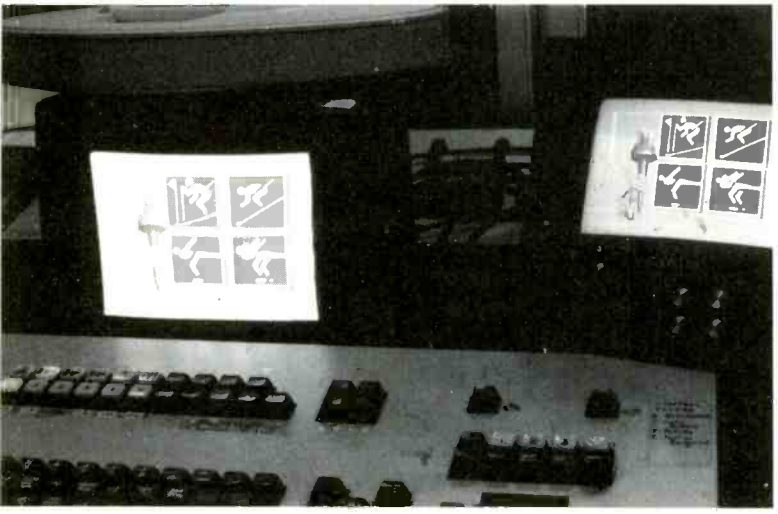
Using the Dubner/ABC system, the Olympics logo stored in a font was first stretched and shaped to correspond to the shape of the TV raster, then positioned and transformed into a border. The Olympic rings from another font were written on top of the "hill" with a three-dimensional effect (A). The stretching process caused the diagonal lines to digitize badly, so the bit trimming capacity of the Dubner was used to clean the image up (B).

Stored in the ESS system (C) were the flags of each participating country (on wall at left of operator), which had originally been created on the Dubner system, then stored as still frames. The second channel of the ESS had stills of the participating athletes.

The Olympics border from the Dubner color background generator (D) together with the appropriate flag were then fed to the DPE-5000 Plus in the control room, where the flag was compressed and positioned to fit into the box above the Olympic rings (E).

Chyron-generated characters giving the name of the athlete, age, home, sport, and other information were then fed through another channel of the DPE-5000 and compressed into the area at the center of the border (F). Using the Chyron's reveal mode, synchronized to the music, the performer's vital statistics wiped into place (G). Finally, the flag was wiped to the second channel of the ESS with the athlete's photograph, then the whole image dissolved through the Grass Valley switcher to the tape of the profile (H). (The final on-air result, of course, had Linda Fratianne associated with the American flag, rather than the Russian flag used during the demonstration.)

ABC Broadcast Center



Symbols for Olympic events, the Olympic torch which could be made to flicker, Olympic rings, etc., were stored as elements in disc-loaded fonts in a new system co-developed by Dubner Computer and ABC

headset and pushbutton at Roone Arledge's desk gave him automatic override on any of the conversations.

A completely separate interrupted feedback (IFB) system linked production with the talent at the venues, with two stations located in control room A. Master control would set up each day the 14 locations to be connected, interfaced through a small control box in each mobile van in the system. The mobile vans, of course, maintained their own IFB systems to which the broadcast center system was interfaced, though Arledge again had automatic interrupt on any circuit.

Though an IFB system normally relies on program audio to carry the voice of the talent back to the control center or mobile van, ABC used a specially designed system to provide constant two-way communications. On the audio mixer in control A, every incoming line had a split-off just before the level control that would send the audio onto line. Though the volume pot could be off, keeping the announcer off the air, he could still talk to the control room.

Within the center itself, two systems were used. One, an engineering intercom with a 48 by 48 matrix, kept engineers in the editing cubicles, studio, control rooms, graphics area, and other areas in touch with one another. The other system consisted of a small intercom between the editing cubicles and the control rooms to allow assistant directors to communicate with directors.

As a final tribute to the broadcast center and everyone involved, it must be pointed out that the entire production came off without a hitch. No system was out of place, no piece of equipment underutilized, no technician wondering idly what to do. The years of preplanning that began almost as soon as ABC had its contract with the Olympic Committee finally paid off. Now, barring unexpected reversals in world politics, it's onwards to the Los Angeles Games. **BM/E**

See following pages for a graphic display of ABC's Winter Olympics coverage.

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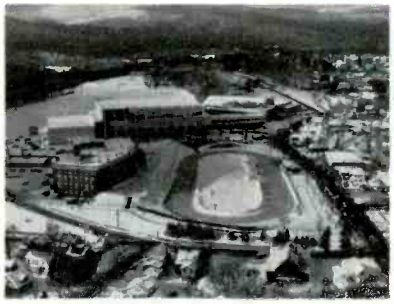
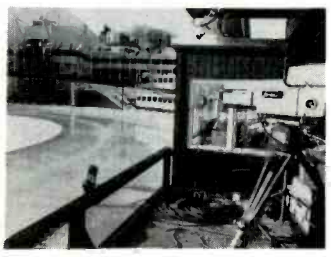
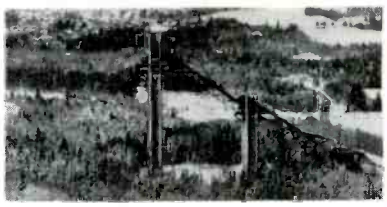
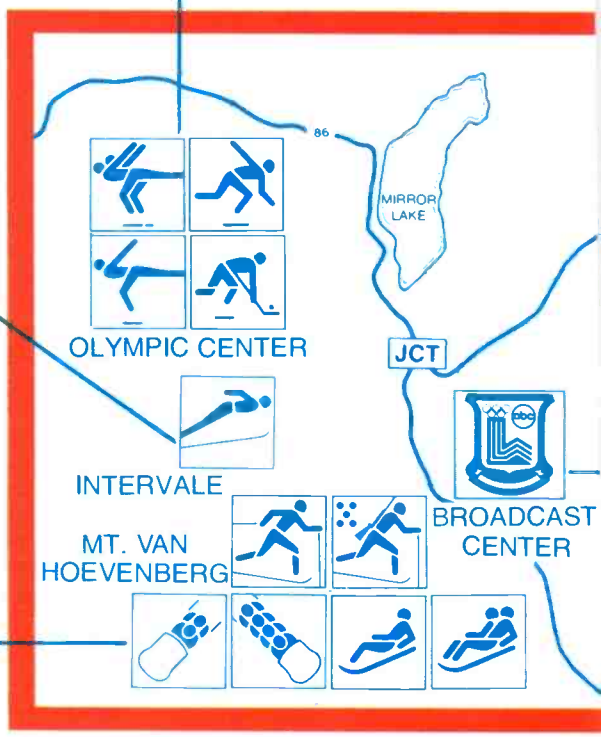


Coverage of skating events was coordinated through mobile vans parked behind new Olympic Center behind Lake Placid High School. Platforms on high school itself provided master shots of speed skating oval and Main Street

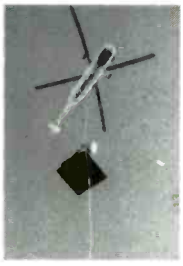




Ski jumping coverage was coordinated by two mobile vans parked under 70-meter jumping tower. Both 70- and 90-meter towers were completely prewired shortly following the construction of the towers themselves



Cross-country and biathlon events were covered with microwave-equipped snow cats, with three multiplexed video signals plus audio carried back to mobile vans at the start line by a complex system of microwave relays



Whiteface Mountain was the venue for alpine skiing events, coordinated through a complex of mobile vans parked 1000 feet uphill from base lodge in a small clearing. Cameras on small wooden pallets could be transported from one slope to another by helicopter. For longer cable runs, special RF repeaters developed by Philips for its LDK cameras, used extensively at the venue, provided triax runs up to 15,000 feet

WHITEFACE MT.

ABC's broadcast center was at the hub of the Olympics coverage. Control room A (upper left) had a Grass Valley 300 switcher, MCI/Quantel DPE-5000 Plus digital effects, and a Siemens audio console. Master control (upper right) could monitor eight incoming feeds simultaneously. Graphics area (lower left) contained Chyron character generators, Ampex ESS still stores, and the Dubner/ABC color background generators. Editing cubicles (lower right) contained Ampex VPR-2s with Convergence/Ampex editors and GVG switchers

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MOBILE STUDIOS HANDLE EVERY RADIO NEED

At the CBC in Vancouver and at KUSC-FM in Los Angeles, mobile studios make finished stereo tapes of concerts from right outside the halls. At WKBN in Youngstown, Ohio, the mobile studio goes with the DJ to any spot in town. All have proved themselves in hundreds of sorties from the home studio.

THE FM STEREO NETWORK of the Canadian Broadcasting Corporation is one of the world's longest. It stretches across Canada's 3000 miles from coast to coast, serving many FM stereo stations.

The programming includes a large proportion of concert music, from opera to rock, recorded at actual performances and put on the network with stereo tapes. Distribution is by a terrestrial microwave net.

One major source of CBC concert music is the Vancouver area on the west coast. The city and the surrounding territory produce a large quantity of concert music of every kind; there is an annual music festival that brings dozens of top Canadian and foreign artists and groups to the area.

For a number of years the CBC radio group in Vancouver recorded concerts for the FM network on typical remote pickup equipment that could be lugged to the scene. But the engineering department, under the leadership of director Don Reagh, were unhappy with the quality of their concert recordings.

Finally, in 1976, Reagh and his colleagues persuaded CBC to underwrite a rolling studio that would be at the very top of current audio quality. Reagh designed a mobile studio on a stripped-down GMC 26-foot truck. Into the truck went the following basic equipment: a Ward-Beck console with 32 inputs and 16 outputs; an Ampex MM1200 16-track tape machine; a Studer A80 two-track machine; JBL 4313 monitor speakers, driven by Crown DC-300 amplifiers; UREI equalizers; digital delay units from Eventide; an AKG-B10 reverb unit; and a battery of Neumann and Sennheiser microphones.

Connectors were provided for quick installation of up to 32 microphone cables that could be led directly into the concert hall. The studio wiring also allowed for immediate connection of the Ampex to the output of the Ward-Beck, for the original multi-track recording; then to the input of the Ward-Beck, for a mixdown onto the Studer two-track machine. Digital effects, equalizers, and reverb can be cut in for the original recording or the mixdown whenever wanted.

In addition, connectors were installed on the outside of the truck so it could be driven back to the CBC studio for adding either an AKG BX-80 or EMT plate reverberator to the circuits.

Mobile studio used by Canadian Broadcasting Corporation to produce stereo tapes of concerts for CBC FM network is parked in front of Vancouver studio building

But an important part of the design philosophy was that the entire job of producing the final stereo tape should be carried out in the truck. Thus, even when the large reverberation units at the studio are used, the actual mixdown is done in the truck. Don Reagh points out some advantages: the acoustic and instrumental balance of the recordings can be consistent (and consistently high); a great deal of time is saved because the truck operators can do a large part of the job right at the concert or just after it — in some cases the mixdown and the original recording can be one and the same; since multi-miking of live concerts has to be done on the spot, there are strong basic reasons for not breaking the job in two by bringing multi-track tapes back to the studio for final program production.

This implies that highly expert monitoring is needed in the truck, and for this function, too, a no-compromise philosophy was followed. The electrical monitoring equipment, as already noted, is top grade. To make the acoustical quality equally high, the inside of the truck is carefully treated so that the operators can really hear what they are doing and know what a program sounds like.

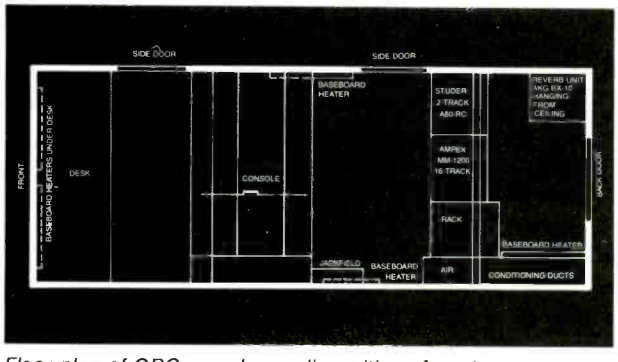
View of interior looking toward the rear shows, left to right, the Studer two-track machine, Ampex 16-track, and AKG reverb unit. Walls have acoustic treatment (see story)

It is an accepted idea that a poor acoustical environment for radio monitoring can lead to seriously erroneous balances, both in the original recording and the mixdown. But in too many cases radio program producers have not pushed this idea to its logical end by installing high-grade, uniform acoustic environments for studio program production. This is even more true for mobile studios — of course, high-grade acoustical treatment is less often needed in mobile rigs because not many such rigs are used for concert program production.

The CBC truck includes carefully designed acoustic treatment of the whole interior, including a "sound trap," a highly absorbing area, at the end opposite the monitor speakers. As Don Reagh notes, this prevents acute coloration of the sound by strong bass reflections from the rear, and also allows the stereo image to be perceived much better. In highly reverberant spaces stereo directionality tends to get lost.

The truck crew, with three years' experience in using the mobile studio, has become highly expert in post-production for a consistent on-air quality. The crew members know that what they hear in the truck will come through virtually unchanged when the program is put on the air. They have a firm conception of what quality they want, and good ideas about how to get it in most of the live situations that come up.

The truck has become a day-to-day workhorse, producing an astounding number of programs for CBC. Don Reagh reports that during one nine-month period in 1978 the truck went to concerts 292 times. He hasn't made a more recent count, but there has been no falling-off in use



Floor plan of CBC van shows disposition of equipment and interior space, including storage, etc.

Close view of van shows entries and comparatively high ceiling, put to use in the acoustical design so that monitoring of mixdown balances will be proper

At the front of interior is the Ward-Beck console, which provides mixdown from up to 32 microphone inputs, or from the 16 tracks of Ampex recorder

— rather, an increase. During the week of the Victoria Music Festival the truck averages two shows a day.

The range of material covers totally the music produced in the area. There are choral groups, recitals by soloists, symphony orchestras, chamber music, rock bands from stage, jazz and pop from night clubs, folk music — quite literally, everything.

This versatility seems to *BM/E* the main lesson to be learned from the success of the CBC mobile studio. The higher the quality built into such a rig, the more different things it can do. If a radio management wants to produce taped programs on the road — and some reasons for doing that have been outlined here — the equipment ought to be top grade.

As to costs, although the CBC has no profit line, it does have careful budgeting. Don Reagh says that the mobile studio brings in concert programs at a lower cost than the old hand-carried remotes did because of higher efficiency. The whole job can be done without any shift from one crew to another, or from one set of equipment to another. There is no time lost in setting up for production with tapes brought back to the studio. CBC is convinced that the money spent on the truck, while raising the quality of the concert programs substantially, has saved them money.

WKBN, WAAM, and the "remote DJ"

WKBN in Youngstown, Ohio, has made a success with a careful mix of MOR with some country music in this industrial city. The management also gives strong attention and much time to community affairs of many kinds.

Both for commercial pickups and for covering community events with immediacy and live style, the management decided two years ago to build a mobile studio from which a DJ could originate a show, achieving the same efficiency and quality he would have right in the studio. The station bought a GMC motor home and stripped down

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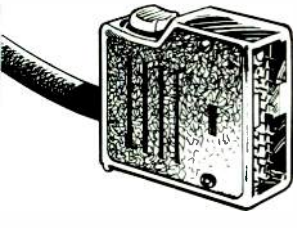

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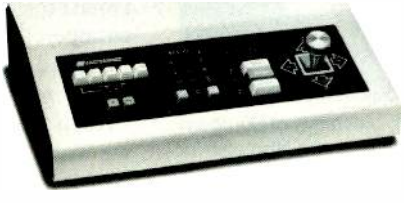

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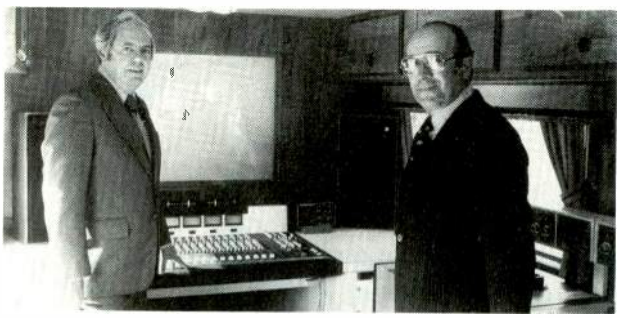
the interior. A good part of the rebuilding with studio cabinets, and installation of the studio equipment, was carried out by Grinnan Fixture Co. of Minerva, Ohio, a specialist in this field.

There is a Pacific Recorders console, three ITC cart machines, and two turntables. A Marti STL transmitter on 460 MHz is installed in the truck, which takes program material off the console and back to the home studio. It also carries control signals from DJ to studio, cueing from studio to DJ.

In addition, there is a short-range receiver that can convert the transmitter in the truck into a relay, sending back material picked up with a hand-held Marti "brick." The DJ or reporter can move around at a considerable distance from the truck and have the output of his microphone relayed directly back to the home studio.

On top of the truck is a 28-foot pneumatic tower that can be raised and lowered from inside the truck. It carries the Marti antenna on its top. The receiving antenna is 800 feet up on the TV tower owned by the station management. This gives excellent STL coverage throughout the area ordinarily covered by the station.

The DJ assigned to the truck carries with him the recorded jingles and IDs and the music, mostly on carts, to be used in the program. Commercials are played in the



Hugh R. Paul (left), director of engineering, KUSC, designer of the studio, and W.W. Weide, president of Fleetwood Enterprises, builder of the interior on a Fleetwood body, show one end of studio. Behind the Auditronics console is window to "announce booth," acoustically separate area for announcements and interviews. Recording space is tuned acoustically for accurate monitoring

Outside of mobile studio built at KUSC-FM, University of Southern California, for production of stereo tapes of concerts, and also for feeding the concerts live to the National Public Radio satellite net. The van has top-grade control, monitoring, and recording units, including Auditronics multi-channel console, Studer tape machines. NPR uplink transmitter will be reached with a microwave system

The WKBN van for "mobile DJ" use has station identification prominently displayed on exterior, along with station's slogan for operation, "Rollin' Radio"

home studio in a semi-automatic "DJ assist" mode, with a string of commercials started off by a button pushed in the truck.

The truck is sent, in the first place, to many kinds of commercial happenings, such as supermarket openings or special sales of car dealers or furniture stores. The leading personalities can be interviewed right on the spot and persons in the crowd interviewed to give proper flavor to the event, along with eyewitness descriptions by the DJ.

These commercial specials, promoted as "Rollin' Radio," have become enormously popular in the city, station manager J.D. Williamson told *BM/E*. The retailers and others sponsoring them have almost always experienced large boosts in sales as a result of the special excitement the remotes generate.

The other general class of show developed with the truck is a visit to some community event. In this case the objectives are to give maximum exposure to a valuable activity and to identify the station as a supporter of that activity and of the community in general. Again, the sponsors of the events have been strongly enthusiastic about the results.

Williamson reported that the truck had originated more than 250 shows in the course of a year. It has brought in substantial amounts of money, adding noticeably to station profits, at a level that makes the investment in the truck an excellent one.

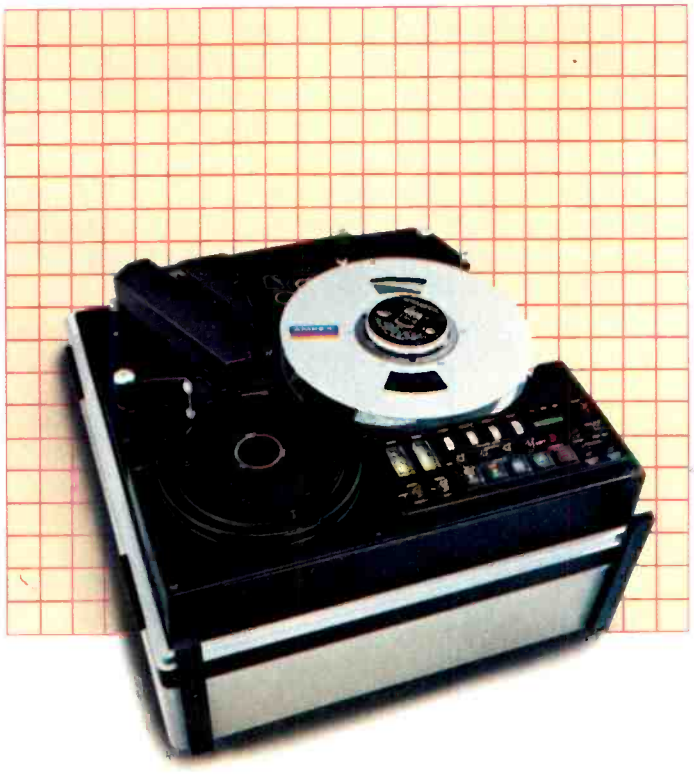
From another point of view the truck has been a fine success, Williamson noted, in making the station known simply by its presence at so many local events. He thinks the attractively decorated van has done more to promote and identify the station than any other effort the management has made, including billboards, newspaper ads, and other material aimed at spreading the station's name.

The WKBN management recently bought another station, WAAM in Ann Arbor, Mich., and has already bought a truck and gotten it nearly ready for use at the new station. It will be somewhat more elaborate than the original truck, incorporating the experience the station has had with the first venture. Both trucks use a Nova inverter for power, running off the truck batteries. Each also has an Onan emergency generator; further, the trucks can run off commercial power if that is close enough at hand.

Asked what WKBN had learned from the construction of the mobile studio, chief engineer Lanny Nass said, "Keep the controls simple! This is a combo operation — we want any competent DJ to be able to run the show." The lesson here is that a mobile studio *can* be easy to operate. Whatever the management's objective in building the van, the design can reflect that objective successfully. **BM/E**

PORTABLE VIDEOTAPE RECORDING WITH THE AMPEX VPR-20:

Bringing Back Tape You're Sure You Can Use Calls for a Tough, "Smart" Portable Recorder.



Finally, you can videotape remotely without compromising the considerations that apply to studio work. Because Ampex engineers went far beyond the usual definitions of portable acquisition when they designed the VPR-20 one-inch helical.

Confidence Is Paramount.

On location, you have to know that you're capturing good material. So Ampex built a confidence feature into the VPR-20 that actually plays back the picture from the tape into the camera viewfinder during recording. When you see it in the viewfinder, you know it's on the tape. And you can have color playback in the field, thanks to the color stabilizer option, which mounts inside the VPR-20.

Production Flexibility for All Situations.

When the assignment is commercial production in the field, your VPR-20 can backspace itself for a flawless assemble edit. And color framing is standard. The advanced cueing system allows you to go back and look at the last shot, and either go on from there or retake the shot and eliminate unwanted material. Right in the field. As simply as pushing the appropriate button.

The Front End of a Special Effects Production.

Tapes recorded on a VPR-20 are fully compatible with every trick in the VPR-2 special effects book. Once you bring your material back to the studio, you can slow it down, speed it up or stop it on a selected frame with a VPR-2. And if you haven't seen the quality of VPR-2 special effects yet, you're in for a surprise.

If You Can Take It, Your VPR-20 Can, Too.

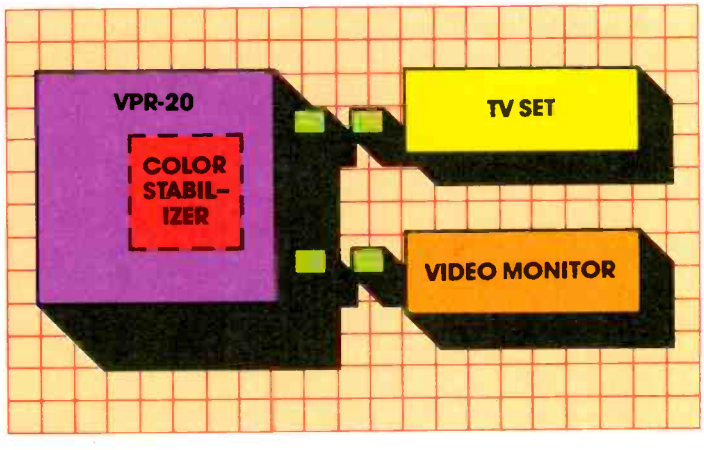
Environmentally, your VPR-20 can take nearly anything that your operator can. It shrugs off dust and sand in the air, tolerates a cloudburst, and stands up to heat and cold. Oblivious to the way it's held or positioned, the VPR-20 has an amazing resistance to the kind of gyroscopic conditions that go along with field recording. So you can take the VPR-20 for granted.

Enough Power to Finish What You Start.

The VPR-20 battery pack has more than enough capacity to record and rewind a full hour of tape. Then, when you're ready for more shooting, the quick-change battery pack gives you quick-change power. There's even a battery/charger system that brings you up to full power again in less than an hour. You'll really value the VPR-20's power-down memory. It keeps the tape timer operational during battery or power changes for up to two days if need be. This is portability with a punch.

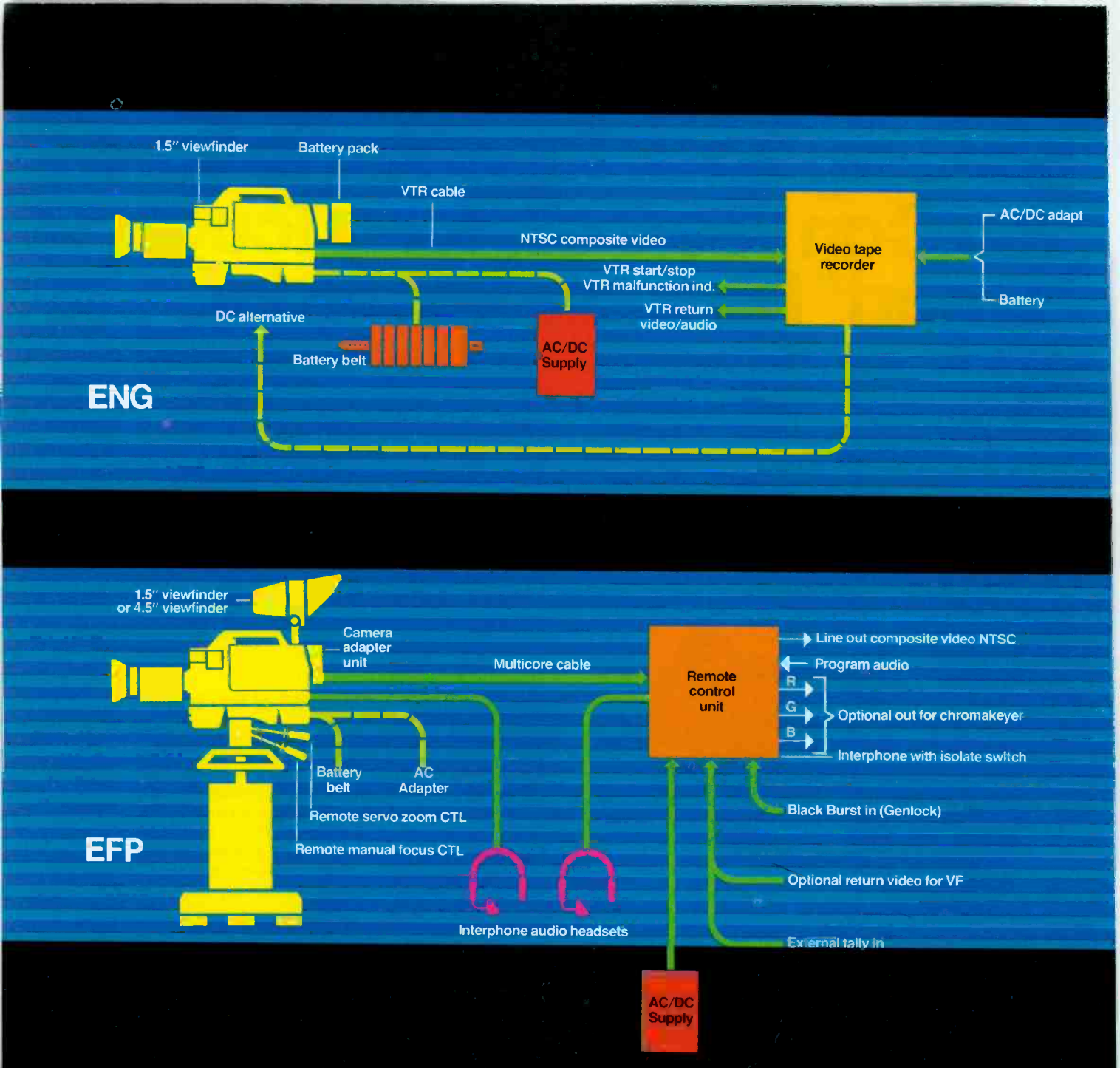
If The Specs Don't Convince You, A Demo Will.

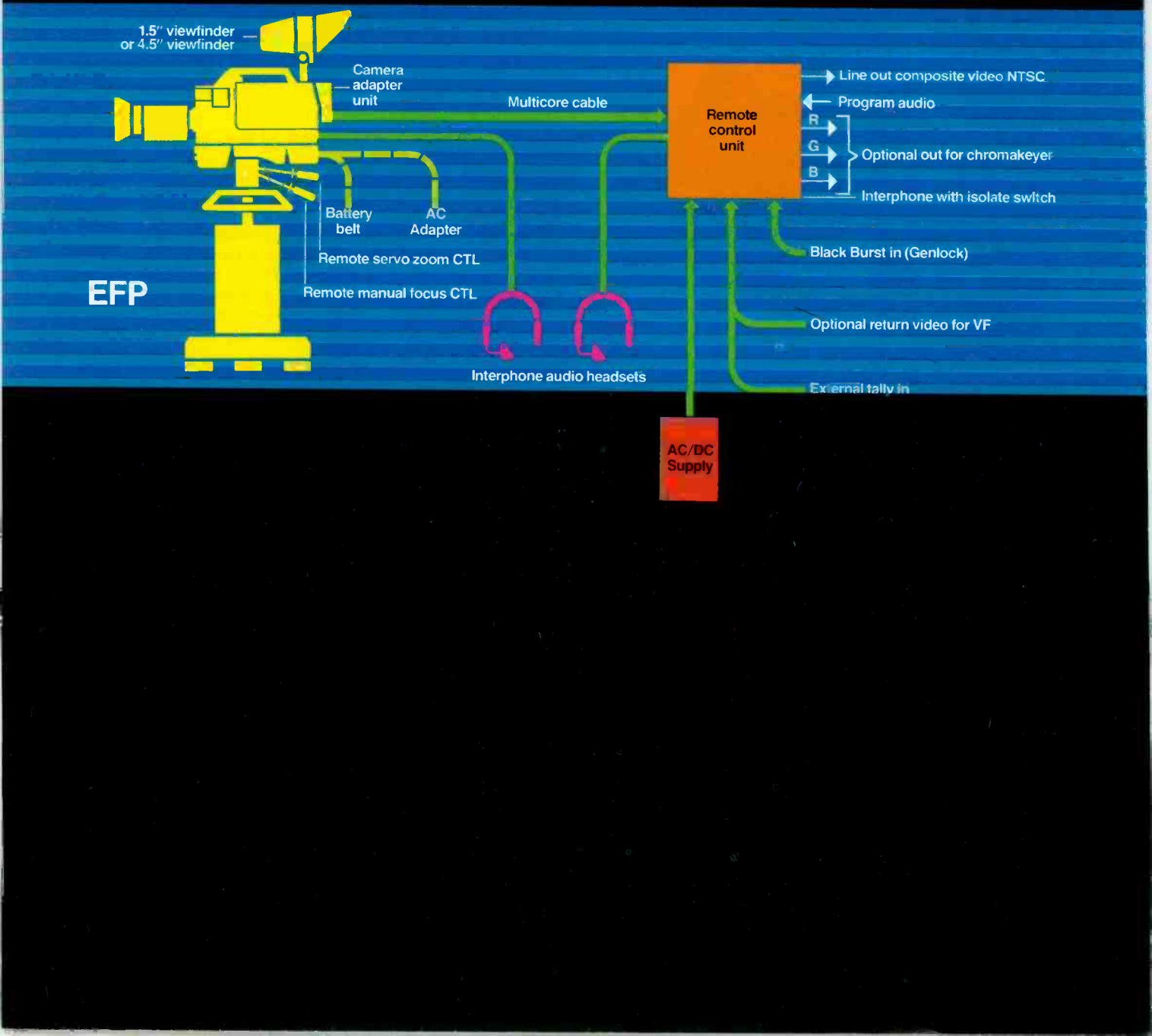
Somewhere within reach of your station, the tough, "smart" VPR-20 is turning the impossible into an everyday affair. Call us for the technical information, and then get your hands on a VPR-20. You won't want to let go.



AMPEX MAKES IT EXCITING

Ampex Corporation, Audio-Video Systems Division, 401 Broadway, Redwood City, CA 94063 (415) 367-2011


1.5" viewfinder
Battery pack
VTR cable
NTSC composite video
VTR start/stop
VTR malfunction ind.
VTR return
video/audio
Video tape recorder
AC/DC adapt
Battery
DC alternative
Battery belt
AC/DC Supply
ENG


1.5" viewfinder
or 4.5" viewfinder
Camera adapter unit
Multicore cable
Remote control unit
Line out composite video NTSC
Program audio
R
G
B
Optional out for chromakeyer
Interphone with isolate switch
Battery belt
AC Adapter
Remote servo zoom CTL
Remote manual focus CTL
Black Burst in (Genlock)
Optional return video for VF
Interphone audio headsets
External tally in
AC/DC Supply
EFP

PLAIN.

AND FANCY.

The Microcam® 601. For double duty–electronic journalism, and studio-quality colorimetry. It's just plain beautiful.

ENG. Microcam Plain. Simply the best value there is in a shoulder-mount camera. Low-power consumption with an easy-to-mount 12 AH battery that allows over 6 hours of continuous use on a single charge. Easy operation, with all controls conveniently situated on the lens or front end of the camera. Lightweight to give operators the freedom to pursue shots that have hitherto been inaccessible.

EFP. Microcam Fancy. When you want to go where the action is. And bring it back alive. With color to studio-quality standards. Precise framing and focus from a 4½" modular view finder. And a remote control system that lets the operator concentrate on getting the shot while a director, at the remote panel, makes it picture perfect.

Microcam. Plain or Fancy, it's your key to the beauty of studio broadcasting and the drama of on-the-spot coverage.

Seeing is believing. If you'd like to know more about the remarkable Microcams, ENG or EFP, arrange for a hands-on demonstration. Call:

Thomson-CSF Broadcast, Inc.
37 Brownhouse Road, Stamford, CT 06902
Tel. (203) 327-7700/TWX (710) 474-3346

CONRAC

INNER VIEW:
A closer look at Conrac Monitors

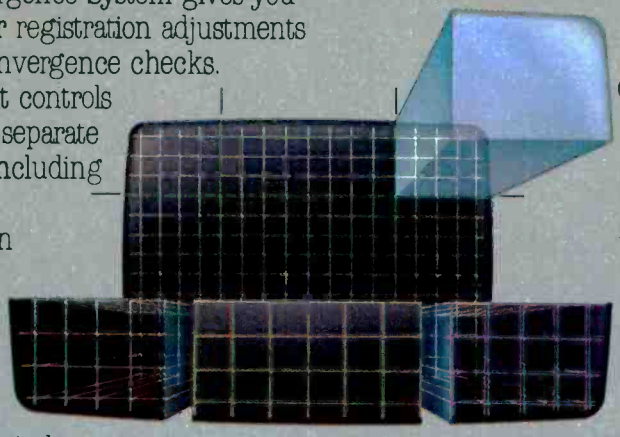
Active Convergence: Registration made simple.

Conrac's Active Convergence System gives you complete control over color registration adjustments and greatly streamlines convergence checks.

It uses 36 independent controls to individually adjust nine separate areas on the CRT screen – including corners!

You spend less time on convergence checks — and the adjustments you make will be much more accurate.

Conrac's system uses 24 operational amplifiers to independently control red, green, and blue in each screen area. Vertical and horizontal waveforms are referenced for shaping the signals that excite the convergence yoke assembly. Dynamic blue lateral convergence is achieved with operational amplifiers.



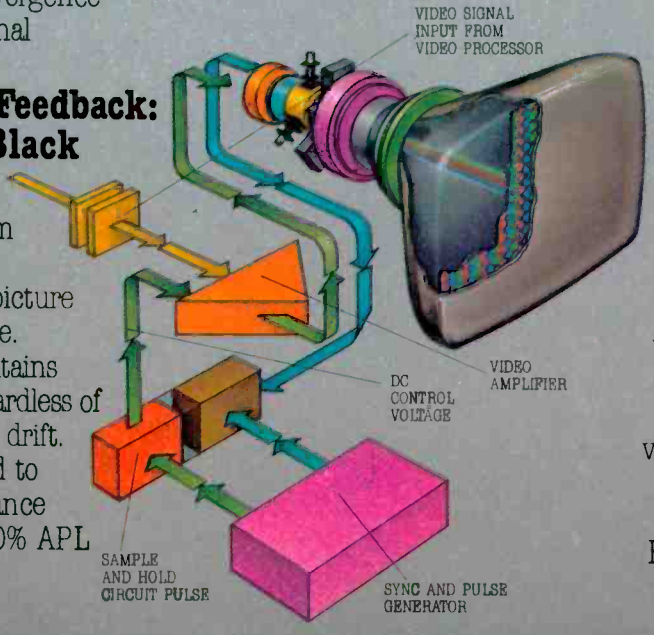
Conrac's Active Convergence system lets you adjust color registration on nine separate areas of the CRT.

Beam Current Feedback: The Ultimate in Black Level Stability.

Conrac's unique Beam Current Feedback system maintains a more stable picture for a longer period of time.

It automatically maintains black level stability — regardless of CRT aging or component drift. In fact, black level is held to within 1% of peak luminance level between 10% and 90% APL (Average Picture Level).

Conrac's exclusive Beam Current Feedback system automatically maintains black level stability.



Conrac's unique system uses a keyed back porch video amplifier and beam current sensing that occurs during the vertical interval. The video signal is ac coupled to the video amplifier, thus eliminating the dc component and retaining the level between black and white. It is then amplified and applied to G1 of the CRT. The feedback loop is completed when a sample cathode current (gated by the brightness pulse) is applied to a sample and hold circuit. If the cathode current changes for any reason, the video amplifier's dc level is automatically adjusted. Result: reference black level will remain constant.

Conrac Technology: 30 years of leadership.

Conrac's track record of technical innovation stretches back nearly three decades. And what we've learned since then goes into every monitor we make today. That's important to you. Because the more technology we pack into each monitor, the more performance you'll receive from it.

Active Convergence and Beam Current Feedback are just two ways Conrac technology can save you time and money.

For the complete inner view of Conrac technology, call or write us today: Conrac Division, Conrac Corporation, 600 North Rimsdale Ave., Covina, CA 91722, Telephone: (213) 966-3511, Telex: 67-0437

Quality you can take for granted.

OPEN-REEL TAPE MACHINES: HIGHEST FIDELITY, PRECISION, AGILITY

Radio broadcasters are still voting the open-reel tape machine the unit they are most eager to buy, and the industry has responded with the finest machines in history. This article surveys the principal analog and digital machines on the industry's shelves at the present time. Most broadcasters will be able to find an excellent machine of the kind they want.

THE RADIO MANAGERS and chief engineers in *BM/E's* latest Panel of 100 survey, in the February issue, put the open-reel tape recorder at the top of their buying interest list, as earlier Panels of 100 have for a number of years.

So this machine, which was a radio workhorse before it was anything else, starting more than 30 years ago, is still a highly desired item in a broadcast plant. The open-reel tape machine has stayed on top of the game for so long not only because it is an excellent basic idea, but also because it has moved far ahead technically, keeping up with the general advance in broadcast technology and sometimes, in fact, leading it.

Right now, as everyone knows, is one of those times when the tape recorder is leaping ahead, with digital techniques taking it to quality levels far above any we had before. But digital recording is only part of the story of technical excellence at this time. Digital machines are still very scarce and very expensive. Most broadcasters will be buying analog machines for some years to come. In fact, it seems likely that we will always have analog machines for broadcasters (and others) who don't want to spend the larger sums of money for tape recording.

BM/E has collected the most important data on the principal open-reel machines now suitable for broadcast use. The list includes most of the machines to be shown at the National Association of Broadcasters convention in Las Vegas, which will get underway just after this magazine is printed. However, there will be a few new ones there for which the makers did not issue advance information. To be completely up to date, study *BM/E's* June Show-in-Print report, and add the two or three new models to the survey printed here.

The two charts are intended to help broadcasters quickly locate machines that come within their own guidelines. Chart 1, "Quick Guide To Broadcast Audio Tape Players/Recorders," shows the models that are likely to interest broadcasters, divided into five price categories. Chart 2, "Broadcast Audio Recorder/Player Comparison Chart," shows important characteristics and features of the analog machines up to four-track capability.

Chart 1 includes machines of more than four tracks, and also the only two brands of digital machine being sold at the time *BM/E* prepared this survey, those of 3M and Sony. It is important to note that the Sony machines are "converters" that turn an audio signal into a PCM digital signal in "pseudo-video" form: a videotape recorder must be connected to the converter to put this signal on tape, with playback coming from the videotape and back through the converter.

After finding one or more machines on the charts that seem to fit, broadcasters, as always, must study the full characteristics of each one as furnished by the manufacturer. Generally speaking they will want today, and can get, electrical characteristics that used to be considered far up on the "high fidelity" scale.

However, machines do differ greatly in the smoothness, ease, and sureness of handling the tape mechanically. Prospective buyers should put any machine that interests them through every possible change of mode, including any special modes for making editing easier (a mode for edit dump, for example, is now fairly common and helps a lot in the production studio).

Broadcasters won't forget, either, that in many cases their machines are likely to be on the job 24 hours a day, so ruggedness and precision in mechanical parts are paramount. On this score it is often useful to ask fellow broadcasters about their experiences with any machines they may have.

A large proportion of the available machines now incorporate motion sensing: the control system is always "aware" of how the tape is moving and can make mode shifts with a minimum of tape breakage and spillage. Another advanced function that is becoming standard is servo control of tape tension, both before and after it passes the heads. This is a big help in reducing flutter and modulation noise, the noise that rides up and down with the signal as a result of jerky tape motion across the heads.

Some of the more expensive machines now have microprocessor control of all tape handling functions.

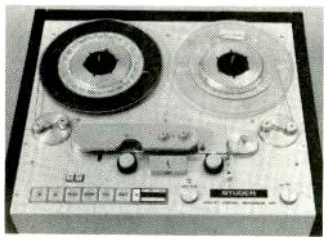
Open-Reel Tape Machines

This fancy operational feature will become more and more common as the price of microprocessor units drops further. It can provide nearly error-proof tape handling, and with a little memory can supply automatic sequencing, as well as other conveniences that are getting familiar in broadcast equipment.

The auto-locator, both outboard and built-in, is also getting more common. It is a fairly expensive option but pays for itself rapidly in a busy production studio, or in on-air operations built around heavy use of tape programs. Sync systems are also more and more available options, for tying tape machines to other audio or video tape machines.

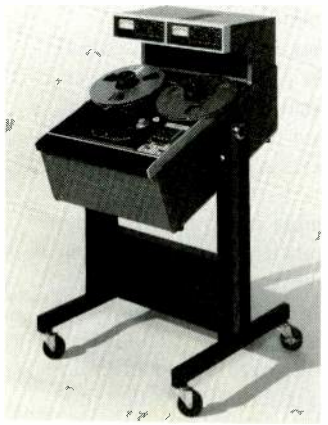
Of course, there are some functions in broadcast operation for which elaborate and flexible control systems are not required. If a tape machine is for use in putting news programs together, for example, the broadcaster can save money by getting a basic model without the elaborate control features. The same applies even more to an open-reel machine to be used for playback only in an automation system. A few "stripped down" models are made specifically for the automation function.

The three main functions, however, manual on-air programming, program production, and live recording of concert material for later broadcast, all demand the topmost control flexibility as well as high electrical quality. On-air program playing needs very low mechanical noise since the tape machine may be in a studio with an open mic from time to time. Quick coming up to speed is obviously



Studer A80 shows exceptionally "clean" top-panel layout, straight-line threading

Control panel for Studer A80 or A800 has full auto-location function, sync mode



Ampex ATR-100 has one to four tracks in top-most quality performance, convenient stand

CHART 1—QUICK GUIDE TO BROADCAST AUDIO TAPE PLAYERS/RECORDERS

	CLASS				
MANUFACTURER	A Under $3000*	B $3-6000*	C $6-10,000*	D $10-20,000*	E Over $20,000*
Accurate Sound Corporation, 114 5th Avenue, Redwood City, Calif. 94063		AS2600 1t, 2t	AS2600 4t, 8t		
AEG-Telefunken, Gotham Audio Corp. (Dist.), 741 Washington Street, New York, N.Y. 10014		M12A 2t			M15A 8t, 16t, 24t, 32t
Allen and Heath Brenell Ltd., Audiotechniques, Inc. (Dist.), 652 Glenbrook Road, Stamford, Conn. 06906			Mini 8 8t		
Ampex Corporation, Audio-Video Systems Division, 401 Broadway, Redwood City, Calif. 94063	ATR700 2t	ATR101 1t 440 1t	ATR102 2t ATR104 4t	440 8t, 16t	ATR124 24t
Ampro/Scully, 826 Newtown-Yardley Road, Newtown, Penn. 18940	255 1t 250 2t	270 2t 280 2t	280B 4t	284B 8t	
Consolidated Electronic Industries, 1925 N. Lynn Street, Arlington, Va. 22209		2025** 2525**			
International Tapetronics Corp., P.O. Box 241, 2425 South Main Street, Bloomington, Ill. 61701	750 2t	850 2t			
Lyrec Manufacturing Company, c/o Rupert Neve, Inc., Berkshire Industrial Park, Bethel, Conn. 06801					TR352 24t
3M, Mincom Division, St. Paul, Minn. 55101				79 8t	79 16t, 24t Digital 4t, 16t, 32t
MCI, 4007 N.E. 6th Avenue, Fort Lauderdale, Fla. 33334		JH110 1t, 2t	JH110 4t, 8t	JH24 8t	JH24 16t, 24t
Nagra/Kudelski, 19 West 44th Street, New York, N.Y. 10036	E 2t (portable)	IVS 2t IS 2t (portable)	IVS 2t (sync) (portable)		
Otari Corporation, 981 Industrial Road, San Carlos, Calif. 94070	ARS1000 2t MX5050 2t, 4t	MKII 8t	MX7800 8t		MTR90 16t, 24t
Technics (Matsushita Electric), One Panasonic Way, Secaucus, N.J. 07094	RS1520 2t				
U.S. Pioneer Electronics Corp., 85 Oxford Drive, Moonachie, N.J. 07074	2022 2t 2024 4t				
Sony Corporation, 9 West 57th Street, New York, N.Y. 10019		TC510 2t (portable)	Digital PCM1 2t	Digital PCM100 2t	Digital PCM1600 2t
Studer/Revox America, Inc., 1819 Broadway, Nashville, Tenn. 37203	Revox B77 2t	B67 2t	A80RC 2t	A80VU 2t	A80 4-16t A800 4-24t
Teac Corp. of America, 7733 Telegraph Road, Montebello, Calif. 90640	35 2t 40 4t	80 8t		85 16t	
Telex Communications, Inc., 9600 Aldrich Avenue South, Minneapolis, Minn. 55420	1400 1t, 2t	1400 4t			
United Research Laboratory Corp., 681 Fifth Avenue, New York, N.Y. 10022		Model S 1t	Model S 2t, 4t		

t = number of tracks *Price ranges are approximate only, based on US market **Estimated price

WHEN YOU HAVE A REQUIREMENT TO ANIMATE, STORE STILLS, SQUEEZE IMAGES, RECORD AND PLAYBACK IN REAL TIME TO SINGLE FRAME, AND MORE—ALL IN ONE COST-EFFECTIVE PACKAGE:

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THE IMAGE MAKER: All the advantages of our EFS-1 and much, much more. The Image Maker is a compact, versatile software based unit which delivers random access to 500 images on line with our exclusive Discassette.® It also has the capability to do several motion loops from 1 second to 16 seconds. Serial digital interface is standard.

THE SQUEEZER: A unique and affordable production tool which can reduce images to four discrete sizes (¼, 1/9, 1/16 and 1/25 of original) with complete positioning capabilities. The Squeezer can also insert one image into itself or key it over another image.

LOW COST TBC: To round off the package, a CCD based analog Time Base Corrector. Used in conjunction with our Discassette, Arvin's Low Cost TBC meets broadcast requirements in one affordable unit.

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handy for tight cueing. A quality still somewhat rare is quick coming up to phase coincidence on stereo playback. Slowness in reaching phase coincidence can give mono listeners a ragged sound at the start of taped programs.

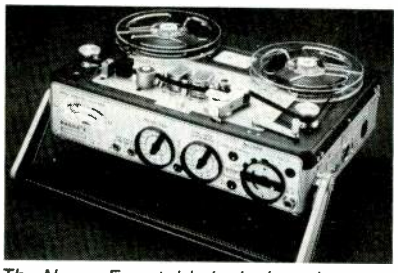
The on-air machine should also be remotable, for operation from the control position. Desirable is remote control with digital signals or low-voltage dc for compatibility with the latest automated consoles.

Original live recording of music for later broadcast demands the highest possible electrical characteristics. The old rule still holds, that no matter how good your equipment, there will be *some* loss of quality as the program passes through your plant. To end up with a high-quality program on the air, you have to start with a super-quality program.

It will turn out in many, if not most, cases that a single model of tape machine meets the requirements for all main functions. There are many advantages in having a single model of tape machine in a broadcast plant. The spare parts problem is greatly eased, of course. Also, the ability of the engineering department to supply fast maintenance and repair is strengthened.

A tape machine has another vital quality impossible to show in tables of specifications, probably more so than any other unit in a broadcast plant because it has precision mechanical elements as well as electrical. It is quick, sure *maintainability* and *repairability*. An expert consulted by *BM/E* during the preparation of this survey illustrated the point in a dramatic way. During a recording session with a pop singer the capstan motor in the recording tape machine became uneven in action; this was quickly diagnosed as serious bearing wear. A new motor was dropped into the machine in about three minutes: the singer did not even know that a repair had been made. The same engineer, a professional of many years' experience, spent more than *three hours* to change the capstan motor in another machine. The point doesn't need belaboring: the broadcaster considering a tape machine will do well to get repair history from actual users. **BM/E**

A bank of the new Enertec Schlumberger F462 machines showing elevated controls



The Nagra E portable is designed specifically for radio news-gathering

The ITC 850 is ruggedly built for heavy use in broadcast operations

Technics (Panasonic) RS1520 has isolated-loop tape drive, crystal-locked capstan speed

CHART 2 — BROADCAST AUDIO RECORDER/PLAYER COMPARISON CHART

Manufacturer/Model (up to 4-track, analog)		Number of Tracks Record/Play	Tape Speed IPS	Maximum Reel Size Inch	Equalization	Inputs	Outputs	Capstan Motor	Shuttle Time	Features
Accurate Sound AS2400/Inovonics 375		1, 2, 4	3¾-30	14	NAB	line	line	hyster syn		Floor cabinet
AEG Telefunken	M-12A	2	3¾-15	10½	NAB, CCIR	line	line	syn		Sync; remote control; varispeed
Ampex	ATR 700	2	3¾-15	7	NAB	line, mic	line	direct dc servo	1200'/1.5 min	Search to cue; function indicator, each track
	ATR 100	2, 4	3¾-30	14	NAB	line	line		2400'/1 min	
	AG-440C	1, 2, 4	3¾-30	10½	NAB, AES, CCIR	line	line	ac servo	2400'/1 min	
Ampro/Scully	250 Series	1, 2, 4	3¾-15	10½	NAB, CCIR					Switched equalization; motion sensing; sync control
	270 Series	1, 2	3¾-15	14	NAB, CCIR					Bidirectional
	280B Series	1, 2, 4	3¾-15	10½	NAB, CCIR					¼" or ½" tape; varispeed; remote ready
CEI	2025/2525	2	7½-15	10½	NAB, CCIR					25 Hz sensor
	Cuemaster 77 MKV	2	7½-15	10½	NAB, CCIR	line	line			Portable
ITC	750 Series	1, 2, 4	3¾-15	10½	NAB	line	line, phones	direct hyster	2400'/1 min	Flip top head cover
	850 Series	1, 2, 4	3¾-15	10½	NAB or CCIR	line	line	direct hyster	2400'/1 min	Console or rack mount
MCI	JH-110B	1, 2, 4	3¾-30	14	NAB, CCIR			dc servo		Transformerless electronics; variable speed; auto sync; servo tension control
Nagra	E	1	7½	7½	NAB, CCIR	line, mic	line, speaker	servo		For broadcast remotes; one mic, one line input; convertible to two mics, mixing; full track mono
	IV-S	2	3¾-15	7½	NAB, CCIR	line, 2 mic	line, speaker			Pilotone track, two stereo tracks; built-in monitor speaker; wow/flutter .05 percent, THD approximately 1 percent
Otari	ARS 1000	2	3¼, 7½	10½	NAB, CCIR		line, phones	hyster syn		Play only, for automation; 25 Hz sensor op.
	MX-5050-B	2	7½-15	10½	NAB, CCIR	line, mic	line, phones	dc servo	2400'/1.5 min	Return to zero; edit control; overdub sync; VU and peak indicators
	Mk II	2, 4	7½-15	10½	NAB, CCIR	line, mic	line, phones	dc servo	2500'/1.5 min	¼" or ½" tape; plug-in heads
Panasonic (Technics)	RS-1520	2, 4	3¾-15	10½	NAB, CCIR	line, mic	line, phones	direct dc servo	2500'/2.5 min	Indicators all modes: closed-loop tape; tension control; auto edit functions; fine adj. bias and equalization
Pioneer	RT 2022	2	7½-15	10½	NAB	line, mic	line, phones	hyster syn	740m/2 min	Cont. variable bias; sync for overdubbing
	RT 2044	4	7½-15	10½	NAB	line, mic	line, phones	hyster syn	740m/2 min	Cont. variable bias; sync for overdubbing
Studer/Revox	Revox B 77	1, 2	3¾-7½	10½	NAB	2 line, mic	2 line, phones	ac	3600'/2.1 min	Integrated logic control; editing cutter
	B-671	1, 2	3¾-30	10½	NAB, CCIR	line	line	ac servo	2300'/2 min	Crystal capstan control; inductive tension control; auto rewind and restart; mode indicators
	A-80	1, 2	7½-30	12	NAB, CCIR	line	line	ac servo		Zero locators; varispeed; electronic tension control; mode sensing; programmable logic
TEAC	35-2	2	7½-15	10½	NAB	line	line	dc servo	1800'/2.6 min	Two-track head, additional four-track head for auditioning; VU and peak indicators; pitch control
Telex	1400	1, 2	1⅞-15	8¼	NAB	3 line, mic	line	dc servo	1200'/1.3 min	Solid state logic control; crystal control capstan speed; indicators for mode settings
United Research Labs	Model S	1, 2, 4	3¾-30	10½	NAB, CCIR	line	line			Dual capstan closed loop; also ½" tape

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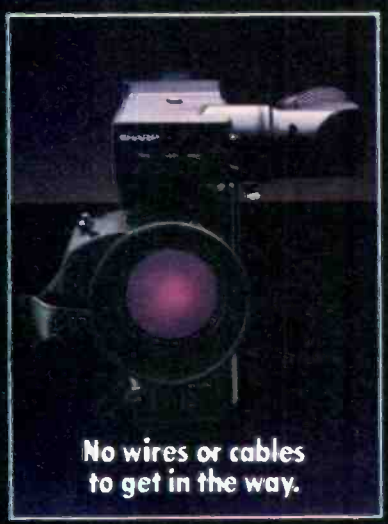

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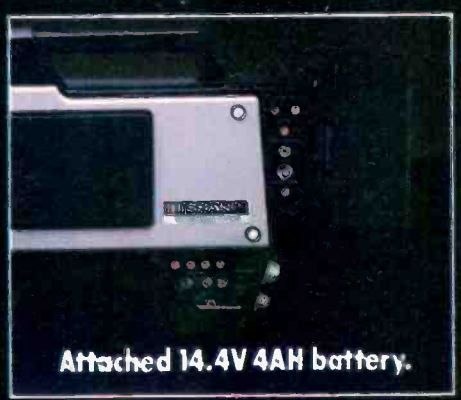

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MOBILE UPLINKS TAKE FIELD PRODUCTION FAR OUT

EFP

In what has been called the ultimate field production trip, broadcasters are seeking a direct link to the satellite network from anywhere. While recent mobile uplinks prove that the technology works, the FCC remains unconvinced about the concept.

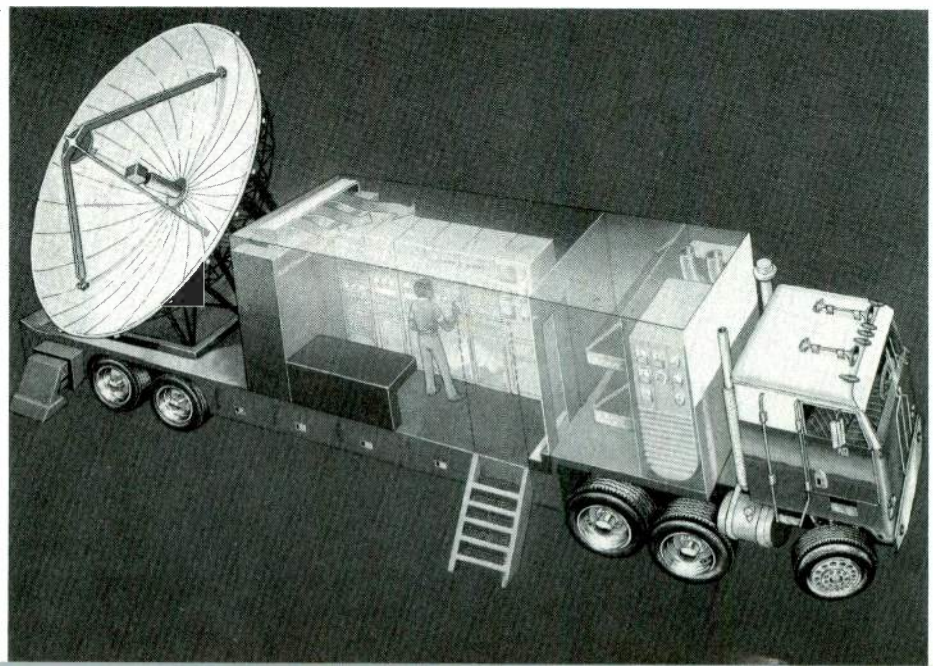
SATELLINK OF AMERICA, INC., the new subsidiary of the Robert Wold Company, will begin landing their "Flying Saucers," mobile satellite uplinks, at remote production sites around the country early this month or next. Trinity Broadcasting will first use its new Compact 42 unit to transmit its *Prayer Day* activities in Washington, D.C., this month to its other stations. Later, the unit will be moved to Trinity's Florida station where it will operate as a production facility and earth station until completion of their permanent facility at that location. After that, the Compact 42 will move on to routine field production tasks. Western Tele-Communications Inc. (WTCI) will be moving its 40-foot tractor/trailer unit around the country for remote broadcasts as it has been doing for the past year.

The result will be a massive increase in the number of remote broadcasts originating via the satellite network. Most of these remote satellite broadcasts will be major sporting events and political conventions. At first the networks will be the largest clients, but eventually individual stations and pay TV are likely to get into the act. What we have is a booming business — but it is hanging by a regulatory thread.

Currently, each use of such a mobile uplink requires a Special Temporary Authorization (STA) from the FCC. The Commission currently asks for 10 days' notice prior to granting an STA, which means that the user must know at least 10 days in advance of the event exactly where he is going to transmit from. Frequency coordination must be done for each site and while the spectrum traffic information at many sites is stored on computer so that coordination can be done quickly, there are many more sites that will require a complete work-up before making an application.

All of the mobile uplink operators *BM/E* spoke with agreed that obtaining an STA was no major problem. The problem is that the FCC is not bound to grant an STA, so that as more of these remote satellite broadcasts are done the statistical chance that interference problems will occur increases. If there is an increase in interference either with adjacent satellites or with terrestrial microwave communications, the FCC can decide to stop issuing STAs. With the blink of an eye this exciting new communications channel can be shut down.

Such a shutdown is viewed by most of the operators as a *very remote* possibility. Instead, operators are looking forward to some procedural changes at the Commission that would allow some type of "blanket authorization." Such a blanket authorization or license was the object of an application made by United Video of Tulsa, Oklahoma



Compact Video's Compact 42, the first of which has been sold to Trinity Broadcasting, offers a complete transmit/receive earth station on a 42-foot trailer body

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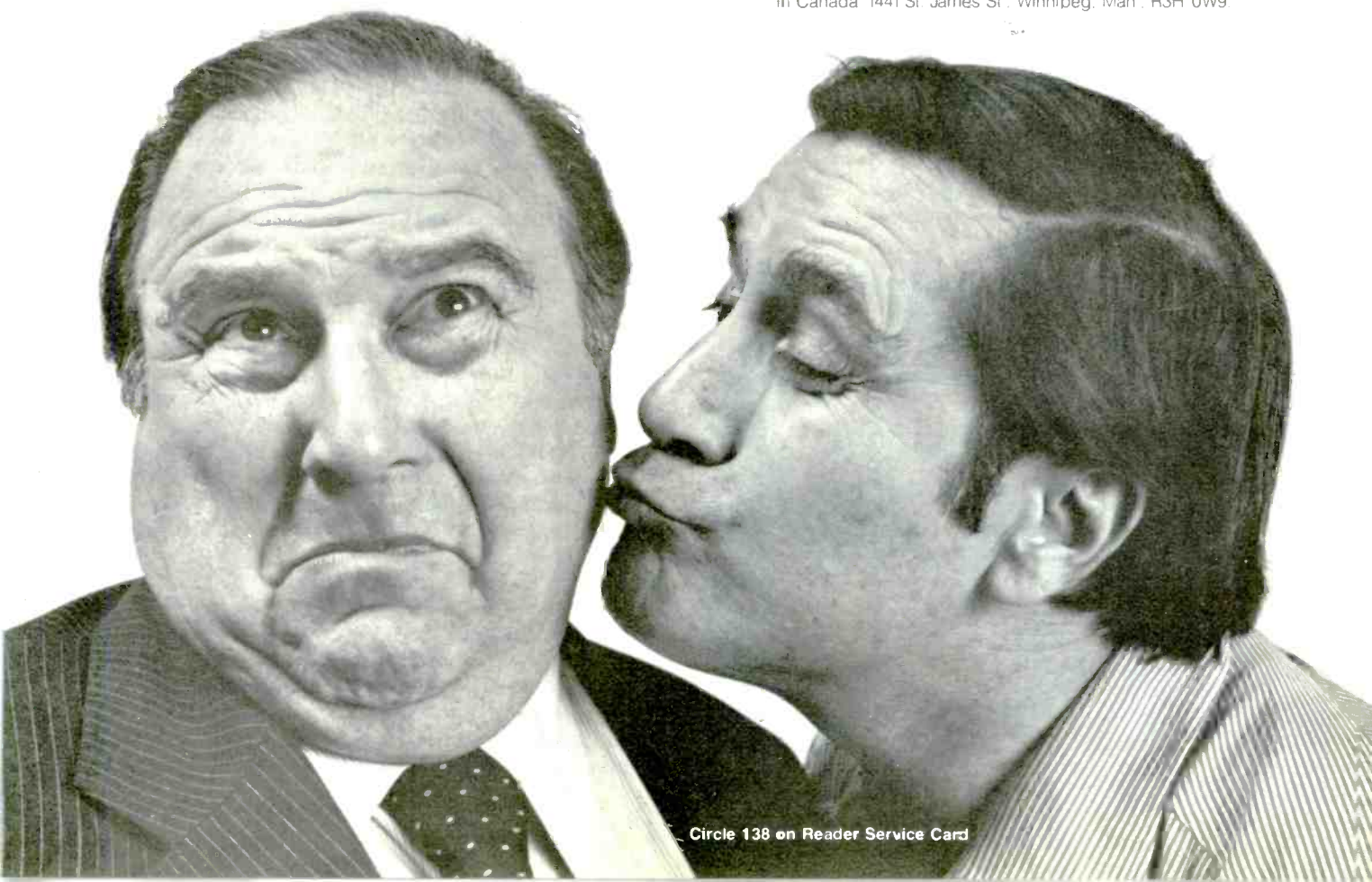

Circle 138 on Reader Service Card

Mobile Uplinks

more than a year ago.

According to Roy Bliss, Jr., chief executive of United Video, his company was prepared to spend about a half-million dollars to build a mobile uplink. Designed by Rockwell-Collins, the unit would be a tractor/trailer-based system using a 6-meter dish. But before making the investment, Bliss wanted some sort of assurance from the Commission that he had a viable business.

While United Video was told by the Commission that there "would be no trouble obtaining STAs," the uncertainties were too great to go ahead. Ron Lepkowski, head of the FCC's Satellite Radio Branch, said of the license application, "It's not a high priority at this time, though we are looking at it."

The dilemma faced at the Commission is that these mobile uplink earth stations use small aperture dishes, 4.6 meters to 6 meters. Such small dishes are prone to interference problems since they have wider beams, which increase the chance of adjacent satellite interference, and greater side lobes, which increase the chance of terrestrial interference.

According to Lepkowski, only two licenses for small aperture transmit dishes have been issued, "to off-shore oil platforms where there is less chance of interference with terrestrial microwave." Of the licensing approach, Lepkowski points out that only one other application has been filed, United Video's. The other operators seem content, at least in the short term, to go through the STA procedure.

Gary J. Worth, president of Satellink, said that his discussions with the FCC lead him to believe that they are "desirous of doing something" about some type of blanket authorization. Lepkowski said, "We would like to find a way of making it work (mobile uplink policy) but we are not certain of all the technical considerations."

So far, the track record for small aperture mobile uplinks is good. Lepkowski could not recall a single instance of a serious interference problem with any such installation to date. Nevertheless, Bob Ottman, director of marketing for WTCI, expressed some concern that as the number of operators expands, the chance of a serious problem increases and Commission attitude could change rapidly.

The technical picture

Technically the situation is this: the essence of a mobile uplink is "mobility." The smallest practical dish antenna is required to maximize mobility. WTCI's system, designed by Rockwell-Collins, uses a 4.5-meter dish manufactured by Andrews Corp. Satellink's unit, manufactured by Microwave Associates, uses a 4.6-meter dish by Scientific Atlanta. The Compact Video Systems unit, the first of which has been purchased by Trinity Broadcasting, uses a 5-meter dish designed by Compact Video and built by Scientific Atlanta.

Given that these smaller dishes may be more prone to interference, transmitter power is critical. Both WTCI and Compact have opted for 3 kW output, while Satellink uses a 700 W TWT. The WTCI and Compact Video transmitters are capable of saturating the transponder under nearly all conditions. According to Worth, Satellink opted for less power to reduce the size of the earth station and protect against interference, and because they felt that

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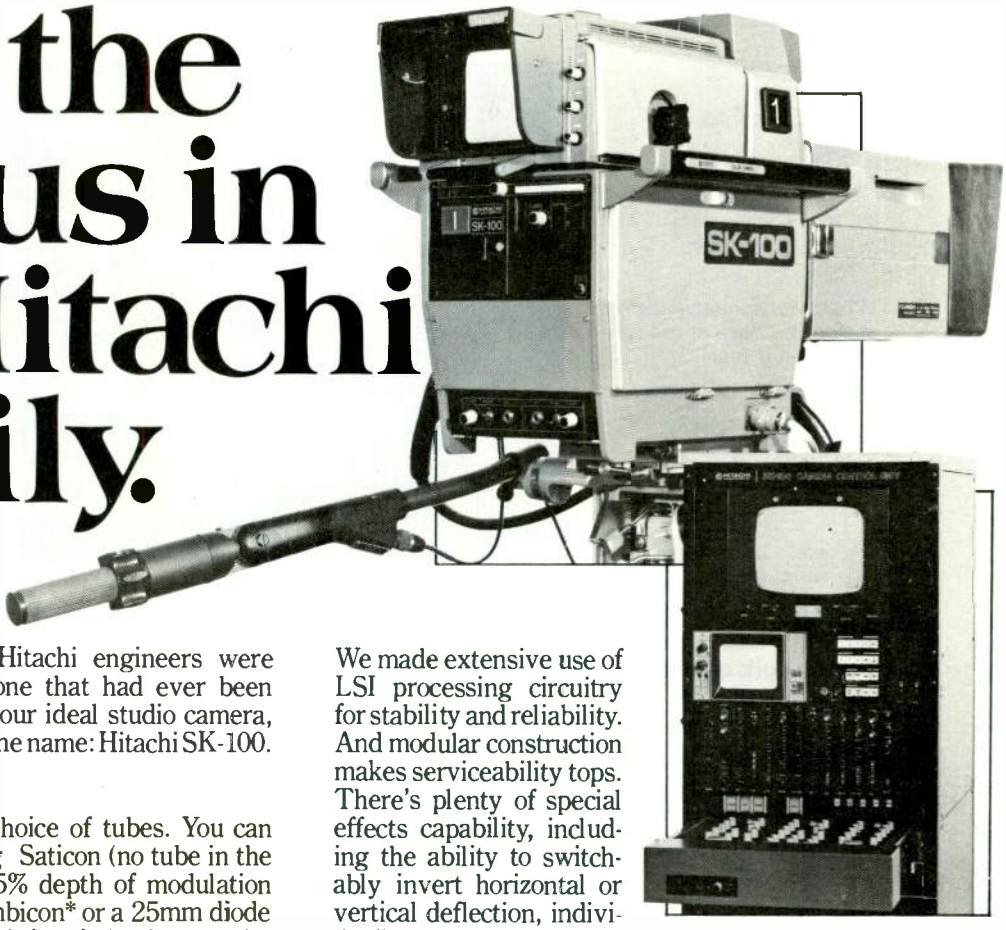

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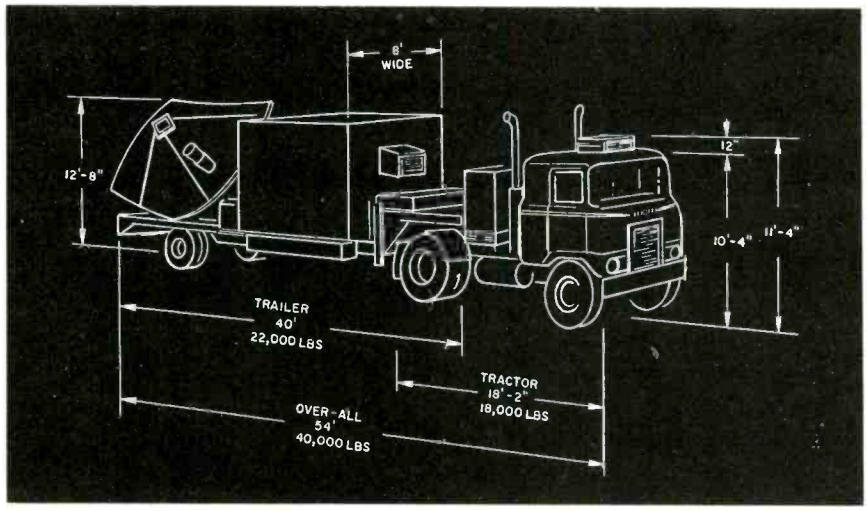

WTCI's transportable earth station has been in use for more than a year

clients for the system would have access to the larger earth receive-only stations (10, 11, and 15 meter) needed to achieve network quality signals at lower power.

Since most cable TV operators use five-meter RO earth stations, there is some question about their capacity to participate directly in a network situation where the uplink is one of the smaller mobile stations. Mike Sayovitz, chief engineer for Compact Video, however, states that small RO earth stations would be shut out only if the transmit signal fails to saturate the transponder. "As long as the transponder is saturated," said Sayovitz, "the satellite doesn't know if the transmit dish is 5 meters, 11 meters, or what."

If reaching small aperture RO earth stations were the objective, according to Worth, Satellink would simply set up a "double hop." In this situation, the signal is sent up from the small transmit station to the satellite and down to a large earth station. The large earth station then returns the signal to the satellite and sends it out on another transponder to the small earth stations.

Worth does not, however, see this as a major problem since his clients — which include the three networks,

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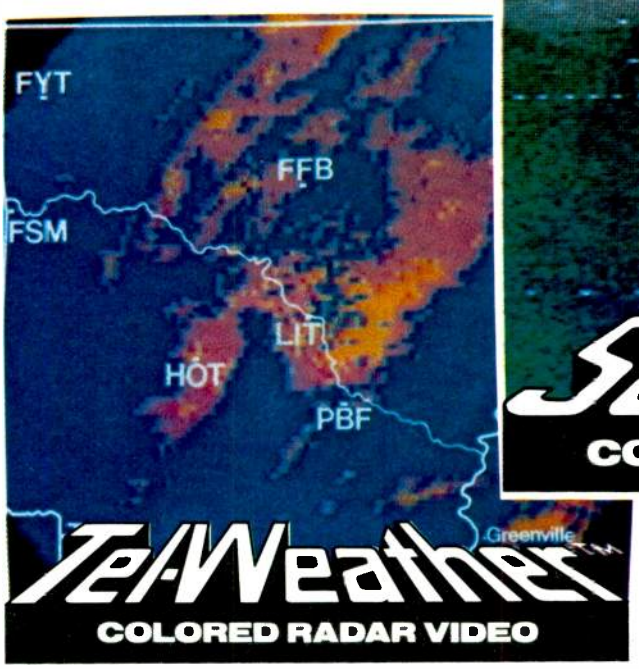

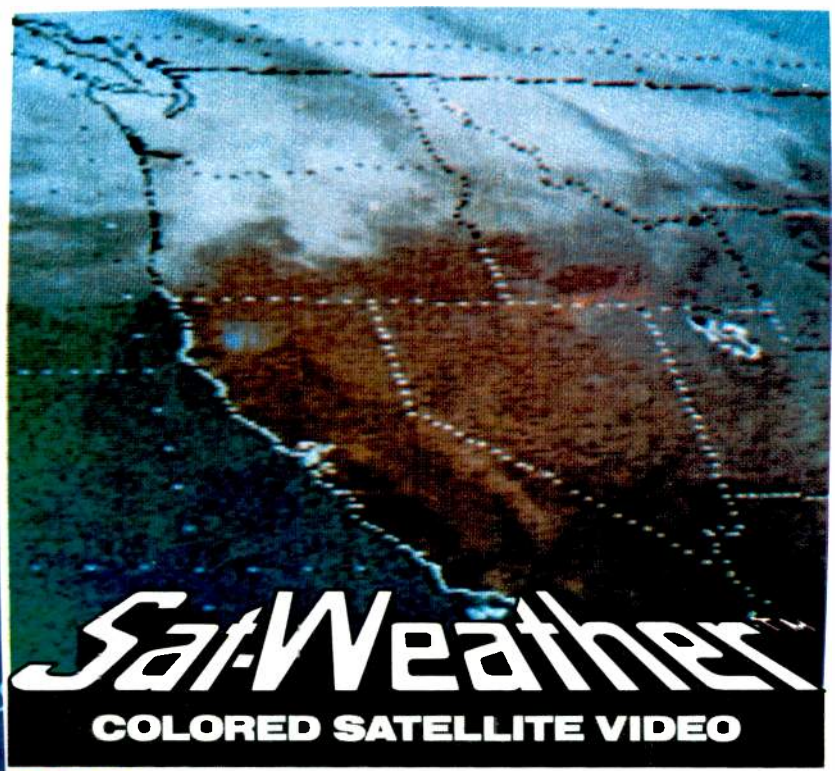

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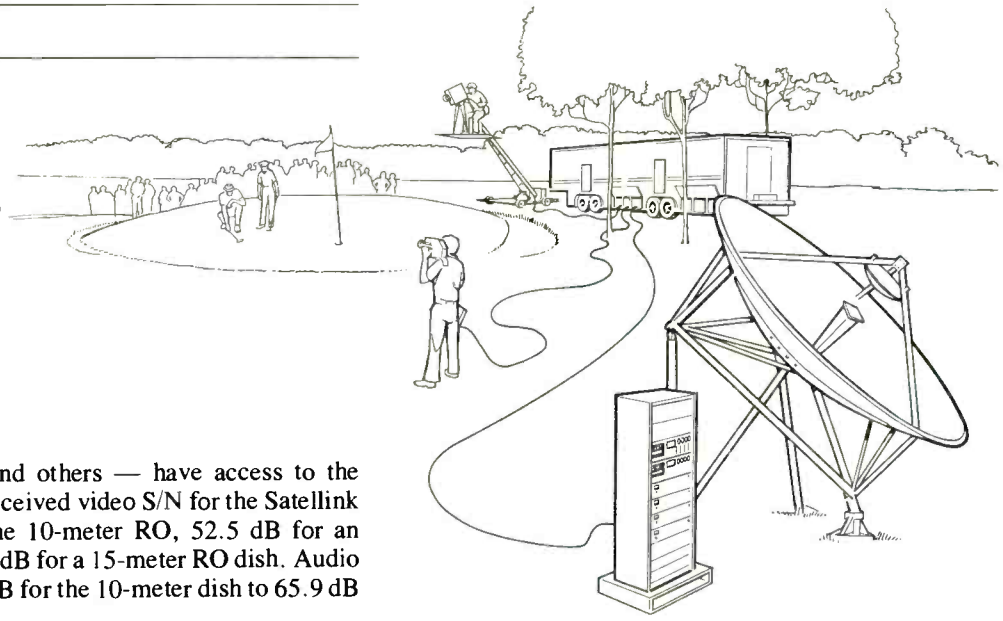
Mobile Uplinks



Satellink's "Flying Saucers" are air-transportable, though most uses are expected to be accomplished by surface means

Storer Broadcasting, and others — have access to the larger earth stations. Received video S/N for the Satellink system is 52 dB for the 10-meter RO, 52.5 dB for an 11-meter RO, and 55.2 dB for a 15-meter RO dish. Audio S/N ranges from 62.6 dB for the 10-meter dish to 65.9 dB for the 15-meter dish.

Another side to mobility

Since it appears that all three systems have beaten the technical problem of antenna size in order to achieve mobility only the less esoteric question of transportability remains. Both WTCI and Compact Video have opted for the tractor/trailer approach. Transmit and receive capability for radio as well as television is provided by each of the units though Satellink's design differs. The Satellink "Flying Saucers," however, are considerably more compact. The entire system breaks down for shipping into 11 instrument transportation cases. Total weight is 4.050 pounds, and the cases take up just 650 cubic feet of storage space, small enough to be shipped in the smallest commercial jetliner, the DC-9.

Worth predicts that most transportation, however, will be short-haul surface trips, in which case the entire system can be carried in a standard 14-foot enclosed truck. On site, the unit can be set up in 4– 5 hours, with the transmit electronics housed in a five-foot rack at the base of the antenna. This, according to Worth, fits in with what he perceives as a desire on the part of broadcasters to be as

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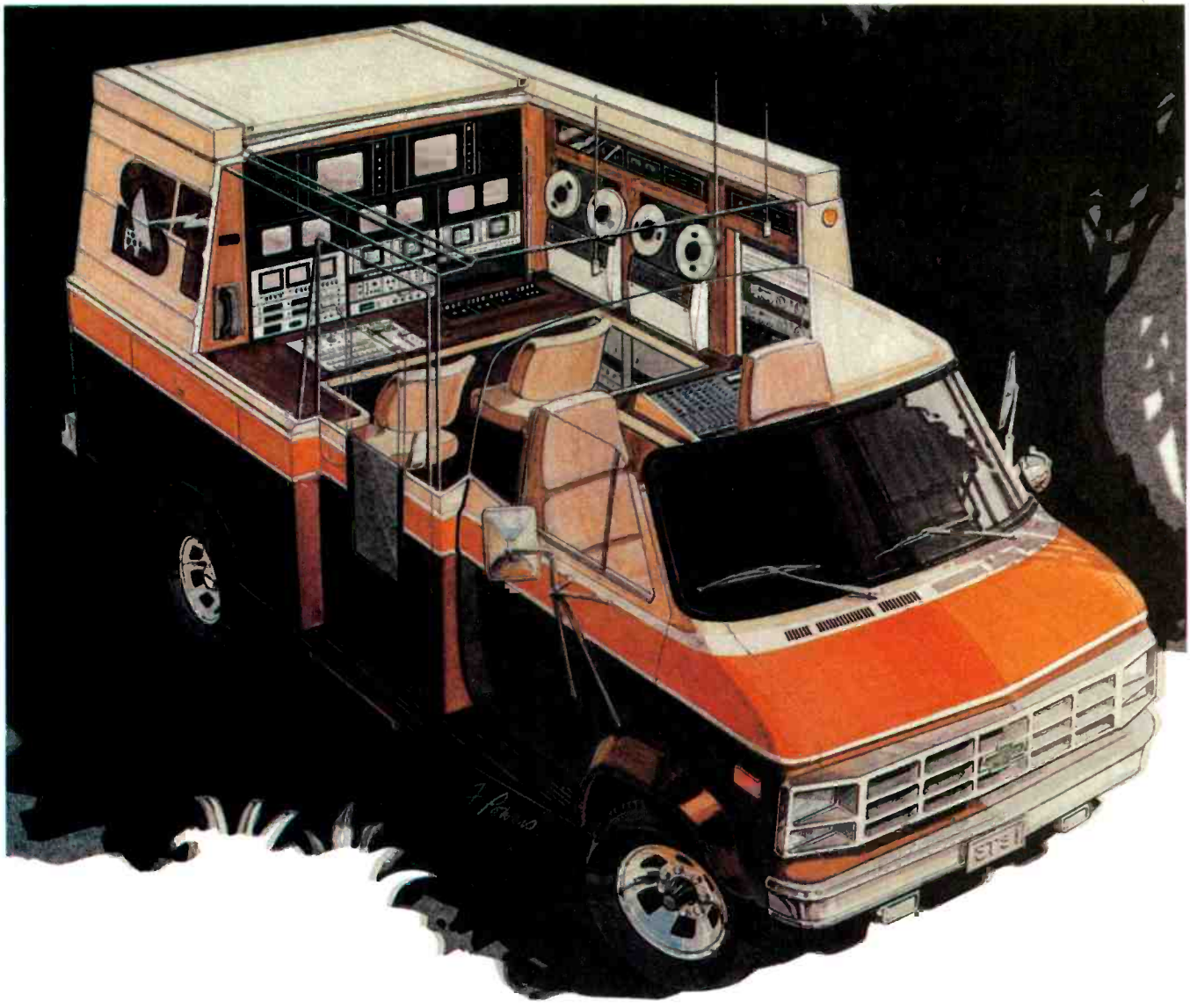

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Mobile Uplinks

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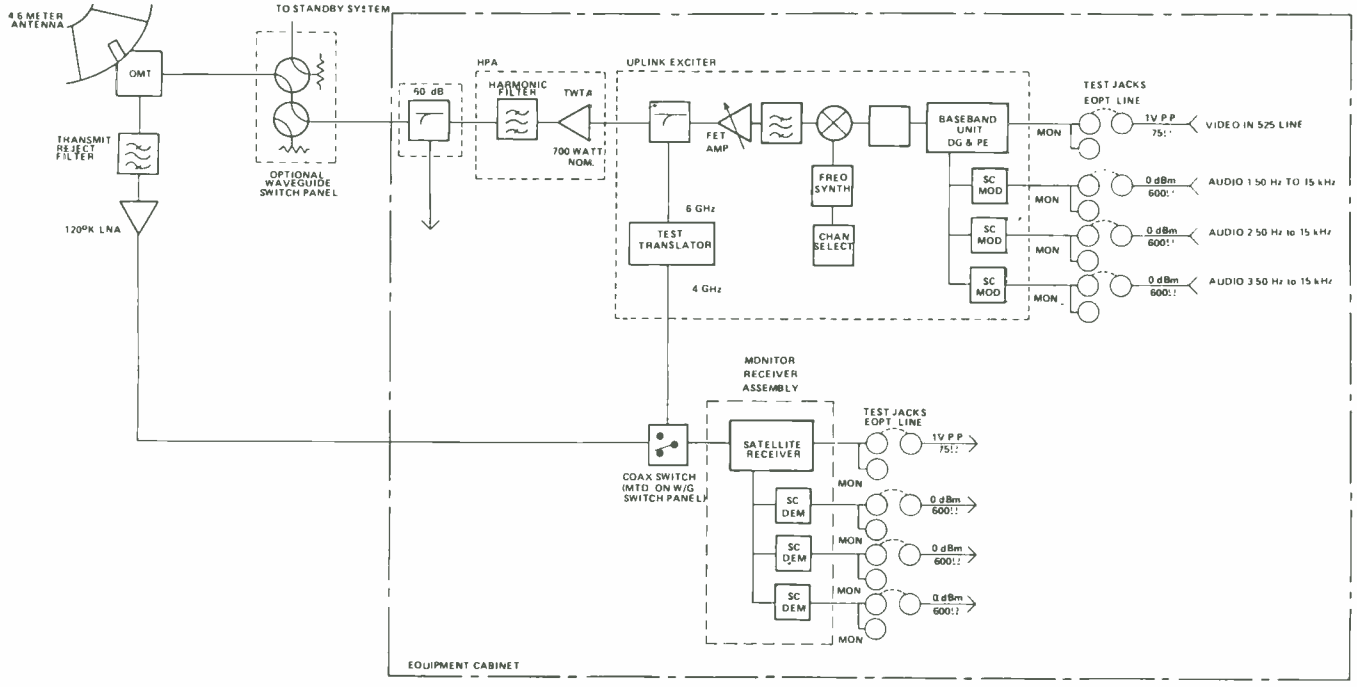
The tractor/trailer units, on the other hand, set up in about an hour. Since the likelihood is that destinations will be known well in advance both Compact and WTCI feel that transportation via airfreight is superfluous. Worth agrees that most jobs will be met using surface transportation and points out that Satellink will have units in Washington, D.C. and Los Angeles, but to him it is the fact that the system *can* be transported by air that is important.



Schematic of Satellink's "Flying Saucer." Unit provides both transmit and receive capability in an unusually compact package for radio and television

Mobile Uplinks

Another important point that should not go unnoticed is that Satellink and WTCI are in the business of supplying the uplink service, but Compact Video is in the business of constructing Compact 42s. It is very possible that, if a particular user wanted to use one approach or another, or some combination of both approaches, Compact would be more than willing to listen to a design proposal. As Oscar Wilson of Compact Video Systems said, "We want to build vehicles and systems for other people to use..."

There are advantages and disadvantages to both the air cargo and tractor/trailer approaches. While the trailer puts the system's transportation squarely in the hands of the operator, there are occasional hassles with federal and state trucking regulations governing weight and load size. Nevertheless, such trucking problems are encountered rarely, and since the Compact 42 is completely self-contained on the trailer, any fifth wheel tractor can be contracted to do the hauling. Other advantages of the trailer approach are that the trailer provides storage space for other equipment, can be employed with other production facilities, and provides housing for both the equipment and its operators. Such concerns as electrical power, air-conditioning, and temporary shelter for the "flying saucers" are handled separately by Satellink and should be of little concern to Satellink users.

Uplinks are common carriers

Both Satellink and WTCI are common carriers and as such charge for their services based on tariffs filed with the FCC. Satellink will offer the basic one-day use to occasional users for $10,000 per day, a $250 per hour transmission charge, and a $.50 per mile transportation charge. Contract users will pay $7000 per day, $150 per hour of transmission, and the same mileage transportation charge.

Worth currently has agreements with the CBS and ABC networks and is contracted with NBC for the political conventions. Says Worth, "I expect we'll be filing for 60 to 70 STAs this year." The schedule he is already looking at is booked for events running into 1981.

Ottman at WTCI explains that use of their unit costs $1000 per day, $450 per hour transmission charge, and a construction fee. Typically, use of the WTCI unit costs about $12,000 for the average event. About 90 percent of WTCI's uplink business is generated by the networks, according to Ottman.

While use of the services is expensive, Worth believes that more usage will lead to a lower per-use cost and the system will become more affordable for routine events.

The great hope of the mobile uplink service is that the FCC will devise some other regulatory procedure than the STA. Worth is confident that they will. He points out that when he spearheaded Mutual Broadcasting's effort to gain approval for some 500 earth stations at radio stations around the country, the Commission looked at having to handle a flood of applications or streamlining its procedures. The result — a permissive ruling allowing stations to install RO earth terminals without prior FCC approval. If demand for mobile uplink services escalates, the likelihood of the Commission finding a regulatory alternative to the STA procedure is increased. **BM/E**

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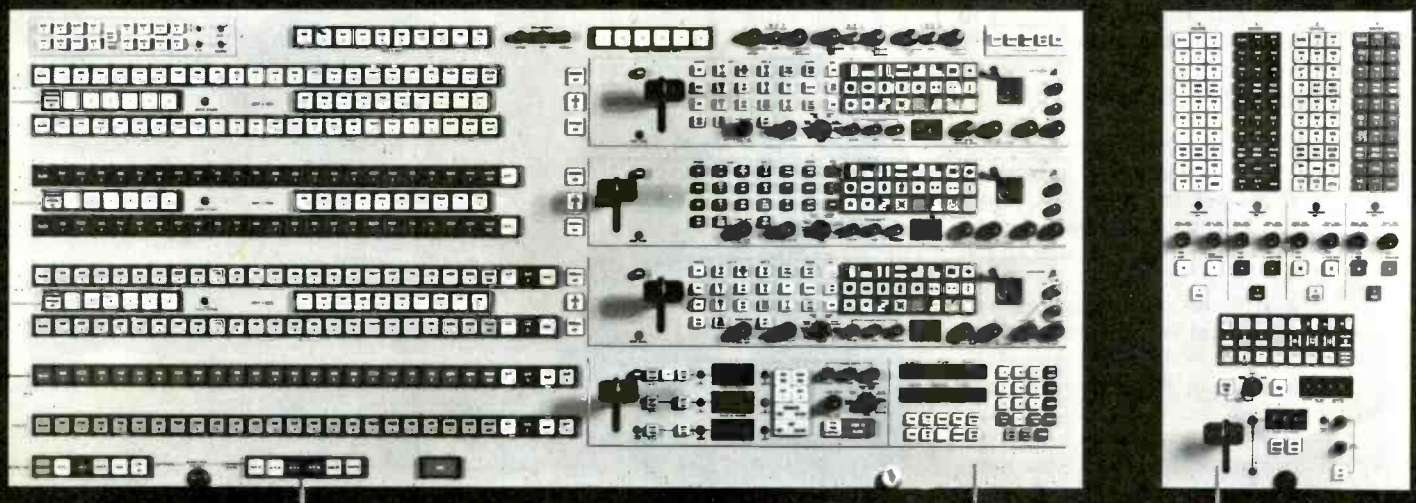

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BM/E NEWS FEATURE

AES, London, Demonstrates Audio Advance Is World-Wide

IN ATTENDANCE, in exhibitors, and especially in the topics and quality of the technical papers, the sixty-fifth Convention of the Audio Engineering Society, held February 25 through 28 at the Hilton and Park Lane Hotels in London, showed that intense activity in audio is not just a United States phenomenon but is spread around the world.

There were nearly 2800 persons registered for the convention, an increase of about 40 percent over last year's European AES convention in Brussels. There were 120 exhibitors, also an all-time high for a European AES show. The 50-odd technical papers were impressive for seriousness and comprehensiveness, addressing many of the topics that are in the center of audio interest today.

Of the seven papers describing work in the forefront of the advance to digital recording, three were from English laboratories, one from Japan, two from the U.S., and one from Austria. One of the English papers, presented by F. A. Griffiths of the Decca Record Company in London, told about the fully developed system in use there to make digitally mastered commercial recordings. Workers from the Victor Company of Japan described their development of a converter for putting PCM audio onto videotape recorders, indicating that the digital mode represented by Sony's PCM-1600 will grow even more rapidly in the future. Matsushita has also shown prototype units for this function.

Heinrich Pichler and Paul Skritek of the Technical University, Vienna, gave a detailed account of sample-and-hold design for the highest quality in A/D and D/A converters. Significant in another sense was the paper by M. J. Hawksford and K. J. Wood, of the University of Essex, telling how to construct high-quality conversion units at low cost.

The question of the cost of digital recording, in fact, dominated a seminar on the subject at which leading manufacturers of digital equipment and of high-grade consoles discussed the potentials of digital techniques with a full house, including many prospective users. The chairman was K. O. Bader of EMT-Franz, West Germany. On the panel were representatives of Sony, Enigma and Decca Records, Harrison Systems, Neve, Studer, the BBC, and the 3M Company.

A strong consensus emerged that digital techniques can now do just about anything wanted, not only in recording but in the control and processing of the signal. But the potential makers of digital control and processing units said to potential users, in effect, "Here is how much it will cost. We cannot afford to develop such expensive equipment on the *chance* that somebody might want to buy it. Order from us a digital console-processing system, for example, at this price, and we will build it." The prices mentioned were many times those of the best current analog systems; the promise of all-digital signal handling will apparently be hard to realize until costs have settled down substantially.

Two papers were concerned directly with broadcasting. One of them had been prepared by Kresimir Jakupek of the Yugoslav broadcasting organiza-

General view of exhibit floor, AES Convention, London Hilton Hotel, indicates the heavy attendance

"Hands on" invitation brings out strong response from exhibit viewers

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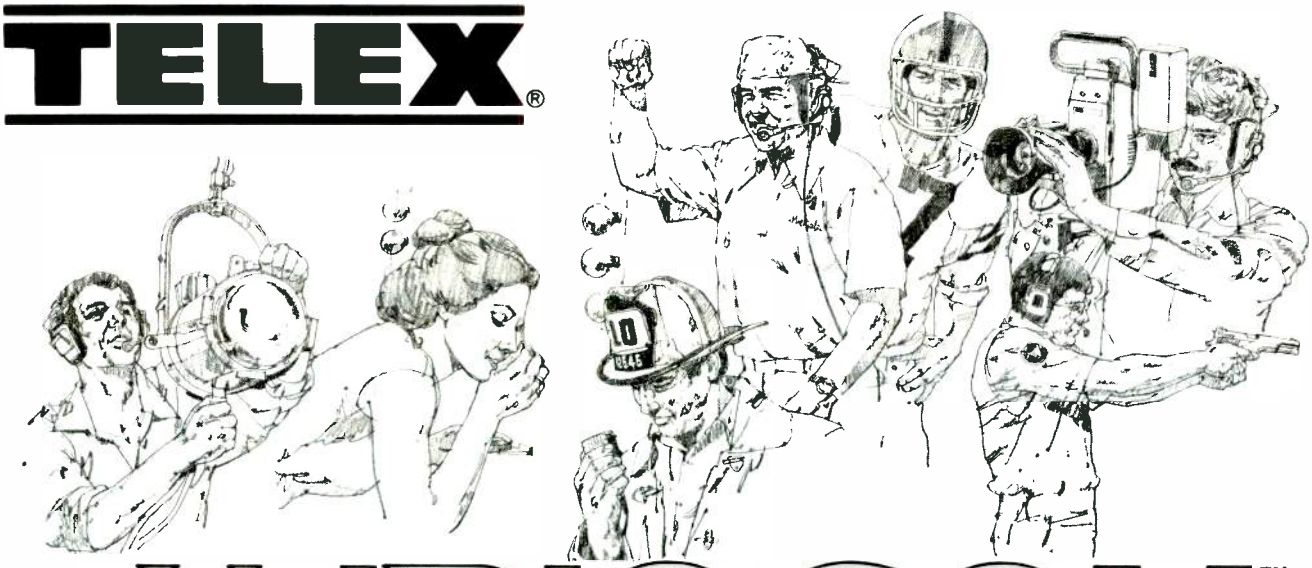

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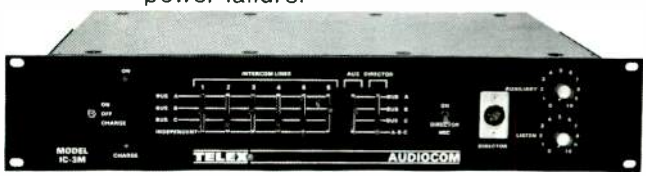

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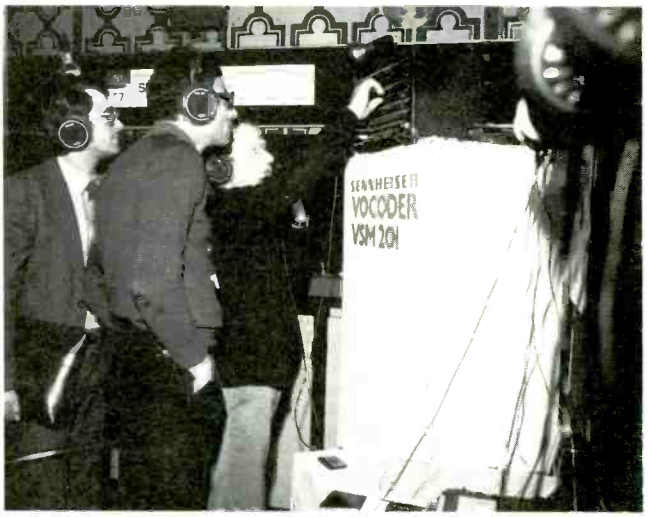
tion. The AES got an advance copy of the paper but Jakupek had to cancel his appearance just before the convention.

He describes an elaborate switching system for audio used at Split in Yugoslavia in September, 1979, for the Mediterranean Games. (Large-scale sports events have stimulated broadcasters mightily to develop highly elaborate control and switching systems.) The Yugoslav response to their sports coverage problem included a two-section switcher with 80 inputs and 64 outputs, one section for program material and one for cueing and control. Other features would be similarly familiar to American broadcasters.

A paper by Andrew Munro of MBI Broadcast Systems tells about a console inspired by a coming generation of new local radio stations in England. Because of very strict budget limits the console had to be inexpensive but also flexible and easy for the combo operator to run. Mr. Munro's design ideas seem well directed.

Several papers, plus one of the seminars, were concerned with subjective testing of audio devices, a subject that has long been high on the interest scale in England. A very strong "high fidelity" push in England goes back, in fact, to the days of the acoustic phonograph, when the hi-fi enthusiast built his own horns from thin wood or plaster. It is

BASF was one of tape makers on exhibit floor from the U.S. and many countries in Europe and Asia



Sennheiser Vocoder, artificial "voice," gets attentive listening

fascinating to see the English hobbyist fanaticism on sound, strong ever since the 1920s, transmuted into the great sophistication of today's schemes for making subjective testing accurate. Some other topics central to today's audio that were covered in the papers were: "surround sound" schemes, including the "Ambisonic" system under development at England's National Research Development Corp.; measurement of distortion of various kinds; multipurpose sound reinforcement in large halls; and a flexible system of "variable acoustics" at the IRCAM Center in Paris.

There were altogether between 20 and 40 papers that any engineer interested in audio, whether for recording or broadcast, would probably want to read. The interested engineer should write the Audio Engineering Society at 60 East 42 Street, New York, N.Y. 10017, for a complete list of the articles available in preprint form.

On the exhibit floor there were many consoles, analog tape recorders, and audio processing units of prime interest to broadcasters. Power amplifiers, loud-speakers, microphones, and test equipment were also present in plentiful quantity. Both Sony and 3M, the two firms now selling digital recorders, showed their digital lines. The exhibitor list included U.S. and English firms that are leaders in audio manufacture, plus a number of smaller British firms and firms from countries of Europe and Asia. **BM/E**

Intense consideration of one of many audio consoles at show

Test gear, as always, gets careful demonstration as viewer follows

SPEAK OUT

"Humor Is Necessary Behind The Scenes In TV Production," Says Bebe McClain

Editor's Note: Bebe McClain is president of B.F. McClain Productions, Asheville, N.C. McClain produces and directs broadcast, industrial, educational, and commercial productions.

ONE GREAT DRAWBACK of being constantly involved in production is that, although you do have opportunities to view other's finished productions, you rarely get the chance to observe them in action. Because of this I have often wondered if the atmosphere and means of accomplishing the end product varies from group to group, or if there are some things common to production and engineering crews everywhere.

It is my opinion that despite the varying factors of a production, be it feature filming, industrial production, or live TV network broadcast, there is one key element found in every crew no matter where they are located around the world. And that element is humor.

This humor is not blatant frivolity, nor is it at any time inattention to one's duties on the job. What it is is an attempt by everyone on the backside of those cameras to cut the tension and become one cohesive unit. It is an almost unconscious attempt by everyone involved to build morale and build it strong enough that when technical trouble appears (and rest assured that it will), the group can handle it together.

I have seen this seemingly spontaneous humor on every production I've ever worked on or visited and have seen how necessary it is to break the tension. It is only an observation, but read on and see if you recognize any of your group in this story.

Anyone who has ever visited a production set, or anyone who has ever worked in any capacity on a film or television broadcast, knows that the tension is so great during the actual filming or taping that it often borders on the unbearable. All people involved in the large films and broadcasts are professionals — experts in their fields. And, when those cameras roll, their expertise and their jobs are on the line. They are like cats poised for the strike. The directors typically hang inches over their chairs, often refusing to sit, but saving their stance in case of difficulty, at which time they will stand and demand action — and answers.

Producer/director Chirkinian gets a "happy birthday" surprise from his crew

During a live video broadcast, the technicians, especially the EIC, monitor not only the 10 or more camera feeds but also 10 or more waveform monitors. Everyone's eyes are searching, almost frantically, for any warning sign, any slight irregularity. If any of them were to ponder the myriad possibilities of equipment failure — from the cameras and mics through the miles of cable to the switchers, the discs, recorders, microwave beaming, phone lines, etc. — they would undoubtedly exit shrieking.

Having been involved with both film and videotape production, I think that broadcasting live must be the most frustrating.

I believe this is due to the highly technical nature of the equipment. Unlike film cameras, where you can actually hold the film, examine it, unjam the camera, etc., videotape's elusive signal can find a million electronic reasons to distort — and try as you may, you'll never hold that signal in your hand.

This is the very reason why humor plays such an important role behind the scenes. It can alleviate those constant tensions and worries that, if not put aside — at least temporarily — can eventually have everyone screaming at each other.

I was privileged to visit a CBS crew at the Kemper Open Golf Classic this past June in Charlotte, N.C., and not only watch the live broadcast, but also watch them rehearse. The broadcast was flawless and thrilling — but the rehearsal was unforgettable. As I watched them throughout that day it dawned on me that those cut-ups and harmless jokes were not unique to my productions. Suddenly I started watching for the signs of humor and began writing the incidents down. I realized that even though production methods might vary, there are and must be some constants. Humor is one of them and tension is the other.

CBS is fortunate to have a grand master of humor on one of its remote broad-

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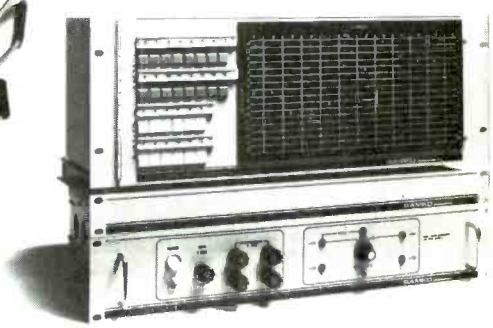

RAMKO

Brains, not brawn.

Speak Out

Bebe McClain, president of McClain Productions

cast crews. His name is Howard Purnich, better known as Howie, terror of the Vidifont. Without so much as walking a step, or engaging in direct conversation with even one person, Howie can keep the majority of the crew in stitches — lessening the tension — by moving his fingers.

Before going on the air, the CBS crew covering the PGA golf tour rehearses by having everyone man their equipment; the camera crew their cameras, the Vidifont operators their keyboards, and directors and their assistants their switchers. As the 11 camera operators found various sites around the course to home in on, Howie came up with appropriate comments on the Vidifont. I found them amusing, but I could soon see that there was method in this merriment. Obviously, practice is necessary. All the various equipment must be checked out and operable. What better way to do this than to let the camerapersons pick their own subjects? There was never any question concerning what they were training those 42:1 zoom lenses on as hundreds of young women, interspersed throughout the crowd, tripped about in brief attire befitting the 85° temperature. What better way to test all the equipment? And, what better way to relax Chirkinian, the producer/director, who was nervously pondering the mysterious malfunction of a switcher earlier in the day?

As another cameraperson came in close on a worker hopelessly trying to shovel six inches of water out of a sandtrap, Howie typed onto the screen: "Yalu River"; switching to another greens worker bailing out another rain drenched trap with a bucket, Howie chose to super: "Ole Man River, he don't say nothing."

A few moments later, after Chirkinian had lost communication with a

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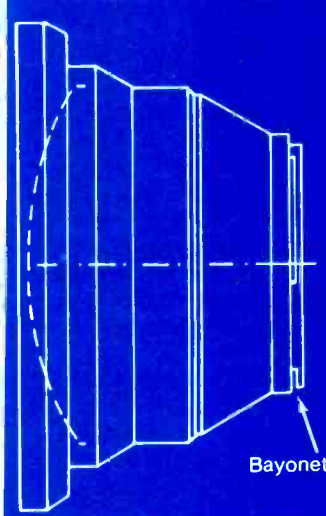
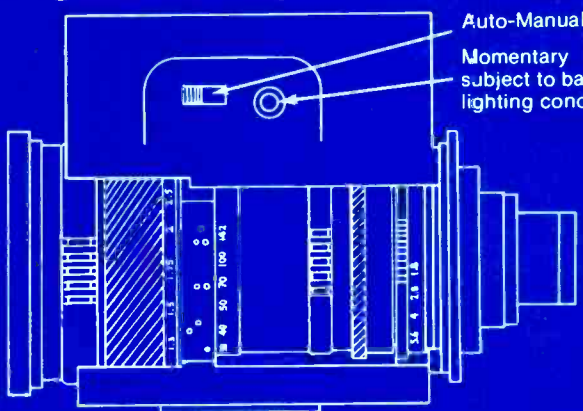
simplicity in engineering = reliability of performance



Bayonet mount.

Retrozoom: Front bayonet mount.
Maximum horizontal angle: 70°
Changes focal length to 7 — 105mm retaining f/1.8 aperture.
Retains full zoom capability.
M.O.D.: 0.30 meter (1 foot).

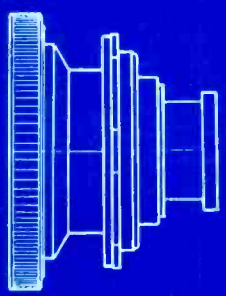


Auto-Manual Iris switch

Momentary Auto Iris button for subject to background differential lighting conditions.

VTR Switch

Servo/manual zoom switch enables either servo or manual zoom operation.

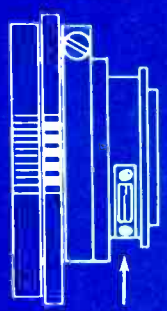


Range Extender

1.6X Range Extender changes focal length to 15 — 225mm, f/2.9

Second Range Extender (1.6X) may be mounted in tandem providing 2.56X factor, changing focal length to 24 — 360mm, f/4.7.

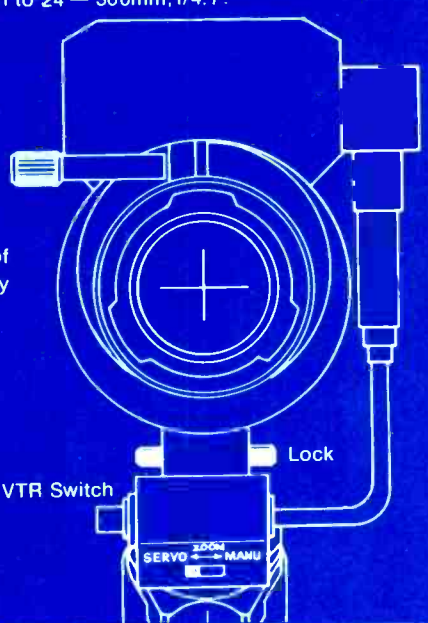
Rear Mount



Adjustable back focus mount with indicator

Servo zoom rate/direction thumb control. Maximum speed: 1.5 seconds.

Note: Location of controls may vary with model of camera



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Focal Length	9.5-142mm	7-105mm	15.8-240mm	15-225mm	24-360mm	25-375mm	41-615mm
Continuous Zoom Range	15X	15X	15X	15X	15X	15X	15X
Maximum Aperture	f/1.8-f/2.6	f/1.8-f/2.6	f/1.9-f/2.6	f/2.9-f/4.2	f/4.7-f/6.7	f/2.9-f/4.2	f/4.7-f/6.7
Minimum Object Distance	0.60m 2 ft.	0.30m 1 ft.	1.50m 5 ft.	0.60m 2 ft.	0.60m 2 ft.	1.50m 5 ft.	1.50m 5 ft.
Weight of Total Package: lens, iris/zoom, servoes, pistol grip, mount and attachments	2.5 kg 5.5 lbs.	3.8 kg. 8.4 lbs.	4 kg 8.8 lbs.	2.7 kg 6.0 lbs.	2.9 kg 6.4 lbs.	4.2 kg 9.3 lbs.	4.5 kg 10.1 lbs.

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cameraman and had verbalized his disgruntlement with the situation, Howie popped this message on the screen: "Memo to Chirkinian: Your vocabulary is crude and impoverished, but sufficient to express your thoughts." And, when the crew learned that it was Chirkinian's birthday, Howie appropriately penned across the monitor: "Happy Birthday, Kachadour" — and added: "(Armenian word for cruel vicious misanthrope.)"

All the cameras had been checked out and tempers had been kept in check while the engineers and technicians traced down the troublesome cables. The report also came through that the slight interference observed was due to lightning in the area — an "act of God." Nothing could be done about it but pray the storm moved out before airtime. And believe me, they all did pray.

Throughout the rehearsal, I witnessed many small signs of humor. The roving cameraman set up his camera on the lunch tent — so all could see exactly how the preparations were coming. Tony Filipi, the truck supervisor, had a sign that read: "Tony Filipi, Wagon Master." Near it another sign read: "Want to lose 40 pounds? Ask us how, next trip."

As they rehearsed the show's opening, Howie flashed up the name of a competing insurance company to Kemper Insurance Company and listed some of its special policies — such as those covering Idi Amin's reign and Richard Nixon's second term. When the cameras were trained on the big-name announcers, Howie relentlessly listed their names and added such things as "specialty — boring comments."

The clincher of the day came when a sound man, testing the parabolic mic, aimed it toward the two workers draining the sand trap just as one actually said to the other, "You can take this job and shove it!"

Soon it was airtime and every single piece of equipment had been put through its hilarious paces. As Howie told me later, "This humor serves a purpose. We go through rehearsal twice as fast, so when we're actually on the air we feel we've slowed down. It's easier that way. It also gets the crew relaxed. They're soon tense enough — they don't need to begin that way."

Yes, there is method in that merriment. The show was flawless. And, as the birthday boy, Chirkinian, stepped from the production van for the first time in five hours, 10 cream pies hit him in the face, all from his adoring crew — the same crew he yelled and cursed at during the broadcast. When the show is over (if it all comes out okay), all is forgiven and forgotten. The humor cancels out the stress — the show is better for it. It's truly a necessary ingredient.

This illustration is not unique. Every day all over this country and around the world production crews are out there working and facing constant technical problems. If anyone should ever wander onto such a set for a brief encounter and should protest the seemingly needless frivolities, do not let him leave but insist he stay all day. By the end of that day he will not begrudge the group its fun. He will see the important role this humor plays in maintaining morale during an otherwise tense production. Yes, the presence of humor behind the scenes seems universal no matter what the subject of the show. Everyone has to work together as a team and solve problems quickly. The humor is the catalyst that makes the group a friendly team. Everyone knows, "You can catch more flies with honey than with vinegar." **BM/E**

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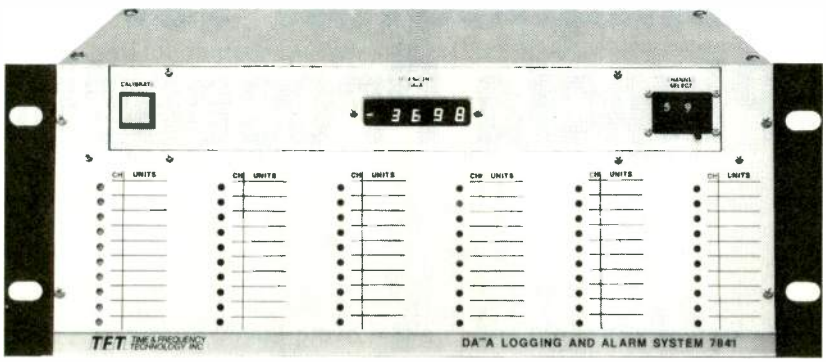

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INTERPRETING THE FCC RULES & REGULATIONS

Commission Terminates Plugola Proceeding

By Frederick W. Ford and Lee G. Lovett; Lovett Ford and Hennessey, P.C., Washington, D.C.

NO DOUBT, MANY READERS recall the payola scandal of the 1960s and 1970s, involving prominent disc jockeys and major record companies. The Commission dealt with yet another aspect of the problem of undisclosed financial conflicts when it recently terminated a long-standing rulemaking proceeding on the subject of plugola. In this proceeding, the Commission decided not to issue new rules on the subject of plugola. Instead, the FCC chose to rely on the previous *ad hoc* procedures. This article will address the distinctions between plugola and payola, outline the case precedents, and suggest ways to avoid the trap of plugola and the risk of a forfeiture.

Plugola vs. payola

What makes plugola different from payola is how one profits from a promotion. As the Commission explains the matter, payola cases involve the *direct* payment of money or other valuable consideration to persons who have influence in the selection of program matter for broadcasting certain material. For example, record company A pays program director B to include an inordinate number of recordings by company A's artists. The relationship only becomes an illegal one if program director B's station fails to disclose his relationship with the record company.

While payola involves a direct financial gain, plugola violations concern indirect rewards. These rewards are violations if they result from an undisclosed relationship between a broadcast licensee or employee on the one hand, and a company whose products or services are promoted on the other.

A situation of plugola exists if a disc jockey receives no direct payment for playing or promoting a recording company's records, but the disc jockey holds an undisclosed interest in the company and plugs the record to increase his financial return.

The Commission has been concerned with this problem for a long time. It opened the docket in this proceeding almost 20 years ago.[1] In the meantime, the Commission has issued some supplementary notices and even a "Tentative Report and Order." By its recent decision to terminate this proceeding, the FCC decided to continue to review questions of plugola on a case-by-case basis, rather than issuing any new rules.

A right to know

The underlying principle of Commission decision on this subject has been that "the public is entitled to know by whom it is persuaded" with regard to advertising and promotion.

Sections 317 and 508 of the Communications Act, as amended, speak directly to this right. Section 317 of the act outlines that whenever any consideration for a promotion is involved, the station must announce the relationship. Section 508 specifically requires disclosure of payments or other considerations received by the licensee or

[1] *Notice of Proposed Rule Making*, Docket No. 14119, FCC 61-637.

FCC Rules And Regulations

those in his employ for advertising or promotion.

The thrust of the Commission decision, in the absence of formal rules which prohibit plugola, has been to emphasize the importance of licensees avoiding a conflict between economic interests and the right of viewers and listeners to know who pays for their broadcasts. In the *Crowell-Collier* case, the Commission said:

> [I]f conflicts of interest in the form of outside economic interests of station personnel are not prohibited, then the personnel involved should be insulated from the process of program selection. When complete insulation cannot be effected, a licensee should take extraordinary measures to insure that no program matter is presented as a result of such practices.[2]

The Commission has not limited its findings on plugola to entertainment programming. In the *Gross Telecasting* case, the FCC cited a broadcaster who editorialized on a controversial matter. The licensee stood to gain by a particular decision. The Commission did not restrict his right to broadcast editorials, but did call on him to keep the public informed:

> Although the licensee's obligation to serve the public interest would not preclude it from editorializing on matters in which it has a significant personal interest as in this case, its decision to do so would impose a responsibility to reveal to the broadcast audience the extent and nature of its private interest.[3]

In yet another case, a network was cited for not exercising "reasonable diligence" in determining whether or not a news employee had legitimately performed his assignment. The commentator in question, who had interest in certain enterprises, broadcast commentaries favoring his interest while failing to disclose it.[4]

Conclusion

The Commission decision that terminated the plugola proceeding failed to communicate specific rules on plugola. The Commission indicated, however, that licensees should exercise all reasonable diligence to avoid conflicts on their own and ascertain whether or not their employees have potential conflicts between financial gain and decisions on programming material. Where potential conflicts exist, the licensee should insulate the employee from programming decisions or, alternatively, exercise special care that the listening and viewing public is not deceived as to the motivations of the broadcaster. Section 317(c) of the Communications Act requires this of licensees in the case of payola. The same applies with respect to plugola.

In sum, as the Commission explained the matter,

> We do not expect licensees to become guarantors that no undisclosed conflicts of interest exist; only, that they exercise reasonable diligence to ascertain whether they exist and, if they do, to make sure that disclosure of such interests is broadcast.

Whenever licensees are unsure as to a possible disclosure problem, they should review the Communications Act and the Commission's rules in conjunction with their communications counsel. **BM/E**

[2] *Crowell-Collier Broadcasting Corporation*, 14 FCC 2d 358-9, 8 RR 2d 1000 (1966).
[3] *Gross Telecasting, Inc.* 14 FCC 2d 239-40, 13 RR 2d 1067 (1968).
[4] *National Broadcasting Company*, 14 FCC 2d 713, 14 RR 2d 113 (1968).

How to condition problem power.

Line voltage is subject to fluctuations. Fluctuations which decrease the efficiency and reliability of such sensitive and costly equipment as computers and peripherals, medical diagnostic and monitoring devices, and sophisticated broadcast equipment.

Condition your power with Superior Electric's power conditioning team. STABILINE® Automatic Voltage Regulators, Shielded Isolation Transformers, Transient Voltage Suppressors, and Computer Regulators. In series or individually (depending on your particular needs), they intercept and virtually eliminate unexpected fluctuations before they damage components, cause erratic operation or reduce equipment life.

Use our simple chart to identify the power problems you are facing. Superior's power conditioning team can provide you with a safe, economical solution.

For product literature or technical assistance, contact your nearest Superior Electric representative. Or, call us direct. (203) 582-9561. The Superior Electric Company, Bristol, CT 06010.

Power problems and solutions

Problem	Impulse	Sag/Surge	Drop-out	Hi/Low Line	Common-mode Noise
Description	Short duration transient in voltage	Multi-cycle variation for voltage amplitude	Total loss of voltage for part of the sinewave	Voltage amplitude long-term average variation	Voltage signal occurring between either line and ground where no signal is expected
Typical Causes	SCR's firing, welders, ignitors, switching for load or power factor correction, fault clearing...	Load switching on/off such as air conditioners, machine shops, transformers, ovens...	Momentary line fault, utility switching operations...	Brownouts and other power cutbacks due to shortages, daily demand fluctuations, long line regulation problem...	Lightning, impulse noise, grounding faults, poor grounding practices, radio transmitters...
Solutions	Transient Voltage Suppressor	Voltage Regulator	Computer Regulator	Voltage Regulator	Shielded Isolation Transformer

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7. Normally Open Relay Contacts

Glenn P. Smith, Chief Engineer,
WBEA-FM, Elyria, Ohio

Problem: Need for another set of normally open contacts on a relay already in use.

Solution: The existing relay is a medium frame, telephone-type relay operated by 48 V dc. To add another set of low-current, normally open contacts to this relay, we glued a small glass-enclosed reed switch to the outside of the coil, opposite the normal relay contacts. Since the reed switches can be purchased for about 20 cents each (in a package of 10), this was a very inexpensive solution to our problem.

This idea should work with many different relays as long as they are operated by dc and the reed switch can be mounted near the coil, in its magnetic field.

8. Matching Nuvistors In TR70s

Martin Persaud, VTR Technician,
Global TV Ltd., Don Mills, Ont.

Problem: Intermittent banding and noisy video in our TR70 recorders.

Solution: There are a number of variables that affect the response of the recorded FM signal, including head wheel panels (tip penetration), RCO, and different kinds of nuvistors. During tests between head wheels and VTRs, I found that intermittent banding was caused when head wheels changed to another VTR for editing or dubbing or during normal use. Because of different tip pene-

This newsman is wearing two Beyer MCE-5 microphones. Find them; you might win them.

Not too long ago, the man in front of the camera was often hidden behind the microphone.

Now you can hide the microphone.

The new 6.5 gram electret condenser Beyer MCE-5 measures just 7 × 23 mm, yet it's a true broadcast-quality transducer that outperforms many of the giants.

Frequency response is guaranteed 20 - 20,000 HZ ± 3dB and SNR is 62dB. Pickup pattern is omnidirectional, with or without the detachable metal windscreen which reduces wind noise by 20 dB. Impedance of the MCE-5 is 700 ohms and EIA sensitivity is −142dBm with a maximum input of 116dB SPL. A special highly charged back electrode converter gives the MCE-5 a high output of −49dBm, unmatched in a mic of this size.

The MCE-5 can be connected directly to a Beyer pocket-size wireless transmitter, or an optional battery pack for use with 12 or 48 volt phantom power lines. Two special versions of the MCE-5 accept 5.6 volt batteries in their connectors for direct connection to any amplifier or recorder.

Voice quality is excellent, when used indoors or out. And the frequency is contoured to eliminate chest and clothing noises.

The MCE-5's dark matte finish won't reflect even the hottest studio lights, and its tiny size makes it easy to conceal or camouflage, like on the newsman in our photograph.

Ten Microphones Awarded! Take a good look. Study him closely and tell us where you think the mics are. If you're right, your entry will be part of a random drawing and you may win one of five pairs of MCE-5s. (Each MCE-5 normally sells for $160.)

Send this entry form (or a photocopy) to "Contest" c/o Burns Audiotronics, at the address below. Enter as often as you wish, but only one coupon per envelope. All entries must be received by June 1, 1980. No purchase is necessary. Contest is not open to employees of Burns Audiotronics, its sales representatives, dealers or distributors.

Winners will be announced in professional broadcast publications, or for a list of winners, send a self-addressed stamped envelope to Burns after June 1, 1980.

I think the Beyer MCE-5 microphones are hidden _____

_____ and _____

Name _____

Title _____

Station _____

Address _____

City _____

State _____ Zip _____

Beyer Dynamic

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5-05 Burns Avenue,
Hicksville, NY 11801
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tration and RCO, there is no control over the gain of nuvistors in the preamp.

I found that matching the FM levels (RF) by changing the nuvistors during a head wheel lineup with test tape can result in a very good picture. Nuvistors for the required head will go a long way because if they are low or noisy for that head, they can be used on another head wheel. Keep bins marked "new" and "old" for your nuvistors and select between the two for the best match.

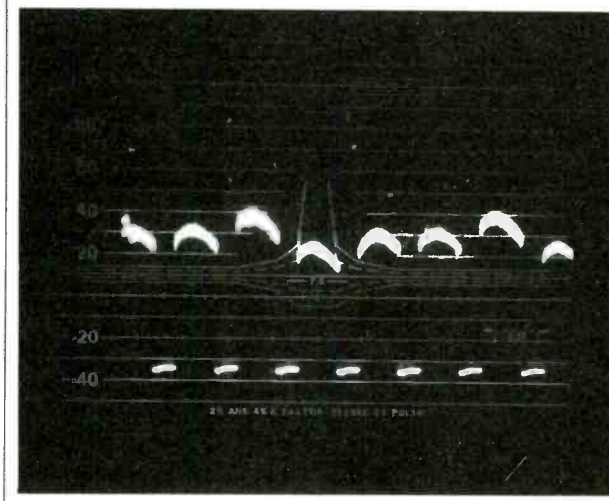


Figure 1. Before matching nuvistors...

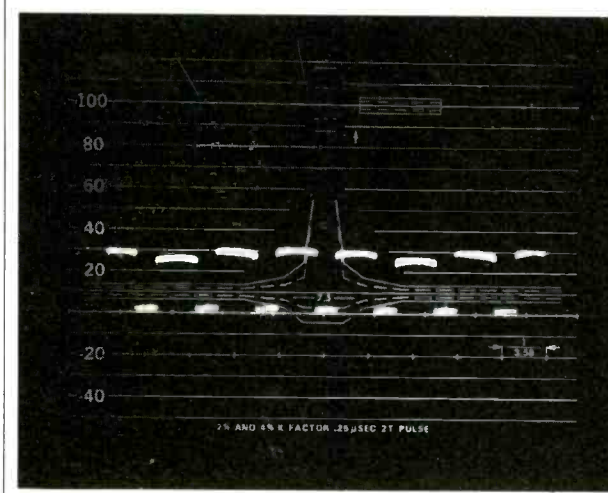


Figure 2 ... and after

Figure 1 shows normal FM for any VTR; the operator is complaining of banding (head wheel tip is around 1.9). Figure 2 is the same VTR and head wheel after matching the nuvistors.

I know it takes more time to match the nuvistors, but it is worth it for the TR70.

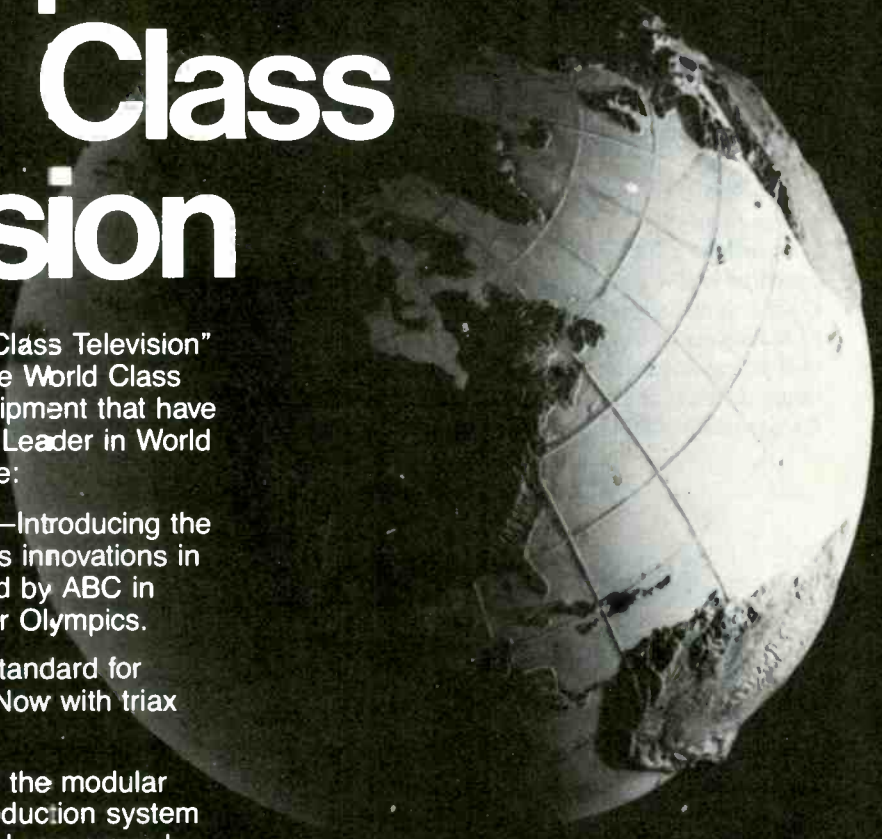
9. Multi-Pair Interstudio Cables

Jim Purcell, WFHR/WWRW, Wisconsin Rapids, Wisc.

Problem: To organize interstudio audio cables.

Solution: After removing all nonessential cables from our over-stuffed cable troughs I installed a multi-pair shielded cable, tying down the ends to terminal blocks in

Come up to World Class Television



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the equipment racks. Then, in painless "bite-sized" chunks, I transferred the audio lines to the multi-pair cable and removed the old wiring. Now nothing remains in the troughs but the multi-pair and a few power lines.

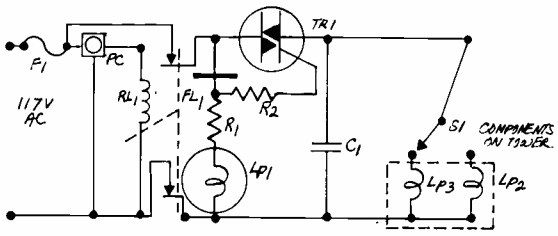
I used Executone intercom cable for this job. The cable comes in various sizes, depending on the number of pairs. It crams more individual shielded pairs into a small space than individual cables and has only one shield wire to be concerned with. It also has non-shielded pairs and a pair of heavy (size 16) wires for power for relay chassis, etc.

10. Tower Beacon Flasher

J.P. Robillard, Chief Engineer,
KLUV-AM, Haynesville, La.

Problem: To build a tower beacon flasher with no moving parts.

Solution: This is my improvement on a circuit that appeared in *BM/E* in September, 1974 and January, 1975. Unlike those two presentations, it has the unique feature of having no moving parts. A quick look at the schematic will reveal conponent FL_1. This little device, not much larger than a quarter, is the same flasher unit found in store display cases where a standard 110 V ac 25 to 100 W bulb is made to flash without the aid of breaking mechanical contacts. This device fits into a standard light bulb socket, or it can be wired into the circuit by soldering leads to each side. The flash rate is 42 flashes per minute. This improvement should eliminate the electric motor, cam, and switching contacts.



Robillard's tower beacon flasher

Parts for the circuit are as follows: F_1, 30 amps; PC, photoelectric cell; FL_1, flasher (see text); RL_1, 120 V ac DPST relay; R_1, 200 ohms 20 W; R_2, 4.7 K 5 W; TR_1, SK 3522 or ECG 5695 Triac; C_1, 0.4 μF 600 V dc; S_1, DPST 30 amps capacity; Lp_1, 15 W bulb; Lp_2 and Lp_3, 3000 W beacon. S_1 is included in order to switch from one beacon to the other in case one fails. **BM/E**

Rules for BM/E's Great Idea Contest

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1980 Entry Form

Name _____ **Title** _____
Station Call Letters _____ **City** _____
State _____ **Zip** _____
Telephone No. _____
Licensee _____
Class of Station at which idea is used (check one)
TV _____ **FM** _____ **AM** _____
Category: Audio ___ **RF** ___ **Video** ___ **Control** ___

Objective or Problem: *(In few words; use separate sheet for details)*

Solution: *(Use separate sheet—500 words max)*

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

1. Eligibility: All station personnel are eligible. Consultants to the industry may enter if the entry indicates the specific station or stations using the idea or concept. Manufacturers of equipment or their representatives are not eligible.

2. How to Enter: Use the Official Entry Form on this page or simply send *BM/E* a description of your work. State the objective or problem and your solution. Include diagrams, drawings, or glossy photos, as appropriate. Artwork must be legible but need not be directly reproducible and not exceeding three in number. Camera reproducible material is preferred. Length can vary, but should not exceed 500 words. *BM/E* reserves the right to edit material. Entry should include: Name, title, station affiliation, and the class of station — TV, FM, AM. Indicate if idea is completely original with you.

3. Material Accepted for Publication: *BM/E* editors will make all decisions regarding acceptability for publication. If duplicative or similar ideas are received, *BM/E* editors will judge which entry or entries to accept. A $10 honorarium will be paid for each item published.

4. Voting: Every reader of *BM/E* is entitled to rank the ideas published. This can be done on the Reader Service Card in the magazine or by letters or cards sent to the *BM/E* office. To vote, readers should select the three ideas they like best and rank them 1, 2, or 3.

5. Winners: Top rated entries in the year-long tally will become winners in each of the three major categories (AM, FM, TV). Final winners will be picked in February, 1981, and announced in the March, 1981, issue of *BM/E*.

6. Prizes and Awards: Three top prizes will be awarded: a programmable electronic calculator will be awarded for the highest rated entry in the respective categories of AM, FM, and TV. Ten engineering slide rule calculators will be awarded as secondary prizes for the highest rated entries in the following additional categories (top three winners are not eligible for these prizes): audio (three prizes, one each in the AM, FM and TV categories); RF (three prizes, on each in the categories of AM, FM, TV); Control (three prizes, one each in the AM, FM and TV categories); Video (one prize in TV).

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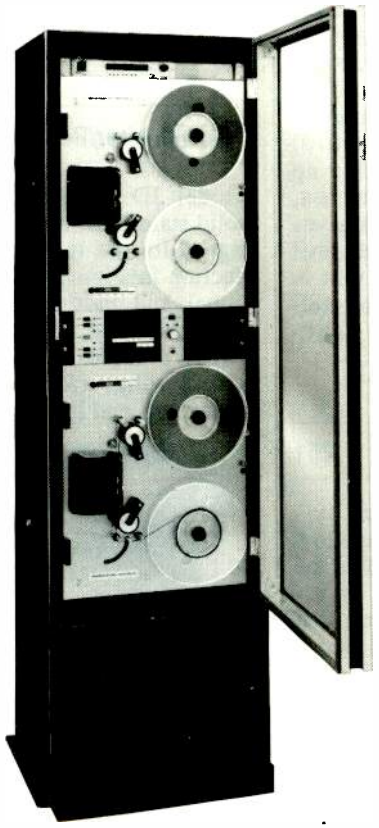

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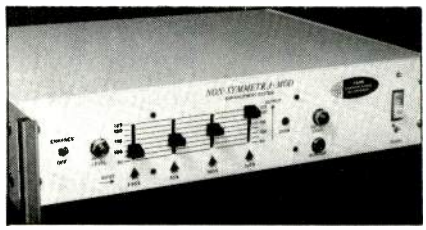
Audio Console 250

Model 8108 offers up to 56, 48, or 32 inputs, each with parametric comprehensive equalizer, filter, and up to 48, 32, or 24 track inputs. Microprocessor-controlled signal routing is via a touch-sensitive control assignment panel that includes entry and recall facilities to any of four integral memory stores. Complex control assignment patterns can be called up from memory at the touch of a button, and a unique interrogation system gives the operator instant readout of channel and track configurations. The unit is fitted with the NECAM computer-aided mixdown system. NEVE ELECTRONICS INTERNATIONAL, LTD.

AM Signal Enhancement 251

Non-Symmetra Mod enhancement system for AM signals is designed to allow the broadcaster to custom-enhance the signal for increased coverage. It accomplishes this by producing a more fully modulated signal with a clean, low distortion sound and significantly



purer sideband structure than that produced by the use of clippers, according to the manufacturer. The unit, Model NSM-125, produces 125 percent positive modulation and is compatible with normal audio processors. It directly feeds the AM transmitter, making it the final step in the modulation processing system. $1965. KAHN COMMUNICATIONS, INC.

Satellite Receive Antenna 252

Model 8006 is a three-meter satellite earth station antenna for data, audio, and video receive-only applications. It consists of compact components that can be economically transported and assembled, and requires no special handling equipment for installation at remote sites and on rooftops. The single axis mount provides structural rigidity and allows the antenna to be pointed with a single adjustment to any two satellites in the 90° to 136° arc with no pointing error. Similar pointing adjustments can be made in the 70° to 90° arc with a single strut change. The maker also offers a pier foundation mounting kit to minimize installation costs. SCIENTIFIC-ATLANTA, INC.

Color Monitor/Receiver 253

Model JD-975WV 19-inch diagonal solid state color monitor/receiver is designed for use in TV stations and production facilities, as well as for educational and industrial applications. A front-mounted, three-function mode switch provides a full selection of off-air viewing, electronic-to-electronic recording, and line preview monitoring

from an auxiliary CCTV source. Other features include an electronic keyboard varactor tuner with LED readout, precision in-line slotted mask picture tube, automatic light sensor, and an exclusive new comb filter with charge-coupled delay line to enhance vertical detail, improve bandwidth, and eliminate cross-color and edge dots. About $400. RCA SERVICE CO.

Video Support System 254

The Sachtler video support system includes fluid heads, tripods, and shoulder supports, all designed for professional use in a wide variety of climatic and environmental conditions. Fluid heads incorporate the patented, encapsulated Hydro-Disc vernier for pan and tilt control and touch-and-go quick release/attach plate. Tripods are made

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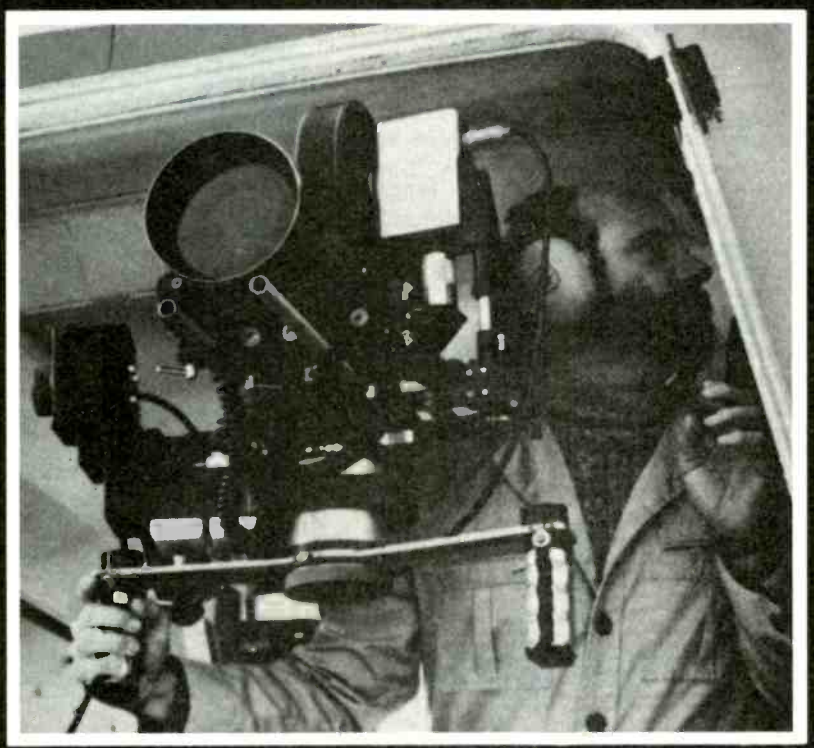

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The cameraman, free to concentrate on his shot, zeros in on the tiny ground target. Racking the zoom lens out to telescopic extreme, he holds the subject motionless in the center of the crosshairs. At the same time, your pilot does a slow, 360-degree turn around the area, finishing with a side pull-away to bring home the perfect shot. Get the picture?

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Audio/Video Switcher 255

The model VAS-10 self-contained broadcast-quality audio-follow-video switcher is intended for use as an input selector for VTRs or as a monitor switcher. Video switching is in the vertical interval by means of a signal derived from outgoing video. In the absence of vertical drive, the switching automatically reverts to a random mode. Switch point is adjustable from line 6 to line 12. Video inputs are bridging loop-through. An internal eleventh crosspoint and control allow up to 10 frames to be interconnected for input expansion. Crosspoint control is by momentary ground from either the front panel switches or from an optional remote control panel. Crosspoint tally is returned to the remote panels via the same wires. AVL DIGITAL LTD.

Condenser Mic 256

Model EM-101 is an extremely compact electret condenser microphone with an unusually small diaphragm (0.2 by 0.3 inches) that gives it excellent

transient response and transparency, according to the manufacturer. It can be easily positioned to take advantage of the enhanced sound pressure field near reflecting surfaces, while eliminating the associated sound coloration. Frequency response is 20 to 15,000 Hz ±1.5 dB; noise level is 25 dB SPL A weighted. Power required is 48 V phantom, output is 150 ohms balanced, and sensitivity is −47 dB. COUNTRYMAN ASSOCIATES.

Character Generator Memory 257

The D-4500 mini-floppy storage device is a random-access character generator memory unit with a unique mode that allows preprogramming of up to 100 program steps. Intended for use with the maker's D-2000, D-2500, D-3000, and D-3016 character generators, it stores up to 400 pages of text. A subtitle mode provides storage and random access for up to 4000 individual lines of titling. Program mode allows the stacking of addresses in or out of sequence; the only step required for playback is to depress the unit's READ button. Animation mode and roll or crawl from disc are featured when used with the D-3000 or D-3016. Second disc drive is optional, and a second keyboard and remote keyboard are available. 3M CO.

Camera Pickup Tubes 258

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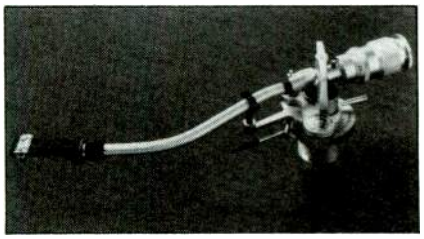
Broadcast Equipment

studio, ENG, and EFP cameras. The new models are the 30 mm 78XQ, the one-inch S73XQLC, and the ⅔-inch 74XQLC. Capacitance in these new tubes has been lowered to 3 to 5 pf, versus 15 pf in previous tubes. According to the maker, they offer very high resolution, low lag, and beam reserve for highlight handling. AMPEREX ELECTRONIC CORP.

Phono Tonearm 259

Model EPA-100 features a variable dynamic damping system that permits the user to "tune" the arm for compatibility with most currently available cartridges. Its extremely stable four-point gimbal suspension employs ruby



ball bearings to maintain static friction at 5 mg or less for movement in any direction. The arm shaft is made out of titanium nitride, which is light and highly resistant to flexing and resonances. Other features include helicoid tracking force and arm height adjustments, heavy zinc diecast arm base, light vibration-proof aluminum, easily adjustable anti-skating control, spring-loaded steel ball clamp for arm rest, and low-capacitance phono cables with gold-plated connectors. TECHNICS BY PANASONIC.

Switcher Automation 260

Model 7200 "Autodrive," when teamed with the maker's 6112 production switcher, performs operations ranging from simple transitions to intricate effects. It can simultaneously control fader arm positioners, hue, and luminance; select patterns; vary softness or border width; select sources, modes, and keys; modulate patterns; and control chroma key for both M/E systems on the 6112. The 7200 functions on the automatic learn and store method while actually reading the switcher control panel and then storing

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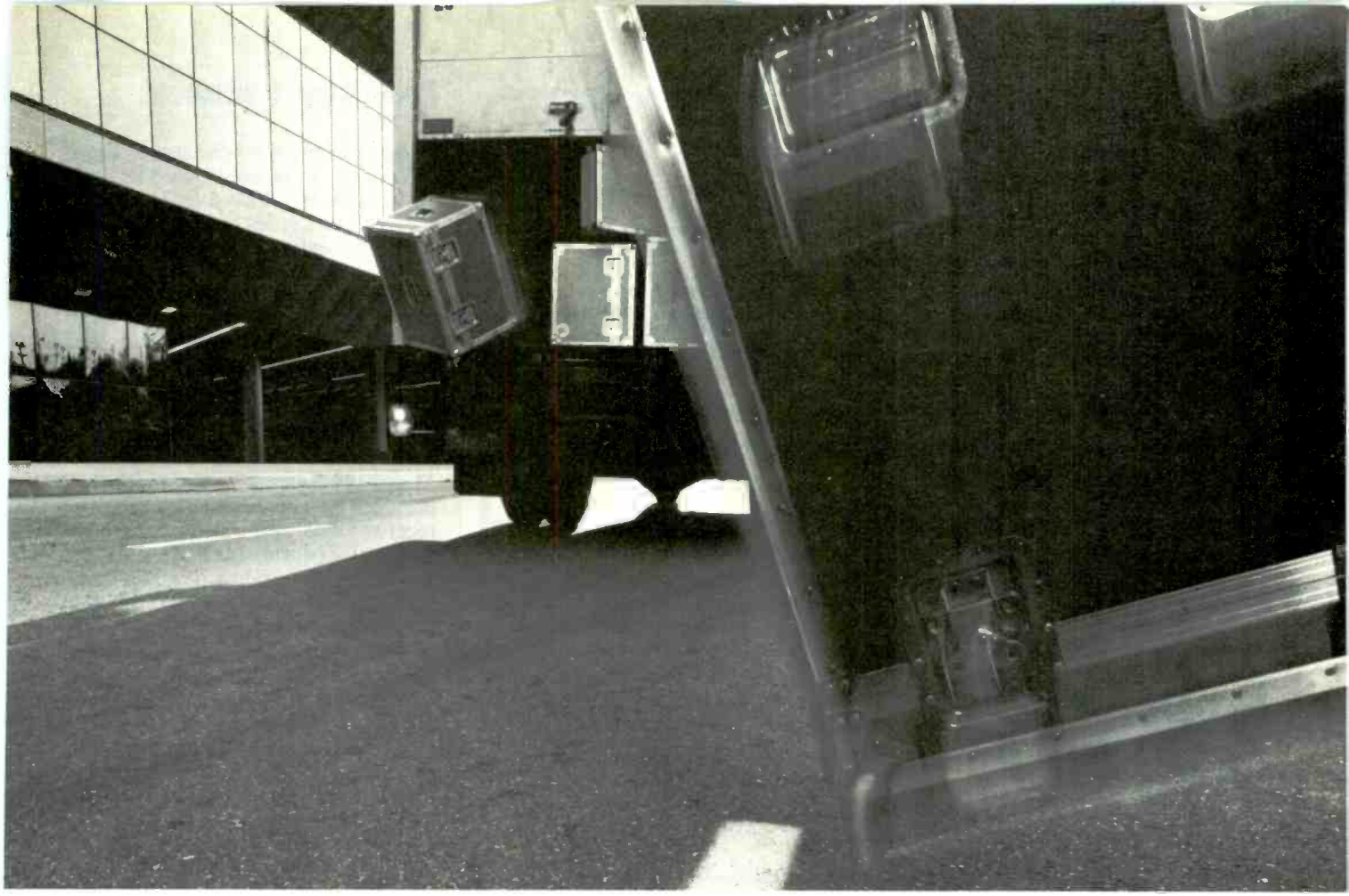

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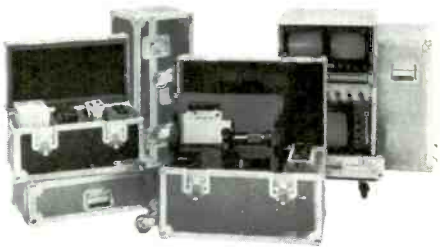

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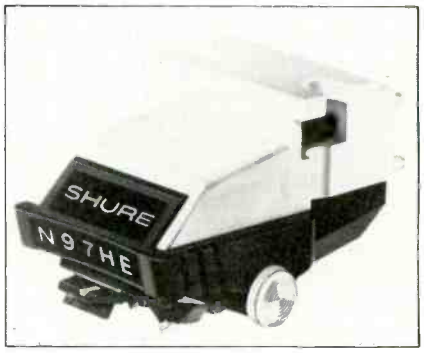
the events for future execution. Up to 256 events can be stored, each up to 99 minutes long. The events can be grouped into a series of separate chains, each representing a group of predetermined complex effects; the chains can be randomly recalled either from the 7200 control panel or by a simple serial interface with an editing controller. $10,500. CROSSPOINT LATCH CORP.

Slow Scan Transceiver 261

Model 285 digital slow scan transceiver provides the capability to transmit and receive video over narrow-band communications channels using standard or special digital modems. The unit incorporates frame freeze for stop-action at the transmitter and continuous display at the receiver as each new image "wipes off" the previous one. It features synchronous serial digital transmission at rates from 2400 bits/second to 500 kilobits/second and requires no adjustment when changing rates. Modem interface is EIA RS-232 and MIL STD 188C compatible. Model 285 accepts standard TV signals from camera, VTR, or videodisc recorder and produces a standard TV output signal for viewing on monitors. The operator may choose left-to-right or top-to-bottom scanning and may transmit either a single field or a full frame of video. From $9000 (receive only). COLORADO VIDEO, INC.

Phono Cartridges 262

The M97 Era IV Series of moderately priced phono cartridges features a viscous-damped dynamic stabilizer and a



telescoped stylus shank structure that increase trackability at minimum tracking forces. In addition, the stabilizer

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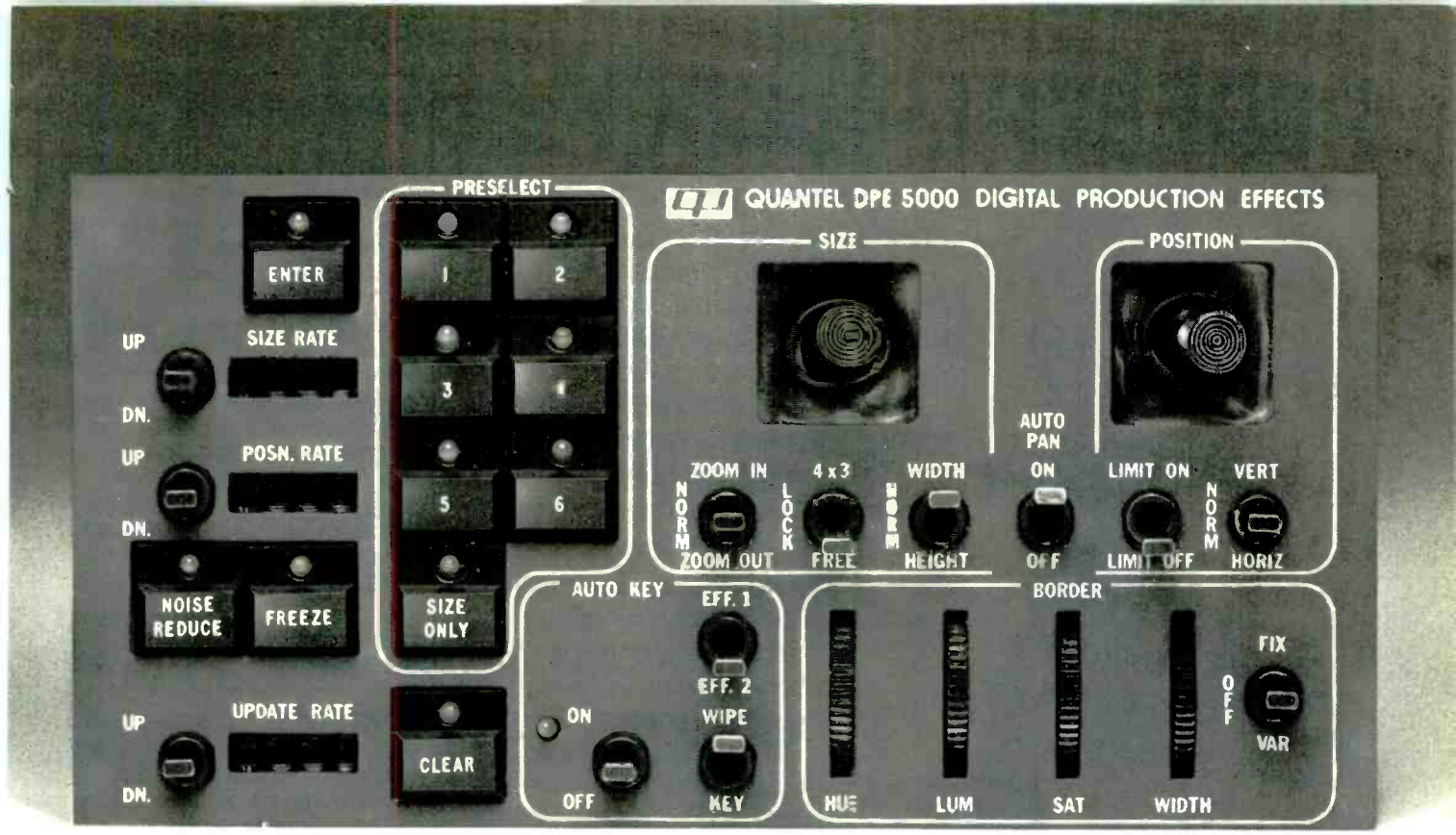

Production control panel of the DPE 5000.

SOME PEOPLE GIVE YOU DIGITAL EFFECTS.

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There's good reason why the Quantel DPE 5000 is the world's most widely used system for digital effects: optical quality.

The DPE 5000 produces effects that are smooth, realistic, virtually indistinguishable from optical effects. Good enough to be used live on the air. With confidence.

A full-fledged minicomputer and several microprocessors handle millions of digital manipulations that make Quantel effects more camera-like.

And our unique production control panel, shown above, gives the operator "extra hands" to smoothly control operation and bring into play the marvelous range of DPE 5000 effects. Automatic functions, programmed routines, and fail-safe limits simplify control and eliminate constant planning and anticipation.

With the DPE 5000, you can actually expand the power of your switcher. (It can be easily interfaced to *any* switcher.) You can preselect effects—shapes, sizes, positions, even transition rates from one effect to the next.

Using optional NO-BLANK noise reduction/blanking correction feature, you can salvage tapes that don't meet FCC blanking requirements.

The net effect of Quantel digital effects is a better, more exciting picture on the air—and a better, more rewarding bottom line.

For more details, call your nearest MCI/Quantel representative. Or get in touch with us directly:

Micro Consultants, Inc.,
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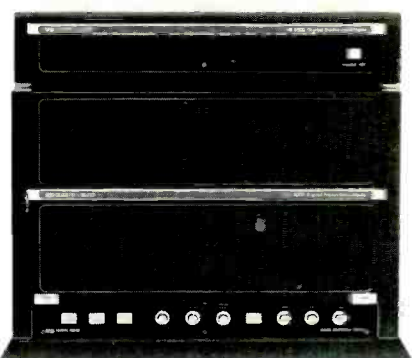

The digital video people

Broadcast Equipment

protects the stylus against vertical impact and the Side-Guard feature protects against stylus damage caused when the cartridge slides across a record's surface or hits its edge. If this happens, the entire stylus assembly withdraws into the housing. Model M97HE has a hyperelliptical stylus, Model M97ED has a nude biradial (elliptical) stylus, and Model M97GD has a nude spherical stylus. All three track at ¾ to 1½ gm. The M97EJ, with a biradial stylus, and the M97B, with a spherical stylus, track at 1½ to 3 gm. M97HE, $112.50; M97ED, $99.50; M97EJ, $82.50; M97GD, $79.50; M97B, $67.50. SHURE BROTHERS, INC.

Amplifier Series 263

The MicroAmp Series of compact, high-performance stereo turntable, dual mic, and dual line amplifiers incorporates the first integrated amplifier designed especially for audio applications, according to the manufacturer. All models are available in three output configurations: transformer output, for optimum protection in high RF environments; differential output, for low distortion and wide frequency response; and single-ended output for economy. Other features include dual concentric gain controls; self-contained, transient protected shielded power supplies; and compact packaging to allow desk mounting, stacking, or single or two-abreast rack-mounting in 1¾ inches. ATI.

Editing System Update Kits 264

Two new software update kits are available for existing Z6B editing systems using Micro-Loc*. The Z6C update allows the user to track with either drop frame or non-drop frame SMPTE time code. Users can freely convert edit lists between the two codes. The Z6F update allows the user to track with 24-frame film rate and non-drop frame SMPTE code. According to the manufacturer, this update permits for the first time "frame accurate" editing of film transferred to videotape. All edit location numbers relate directly to the film edge numbers so that an edit list can be handled directly by the optical house, eliminating the cost of work prints. Both update kits are field-installable; each costs $1000. VIDEOMEDIA, INC.

For more information circle bold face numbers on reader service card.

Expander 265

The C-8E expander adds the capability of eight more inputs to the maker's C-12 master console, retaining all of the C-12's extensive patching features. Each added input has a mic-line switch, overload LED, three sends, three-band EQ with sweepable midrange, four mix buses with panning, solo, and a 100 mm slide fader. In addition, the C-8E contains mixing amps and a self-contained power supply for necessary operating voltages and 48 V Phantom power. It is connected to the master board via nine ¼-inch phone plug patch cords; the line level outputs allow it to function as a bus expander, input expander, or dedicated submixer. $1450. TAPCO.

Graphic Equalizer 266

Model 1000B professional 10-band graphic equalizer is designed for studio applications where low noise and distortion are desired. It features switchable equalization ranges (±8 dB, ±16 dB), infrasonic filters, input level controls, total channel independence, and LED overload indicators. The self-contained unit is provided with balanced and unbalanced inputs and outputs. $595. SPECTRA SONICS.

Intercom System 268

The Audiocom™ closed-circuit headset intercom system is designed to provide clear two-way communications in TV studios and other situations. It will interface with sound systems of other manufacture, including telephone-type circuits. Headset intercoms are installed with simplex wiring and standard connectors; wiring can be station-to-station or from the power

supply to each separate station. Each line is conservatively rated to include 30 headset-intercom stations, eight speaker-intercom stations, or a combination. According to the maker, excellent RFI and EMI rejection prevent noise pickup from telephone lines or in the immediate vicinity of radio or TV antennas. Controlled frequency response (voice-shaped 200 to 5000 Hz) limits the effect of ambient noise and enhances maximum transmission of information. TELEX.

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