

JULY 1977

BME

BROADCAST MANAGEMENT ENGINEER NC



128 B
 5C-TME DJRT VIDEO AUDIO HOUSE# ---TITLE---
 0020 FC6 M AMERICAN HEAR
 CUE FC8 ANN
 CUE NET M

 085828-0026 UT6 M
 0100 FC7 M
 0010 SC4 ANN
 0003 FC8 ANN
 CUE UT6 M
 090300 0100 FC7 M
 0010 SC4 ANN
 0030 FC7 M
 0030 FC7 M
 CUE UT6 M

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 MCLEAN AND CO
 1. AMERICAN HE
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**For Radio & TV Broadcasters,
 Large Market Or Small,
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 Also:
 ITS Takes First Steps In The Field.**



CTL EXC

EDT INS DEL WTF LAF ORF OPY DLF END HLT

3:59:59P :30 REC TRW
 :00 CHS
 :00
 4:00:00P 1:00 REC
 1:00 CA
 1:00 CA
 4:04:00P 1:00 REC
 1:00 CA
 4:05:00P 1:00 REC
 1:00 CA
 4:19:30P :00 REC
 :30 REC
 4:20:00P 4:30 REC
 1:00 REC
 4:24:30P :30 REC
 4:25:00P 4:30 LOC
 1:20 CC
 4:29:30P

CHS DRAMA PROM
 TP WLD. TONIGHT SPORTS T
 PLAY-BACK AT 6PM AND 6A
 NEWS O/C CT-
 DELTA AIRLINE CT-148
 CLLIGAN SO. WA. CT-95
 BILTMORE FASH. CT-141
 4:14 PM BREAK
 FORD MOTOR DIV. CT-2
 THE STOCK AND FINANC
 C/C CT-161
 4:19:30PM BREAK
 CNT. BANK CT-32
 AZ. SPORTSTIME-PM
 JOHN MURRELL CT-116
 4:24:30PM BREAK
 WEATHER

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Canon Amsterdam N.V. Industrial Products Division, De Boelelaan 5, Amsterdam, Netherlands

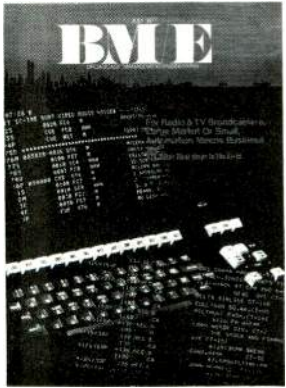
*PV25x20B is 20-1000mm in 25mm format.
PV5x27B is 27-1350mm in 30mm format.
Circle 101 on Reader Service Card

TV ZOOM LENS PV25x20B 20-500mm 1:1.8

BM/E

BROADCAST MANAGEMENT/ENGINEERING

JULY 1977/VOLUME 13/NUMBER 7



As the cover depicts TV and radio broadcasters are applying automation in varying degrees regardless of market size. Automation helps broadcasters do more business, but as our features show, they still do it differently.

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BPA BM/E, BROADCAST MANAGEMENT/ENGINEERING, is published monthly by Broadband Information Services, Inc. All notices pertaining to undeliverable mail or subscriptions should be addressed to 295 Madison Ave., New York, N.Y. 10017. BM/E is circulated without charge to those responsible for station operation and for specifying and authorizing the purchase of equipment used in broadcast facilities. These facilities include AM, FM, and TV broadcast stations; CATV systems; ETV stations; networks and studios; audio and video recording studios; consultants, etc. Subscription prices to others: \$15.00 one year, \$25.00 two years. Foreign: \$20.00 one year, \$35.00 two years. Foreign Air Mail: additional \$24.00. Copyright © 1977 by Broadband Information Services, Inc., New York City. Controlled circulation postage paid at East Stroudsburg, PA.

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BROADCAST INDUSTRY NEWS

New Directions and Emphasis For NAEB Unveiled

The more than 3,000 public broadcasting and technical executives that are expected to attend this year's NAEB 53rd annual convention will find some big changes as the organization embarks on a plan to involve exhibitors and attendees in a new focus on technology.

The convention, scheduled for November 13-17, at the Sheraton Park Hotel in Washington, D.C., will feature eight and one-half hours of "exhibit only" time to allow maximum exposure of attendees to displays of new technology. Moreover, the rule requiring exhibitors to be associate members of the NAEB has been dropped to encourage greater diversity of exhibits. The new NAEB convention format will also permit exhibitors to participate in special panels with engineers as a part of the formal agenda.

These changes and others are part of a decision by the NAEB and Engineering Committee of the Public Broadcasting Service to upgrade the quality and size of its exhibit areas and to place greater emphasis on technology and engineering expertise that is the core of public broadcasting. The difficulty of aggregating this \$40 million market has long been a thorny problem for manufacturers and the broadcasters themselves. The NAEB apparently has decided that it is in a position to do more about the problem than is any other entity.

Home VTR Offense Kicks Off In Fall

An important new part of television viewing starting with the fall programming season will be the rapidly increasing numbers of home videotape players and recorders on the receiving end. The VTR hardware manufacturers predict that their machines will alter consumers' TV habits once a significant number of units are sold, diluting prime time counter programming.

And starting this summer, the com-



JVC's new Vidstar VHS™ 1/2-in. tape, 2-hour videocassette recorder/player. The VHS format was developed by JVC—Victor Co. of Japan, Ltd.



JVC's new Vidstar VHS™ system consists of: 2-hour videocassette recorder/player; the Vidstar camera, Model CG-3300U (shown here with 6:1 zoom lens and electronics viewfinder) and accompanying color camera adapter; and videocassettes with playing time of 2 hours, 1 hour and 1/2-hour.

petition will be on in earnest to open this home market. Almost all of the TV set makers—U.S. and Japanese—have now made commitments to marketing one of the non-compatible 1/2-in. formats. At the recent Consumer Electronics Show (CES) sponsored by the Electronics Industries Assn. in Chicago, home VTR makers agreed that demand this year will far outstrip availability of equipment as the selling season gets under way. The main thrust of their campaigns will be to tell consumers that they are no longer bound to broadcasting schedules once they get a VTR.

It's doubtful that many more than 225,000 units will be sold in 1977, but this figure should jump to 750,000 or more units by next year, and climb on into the million-plus neighborhood by 1979. In 1980, saturation should reach a point at which pre-recorded videotape cassettes will be on the market, further altering home viewing. Also, relatively low cost (\$1500) single-tube color video cameras will be available this year for home recording which could also have an impact on the

amount of time consumers spend viewing broadcast television.

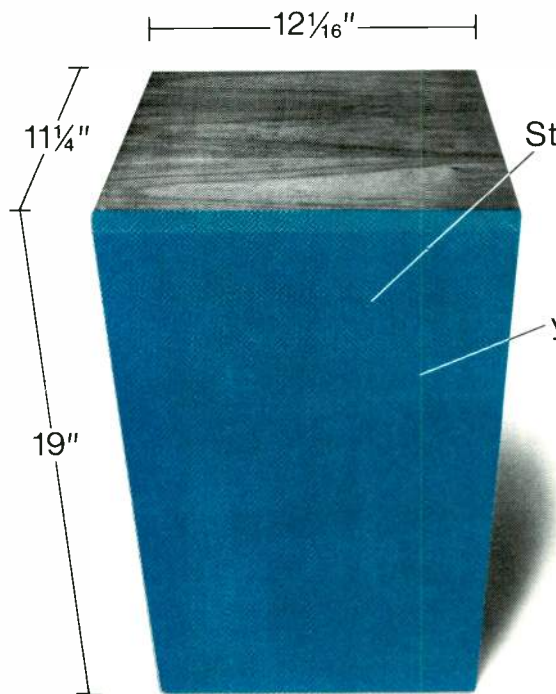
Prices for VTRs are now about \$1200, but should begin dropping as volumes increase. Sony Corp., which began selling Betamax two years ago, believes that the market will take off now that there are more competitors and prices begin to fall to \$600 to \$700 levels. Blank tape cassettes are selling for about \$20 for two-hour play tapes and \$16 for one hour. All of the tape makers, plus some of the VTR hardware firms, are gearing up for cassette production and with good reason. According to one estimate, each household with a VTR purchases up to 18 blank tape cassettes.

With the exception of Admiral and General Electric, all of the U.S. producers have lined up for one of the Japanese-designed VTR formats. The two biggies in color TV sales, RCA and Zenith, are once again on opposite sides—RCA has signed to sell VHS units in two and four hour format made by Matsushita and Zenith has committed to market one and two hour Beta format units made by Sony. (Zenith will also have a black and white camera available.) Neither has announced retail prices as yet. GTE-Sylvania and Magnavox have opted for Matsushita-supplied VHS equipment.

Of course the Japanese producers will also be selling their own VTRs in the U.S. The Beta format will include Sony, Sanyo (Sears), Toshiba, and probably hi-fi maker, Pioneer. The VHS will have JVC, which developed this format and quickly allied with its parent firm, Matsushita, Panasonic, Hitachi, Sharp and Mitsubishi. Quasar, which is part of Matsushita, will continue to market a third type, VR1000, originally developed in Japan as a low cost, under-\$1000 alternative. What about video discs? Says Jack Sauter, marketing manager for RCA Consumer Electronics division, "There's no reason why the VTR and the disc cannot stand together in the market, since the disc will be a low cost means of playback and the tape will offer record and play." RCA intends to continue development of its disc, introduction time—unspecified.

continued on page 8

Now there's a JBL monitor specially designed for broadcast studios.



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BM/E7

Circle 102 on Reader Service Card

News

Marconi To Manufacture Ampex One Inch Line And Other Products

Ampex Corp. announced that Marconi Communication Systems, Ltd. will manufacture and sell its new line of helical studio and portable VTRs as well as Ampex TBC products.

Donald V. Kleffman, Ampex vice president and general manager of the

audio-video systems division said that in the near term, Marconi will make and sell the firm's VPR-1 studio recorder and portable VPR-10 version as well as the associated TBCs and that this should be beneficial to the promotion and usage of the 1 inch video recorder format world-wide. Currently, according to Ampex, there is a \$5 million backlog of orders from the international market.

A spokesman for Marconi indicated that the licensing agreement will strengthen Marconi not only in the overseas area but also here in the U.S.

Though no genuine head-on competition is expected between Ampex and Marconi for the domestic market, Marconi feels that the addition of the line will put them in a better competitive position with customers seeking complete television systems.

NAB Responds to House Subcommittee "Options Papers"

"Options papers" drawn-up by the staff of the House Communications Subcommittee received generally poor reviews from the NAB. In NAB's initial comments on the papers, the present broadcast system was termed "far superior to any option that has been suggested by the staff."

While NAB commended the staff for the overall tone of the papers which was "moderate and reasonable" and for its attempt to maintain neutrality, it expressed "a keen sense of disappointment" that the options presented were not meaningfully examined, in the opinion of NAB.

NAB took issue with what it called a "presumption in favor of radical change" in a system that NAB believes has been successful in providing the American people with the finest broadcast service in the world. "Unless someone can come forth with substantial shortcomings in our present system," said NAB, "... it makes little sense to consider radical revision of the basic law that has served the public well and continues to do so."

The options papers' discussion of licensing was termed generally well-balanced in its consideration of arguments for and against change. NAB took exception, however, to some of the other options discussed in the papers, such as "leasing," which NAB felt was first of all, an old idea, and secondly, it was described in such a way as to appear a viable and perhaps, attractive alternative to licensing. NAB comments criticized the absence of any discussion of the drawbacks that a leasing system would have.

Other areas of the staff options papers that NAB took issue with included the notion that the papers did not recognize the current system's adherence to the principle of localism and "rejected" the staff's claim that there "... is something less than a 'free speech' tradition in the industry."

Pilot Study To Improve Radio Audience Measurement

A new system to measure local radio audiences will be tested in pilot studies to be conducted over the next 3 months. The pilot program is being sponsored

continued on page 10

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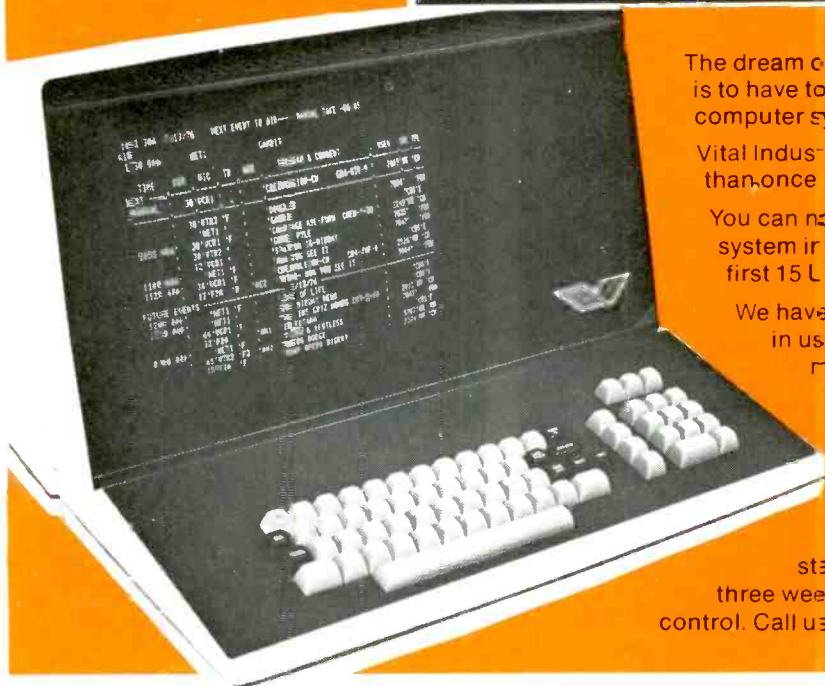
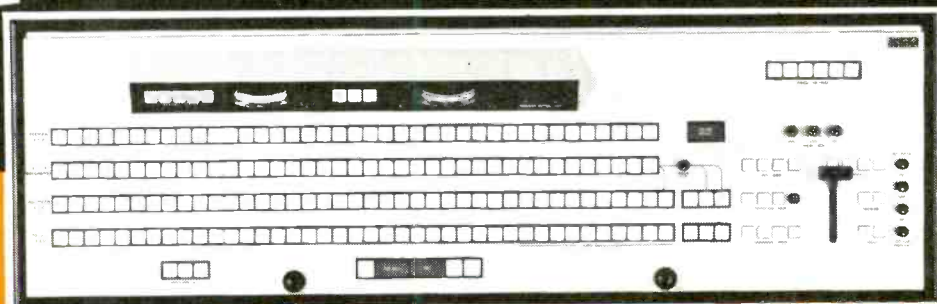
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Circle 104 on Reader Service Card

News

by the Radio Advertising Bureau with additional funding and staff support from NAB.

The system being studied is designed to provide in-depth knowledge of listeners shopping patterns, and other information which will interest national and local advertisers as well as retailers. It will measure radio continuously rather than in traditional "sweeps," and will most likely be conducted from a central telephone interviewing location rather than from the home phones of interviewers.

It is hoped that these techniques will help reach and measure the hard-to-reach segments of the audience such as minorities, drive-time listeners, and others.

Corporate Managers Turning To Private TV

Just as President Carter is getting expert advice on how to come across effectively on TV, key industry executives are learning how to use TV wisely. Not on how to perform in front of a camera, if and when called by the news media, but how to communicate to one's own employees.

Companies employing upward of

25,000 have to regard their own employees as their most important constituency, reported John Bunyan and James Crimmins of Playback Associates, Inc., at a Video Expo '77, Chicago, seminar last month. Instant communication is ever more important. If a chief operating officer is to testify before Congress it is desirable to communicate to one's own employees at the same time to make the company's position known in full. Employees are effective "lobbyists" in influencing their own Congressmen when they understand issues at stake and how pending legislation—energy environmental, OSHA, etc.—might effect them personally.

While such "political" use of private TV is applicable to only a handful of companies, instant corporate communications is a real boon in scooping the troublesome grapevine.

Any operation that has as few as 20 field offices or plants can make cost effective use of internal TV distribution systems to cut travel. Instead of bringing managers to the home office for briefings, etc. the home office can talk directly to all concerned in the field. When plant visits are essential they can be made more effective if executives precede them with a video tape covering new company policy, goals, etc. The followup personal visit can then be

devoted to dialogue and interaction with key personnel.

The key to managers becoming more effective on TV, say Bunyan and Crimmins who have authored a book on the subject, (Television and Management, Knowledge Industry Publications, 2 Corporate Park Dr., White Plains, N.Y. 10604), is not to use a prompting device. "Managers got to be managers because they were persuasive particularly in small groups and they shouldn't be expected to be actors," say the authors. The secret of getting an executive to come across as himself and with spontaneity is to set up a news-type interview format. The interviewer (sitting at the side of the camera) pops hard questions in a free-wheeling Q & A. Final tape is edited for logical continuity and necessary brevity.

Kodak Survey Finds Film Market Strong For Locally Produced Spots

A recent survey of television station practices in the production of commercials reveals a continuing reliance on film and growth for both film and videotape.

According to the survey conducted by Kodak, 94 percent of all television stations produce commercials. In

continued on page 12

The New Reverb Price/Performance Leader:

Introducing the new *dual channel* Orban/Parasound Spring Reverb. The new 111B retains all of the electrical features of its popular single-channel predecessor and augments them with a new bass control and "quasi-parametric" midrange control. The new midrange equalizer permits stepless adjustment of its ± 12 dB equalization range, as well as continuously variable center-frequency and *bandwidth*. This equalization flexibility is unparalleled in the low-cost reverb field and effectively complements the simple equalizers usually found on low-cost mixers and consoles.

Included in the new package is our unique "floating threshold limiter" which minimizes "spring twang" and provides absolute protection from overload. And our highly-respected electronics provides a bright, super-clean sound with the best signal-to-noise in the spring reverb field. Most remarkably, the two-channel 111B costs exactly as much as our single

channel model. The only thing you give up is the flexibility of our dual-chassis construction—now the spring is mounted with the electronics.

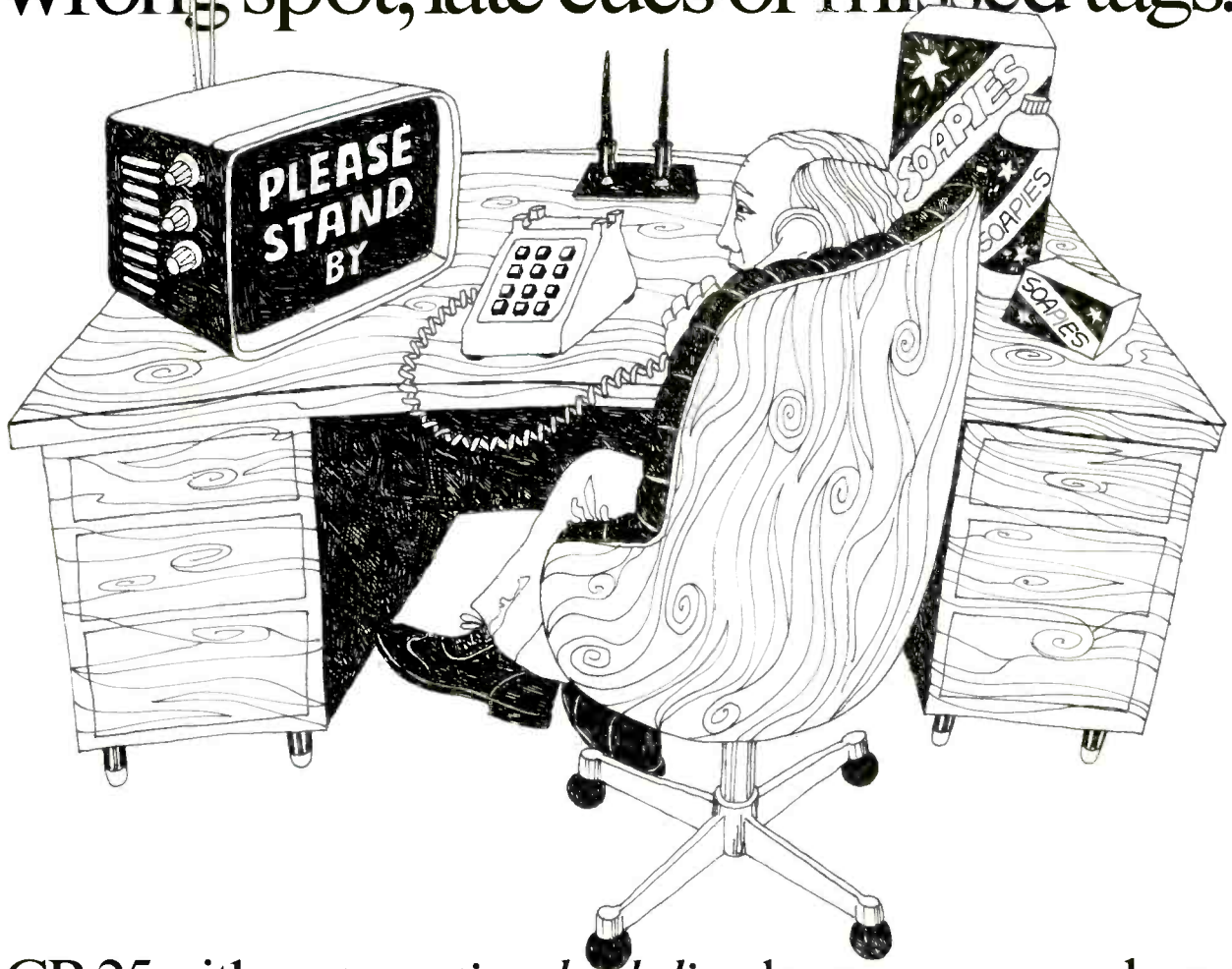
At \$695 for two channels, the 111B provides the quality alternative to the cheaper, consumer-quality reverbs on the market. With industrial-quality construction, line-level balanced outputs, compact size, and smooth, four-spring (per channel) sound, the 111B is the ideal choice for the user with space and/or budget limitations. And as always, you can count on Orban/Parasound's reliability and prompt service. For more information on the new 111B, see your local Orban/Parasound distributor, or contact

orban/parasound

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ACR-25 with *automatic scheduling* keeps sponsors happy.

Ampex has a money machine for sale. It's called the ACR-25, and it transforms commercial breaks into bottom-line profits. It plays short spots, long spots, IDs, tags and program segments automatically.

Automatically *means* automatically. ACR-25, along with three optional accessories (ADA, IDA and the new ASD-1 Automatic Scheduling Device), makes the front office schedule pop up on the screens at home. You make the decisions, and the ACR-25 makes the money.

Load 24 video cassettes into the ACR-25 bins and close the door. First, the system identifies the tape in each bin, then ADA generates a Table of Contents. Next, this automatic system compares the Table of Contents with the program schedule and generates a Play List. For added confidence, ASD-1 can print out the entire Table of Contents or Play List. It will also print out

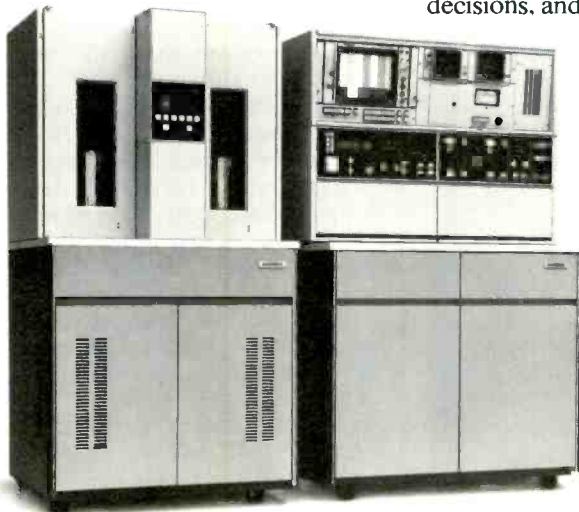
a list in numerical order, leaving less chance for human error when cassettes are selected from the library. Ampex automation can "talk" with your front office computer and follow the daily schedule, playing items as short as 10 seconds or longer than five minutes.

What do you do? Not much. Make sure the bins are loaded. Roll the machine on cue. Listen to the ACR-25 whir. Deposit the checks.

ACR-25, along with ADA, IDA and ASD-1. An automatic system for playing the revenue producers. Designed by Ampex for station managers who can't take chances.

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Circle 107 on Reader Service Card

Transmitters Love Our Modulimiter.

The Competition Will Hate Your New Sound.

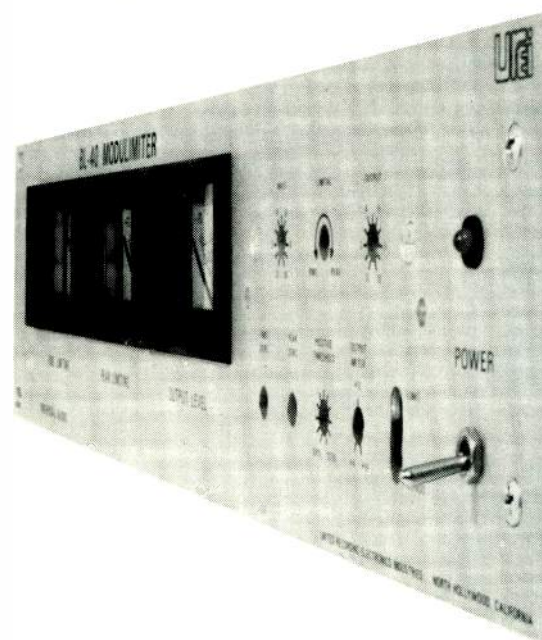
The BL-40 Modulimiter is a unique automatic AM broadcast limiter, which will maximize modern transmitter performance. Whatever your format—hard rock to classical, Modulimiter will increase transmitter efficiency and extend coverage.

The BL-40's patented electro-optical attenuator provides smooth, unobtrusive, true RMS limiting. An ultra fast F.E.T. peak limiting section assures absolute protection from unwanted over modulation without peak clipping. Attack time is essentially instantaneous.

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Circle 108 on Reader Service Card

News

smaller markets, stations tend to do most of the commercials produced in that market, nearly 96 percent, while just 4 percent are produced outside the station. In markets 26 through 124, 90 percent of the local commercials are produced by the station. Only in the top 25 markets does the percentage decline significantly and then to just 79 percent.

Of course, all types of commercials were considered including slides, with voice-over. The 30-second commercial comprised 81 percent of all spots, with longer and shorter spots splitting the remainder.

In 75 percent of the cases, the cost of locally produced commercials is less than \$200. This also tends to vary with market size whereby the smaller the market, the less expensive the spot.

The average amount of 16mm film used per commercial costs \$25; that's 250 feet of film used in a 12 to 1 shooting ratio. In-studio production on tape was used 52 percent of the time, then 16mm film, 18 percent; ENG equipment, 4 percent; and other media, 4 percent.

Stations around the country expect marked increases in the numbers of commercials they produce. Moreover, 88 percent expect to increase their use of tape and 54 percent expect to increase their use of film.

Alaska Gets Live Prime Time TV Via Satellite

The state of Alaska came one step closer to unity with the "lower 48" on May 22, when it enjoyed its first live prime-time public television programming.

The direct transmission was made possible through a NASA communications satellite, ATS-6, and the cooperation of three groups in the continental U.S. The PBS evening schedule was transmitted to KAKM in Anchorage and KUAC-TV in Fairbanks via the satellite and was termed less expensive than the previous method of mailing the tapes.

The PBS programs were sent from Washington, D.C. to the Rocky Mountain Public Broadcasting Network in Denver, where they were delayed 5 hours until the appropriate Alaska time. The programs were then fed to the Public Service Satellite Consortium technical facilities in Denver and then transmitted via microwave to the ATS uplink at Morrison, Colorado. The downlink is located in Anchorage. Cost of the service will be about \$180,000 to serve both stations as compared to a ticket of \$135,000 per station for the existing PBS "bicycle network."

continued on page 16

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SYNC S C

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The Sony BVT-1000. Consider the logic.

A time base corrector is part of a system. A system that includes a video tape recorder.

Isn't it logical that a company which manufactures video tape recorders would have an inside track on what it takes to correct time base error in a VTR signal?

We're talking, of course, about Sony Broadcast.

The company that pioneered professional U-matic video recorders. And introduced the BVH-1000 1" High Band Video Recorder, that has the whole broadcast industry moving in a new direction.

Sony Broadcast has matched these impressive video recorders with an equally impressive digital time base corrector. The BVT-1000.

And before you face up to the difficult decision of which TBC is best for you, consider the logic of the BVT-1000.

1. The economy of a complete package. Sony Broadcast knows that line-by-line velocity compensation, complete video processing with advance sync, drop-out compensation, and the ability to handle both direct and heterodyne color are not just "options."

They're requirements. Requirements that broadcasters need and use in day-to-day operations.

So we make all these so-called options standard built-in features of the BVT-1000. And you save dollars in our greater production efficiency.

2. The advantage of superior technology. The economy of the BVT-1000 doesn't mean you sacrifice quality.

Far from it.

The BVT-1000 incorporates unparalleled

technological excellence. Excellence demonstrated by a unique A/D converter that expands the effective number of bits per word, resulting in a higher signal-to-noise ratio than theoretically expected in an 8-bit system. Which leads to transparent picture quality.

With the Sony Broadcast BVH-1000 1" recorder, the BVT-1000 provides locked recognizable color pictures from still-frame to seven times normal speed. And to greater than thirty times normal speed in monochrome. So your editing techniques are faster and more critically accurate than ever before possible.

And for use with U-matic format recorders, the BVT-1000 offers special advantages. A wide 4H window and special anti-gyro circuitry compensate for wide errors and maintain both color and luminance stability.

Advance sync control allows phase correction using LED indicators at the TBC, for system integration. And the video level can be monitored by LEDs that show at a glance high or low level relative to one volt peak-to-peak.

3. The logic of a systems approach. If you are into electronic news gathering, or if you're part of the new revolution in 1" high band machines, the chances are very good that you're already using Sony recorders.

The BVT-1000 gives you an opportunity to add new logic to your broadcast equipment. The logic of an all-Sony system.

For full information about the BVT-1000 or any of the other professional video products in the Sony Broadcast family, call your nearest Sony Broadcast office.

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News

SMPTE Issues New Book On Digital Video

"Digital Video" is the title of an excellent new book from SMPTE. The book includes selections from previously published papers, other publications, and some never before published articles.

In the "Tutorial" section there are 10 chapters, two of which have not been previously published. Frank Davidoff, of CBS, has written an excellent chapter entitled "An Update of Digital Television Fundamentals," and Dennis Conroy has authored a timely chapter on "Digital Television at Reduced Bit Rates."

The second section of the book is devoted to Application and Equipment Papers and includes a previously unpublished paper by R. McMann, of Thomson-CSF, and others, on "A Digital Noise Reducer for Encoded NTSC Signals."

Also included in the book is a very helpful glossary and bibliography for digital television. The book is priced at \$15.00, and is available from Publication Sales, SMPTE Headquarters, 862 Scarsdale Ave., Scarsdale, NY 10583.

NBC Issues Optimistic View of Broadcasting In Coming Decade

"Broadcasting The Next Ten Years" is a report by NBC's Department of Corporate Planning which forecasts, among other things, that "The next decade will be one of continuing change, not of upheaval."

Some of the optimistic trends cited in the report include the increasing average age of the population which by 1985 will see men and women over 25 making up more than 60 percent of the population. This group is television's heaviest viewers. Moreover, the population shift into the suburbs should also work to broadcasting's advantage. NBC takes particular pleasure in pointing out that its radio programming is already geared to the listener who will make up this new plurality.

The economic outlook, according to the NBC report, is for steady growth and real improvement with an easing of inflationary pressure. Technologically, NBC expects one-inch videotape and related camera and recording technology to have the greatest impact on broadcasting in the coming years. Broadcasting via satellite is not expected to be a major factor until at least 1980 and then, depending on AT&T rates and cost-effectiveness factors, terrestrial facilities may yet remain the favored distribution system.

NCTA Calls for Removal of All Restrictions on Signal Carriage

New NCTA Chairman, Daniel Aaron, moved quickly on a promise made in a speech before the New York CATV association, when the NCTA petitioned the FCC to convert its syndicated exclusivity inquiry into a rulemaking that would remove restrictions on all distant signal carriage.

The petition said "It is time for the Commission to stop regulating cable television based upon unsupported, anti-competition assumptions that the commercial broadcasting structure should be protected from the growth of this new service." According to NCTA, removal of all such rules would bring the Commission into line with the current administration's renewed emphasis on the competitive marketplace rather than governmental regulation as the most effective regulator of prices and services.

NCTA cited the U.S. Court of Appeals decision removing restrictions on Home Box Office and statements of FCC Chairman Wiley as further cause to make this move now. Wiley recently stated that, "The FCC has never had an adequate empirical base for projecting potential harm to the broadcast industry from cable competition." Also cited by NCTA were the staff report of the House Communications Subcommittee and the passage of copyright laws.

NAB, NCTA Clash Over "Identifiable Public Harm"

In a letter to NAB president, Vincent Wasilewski, NCTA president Robert Schmidt suggested that NAB join NCTA in supporting "identifiable public harm" as the foundation for all regulation of cable-broadcast competition, including pay cable.

The letter was prompted by NAB's recent call for legislation on pay cable to prevent "siphoning." Schmidt disagrees that pay cable represents a threat to the public interest and suggests that his notion of "identifiable public harm" would offer satisfactory protection. Wasilewski's immediate reaction to the idea was, "If identifiable public harm means paying for what you get for free, we agree. If it means that the poor lose service, we agree. If it means the rural communities will not get service, we agree."

News Briefs

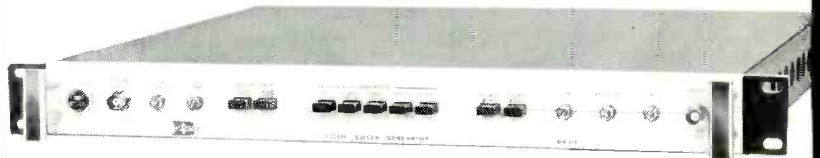
Robert Flanders, vice president of engineering for McGraw-Hill Broadcasting Co., and chairman of the NAB Engineering Advisory Committee,

continued on page 18

THE BETTER WAY

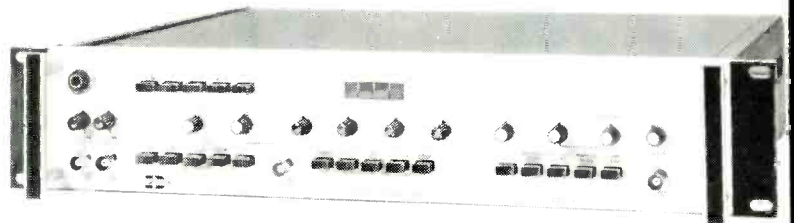
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PLOUGH BROADCASTING'S WHRK, Memphis, picks a new format and IGM's RAM to make it go!

The new "disco" sound at WHRK requires the capability to program three or four times as many events as the previous format. So, the 100,000-watt, 24-hour station went to IGM with the problem.

The solution is a RAM (Random Access Memory) Control System, three 48-tray Instacarts and four reel-to-reel playback units with time announce capability.

Now, WHRK can program 4096 events—enough for seven days—and, at the same time, "flag" certain events to insert spot changes quickly.

WHRK is only one of five Plough Broadcasting stations to install RAM systems.

The whole story is in IGM News, No. 2-77. Send for it today.

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News Briefs

called on the television electronics industry to **develop a 10-second delay device for live ENG feeds.** Flanders' concern was prompted by the Kiritis kidnapping case in Indianapolis when a McGraw-Hill station, WRTV, and others were forced to carry live coverage of the gunman and hostage.

Defending his position on broadcast regulation before a meeting of Presidents and Executive Directors of State Broadcaster Associations, FCC chairman Wiley mentioned that he **did not expect any significant legislation** affecting broadcasting within the next four years. Wiley stated that the proposed rewrite of the Communications Act would cause this legislative lull.

... In a letter to FCC chairman Wiley, NAB president Wasilewski asked for an **"immediate refund of all fees illegally assessed to broadcast licensees,"** since the FCC made no appeal to the U.S. Court of Appeals decision to strike down the Commission's fee schedule.

The six **Swanson Broadcasting, Inc. radio stations have joined the NAB** . . . Chris Payne, assistant to the vice president for engineering for NAB, has been **named project manager** of the National AM Stereophonic Radio Committee . . . NAB has asked the FCC to issue a Notice of Inquiry at the earliest possible time for the **modernization of rules** governing the operation, monitoring and measurement of radio stations audio system.

Booth space for exhibitors at SMPTE's 119th Technical Conference Equipment Exhibit is now available. The Conference will be held October 16-21 at the Century Plaza Hotel, Los Angeles . . . The **"Beyond ENG" presentations** by Joe Flaherty of CBS and Isaac Hersly of ABC, made at the SMPTE Winter Conference in San Francisco, are available for loan on video cassette from SMPTE.

A **new SCTE chapter** is being organized in the Rocky Mountain States. Interested parties should contact Judith Scharf, design engineer at TCI, Denver, Colorado . . . SCTE president, Robert Bilodeau, has called for a **"Re-organization Study Group"** to examine the future needs and requirements of the organization. Bilodeau expressed an interest in participation by all concerned members, organizations, and others with interest in CATV.

Nine CATV companies with a total of 250,000 subscribers have become **new members of NCTA** bringing the total number of subscribers represented by the organization to more than 7 million . . . **Mel Gilbert** of Snyder Community Antenna TV, has been

named to a second term as **chairman of the Independent Operator's Board of the NCTA.**

Sam Cook Digges, president of CBS Radio Division, told a Toronto meeting of sales and marketing executives that an advertiser with a **budget of \$70,400 could buy sixty 30-second commercials on network radio** in one week, 12 commercials on each of 5 radio networks, and reach 35.9 percent of the adult U.S. population an average of 2.3 times per week. An advertiser with the same budget, according to Digges, who chose to spend it on TV, would get only one 30-second spot on a top rated network TV program and reach, just once, 23.7 million adults, or just about 16 percent of the population.

FCC Briefs

Date has been extended to August 22 for comments on the hotly debated proposal (Docket 20418) to **drop in four new VHF assignments.** (short spaced) for Charleston WVA (Ch 11); Johnstown, PA (Ch 8) or Altoona, PA (Ch. 12); Knoxville, (Ch. 8); and Salt Lake City (Ch. 13); the FCC itself is split on the issue, some members seeing the drop-in procedure as inimical to UHF . . . What must be the **largest fine so far for illegal CB operation,** \$2,200, was imposed on a Houston father and son convicted on 22 counts, including use of an RF amplifier rated at 3000 watts (CB legal maximum is 4 watts).

Amended rules require radio broadcasters to make their **program logs or log data available for public inspection,** and to make such material, as well as public inspection file material, available for machine reproduction: the same rule was earlier applied to television stations . . . The requirement for the **amplitude characteristic of cable television systems** became less restrictive, with the following new definition: "The amplitude characteristic shall be within a range of +2 dB from 0.75 to 5.0 MHz above the lower boundary frequency of the cable television channel, referenced to the average of the highest and lowest amplitudes within these boundaries."

Business Briefs

As a direct result of a recent Canadian law impacting the carriage of commercials on U.S. TV stations that broadcast into Canada, **Wometco Enterprises,** reported a decline in its first quarter net earnings. Wometco claimed that the 6 percent decline in earnings was traceable to the poor performance of KVOS-TV which suffered revenue

continued on page 74

The Dolby System in FM Broadcasting – April 1977



In June 1973 Dolby Laboratories proposed an improvement in FM broadcasting which would overcome high-frequency overmodulation problems and at the same time reduce receiver noise. The technique combines a reduction in the pre-emphasis time constant to 25 microseconds and the use of the Dolby B-Type noise reduction system. In May 1974 the new method was approved by the Federal Communications Commission for optional use in the U.S.A. A number of other countries either have approved the system or are considering it.

Transmitters

Since 1974, 160 FM stations in the U.S.A., in addition to 25 in other countries, have purchased the Dolby Model 334 FM broadcast encoder unit.



Receivers

Concurrently, Dolby consumer product licensees have been preparing tuner and receiver models incorporating Dolby FM decoder circuits. At the present time there are 51 different models of such receivers from 22 manufacturers. About 300,000 units are in use, increasing by some 30,000 units per month.

Listening Advantages Gained

1. High-level high-frequency signal recoverability.
2. Noise reduction.

The Dolby FM process works at both extremes of the dynamic range. The maximum permissible level of high frequency signals is

increased, while low level noise is reduced. The 10 dB action of the Dolby B system is split in an optimum way between these two equally important areas of operation. The net result is an FM system which can pass signals from transmitter input to receiver output with high integrity.

Information Available

To find out more about this new development, please write to us for further details.

A NOTE ON DOLBY LABORATORIES

Founded in 1965, Dolby Laboratories specializes in complementary noise reduction methods and systems. In London the company manufactures equipment for professional use by recording studios, broadcasters, and the motion picture industry. In the consumer field, Dolby Laboratories functions purely as an R & D and licensing organization, based in San Francisco, California. Licensing is handled by a subsidiary, Dolby Laboratories Licensing Corporation, which has world-wide non-exclusive agreements with about 60 manufacturers for the incorporation of the Dolby B-Type noise reduction system into consumer audio products. A uniform royalty rate is applied on a sliding scale based on circuit quantities; the average royalty paid is about \$0.21 per circuit (two circuits for stereo). All Dolby circuits are manufactured to meet standardized performance requirements for universal interchangeability of hardware and software; 20 million such circuits have been made since 1968. Software products (duplicated tapes and FM broadcasts) are produced on a royalty-free basis.



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RADIO

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News, Drama, Stocks, Jingles, Guidance, Music, Music, Music . . .

THE FOLLOWING PARAGRAPHS cover a few items selected from the radio program cornucopia. Future issues will give more such notices and *BM/E* is planning, for a later date, a comprehensive directory of radio program sources.

Helping Fill The NIS Gap

Two former stars of the NBC NIS, Cliff Barrett and Frank Gorin, are in business for themselves as Barrett-Gorin, Inc., at 32 Freemont Road, Tarrytown, NY. They started late in April to supply radio stations with news featurettes and short documentaries of the kinds NIS subscribers found most valuable—and hardest to get elsewhere. Barrett-Gorin have a package of 50 news features a week, running 1 or 2 minutes each, with some "mini-documentaries" of 3 to 3½ minutes. These are produced with "... well-known broadcast journalists and covering today's most important and relevant subjects and issues."

The programs are distributed on tape, ready for immediate airing. When this was written (late May) Barrett-Gorin had already signed up 16 stations, most of them former NIS subscribers. The geographical and market range of these stations is wide, testifying to the broad appeal of the material. Some of them are: WWTC, Minneapolis; WCAR, Detroit; WINZ, Miami; WRR, Dallas; KHVH, Honolulu; WSOC, Charlotte; KURV, Edinburg, Texas.

Both Barrett and Gorin have had 20 years' experience in broadcast journalism. Before joining NBC, Barrett had news management posts in several radio stations. Gorin has won an Emmy for his TV documentary work.

Good radio drama may be on the way (tell WFMT if you want it!)

Last month this department described the strong listener response to modern, well-produced radio drama, as evidenced in the great success of the CBS Mystery Theatre and Radio Adventure Theatre series; and in the success of several series produced at

educational station WMUK, Western Michigan University, as told by the man in charge there, Dr. Eli Segal. The sad part of the story is that commercial radio stations can't find much modern, fresh drama. The CBS series is only for CBS stations and affiliates, except in a few markets where the CBS station turned the series down. The WMUK dramas are available only to other non-commercial stations. This restriction to non-commercial outlets also applies to an outstanding drama series, several years old, called "Earplay," produced by Minnesota Public Radio and heard on most National Public Radio stations across the country. Earplay has developed skills for first-rate original radio drama, much of it using important playwrights like Edward Albee, and the story will be told in detail in an upcoming issue of this magazine.

But the probability has appeared that award-winning radio drama developed for WFMT, Chicago's fine arts station, will be syndicated by that station starting this fall. A separate organization, the Chicago Radio Theater, sponsored by WFMT, has produced a number of highly successful radio dramatizations. In late 1976, for example, "Dracula," adapted to radio from the famous novel and aired by WFMT, won first place in the annual Armstrong Awards for FM stations, in the category Creative Use of the Medium. An earlier Chicago Radio Theater production also won the award. (WFMT programs have won 12 Armstrong Awards, eight of them in the last six years.)

Ray Nordstrand, the imaginative and forceful general manager of WFMT, says he is looking at the possibilities and problems in the syndication of the WFMT drama series. Any station management that looks hopefully at the possibility should let Ray Nordstrand know: a strong prospective market will certainly be positive for his deliberations.

Free hourly Amex stock reports—via phone-in

Any broadcast station, by applying to the American Stock Exchange on

company letterhead, can get free a confidential telephone number that can be dialed to activate a taped, 90-second, up-to-the-hour stock and options report. The report, of high audio quality, can be aired directly or taped for later use. "Market-Tape," the Amex name for the service, with fresh reports available 5 minutes before each hour, starting at 10:55 AM, is updated six times each business day. It is in three segments, with pauses between, allowing the station, if it wants, to insert station breaks or commercials. The first segment (15-seconds) gives Amex share volume, value index, the trend of prices for stocks and options. The second segment (25 seconds) includes a listing of the five most active Amex stocks; the final segment covers the most active options. Write: John J. Sheehan, vice president, press relations, American Stock Exchange, 86 Trinity Place, NY 10006.

Jingles that fit the format

As reported here a number of times, programming professionals emphasize the fact that everything a station puts on the air must reinforce the image the management wants to project. Jingles, commercials, ID's that clash strongly with the format are "turn-offs"; the listener pulled in by the music is driven away by the other material.

With this in mind, Century 21, syndicators of Dallas, Texas, have recently issued two packages of ID jingles tailored to specific formats. "Counterpoint—the Soft Rock Sound," is designed, according to Dick Starr, general manager of Century 21, for "adult contemporary and soft rock stations. A mellow music on soft rock format has unique identification problems. Hard driving jingles or announcers are at odds with the basic sound . . . Counterpoint matches the music and supplies a strong vocal line for immediate identification."

The second ID jingle package is called "Super Country '77" and is similarly tailored for a specific format, in this case country music. The pack-

continued on page 22

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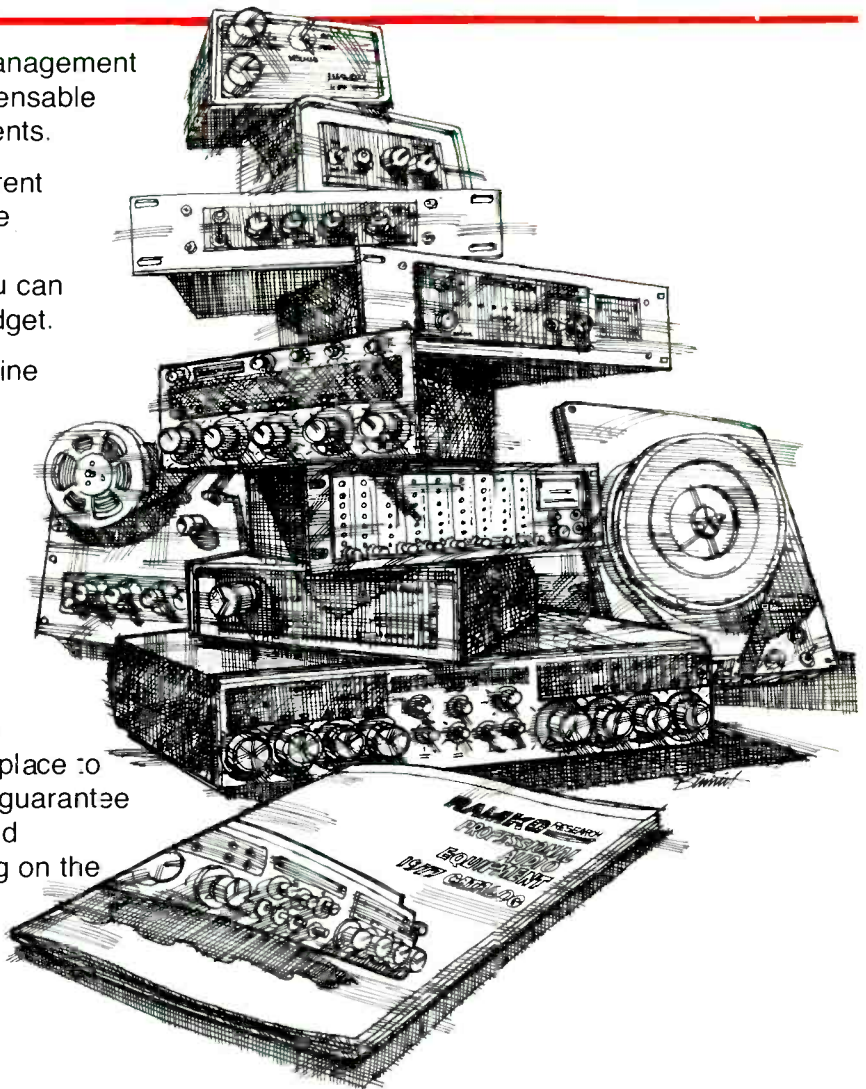
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Radio Programming

age includes 24 vocals and over 30 instrumental cuts, among them news, sports, and production themes, and a 60-second "Super Country Song" for TV spots and agency presentation.

For data: Dick Starr, Century 21, 2825 Valley View Lane, Dallas 75234, Tel. 800-527-3262.

Philosophy, quips, anecdotes—plus selling

A one-man syndicated talk show which is winning subscribers is "Bud Sunkel Time," produced by Bud Sunkel, of 927 N. Griffin Street, Danville, IL. 61832. Sunkel is a 25-year veteran of broadcasting who moved from successful DJ operations and station management to making programs for many stations. He describes Bud Sunkel Time as a one-to-one conversation with the listener, which takes up the listener's problems, offers personal advice, humor, insights into life situations, etc. At the same time, Sunkel becomes the advertising creator and voice for specific accounts, working closely with them to develop a low-key, "sincere," almost ad lib quality, and helping develop such events as store specials, open houses, other public interest affairs.

In its first release, Bud Sunkel Time was picked up by 32 stations, including stations in California, Alaska, Texas, as well as throughout the Middle West.

New syndicator—The Music Works

Bill Robinson, morning air-personality and program director of WIRE in Indianapolis, has formed The Music Works, Inc., to produce syndicated programs for automated and semi-automated radio stations. Robinson has twice been rated "Country Music Program Director Of The Year" by Billboard, and "Music Director of The Year" by the Gavin Conference. WIRE has five times been "Country Music Station of The Year," with Robinson as program director.

Robinson will serve as president and also be one of the hosts of "Alive Country," a country-and-personality show which will be one of the first series from The Music Works. Other hosts will be Gary Havens and Lee Shannon; the subscriber can take one, two, or three hosts, depending on how many hours per day of country music is wanted.

"Casual Country" will be a non-personality country format; "Canned Pop" a contemporary soft-rock format; and "Real MOR" a traditional casting of middle-of-the-road, mixing solo vocals, group vocals, and instrumental groups. Each of the four is

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multi-track recorders in tandem.

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fully back announced, and supplied on 10-inch reels, 7½ ips, in mono or stereo. Music Works headquarters is 6238 LaPas Trail, Indianapolis, IN 46268, tel. 317-291-9400.

Another new one—Air Crafts Limited

Two shows based on rock music are firsts from a new syndicator, Air Crafts Limited, of 516 Leonard Avenue, Woodbridge, NJ 07095. "Rock and Roll Illustrated" is a weekly 15-minute show with Michael Vee as host. Each week the show picks out a different artist or period in rock music

for discussion and illustration. Topics, says Air Crafts, will range from the "Do Wop" sound of the fifties to the "Disco" scene of today, and into the future of rock by spotlighting current trends, new artists, etc. The second series, also 15 minutes weekly, is called "15 Big Ones" and includes a quiz, asking listeners to identify title and artist of short segments of rock music. Full-length pilots of both series, including commercial breaks, together with a manual of operation, are available to interested stations at \$10, to allow a trial under actual operating conditions.

BM/E's Program Marketplace

Syndicators For Radio

IN THE FIRST SIX MONTHS of this department, starting last January, *BM/E* has described syndicators long established, with enough subscribers apiece to make them obvious large-scale successes.

More such syndicators are coming, but this month we examine two that don't fit that pattern. Master Broadcasters started a few years ago as virtually a one-man operation. But unlike some other such tries in this tempting and treacherous business, it gives every sign of being here for the long haul. Filmways Radio is a new venture for a large entertainment complex, successful in several other fields; it has a sizeable staff loaded with experience in radio programming. Each of these operations seems to *BM/E* to offer positive (if different) values that some broadcasters are likely to find well suited to their needs.

Master Broadcast Services, Inc.

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TALKING WITH JASON TAYLOR, founder and president of Master Broadcast Services, you get the lift that comes from a man doing an interesting job he really wants to do. The fact that he is especially good at it emerges from the history of his subscribers and from his ideas about programming for radio stations.

Starting in 1972, he built the business single-handedly to its present viability, with successful subscribers in nine markets. Master Broadcast Services, unlike some other one-man ventures in the field, looks good for the long haul.

Jay Taylor got his professional start in putting together programs for radio as program director of WBUD, in Trenton, NJ. That was in the early

1960's; in 1965 he headed for the wider horizons of New York to work for several top-line ad agencies as media buyer. This led to an expanding career as a representative for several broadcast companies.

But there came a day, with a major reaffiliation in the works, when Taylor asked himself: is this new career what I really want? The clear answer was no; he decided that programming for radio had the real appeal. At that juncture, a small inheritance plus some borrowed money, gave him just enough to go on his own.

One format—beautiful music

Taylor's ideas on how to make a successful "beautiful music" format have been quite definite from the start, and the record of his stations bears him out. He says that "random select" has never beaten a well-designed matched-flow format, when the station facilities and performance were at least approximately equal. His own programming is issued in 13-minute segments on 10½-in. reels. It is unannounced: Taylor says most listeners to this kind of music don't want the voice interruption of intros and outros. The commercials should not include music, which is almost sure to clash. The transition should not be directly from music to commercial, but through a low-key ID or PSA.

However, the listener does not want to feel totally out of the world; that feeling will develop a need to tune in another station just to know what's going on. Thus there must be at least two minutes of the top news every hour. Taylor's programming leaves room for this and for approximately one commercial to every 4 songs: he says that's about the limit if an "easy listening" spirit is to be maintained.

The reels are set up on an A-B
continued on page 24

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Radio Programming

two-machine system, with a third for fill-in. The end of a segment on the A-reel cues the B machine and vice versa. Taylor supplies a complete programming plan for each day which includes variations for the different day-parts. His initial package, delivered all together when a station subscribes, is 175 hours of music (to reach 200 hours this summer). In addition, he supplies about 100 hours of fresh material every year. He claims that this is as much music as any other syndicator on the market supplies, and more than most.

He also says that his sequences are designed so that repetition never becomes troublesome if the station follows his programming plan. The replacement tapes go out weekly; also supplied are customized IDs, a large Christmas library, technical consultation and promotional guidelines. Like other successful syndicators of beautiful music, he is fanatical about technical quality, requiring a minimum of 50 dB S/N ratio and frequency response flat from 50 to 15,000 Hz.

What kind of music?

Taylor's choice of music is governed by his conceptions of the audience he wants to reach. His understanding of, and sympathy for, that audience are obvious, and are surely basic to his success. The audience includes the 35+ group who have been the standby for beautiful music demographics and also the 25-34 group, who have recently grown out of their hard-rock years.

Taylor says this latter group now has a very wide range of musical tastes; they want to feel that they are current and in touch with what's happening in music. This group was a kind of "hole" in demographic coverage with beautiful music hitting the 35+ and the rockers the below-25 group.

Some stations have recently aimed at this hole in the demographics with album-oriented-rock. But Taylor sees this as fragmenting the audience. He feels he is holding the 35+ and also reaching the 25-34 by adding recent "mellow" cover hits by such artists as Streisand, Gordon Lightfoot, Art Garfunkle, Barry Manilow, Bread, Janis Ian, and the Carpenters.

Great care, says Taylor, must be taken in the choice of cuts, to maintain the "matched flow" with its precisely ordered ebb and rise, its pleasing contrast from one piece to the next. This is essentially a musical skill, and the evidence for it lies only in sampling the programming itself.

Like other syndicators interviewed by *BM/E*, Taylor emphasizes the in-

creasing difficulty in finding in adequate quantity the kind of music needed to keep an easy listening format fresh. The syndicator supplies a highly worthwhile service on that score alone. To extend his own resources, Taylor uses several "privately" recorded catalogs, in addition to the full sweep of commercial recording, including material from George Greeley, and the recently released arrangements of Frank Chacksfield. (Taylor believes he is the first syndicator licensed to use the Chacksfield material.) Taylor notes that it has taken him four years to build his tapes to the full complement of cuts he wanted; now that he will shortly have the 200-hour base he believes is right, keeping it fresh will be his main push.

A success story—WKCI, New Haven

All these elements in the character of Master Broadcast Services can be seen actually on the line at WKCI, in New Haven, Conn., a subscriber for more than a year. The ratings show fine success: after seven months with the format, without large promotions or television advertising, WKCI went up 45.9% in average ¼ hour adults, 54.1% in cume total adults, and 56% in 18-49 adults, over the previous rating period, when the station had a different format. WKCI is now a solid #2 in its market in both average ¼-hour and cume total adults. This is in direct competition with other important "beautiful music" syndicators who are on nearby stations.

The market is one calculated to put Jay Taylor's theories to a sharp test. Bill Patrick, WKCI operations director, points out that the station covers all the state of Connecticut, and much of adjoining New York and Long Island. There is a very large college and post-college population. Master Broadcast, Patrick says, works well for this group by getting carefully selected current hits into the programs promptly; the younger listeners feel they are "current," hear the hot new music they want to hear. At the same time, the "matched flow" skill with which the programs are put together, and the basic emphasis on beautiful music, keep the station strong with the older group. Patrick says he is delighted with his year of Master Broadcast Services, sees the format as strong for the future.

Filmways Radio, Inc. (Subsidiary of Filmways, Inc.)

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If an organization has produced "Two Minute Warning," "Save The Tiger,"

and "The Other Side of the Mountain" for the movies; "The Beverly Hillbillies," "Green Acres" and "The Adams Family" for television; and also has successful subsidiaries in publishing and popular music, it clearly has the financial wherewithal for a solid try at radio program syndication.

It also has experience in choosing people with the needed creative skills for entertainment ventures; and highly skilled people seem to have been chosen by Filmways, Inc., Hollywood entertainment complex, for Filmways Radio, a syndication operation launched early this year.

Steve Epstein, previously operations director of the Programme Shoppe and with earlier programming experience in a number of broadcast stations, is program director for Filmways Radio. John Price, director of marketing, comes from Camex, International, automation and programming organization. Roger Layng, program consultant and daytime announcer, launched the phenomenally successful "mellow sound" as program director of KNX-FM, No. 1 station in Los Angeles, and is currently program director of KPOL-FM, Los Angeles. Carol Allen, nighttime announcer, now at KPOL, was earlier program director of KEZY, Anaheim, and before that announcer on various stations.

The first format developed by this staff for Filmways Radio is called the "20/40," to designate the demographic block aimed for. Again, this is the post-war rock generation grown up to a mellow strain, the target of a number of the syndication efforts described in earlier issues. Steve Epstein described 20/40 to *BM/E* as "MOR for the young adult—not top 40, not soft rock—but the best of today's contemporary music for the 20 to 40 year old."

The hosts are not intrusive—pieces are all back-announced. The subscriber starts with 60 hours, or about 1000 songs, on 10½ inch reels. Two new reels go out every week, so that the basic library is replaced about every six months. In addition, the station gets new weekly current hits that can be fitted in as "flash" or "sparkler" material.

Filmways lays out a total programming plan for each station, with assignment of definite reel sequences for each part of every day. These sequences are worked out with the help of a computer at Filmways headquarters, and provide the flow of up and down tempo, the reel to reel sequence, that Epstein and Layng find most effective.

The main programming is laid out in 11 to 13 minute segments. The sequence leaves room between segments

for from 3 to 6 commercials per hour—Epstein and Price say they prefer the smaller number, as giving the station the best chance to maintain the “image” the music produces.

Like other syndicators described here earlier, Filmways Radio really operates as a consultant on the total performance of the station, giving detailed advice based on a comprehensive market analysis. But John Price points out that, unlike the standard “consultant,” Filmways does not drop in, supply some advice, and then go away. They stay with the station, continuously monitoring its on air and financial performance. Dial-up monitoring, via telephone couplers to the station’s output, allow Filmways personnel to catch a station on the air from anywhere, at any time. Comment or advice that seems needed is forwarded immediately.

The 20/40 format will have Layng as day-time host, Carol Allen at night. One of the areas in which many stations lack experience, according to Price, is in “selling” a personality to sponsors. This is largely because such stations often have not had a “personality” that was outstanding in quality, or that stayed with the station long enough to be a stable selling tool. So Filmways is ready with advice on making the most of a personality.

Another area, this one technical, in which Filmways attacks a widely-evident need is the adjustment and operation of cart machines for best quality. Filmways has developed an instruction manual on this topic, and a test cart that aids in setting up the machine. The instruction and test allow the broadcaster to avoid having cart material sound substantially inferior to that from the reel to reel tapes, another invitation to turn-off.

As this was written (late May), John Price reported that Filmways already had contracts for the 20/40 format with nine stations across the country, an excellent start for a new service. Four of these are in major markets and five in medium to small markets. As is virtually standard in the business, Filmways operates on a 1-year contract, and rates run from \$650 to \$2000 a month, based on market size.

Another offering, brought out earlier this year, is a two-programs a day, five-day-a-week series of 3½ minute shows called “Record Report.” Host Robert W. Morgan plays current recordings, and brings the artists to the studio, for interviews. The program is sponsored nationally by Warner Lambert (through the Ted Bates agency in New York) and is on 150 stations at this time. It is distributed on a weekly disc, ten shows per disc.

Filmways Radio looks very much as though it’s on the way. **BM/E**

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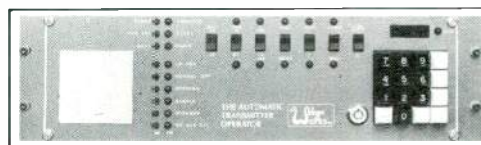
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TELEVISION

PROGRAMMING & PRODUCTION FOR PROFIT

At Post-Newsweek Stations Local Production Is A Vital Part Of The Corporate Plan

THE TELEVISION VIEWERS of in the Hartford, Connecticut, Miami, Florida, Jacksonville, Florida and Washington, D.C. markets get more of one thing than do most other television viewers: quality local programming. The reason for this is that in each of these markets, Post-Newsweek holds a license for a VHF network affiliated station.

There are no doubt some stations that do more local programming than the Post-Newsweek stations but these are the exceptions, not the rule. At Post-Newsweek, responsive local programming and lots of it, is the rule. It's a matter of corporate policy. The amount and type of local programming done at WFSB-TV, Hartford; WJXT, Jacksonville; WPLG, Miami, and WTOP, Washington, D.C. is expensive and not wildly successful as a revenue source. Joel Chaseman, president of Post-Newsweek, claims however, that the money spent by each station on local programming is a re-investment in the community, and ultimately strengthens the stations competitive stance.

"We happen to believe," said Chaseman, "that local programming is all part of the same management scheme—it all has to work together." Post-Newsweek wants to be the finest entertainment and advertising medium in each of its markets and Chaseman believes it can be without chasing after every profit dollar. "Those stations, in the long run," said Chaseman, "that have the deepest roots in their community and do community programming in an exciting responsive way," will have the best chance in the future as new drives are launched to monopolize the home screen, "whether it comes from video games, or cable, or over-the-air pay-TV."

Even now, when the competition for the home screen comes mostly from other broadcasters, the Post-Newsweek stations believe that the type of

responsive local programming they do is good for business. John Goldhammer, WTOP's former program director, said that it creates an air of excitement about the station, which in itself is good, but can also sometimes be a tie breaker.

Some of the things they do

The budget for local programming at each of the stations is estimated in the six figure area. Each station produces a "Town Meeting" which consists of open and unrehearsed discussion of some issue of local importance. Issues that have been discussed have ranged from zoning laws to abortion and from energy conservation to police relations with minority groups. Much of the effort is in the area of news since the station group considers news to be one of its primary objectives and as important to them as it is to the corporation's other two divisions, The Washington Post and Newsweek magazine.

Three years ago, when Post-Newsweek took over the license in Hartford, one of their first actions was to expand the 6 PM news from 30 minutes to an hour. Though the new managements style of aggressive local programming ruffled some feathers at first, its evening news soon became number one in the market, where it remains. Some of those who have turned to WFSB for news were brought in by the station's general approach to the community.

At WJXT, Jacksonville the style has concentrated on hard-hitting investigative reporting—much of which has either resulted in legislation or investigations into corrupt local officials and businesses. In addition WJXT produces "Kutanda" the only local daily black program, "Magazine 4," the only prime-time public affairs program in the market, a feminist program, children's programs, documentaries, an agricultural show and, of course, "Town Meeting." The local "Eye-

witness News," is the top rated show in the market.

WPLG, Miami follows the same policy of local programming and in one instance, achieved unusual impact on the problems it had focused on. "Why Johnny Don't Know," was a series of programs that focused on the failures of the educational system in Dade and Broward Counties. It consisted of at least 61 education stories, a unique 1½ hour prime time reading test for children and parents, an on-going editorial campaign, and much support from other media in the way of free advertising on radio and in newspapers. The program created such a furor that the State Legislature investigated and eventually passed an extensive education reform act that was termed by one lawmaker, "... the most important bill to emerge from that session..." The series took the NATPE Iris award for public affairs programming at the '77 convention.

WTOP, Washington, D.C. is Post-Newsweek's flagship station and one of only a few CBS affiliates in the top 15 markets to remain number one, sign-on to sign-off, consistently during that network's most difficult times last year.

One of WTOP's best known locally produced show is "Agronsky & Company" which is also one of the three top rated shows in the market. Chaseman points to "Agronsky & Co." as an example of what can be done with talking heads, if "the heads are saying something." The temptation is to say that the success of this show can be attributed to the nature of the market since Washington is a hotbed of political interests, but when the show was taken to Hartford, and played at the same period, the results were nearly identical.

There are approximately thirteen locally produced shows coming out of WTOP, including series and specials.

continued on page 32

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TV Programming

Two of the most successful are "Everywoman," a Peabody Award winner, which is not only about women's issues but takes a wider view of other human issues. Another is "Harambee," another Peabody winner in its 8th season. It consists mostly of half-hour documentaries focusing on black issues and airs at 7:30 PM on Saturday nights, monthly. This slot is shared alternately with "Everywoman." Under the "Harambee" banner some specials are produced, one of which was "Genesis, Juba & Other Jewels," an incredibly beautiful docu-drama depicting the force of music and dance on the lives of black people. All music and choreography were original. Expensive? Yes. Is it working? Yes.

According to Chaseman, most of the locally produced programs pull respectable numbers, mostly eights and nines. There are, of course, the exceptions such as "Agronsky & Company" and some of the specials which sometimes take their time periods. And, if something really is not working, it gets the axe.

Chaseman rates the avails on such programs as "good." He points out that there is a qualitative difference in

the audience since programming like this is tuned in by people who intend to pay attention. Even the smallest number, said Chaseman, is comparable to filling the largest municipal stadium three times over.

How it's done

Most of the programs are done in the studio, the least expensive of production modes. The studio at WTOP is usually booked solid, six days a week and many times, all seven days. Double shifts are not infrequent. John Goldhammer estimated that if it were not for the production load at WTOP, the station could be run by about 70 people instead of the approximately 165 people now on staff.

Film has been the mainstay of the documentary programs but ENG equipment is being brought in in stages. WJXT was the pilot ENG operation for Post-Newsweek and began with Hitachi cameras and Sony cassette machines. Eventually, as experience increased, ENG has spread to the other stations. Asaca cameras were purchased for the news departments and are now being replaced by Ikegami. The Asacas have been phased into commercial production and some are being turned over to public affairs. Most of the ENG editing is accomplished on Convergence equipment.

No move to "all ENG" is expected since the style of some of the programming is best suited to film.

The management is completely supportive all the way from Mrs. Graham, who heads the parent corporation, down through the field producers. Perhaps the management technique which has the most affect on this responsive programming is the way in which ascertainment is handled. Post-Newsweek requires each station management team to go well beyond FCC guidelines for ascertainment. Community meetings are held on a neighborhood by neighborhood basis as frequently as twice a week. At these meetings, the management team seeks out complaints of the community against the media. The meetings are advertised well in advance and special invitations are sent to known local activists.

Added to the vast amount of input acquired through these meetings is a very varied management team. Although Chaseman said that the mix is not planned, most of the stations have management teams that range in age from the low 20s to late fifties, and have a high proportion of women and minorities. The result is discussions and reactions to problems that Chaseman figures would never have occurred five to ten years ago. **BM/E**

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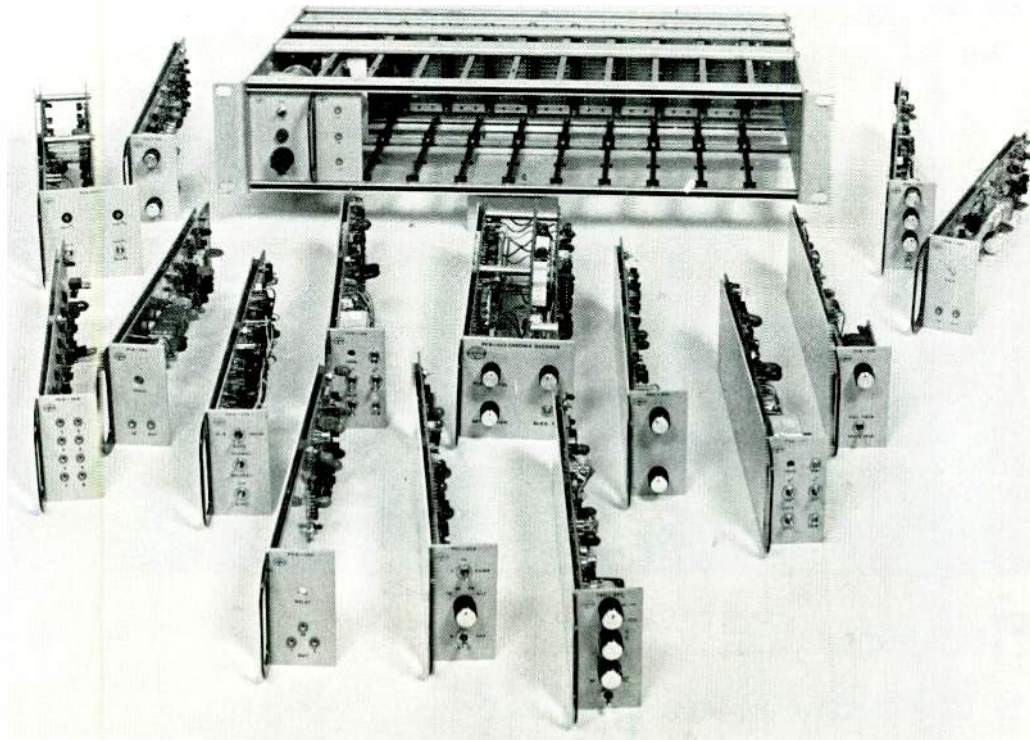
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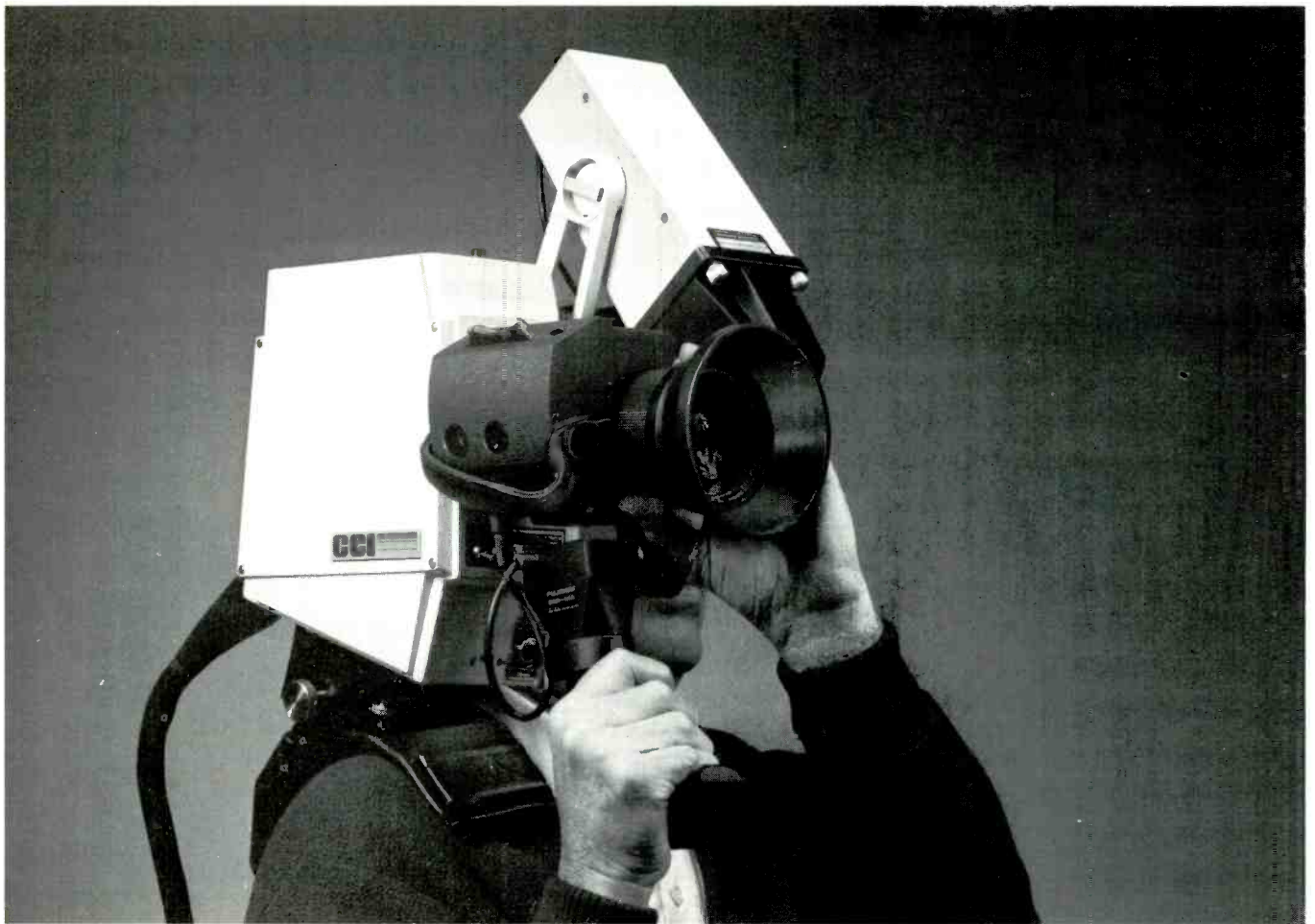
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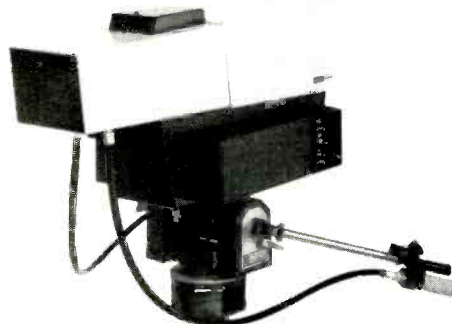
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ATS: Almost "The Transmitter That Runs Itself"

The completely self-directing broadcasting machine, the transmitter section of total automation, is some years away. But with the ATS authorized by the FCC in February we are on our way toward it. And ATS has immediate benefits every broadcaster should consider.

IT IS EASY TO ENVISION today a transmitter with enough "brains" to handle just about any event or requirement, normal or abnormal, coming its way during the broadcast day, and handle it far more quickly and surely than any human operator could. Added to computerized book-keeping and computerized program switching, this transmitter would make a complete broadcasting plant of awesome assurance, efficiency, versatility, smoothness.

Before we get this super-human transmitter, though, one or more organizations must put time and money into a large development program. Then, assuming we get attractive working hardware, the FCC must find the whole thing practical and desirable for the broadcast service. So, although the completely self-directing transmitter is supremely logical with today's computer technology, we can be pretty sure it is five or more years away.

But a broadcast operator can get right now some of the important benefits of transmitter self-regulation by installing an ATS, for the new optional semi-automated mode of operation the FCC made legal in February for FM and non-directional AM stations. Directional AM and TV are coming in later. An ATS will bring payoff measures of the *consistency*, the *freedom from out-of-limits operation*, the *constant maintenance of maximum power and modulation*, that we foresee as some of the outstanding boons of total transmitter automation.

The FCC's ATS ruling also eases substantially the inspection and control load on operation personnel and allows the station operator much greater flexibility and efficiency in handling engineering personnel, with a sharp reduction in operator licensing requirements. Many stations will be able to turn these changes in the rules into money savings or more efficient operation, or both.

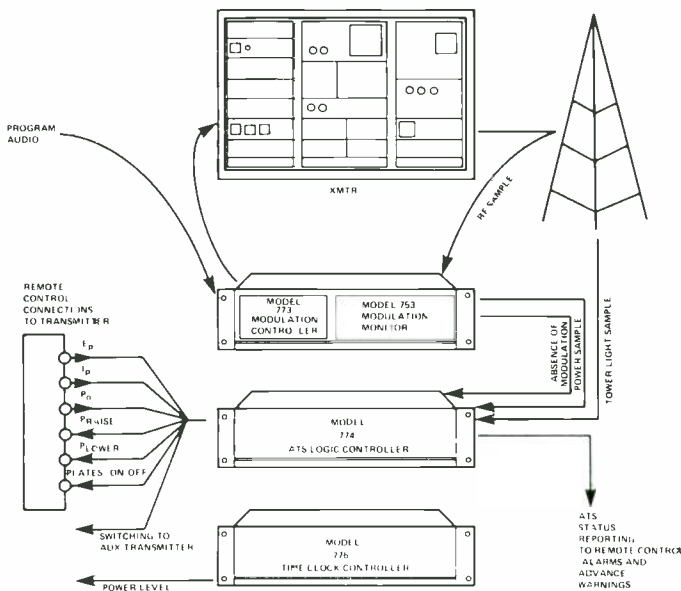
Why this ATS?

The FCC opted for this particular level of self-regulation because, in the first place, the industry is ready for it. Remote control and monitoring techniques have reached levels of reliability and versatility that make ATS hardware easy to design and build. ATS units from practically all the established makers of remote control equipment will be on the market within months (see box for some upcoming systems).

The FCC was also going for some applied democracy. They wanted a kind of automation that could be added to most existing transmitters at moderate cost, with benefits that have a good chance of justifying the cost for many stations, in the small markets as well as in the large.

Underlying those considerations was a more basic motivation: the intention of the FCC to move broadcast regulation toward the quality of the result, and away from detailed directions on how to get the result. Chair-

Simplified block diagram shows signal and control flow in ATS developed by Time and Frequency Technology. Time clock controller is required for AM multi-mode stations.



ATS: Almost Runs Itself

man Richard Wiley forcefully expressed this new regulatory philosophy in a personal statement issued along with the ATS ruling. He calls the ruling "... one of the most significant actions taken by the FCC during my tenure as Chairman ... Our action today permits licensees themselves, rather than the Government, to select the best means of maintaining the technical compliance of the station in his or her particular circumstances. The broadcaster will be held accountable for the bottomline integrity of the signal and not for observance of numerous and detailed regulations ..."

Chairman Wiley also points out that the FCC, in the ATS ruling, is to a large degree simply catching up with current technology. Although that technology, as already suggested, could take us much farther along the road, an ATS does represent a profitable move into transmitter automation.

As it looks now the FCC will win with ATS. The equipment already announced is priced in the range from

about \$3000 to about \$6000, and other makers queried by *BM/E* say their prices won't be much, if any, above that, for FM and non-directional AM. ATS for TV is more complex and will probably cost somewhat more. The equipment is very compact, quickly installed, and works with just about any reasonably modern transmitter.

Getting authorization for ATS is simple

Imbued with its deregulation spirit, the FCC has made it very simple to get into ATS. When the system has been installed (which takes no prior go ahead from the FCC) the licensee writes the FCC—station letterhead is allowable—saying that the system is in, has been tested and meets all the technical requirements. This must be certified by a radio-telephone operator with first class license. In nearly all cases the FCC will routinely and promptly give ATS authorization, and the station can start regular operation with the automatic system immediately.

The functions of an ATS

One function the ATS has not been given is turning on the transmitter at the sign-on. *This must be done manually.* After that, the ATS takes over as described in the following.

Control of Power, AM and FM. The ATS must sample the output power at one minute intervals and keep it automatically within the limits authorized for the station. For AM, the antenna current is sampled at the antenna ammeter, but on the transmitter side. For FM, the power can be measured by either the direct or the indirect method.

Turn-off for overpower. If the output power stays at 105% or more of the station's authorized power for more than 3 minutes, or after 3 samplings (automatic correction fails), then the ATS must turn the transmitter off.

Alarm for underpower. If the power stays below 90% of the authorized power for more than 3 minutes, an aural alarm must sound at the ATS control point (see below for description of control point and complete alarm system required).

Control of modulation, AM and FM. The ATS must monitor the peak modulation continuously, at the transmitter output. For AM, overmodulation is more than 10 bursts of 100% negative modulation in any one minute period, or any burst exceeding 125% of positive modulation. For FM, overmodulation is more than 10 bursts of 100% modulation in a one minute period. For both AM and FM, repeated bursts of overmodulation within a single 5 millisecond interval are counted as one burst.

For both AM and FM, if overmodulation as defined continues for more than 3 minutes, the ATS must automatically lower the program audio input until the overmodulation condition ceases.

Turn-off for overmodulation. If the overmodulation as defined continues for more than 3 minutes and automatic correction fails, the ATS must turn the transmitter off.

The station's gains from the power and modulation control

This automatic regulation of power and modulation makes sure the station puts out the maximum legal signal, with maximum modulation, at all times. The

continued on page 38

Ample Choice of Equipment For ATS Is On the Way

The following companies have announced that they will market hardware for ATS installations at various times before the end of this year. The first two have already made station installations, as noted.

QEI Corporation, Kresson, NJ. Prototype Model 7775 Automatic Transmission System installed at WWTR-FM, Bethany Beach, Del., scheduled to go on the air around the time this issue is distributed. Production models ready about the same time or a little later. Have issued an excellent "Guide To Automatic Transmission Systems" with summary of FCC ruling on subject.

The Widget Works, Medina, Ohio. "Automatic Transmitter Operator" installed in WDBN, Medina, to go on air about time this sees print. System marketed nationally by CCA Electronics, Gloucester City, NJ. Have an excellent summary of ATS features in general.

Time and Frequency Technology, Santa Clara, CA. Have completely designed systems for FM, AM, clock-controlled AM; regular marketing "before the end of this year." Have issued an excellent "ATS Fact Kit" with supporting documents from FCC, etc. available to interested station managements.

Harris Corporation, Quincy, IL. Complete, micro-processor controlled system will be marketed "in the near future." Demonstration at NAB in April showed great flexibility.

Moseley Associates, Inc. Goleta, CA. Will have complete ATS in the near future. Are designing systems for ready interface with Moseley remote control systems now in field; buyer of an ATS can then revert immediately to normal remote control at any time. Complete ATS will, of course, be available for all stations, whether they have present remote control or not.

Belar Electronics Lab., Devon, Pa. Will market complete ATS at an early date. New remote control and monitoring equipment introduced at NAB in April designed to interface with ATS.

Delta Electronics, Springfield, VA. No immediate plans for complete ATS; but their new AMC-1, modulation controller, introduced at NAB, meets ATS modulation control requirements exactly: Delta says in prototype installations it has raised average modulation level 1 to 2 dB, without overmodulation. Similarly, the new APC-1 controls power compatibly with ATS requirements. Both units are scheduled for regular delivery in early fall.

When WFVA^{AM}_{FM} buys Ampro, they broadcast it . . .



Keith E. Angstadt,
Chief Engineer and
John Carl Morgan,
General Manager
WFVA AM & FM,
Fredericksburg, Virginia

and, according to John Carl Morgan, General Manager of WFVA . . . "our four Ampro Consoles and eight cart decks get steady use and have proved to be real work-horses which have needed no babying and have been exceptionally trouble free. Even when maintenance was necessary, we found getting into the innards to be easy and straightforward. Further, our entire operation is located at the transmitter site in the field of a 1kW AM and a 5kW FM transmitter. The Ampro units have lived in this environment without any sign of RFI — even with everything wide open!" WFVA's Chief Engineer, Keith Angstadt, concurs adding that, "we are sold on Ampro products".

Ampro is the choice of the professional broadcaster. Their complete line of 6, 8, 10 and 12 channel audio consoles — stereo, mono, dual mono and stereo or simulcast — as well as cartridge equipment, turntable pre-amps and the new Monomax stereo phase protector are backed up by

a 24 hour staff of engineers seven days a week. All Ampro equipment features superior RF shielding . . . never a spurious pick-up problem no matter transmitter proximity. All equipment is logically laid-out for easy operation, constructed by craftsmen using the highest quality components. And, most important, Ampro equipment is made to last and last.

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ATS: Almost Runs Itself

system takes the burden off engineering personnel and does the job much better than they could.

By keeping the station at the top, but never over the top, the ATS produces maximum efficiency in the use of supply power, and maximum coverage, while at the same time protecting the station from FCC regulatory action for being off limits.

Time clock for multimode AM stations

If an AM station has more than one authorized mode, or has restricted hours of operation, the ATS must include a time clock system that automatically prevents sign-on ahead of the authorized time, performs all mode switching automatically at the assigned times, and turns the transmitter off at the assigned time.

However, the system can include a manual override that will allow full-power operation into a restricted-power time, if an emergency situation demands it.

Again, an ATS can greatly reduce the chance of illegal operation (fairly common among multi-mode stations) while taking a large burden off engineering personnel.

Clock fail-safe. If the clock or clock-controlled switching fails, the ATS must turn the transmitter off.

Clock accuracy and resetting. The clock must be within one minute of the time as set by WWV or WWVH, at all times. The accuracy must be checked at least once each calendar month, and the results entered in the station's maintenance log. The clock system must include automatic resetting on the first of each month, or

must be reset manually prior to sign-on at the start of the month.

SCA modulation control

If an FM station uses SCA, the ATS must include an automatic limiting device to prevent excessive modulation deviation of the SCA subcarrier.

Getting back on the air after automatic turn-off

After an automatic turn-off by the ATS, the station can go back on the air when the out-of-tolerance condition that caused the turn-off has been corrected. The station can go back on the air under *manual control* if the condition causing the turn-off has been corrected, and if the *operator on duty has the proper license for manual operation*. (See below for reduced license requirements for ATS operation.)

If the turn-off was for some failure of the ATS system itself (see below for requirements on this) the station cannot go back on the ATS until all necessary repairs and adjustments to the ATS have been made, and the station's radio-telephone first class operator has certified to that effect in the maintenance log.

Monitoring and control point: alarm system

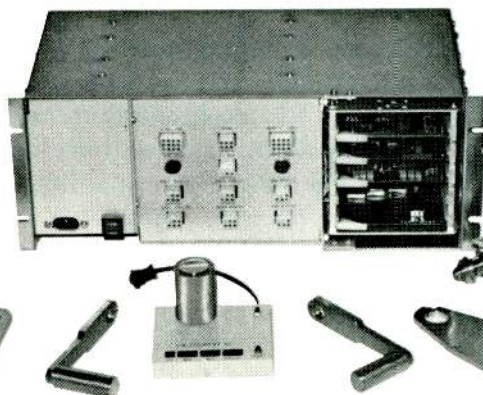
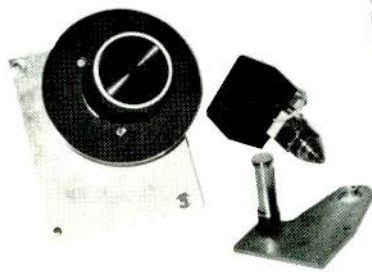
Every station using an ATS must have at least one monitoring and control point, at which an operator holding at least a restricted (non-endorsed) radio-telephone 3rd class permit is continuously on duty when the station is in operation.

This monitoring and control point can be at the trans-
continued on page 40

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ful life of your old VTRs. Before you submit a budget to equip your operation with the new VTRs, consider R-MOD as an alternative. It may give those quads enough intelligence to be worth keeping. Call or write for details.

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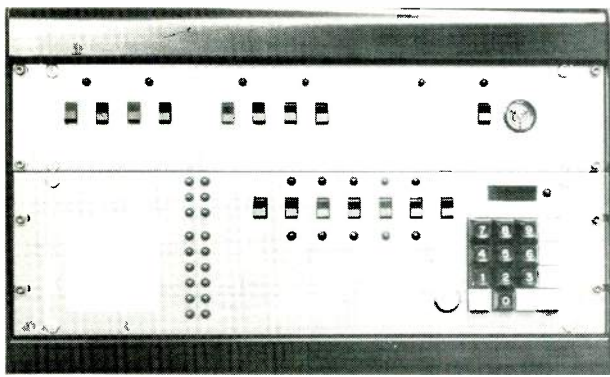
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STUDER REVOX

ATS: Almost Runs Itself



"Automatic Transmitter Operator," the ATS developed by the Widget Works of Medina, Ohio, uses microprocessor to control all functions, has switching, read-out for non-technical operation.

mitter, at the main studio, or at an authorized remote control location. If the station wants the ATS control point at a location not previously authorized, and not at the transmitter or main studio, the licensee must send an informal request to the FCC, describing the wanted location and the reasons for choosing it. In most cases the FCC will approve it promptly. More than one ATS monitoring and control point can be set up if the station management wants more.

The monitoring and control point must be under the control of, or available to, the licensee at all times and must have protection against operation of the transmitter by unauthorized persons.

Functions of the control point. The control point must have the following:

Means for turning the transmitter on and off manually (as already noted, the initial sign-on for each day must be based on a manual turn-on);

An off-air receiver for observing the transmitted signal;

An aural alarm system with functions described in the following. The licensee can, of course, include at the control point whatever other monitoring or control functions he finds desirable.

Functions of the aural alarm system. The alarm must sound if:

Any of the turn-off conditions occurs;

Transmission is interrupted for more than 3 minutes;

Power falls below 90% of the authorized power for more than three minutes (already noted in the foregoing);

If there is any failure of the tower lights, unless the duty operator can monitor the lights visually. The licensee can put in whatever additional aural or visual alarms he wants, as long as the optional alarms are clearly differentiated in action from the required alarms.

If a required alarm sounds, it must keep sounding until the condition causing the alarm has been corrected or the operator takes manual control of the transmitter. However, if a visual as well as an aural indication is activated with the alarm, the aural can be turned off as long as the visual stays on until the condition is corrected. The operator must note in the operating log the time, circumstances and duration of any ATS alarm condition.

Testing and fail-safe provisions

An ATS must have circuits that allow the automatic control and monitoring functions and devices to be

tested. The testing can be set up to be done while the transmitter is in operation, as long as it cannot inadvertently or purposely be used to override the automatic operation and control.

Turn-off. In addition to the automatic turn-off requirements already noted above under power and modulation control and mode switching, the ATS must turn off the transmitter:

For any failure of the line to the ATS monitoring and alarm point for more than 3 minutes, which would prevent the transmitter from being turned on and off manually at the control point;

For any failure of the required alarm circuitry for more than 3 minutes;

For any loss of the ATS sampling functions for more than 3 minutes.

Reductions in operation licensing, inspection and logging

As already noted, the operator on continuous duty needs only a restricted (non-endorsed) third-class radio-telephone permit. But for periods when the ATS is shut down and the station goes back to manual operation temporarily an operator with a 3rd class endorsed license must be in control.

Repairs or adjustments to the ATS control equipment must be made by an engineer with radio-telephone first class license. Inspections, required with an ATS only once a month (instead of once a week) must also be made by an operator with first-class license. The maintenance log is kept under the same rules as for a manual station, but the operating log is simplified; entries are required mainly for signatures of on-duty employees, operating hours, and recording of system interruptions.

No more meter readings. A large gain against the operating load is the elimination of all meter readings while the station is on the ATS.

Gains from the new operator, inspection and logging rules

The legalizing of the non-endorsed license for the continuous-duty operator of an ATS means that the station management has great flexibility in choosing and assigning engineering personnel. An on-air "personality," or even the receptionist at the station, can be the duty operator if that is more efficient or convenient at any period.

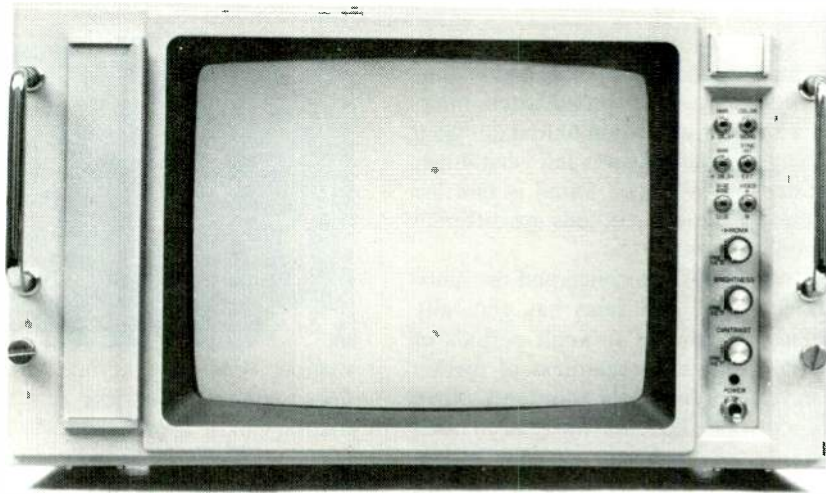
It is more convenient and practical with an ATS, than with manual control, to hire a radio-telephone first class operator on a part-time, contract basis. He is due for the once-a-month inspection, and for any adjustment or repair to the ATS system. For all other normal operation procedures, the station can do without him.

The reduction of the transmitter inspection from once a week to once a month is a considerable saving in time and effort in itself, especially if the transmitter is at a remote site.

ATS is a step into the future

Finally, it is worth noting again that an ATS gives the station a foot in the door leading toward total automation. The power and modulation control, and the fail-safe provisions specified for ATS would obviously be essential parts of the transmitter that completely runs itself. And it is unavoidable to conclude, with the trends in computer technology, that we will get that transmitter before too long; so ATS is the "way to go." **BM/E**

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With twice as many image-making dots on its tube, an Ikegami color-tv monitor can show up in unnervingly high resolution a dozen or more things that could go wrong in your picture. Not just purple cows, but the smallest anomaly in linearity, the slightest picture distortion, the most marginal overload.

This one is our Model TM14-2RH. A comb filter helps maintain resolution to more than 600 lines. It gives you a choice of over- or under-scanned picture display.

Damage to its picture tube is prevented by power-protective circuits. Up front are all adjustments for its 14-inch CRT and inside are modular PC boards for simple servicing and maintenance. A keyed back-porch clamp system keeps the black level constant for maximum picture stability.

There are both pre-set and adjustable controls. Video response is from +1 to -2 dB from 60 Hz to 8 MHz.

It has extremely rigid, sturdy construction and is available in a free-standing cabinet or for standard 19-inch rack mounting. Its built-in degaussing circuit and magnetic shield to fend off external magnetic effects make it possible to move the Ikegami monitor without affecting its picture.

Also available from Ikegami are our Series Eight monitors for broadcast studios. There are four models, 25, 20, 16, and 14 inches. All use in-

tegrated circuits for high stability, long service life, and very modest appetite for power. Their picture tubes have black matrices for maximum contrast and best color fidelity. A keyed back-porch clamping circuit keeps pictures stable with proper black level. Video response is +1 to -2 dB from 60 Hz to 5 MHz.

You can get an optional remote control for brightness, contrast, and chrome.

We really shouldn't have to give you all the specs. The name Ikegami alone is enough to tell you how good they are. But if you do insist on more, ask Ikegami. Ikegami, the leading manufacturer of ENG cameras, manufacturer of the best in studio cameras, and now the best in monitors, too.



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Automation In Small, Medium and Large Market Television Stations.

There is a desire to automate in every market. The approaches vary but the motivation is the same. More money, better management and a tighter operation.

LAST YEAR IN *BM/E's* SPECIAL REPORT on automation we took a look at what the various data services and technical automation suppliers had to offer broadcasters interested in automation. This year we sought to find out what broadcasters were doing with automation and what directions they are interested in. What we found is that the directions are the same; the chosen methods are different and for some very good reasons.

As far as business operations are concerned the automation of traffic, accounting, and sales has generally been a blessing. There are tales of difficult periods of changeover but for most stations, regardless of market size, these periods have been relatively short and, when patience has willed out, the benefits have been well worth the effort. The degree of improvement most frequently mentioned has been in the 20 to 35 percent increase in revenues directly attributable to more effective exploitation of the station's inventory and fewer make-goods. Also mentioned commonly was a marked improvement in cash-flow as delinquent accounts have been significantly reduced.

Perhaps the most significant result of business automation mentioned was the vast increase in data and reports upon which to plan and to monitor. Management finds these systems indispensable tools for getting the most out of their inventory. The discipline imposed by automation has also been a morale builder in most cases. Though the transition periods at many stations resulted in personnel dislocations in order to staff the system, there has been little or no outright reductions of staff. In many instances, the staffs at automated stations have increased—usually in the traffic department as a reflection of greater responsibility focused there, and in sales, as a reflection of the greater variety of avails to sell.

Technical automation

Only in the area of technical automation was there a great variety of responses to the trend towards auto-

Coy Dean, controller for KCBD-TV, checks out the station log for spot availabilities with VP and GM, Robert McKinsey.



Traffic office at WNAC, Boston, where station log and most other data entries are initiated.

mation. Whereas everyone wants to do this, market size does seem to affect the rate at which technical automation can be approached. As expected, this fact relates even more clearly to the capital available to the station than to its absolute size. The urge to automate is primarily associated with the desire to reduce errors and to free-up technical staffs for more creative work. The final interface of technical automation systems with business systems is a logical extension of this trend and nowhere did we find a reluctance to move toward that end.

Many stations reported increased use of video carts or cassettes for running commercials, and cited these purchases as related to ultimate plans for total automation. Only in the past have truly semi-automated equipments become available, such as programmable cart machines and telecines and intermediary technical computer stages such as Ampex's ASD-1. Recognizing this desire to attempt staged entry into technical automation GVG introduced its M200 system at this year's NAB, which offers a modular approach to technical automation.

In the remainder of this report, you will find everything from total automation at WNAC-TV, Boston, the 6th ADI, to experiments with hobby class computers in Las Vegas, and a "roll-your-own" business system in the 142nd ADI, Bismark, ND.

One of the more notable differences between our report last year and this is that broadcasters have become increasingly comfortable with computers and the fear of "getting into the data operations business" is quickly disappearing. No comprehensive round-up of the various data services is implied in this report since our attempt here is to simply provide you with a look at how other broadcasters are finding their way towards total automation.

Wherever possible, we have eliminated redundancy. Stations, regardless of market size, tend to deal with the same fixed problem: given that we are on-air at least 18 hours a day and that we have 'X' number of avails, how do we utilize those avails to their maximum? Most

broadcasters we talked to felt that there was not a great difference in the quality of the various data service suppliers. The factors that seemed to influence them most were whether the station was affiliated with a network or independent, whether personnel with data processing skills were available to them or not, whether they were within range of computer hardware support or not, and ultimately, their own "style of operation." This last category seemed to be the most important in deciding on a business system and represents a subjective, almost "emotional," condition.

Bismark has "rolled-its-own"

The decision to "roll-their-own at KFYZ grew out of a somewhat unique set of circumstances. First of all, "at the time we started to automate some of our operation, there were not many specialized data servicers in the business," said William Ekberg, president of Meyer Broadcasting Company. The year was 1966. Secondly, Meyer Broadcasting Company is a study in contrasts. Though its AM radio station has fewer listeners compared to large metropolitan stations, in terms of geography, its daytime coverage includes five states, and two Canadian provinces—the largest daytime coverage in the country. Though its three FM stations, two CATV systems, and two satellite TV stations puts it well below the maximum one-company ownership allowed by law, its 165 employees mark it as a relatively large company.

Meyer Broadcasting began with an IBM 402 and the pleasant discovery that one of its control operators, Bruce Davidson, was a skilled programmer. "We gave him a temporary assignment as the traffic clerk handling commercial orders and logs for six months," said Ekberg. Davison then worked with sales people to determine their needs and learned a number of other functions in the operation. "We then decided that we could write our own programs, and probably do it cheaper in-house, essentially for the rental fee of the computer."

Since then, Meyer Broadcasting has been through the IBM 402, updated it to an IBM System/3 Model 6, then to an IBM System/3 Model 10 and now uses the IBM System/3 Model 12. The system is being used for accounts receivable, general ledger, payroll, accounts payable, cable TV billing, product analysis, and sales analysis. The real payoff, according to Ekberg, is scheduling of commercials for radio and TV. "I don't know how we could get along without a computer anymore," he said. "The demand for accuracy is so great and the schedules are so fluid that it is just an impossible manual task." Ekberg said that his use of the System/3, is not only economical and dependable, but "necessary."

The three television stations, KFYZ in Bismark, KUMV-TV in Williston, and KMOT-TV in Minot, are operated in an unusual mother station/satellite mode. KFYZ-TV is an NBC affiliate and operates as the mother station. All network programming and national advertising is simply fed straight through to the other two stations and broadcast exactly as at KFYZ. The first half of the noon, 6 PM, and 10 PM news and weather, along with commercials, are handled by an anchor-man team in Bismark. The second half of the programs are handled independently by the satellite stations.

The business operations for the TV stations, CATV systems and the radio operations, with the exception of its two Montana AM radio stations, are handled by the IBM system in Bismark. The Montana radio stations use

their own in-house IBM System/32s.

Ekberg finds the ability to rotate commercials both horizontally and vertically among the most useful functions of the system. Whereas most data services suppliers offer some form of rotation, Ekberg wants to do some things "our way." "We produce," said Ekberg, "what we think is a unique sales report. We allow national and regional spot sales free access to a whole block of time. We allow two days for adjustments, then the last five days are frozen and the time is given over to local advertisers. This system has resolved many conflicts at the sales level. And, the point is, when we decided to make this change in our system, we made it very easily because we controlled the entire operation in-house."

The next step for Meyer Broadcasting will be to go on-line in all their applications. "We are making that transition now," said Ekberg, and "we hope to eliminate all keypunching and do our input operations with CRTs." Real time information, it is hoped, will allow Meyer Broadcasting management to know where they stand at all times, "particularly on availability changes." Ekberg said. "We are also writing a super command language to allow our own executives access to our data in special ways for such things as sales, payroll, and payables analyses."

KLAS-TV, forecasting and experimentation

At KLAS-TV in Las Vegas, a CBS affiliate, a confluence of events led to the selection of the Jefferson Data Systems business service. For one thing, KLAS is owned by Summa Corporation which has, itself, considerable computer power. The feeling was that at some point in the future KLAS would go on some type of distributive system using the Summa's mainframe computer. Jefferson Data is a distributive system and the only supplier, according to Allyn Cutler, comptroller at KLAS, that would "entertain the thought of selling its software." Moreover, the current Jefferson system most nearly approximates the eventual system KLAS is likely to develop.

One of the things Cutler likes best about the system is, "it lets the managers do more in the way of managing." According to Cutler, "We rotate both horizontally and vertically and we've gone into block selling," and the fact that the system lets the station look some ten weeks down the road, "has just opened up our inventory something tremendous."

At 8:30 in the morning, when the salesmen arrive, there is an avails listing of what is unsold ten weeks out lying on his desk. This, together with historical information obtained from the system, permits the sales people to "add credibility to their pitch." They can now look at the expenditure of a particular client historically and call on them when it appears that the likelihood of a successful call is greatest.

The salesman is no longer going out to a client cold, according to Cutler. This has improved morale quite a bit. Management is talking "current information" and therefore can give the salesman counsel and directly lend more effective support to the sales staff." The greatest effect to date has been a very sizable increase in local sales.

The receivables situation has also improved "tremendously," according to Cutler. "The one girl we had doing receivables in the past spent 80 percent of her time doing clerical bookkeeping entries. Now she spends

TV Automation

maybe two-and-a-half days a month putting things into the computer and spends the rest of her time doing credit."

KLAS also sports one of the more interesting approaches to technical automation, mostly due to the efforts of Tom Franklin, operations director, and Ken Brookhart, chief engineer. Both Franklin and Brookhart are computer buffs and enjoy experimenting with computer control of the technical plant. Some time back they convinced management to let them buy an IMSAI 8080 hobby class computer, essentially as a mass storage device for their Datavision character generator.

Within a short time, however, Franklin and Brookhart discovered that the 8080 was much more valuable as an experimental tool.

Already, KLAS uses RCA TCR-100 video cart machines and is interested in getting into ATS (Automatic Transmission Systems) as soon as they are authorized for TV. Franklin said, "It's probably not too far down the road as far as automating the on air operation goes." The IMSAI 8080 currently sits in the control room, where "we simply play with it and use it to develop ideas," said Franklin. On the day of this conversation, Franklin and Brookhart were preparing to hook it up to their RCA AE600 reel-to-reel videotape editors to experiment with using the time code editing system.

Originally they planned to use the 8080 in an election reporting program they'd developed but a power failure on election eve caused them to alter their plans. "But," said Franklin, "we've been adding onto the thing and are now looking at expanding it to support several things at once: The character generator, tape editing, plus master control, on the one computer." The system currently

Telephone and channel interface equipment sit on top of the Nova II mini in traffic. This equipment is on-line to BIAS in Memphis, Tenn., at all operational times.



The PDP 11, part of the CDL System 100, provides the computer power for technical operations. Disc drives below are used to store the station log and record as-aired data.



uses a floppy disc drive and this might have to change, or the computer itself might have to be replaced with a larger, faster type, but nevertheless, invaluable experience is being gained. Eventually, they would like to interface with the business system but Franklin does not see this in the immediate future.

One reason there is such interest at KLAS in technical automation is that the station is getting more heavily into production and would like to free-up its technical staff for more creative work. In addition to increased local production and commercials, there have been discussions about originating some regional or national gameshows. The new facility that KLAS has moved into has been a big boon to improving the quality of local production and as the ambition to do more regional and national production increases. Franklin feels that automation can help tremendously by permitting more emphasis on quality control.

KCBD-TV: Automation helps station "think big"

Robert McKinsey, vice president and GM of KCBD-TV, in Lubbock, Texas (ADI-132) points out that "Size, like age is a state of mind. They say you're as young as you feel and as big as you think . . . we don't consider ourselves a 'small' market and that's why we approach our problems with the same degree of sophistication as TV operators in the major markets in the country."

According to Coy Dean, comptroller for KCBD, an NBC affiliate, "in the past two years the increase in business volume at our station has been so great that it would have been practically impossible to handle it manually." The people at KCBD believe that the overall increase in volume has diminished the difference between small market and large market conditions. McKinsey points out that Lubbock is a three-station, three-network market and that competition here is as stiff as it is anywhere.

KCBD was the first in its market to take advantage of the computerized capabilities of automated business system. They chose BIAS (Broadcast Industry Automation System) from Data Communications Corporation in Memphis, TN. KCBD management feels that it has actually given them a competitive edge.

BIAS is an on-line automation system with its host computer located in Memphis. Clients use the system in real time over telco lines. McKinsey feels that automation has given them a number of benefits, "including what we feel is the most important complete control of our inventory." Other benefits have been a reduction in paperwork, sales records, and analysis reports that are a great help in sales projections. Rotations, block sales, and protection are all things that can now be provided with a minimum of upheaval.

KCBD looked at a number of systems and found that they all had something to recommend them but felt that the on-line features of BIAS were best suited to their needs since they had little desire to acquire any computer hardware.

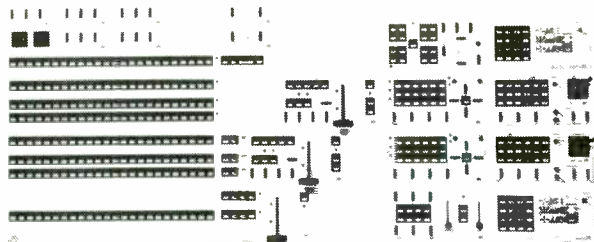
Dean said that in the two years they have had the system, "it has enabled us to cut down on our manual errors, omissions and deletions and, from a cash-flow point of view, has cut our 90-120 day delinquencies by 50 percent and our 30-day past dues about 35 percent. Moreover, the backbreaking log preparation has been cut down to 11-minutes. Make-goods have been virtually eliminated and

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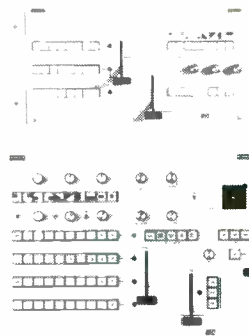
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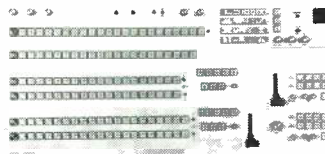
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late sales are no longer the 'crisis' they used to be. In this respect, the system has been a real morale booster.

Carl Minor, national sales manager for KCBD, figures that station revenues have grown by about 20 percent annually since the station went on-line. According to Minor, "The national-regional-local sales reports, projected sales revenues, person-by-person sales breakdowns and similar reports enable us to make specific determinations as to our future plans . . . and soon we'll have the ability to forecast future advertising demand, which will be invaluable in developing future rate structures."

Small or large market," said McKinsey, "makes little difference anymore. The overall increase of business in all areas of television over the past few years has created a volume that can only be handled efficiently by computers." Sophistication of the buyers in the market has gone up too, said McKinsey, and soon, "even the smallest stations will have to computerize to increase revenues." That will include technical automation too.

Medium size markets have great expectations

We talked to a number of stations in the medium size market category and from the business side, things shaped up pretty much as they did in the smaller markets. Looking at the client lists of the various suppliers there is very little to indicate a preference. Business is business and all the various suppliers have found a suitable way to conduct it or they wouldn't be in the market. This is also true of the large markets too, ADI 1-25, which we'll look at a little later. The stations we report from here were selected mostly because the people we talked to said something different and might add to your own expectations.

Ed De Long, executive vice president and GM for WHBF, Rock Island, IL, has some pretty interesting observations. His station, a CBS affiliate subscribes to Jefferson Data Systems for its business service.

One of the chief advantages of automation for DeLong is the ability to analyze long term trends. "This sort of information," said DeLong, is not expressed in the data so much as it is implied, and looking at the data you have to ask yourself, 'What happens if . . .?' "If the price of gasoline goes up, suggests DeLong, and we used to get a lot of used car dealers—what will happen to their market for the old gas guzzlers? Will that make them less susceptible to sales appeals? Looking at the historical data, are there seasonal fluctuations we can take advantage of, or is there some other product in my market which is not being effectively marketed? According to DeLong, one ought not buy a business system for its bookkeeping capacity, "It has to provide better management tools that were not available to the manager in the past."

The experience at WHBF was not that different from others we have talked to but DeLong had some interesting notions. As for most managers, DeLong said that it would take them a longer period to understand what is available to them than it will to understand the actual operation of the system. He points out that inventory in broadcasting is always changing; that it differs radically from the warehouse inventory of a manufacturing system. "What you are selling is always changing," said DeLong, "news spots, kids shows, different types of

syndicated product, etc . . ." With the historical information on hand from an automation system, "we can trace our activities over a long period of time," and project more accurately. Technical automation is a logical next step, said DeLong. And after that? "Maybe charting biorythms." There may be days when a salesman ought to stay in the office or a member of an ENG crew ought not to be driving the van. DeLong knows that he's projecting way into the future but what he is stressing is the need to view automation creatively.

At WHAS, Louisville, KY, the 26th ADI, they subscribe to the Cox system. As in most other cases, the business system has gone through its initial growing pains as the station personnel adjusted to it. It has now settled down into the roll of management tool. At WHAS, as in the other stations, nobody wants to go back to "the good ol' days." WHAS selected Cox for many reasons; chief among them was a desire to "do business in our own way." "We have had to become a data operations center," said Tom Bauer, operations manager, but then, that was a conscious decision. WHAS had the experience with both a card based system and the earlier time-shared Cox system, so they were not intimidated by computers and wanted to have the flexibility to innovate.

Periodically, sales, traffic, and programming sit down and decide on the basis of data acquired, whether they want to change anything. "We all look at what the programming is, and then look at how we'll maximize the inventory. Are we going to have 10 second, 20 second, 30 second spots—or . . .?" All these questions are asked and if a change in software is needed, it can be accomplished. Said Bauer, "If we want something special, we might have to pay for it but if we want a modification of software we can get it built into a system pack."

Right now, WHAS has an old Riker master control switcher. Within a few weeks they'll take delivery on a new GVG M200 automation system. This new system is a modular design and will permit WHAS to move toward total automation step-by-step.

"We have an ACR-25" said Bauer, and three film chains. "If you look at what we're buying you'll see that almost everything is being purchased with automation in mind." Immediately, WHAS is working toward a complete accounting system including general ledger and has hopes that Cox will soon come-up with a radio system. Technical automation is further down the road but is definitely in its future.

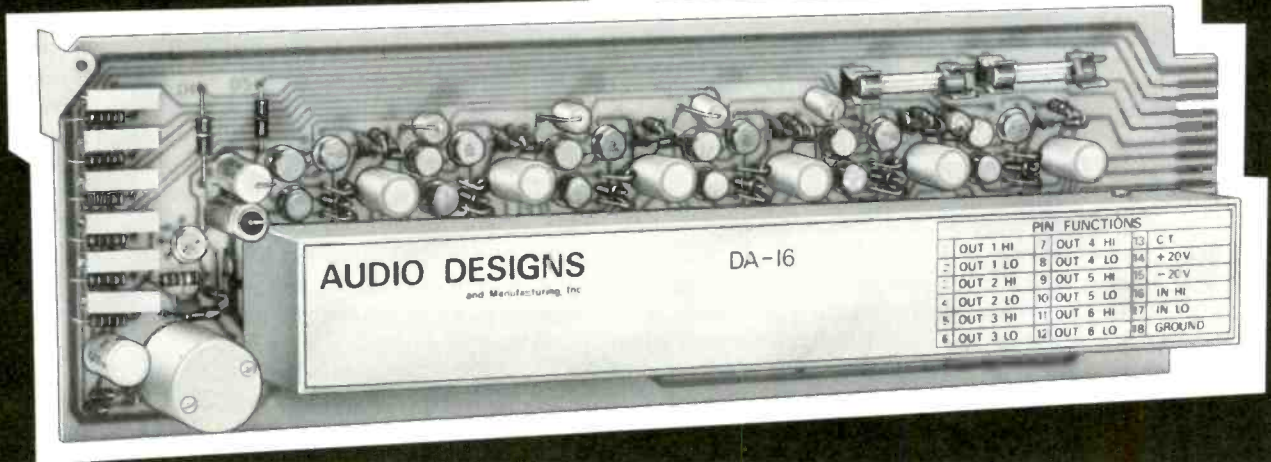
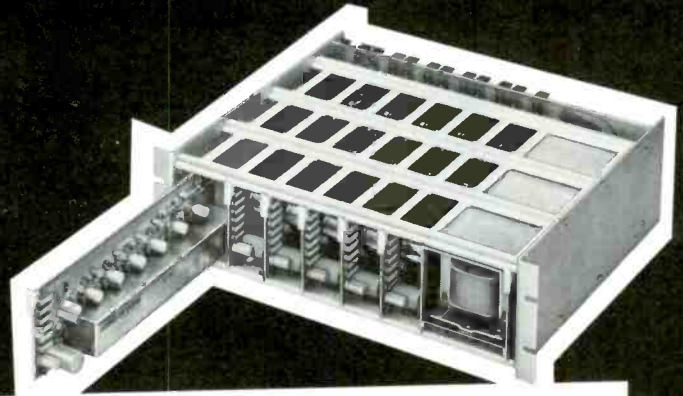
In the big markets, technical automation is here

It has been some time since the first "total automation" system went on-air at WTCN, Minneapolis. The experience gained there and the example it set has convinced many broadcasters of the wisdom of "total automation." As might be expected, the wealthier large market stations have moved most quickly towards total automation though smaller market stations are not far behind. Still, total automation is not a decision lightly made. It takes months, sometimes years, of planning (though this time can be expected to be shortened as the various suppliers become more experienced and comfortable with each other).

Total automation is not yet a foregone conclusion. Even in large markets it is not a hellbent race to automate but rather a steady progression towards an inevitable goal. At Belo Broadcasting in the 10th ADI, Dallas-

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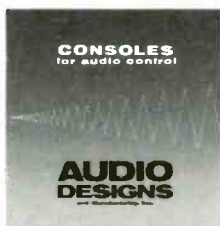
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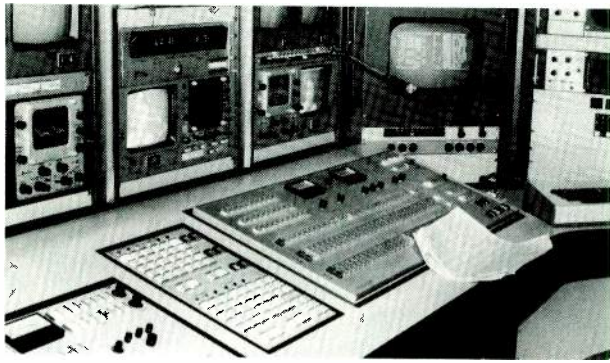


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TV Automation



Vital 16 event preset switcher (lower left) provides manual back-up system. Hardcopy of station log is kept near CDL master control switcher to provide operator with constant check on performance. CRT print-out (upper right) provides real time monitoring. Console below can be used to edit schedule and look at future or past events using bottom six lines of CRT printout.

Ft. Worth, business operations of its TV, AM and FM stations, all housed in the same building, are automated via the BIAS system. The television station, WFAA-TV, is rapidly expanding to accommodate an ever more ambitious production schedule.

According to vice president and director of engineering, Jim Cooper, the transition to total automation can be "traumatic." "When we automated our business operation," he said, "we experienced a difficult period of transition. It took time to train our personnel to adapt to new work procedures and I don't want to repeat that experience with broadcast operations."

So, WFAA has decided to take a step-by-step approach, and the first step is ASD-1. This system consists of a rack-mounted PDP-11/03 mini-computer equipped with serial interface cards, a non-volatile core memory unit, and a teletype ASR-33 keyboard/printer with tape punch and reader. This set-up is used in conjunction with the Ampex ACR-25 equipped with ADA and IDA.

Since WFAA has a cassette library of some 2,500 cassettes and plays some 300 of these a day on the average, automating this function alone is a big help. Using the schedule produced by the BIAS traffic system, a technician loads the ACR-25s (WFAA uses two on-air). The cassettes need not be loaded in sequence but can be loaded randomly wherever empty bins exist. The house ID number, or IDA message, is recorded on the pre-roll segment of the cassette tape. Once loaded, and the door closed, ADA automatically interrogates the cassettes, reading the IDA numbers to create a table of contents.

The table of contents obtained by ADA is then stored in ADA and transmitted to ASD, where it is used to update the playlist. The ASD operator uses the teletype to enter individual cassette IDs into the ASD-1 based on schedule revisions, additions, or deletions. This date is then sent back to ADA to reconcile with its table of contents which, if necessary, may be reordered to reflect the new playlist. The original ASD schedule is prepared on punch tape by traffic, and only last minute changes need be made once it is fed to ASD.

In the same market, Dallas-Ft. Worth, the commercial independent station is totally automated. KTVT operates a BCS (Broadcast Computer System) from Kaman Sciences for its business system and has recently interfaced with the Vital, Viamax 200, technical automation system.

Chief engineer Bill Kessel states that as an independ-

ent, KTVT runs more events daily than an affiliate. On a busy day, "we'll run between 400 and 450 events." To handle this load everything that can be is transferred to video cassette for the ACR-25.

The log is prepared by the BCS computer and is transferred to the Vital computer via a hardwire interface. The table of contents of the ACR-25 is reconciled with the transmitted schedule in a series of communications between it and the Vital system. After a day's run, the Vital system runs an "as-aired" record and transmits it back to BCS. The BCS system prepares a log which may eventually serve as an approved FCC log. This depends ultimately on the opinion of lawyers who as yet, do not feel that the log meets FCC requirements. So, as of now, the FCC log is prepared as it was before.

There are two ways of approaching the timing of events in a system like this. One is to use an elapsed time system for each event. That is, if the schedule says that an event is three seconds long, at three seconds, the computer moves on to the next event. The other approach involves the on-air machine (telecine, VTR, cassette of cart machine, etc.) returning a cue to the computer that signals the completion of an event, and triggers the next event. Nearly everyone is in agreement that some system of cueing would be superior to the elapsed time system since elapsed time results in the occasional clipping of events.

The KTVT system is based on elapsed time as of now, though Kessel would prefer a cued system. Nevertheless, the elapsed time system is not all bad. It has forced a degree of discipline on the technical staff, "probably more strict than anything we've had in the past," according to Kessel.

One of the innovative things that Kessel has accomplished is the solution to a problem of recueing films on the telecine. The automation system would roll film but it would not recue it. Kessel installed a photo-electric cell on the telecine to count sprocket holes. This gives the telecine a "frame counting" system which the computer can handle quite nicely.

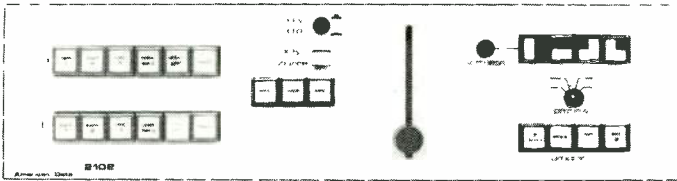
BCS has lead the "interface race" especially with its string of successes at Metromedia stations. In the last year, however, other interfaces have gone on-air including a unique set-up at KTVI, St. Louis, where Cox took it solely on themselves to interface their business system with the Vital master control system. As things stand now, at KTVI, the Cox system produces a schedule which is then recreated on a paper punch tape. That tape is edited as necessary and then used to control the Vital switcher. The Cox-GVG interface at WIIC, Pittsburg, which we reported on last year, is now in full operation.

BIAS, though a leader in the supply of business systems with more than 160 client stations, has had some difficulty with interfacing. These problems now seem largely solved as BIAS reports a recent interface with a GVG switcher at WEWS-TV in Cleveland, and has achieved a successful interface with CDL system at WNAC-TV, Boston, which has been operating for several months. Interestingly, the technical software at WEWS was written by Vital.

The WNAC interface went live on February 15, 1977. It was the culmination of a long planning process begun in engineering four or five years ago when the decision was made to automate. The engineering management had already determined the benefits they expected to

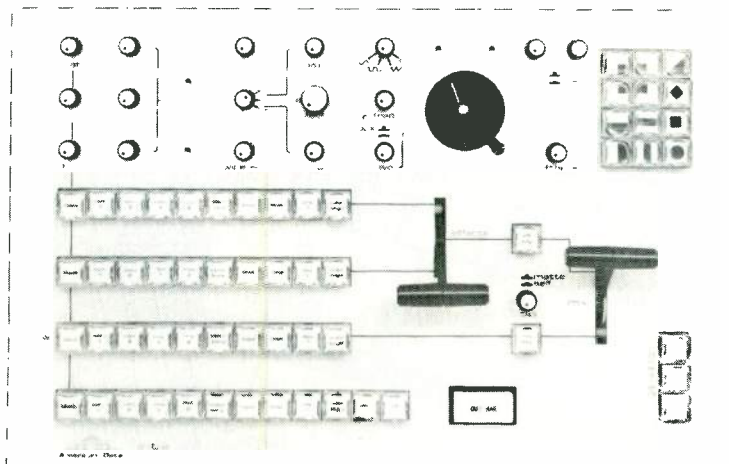
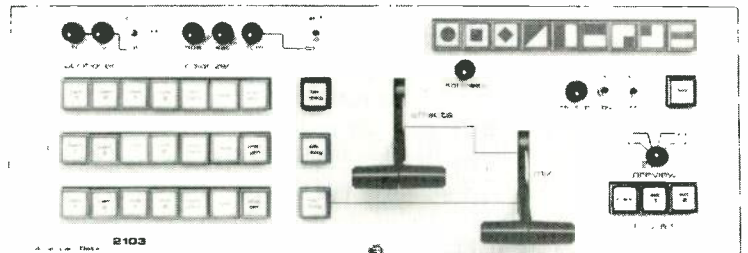
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TV Automation

derive from automation. These plans mostly involved the elimination of errors, the creation of more time for production, and the relief of the technical staff from routine procedures to be utilized in this production.

Dave McCracken, traffic manager at WNAC, is very pleased with the outcome of the interface. There are still problems and some things not in the system that they are working toward, such as reconciliation of the as-aired results with the schedule for billing purposes. With the BIAS options that WNAC has selected, they are able to see ahead some six months for sales and traffic purposes. The actual daily log preparation takes place only a day or so ahead of its actual calendar arrival. McCracken prefers to hold onto the log as long as he can so that modification can be made in traffic rather than requiring engineering to edit at the last minute.

The interface has probably increased the responsibility on traffic by a third. The traffic people have had to learn a new language and have had to use that language precisely. Where in the past you could rely on the engineering people to interpret what you meant to say, the computer is less forgiving. It needs detailed instructions.

The log is held in traffic until McCracken is relatively certain that it will remain unchanged. McCracken knows when the station switches to net so he waits until then. Usually around noon, just after the news, McCracken will call the m/c room to see if they are prepared to accept the next day's log. If so, the CDL PDP-11 is set up to receive the log from the Nova II in traffic.

The CDL system is the System 100. It utilizes two disc drives and can store 256 events in core. When the log is transmitted, one disc drive is loaded with new discs to receive the log, while the other disc is on line to the PDP-11 with current activity.

At present, the master control automation system will not run certain extremely complex breaks as they appear on the BIAS log. So when such breaks are scheduled, an autohold function is used. Autohold suspends the execution of events until the break is completed manually, and then returns to automatic. This problem is being worked on and chief engineer, Ken McGowan, is confident of a solution.

The technical automation system controls the station's on-air appearance for the most part. It runs the RCA TCR-100 cart machines and rolls the numerous telecines and VTRs. WNAC, like KTVT, is still on an elapsed time system for moving to the next event.

Though WNAC always ran a tight ship, the automation system has made it necessary to run it even tighter. Timing has got to be right-on and even talent has to get used to the idea that a three-second news headline is precisely three-seconds long.

WNAC, with its BIAS system, CDL System 100 and remote control of its transmitter is just about as automated as the state-of-the-art permits. ATS is a hoped-for extension. There are problems associated with start-up and transition to automation, but McGowan remembers the not-so-distant past when the operators preferred the sixteen event pre-set Vital switcher that is now maintained as a back-up. Do WNAC operators want to go back to those days? Not by a longshot. **BM/E**

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Program Automation, Traffic Automation Are Now Powerful Aids To Radio Success, Large Market Or Small

Numerous radio managements, in large markets and small, said it again: automation works hard for them, in better management control, much higher efficiency, more productive and interested operating personnel, a more consistent on-air sound, than they had with manual control.

TALKING WITH THE MANAGERMENTS of a random sample of radio stations that have recently gone to automation reinforces and enlarges the view that has been building for several years. In two sections of the broadcast operation, traffic/accounting and program switching, automation is today a mature, cost-effective technology that becomes more versatile, more flexible as computer techniques advance.

And with FCC go-ahead in February, the third section of the plant, the transmitter, is starting to move toward automation: see the story on ATS on another page in this issue.

The versatility of today's program switching automation, its adaptability to many levels of operation, are emphasized when we look at what stations in very large markets do with it, and then at some stations in very small markets. Take first WYNY, the NBC FM outlet in New York. As WWNS, it was the flagship station of the NBC national news service, NIS and had an all-news format. When NBC decided to scuttle NIS, the station was set up to go to music, with a contract for Bonneville's syndicated "soft rock" (see story on Bonneville in *BM/E*, January).

Lou Bruno, engineering manager, says that automation was considered a necessity to ensure a highly consistent sound, since the station would have to re-educate its audience and to some extent find a new one, in the massively competitive New York market. Automation was also seen as the way to keep engineering costs within reason, in the face of New York's soaring personnel costs.

NBC decided on a Schafer 903 system, adding many options to make the system highly versatile. In a crash operation carried out between early November 1976 and January 1, 1977, when WYNY was due on the air, the system was installed and successfully took over operation. Bruno says it is doing the job they wanted splendidly.

The modifications, (which are continuing to be added) include, for example, diversion of some memory capacity to make the microphone switching more automatic: on-air talent does not have to do any operation jobs. There is an automatic interface to a dbx noise reduction

system, which comes in on certain noisy programs. The number of inputs to the system is being expanded beyond the standard 19, so that material for a whole day can be loaded on open-reel and cart machines in the morning.

WYNY is a complex operation with some on-air personalities riding along with the music, and closely-calculated handling of national and local news considered essential for young adult audience. The automation does it all with great smoothness, while at the same time preserving a "live" and lively program flow.

For a contrast, consider KIBC in Ogallala, Nebraska. The town has about 6,000 people, the county about 10,000 more. General manager Willard Soper has installed a Microprobe system, with a sequencer that allows numbers to be played in a "punched up" order, from open reels or carts. As they use it, the system gives a maximum of only about 12 minutes walk-away time, but that is enough to greatly simplify the dj's task, make the sound ("beautiful music" from FM100) the diversified blend of old and new the management wants. Each segment is carefully chosen for that blend.

This program diversification is needed because a station in a market of this size cannot "live" on a particular section of the demographics: the music has to appeal to a broad range of listeners. Soper has competition from country and western formats, and he has to feel out his audience with great sensitivity, as does any station management in a very small market. The mini-automation he has is allowing him to do that, while keeping equipment and operating costs low and on-air consistency high. He says that at a later date, he may want to go to a more complete automation, depending on the success of the format in that market.

Here is another situation: that of KBTN, AM and FM, in Jonesboro, Arkansas. When general manager Allan Patteson spun the FM off the AM programs about 2½ years ago, he chose to automate the FM with a Schafer 903 so that a large staff expansion could be avoided. The management quickly learned that the full gain depended on automating the AM too, so another Schafer went in there about six months later. Now both stations run easily with what is, in effect, a single staff with procedures for the two stations substantially standardized.

The AM, which uses 1 kW by day, 250 watts by night, has a MOR format designed for broad appeal. The FM puts out 100 kW, with a stereo rock format aimed in part at the 7000 students of the State University there. Obviously manager Pattenon must control his formats very closely, with knowledge of the differing coverage, listenership, of each of his stations.

In the following, a number of other "automaters" tell their stories most briefly. Each story tells us a little more about the stance of radio automation today.

WFBC, AM and FM, Greenville, S.C.

Program director Billy Powell points out that the AM station, with 5 kW and a directional antenna at night, reaches about a 50 mile radius, while the FM, with 100 kW and an antenna on Caesars Head Mountain, 1700 feet above average terrain, covers a very large ADI, the 36th market in the U.S. The FM carries a big load of regional and national ad business, with the programming of contemporary MOR designed for a broad appeal.

A Schafer 903 automation system gives the management the necessary control of the programming for the consistently smooth effect in the music that is

wanted. It makes automatic the insertion of time and temperature, makes easy putting in the news, voiced spots, PSAs, etc. Considerable flexibility is needed because the station aims a variety of service items—agricultural reports, etc.—to the large rural areas covered.

The total mix is obviously well chosen because WFBC has been, for some time, the No. 1 station in the area.

KOCM-FM, Newport Beach, Calif.

Another Schafer system, the 903E, went in to KOCM in October, 1976. President and general manager Gary Burrill says he wanted his on-air quality to be consistently high; along with the automation he signed up for the Drake-Chenault MOR programming. Also motivating the dual move was the increasing difficulty of finding the music on his own. KOCM is typical of many "suburban" operations, standing in a comparatively small town but reaching a metropolitan-sized audience, in this case about 1½ millions people in Orange County. That puts the pressure on for good programming, smoothly presented. The automation, plus the syndication, have done the job.

On this page are just three of many ways radio uses automation. For more, see BM/E next month.

Automation Electronics (right) uses Honeywell computer for system with capability for combined traffic/billing and program switching; station can start with one, add other later. Photo emphasizes use of multiple inputs.



The Kaman Sciences' BCS-100 (above) represents another popular traffic/billing plan. System uses a large capacity central computer, plus mini-computer power at station. Interface to program automation is fully developed, in wide use.



A third kind of radio automation is the IGM Mark VII which assists dj by putting music on push-button call-up, either singly or in pre-set sequences of almost any length. Operator can set up long program, interrupt or change at any time. This installation is at KTNT, Tacoma, WA.

Radio Automation

WIRA, AM and FM, Ft. Pierce, Florida.

Due to be installed about the middle of June (after this was written) was an Automation Electronics, or Autotron, traffic/bookkeeping system. General manager Randolph Millar says he studied the market for several years, decided the Automation Electronics system met his needs the best. He is looking to it to raise the efficiency of the bookkeeping and traffic operations, give the management much better control of sales, availabilities, etc. His objective is to direct the station in such a way that it serves the community at a high level—and gets top listenership.

WWCS, Glens Falls, NY (A combined program-billing system)

Another Autotron system, the Model 6, is going into this station, with installation scheduled for completion in early September. President and general manager Christopher Lynch emphasizes the fact that this will apparently be the first single system to be installed in this country for both traffic/billing and program switching. A single computer, a Honeywell Model 6, easily runs both operations. The interface between them is total. For example, if a slated spot is missed on the air, the computer not only makes a note that a "make good" is in the works, but also attempts, automatically, to get the missed cart back into the schedule promptly, in such a way that all conditions agreed to for that spot are met. Only if rescheduling fails through automation does the

computer send a note to the traffic department about the situation.

WWSC's leap into near-total automation is motivated in large part by heavy competition in the area, including several stations in Albany which are locally tunable. Although the city is medium small, the ADI is medium large, and WWSC has to compete using big city quality. The MOR format is designed for very broad appeal. The automation will keep that appeal, Lynch says, at its brightest and best.

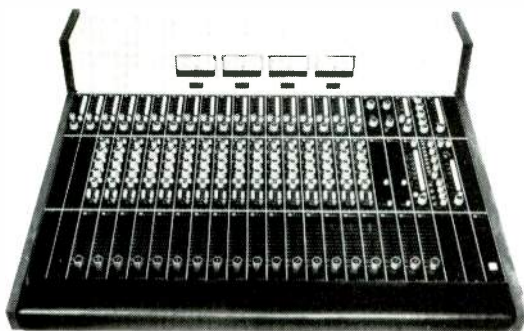
WGEN-FM, Geneseo, Ill.

General manager Lowell Dorman uses a Microprobe sequencing system for his FM100 syndicated format. Again, he is a small/town station that has to compete with city-style stations. His Microprobe sequencer gives him, he says, the smoothness and professionalism in sound that he wants. His format is beautiful music from FM100. This mini-automation is the only way, says Dorman, he could compete on home grounds with the "bigger leagues." That competition has been going well for WGEN, and the mini-automation has had a lot to do with it, according to Mr. Dorman.

WSPA, Spartanburg, S.C.

Make-goods, availabilities were out of control, being discovered very late and requiring too much effort to correct. The station was losing a lot of money on account of the sloppage, says general manager Walter Vieth. A computerized traffic and billing system from BCS put it all right and got the management back in full control of the situation.

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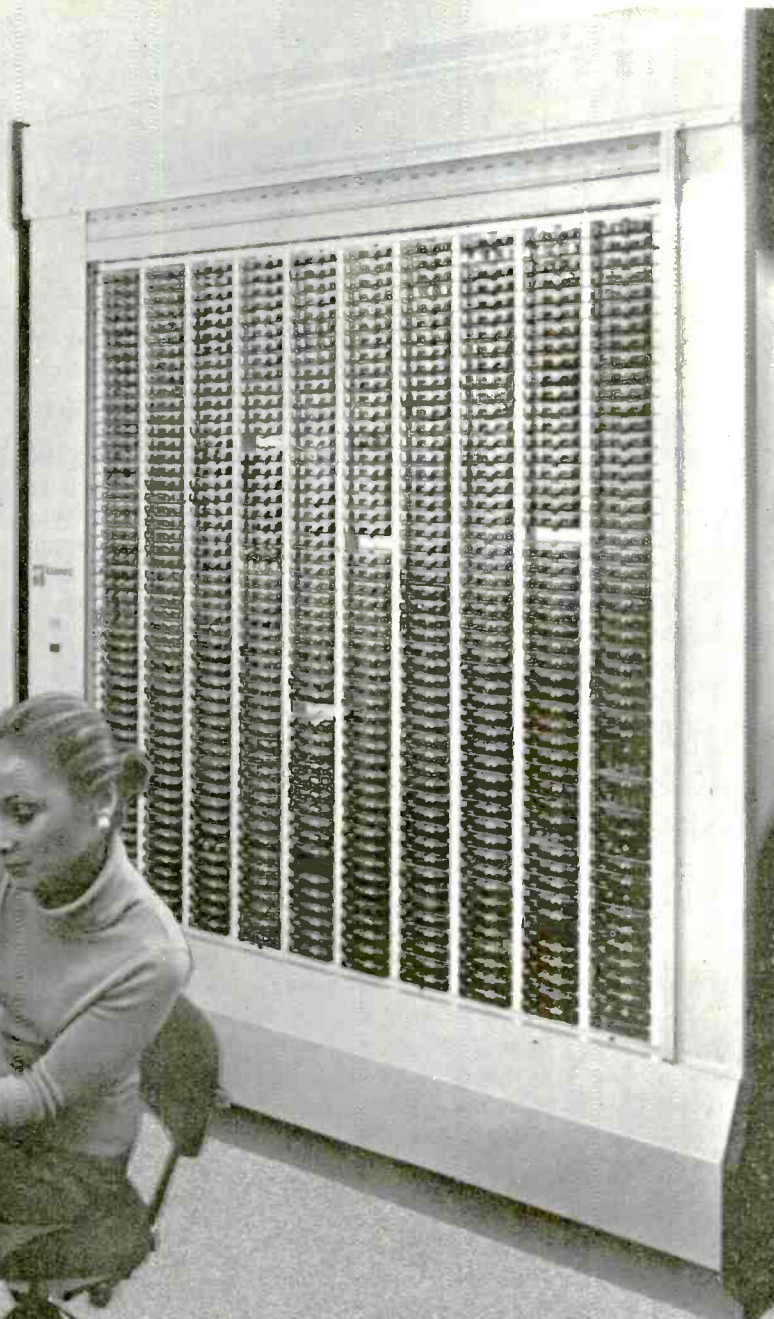
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Finally a group or two has chosen one central computer with remote terminals at their other stations.



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Circle 136 on Reader Service Card

Problem Solving With The Pocket Programmable Calculator

By George W. Ing

The programmable calculator can save you time and headaches. Several programs here provide daily relief from dreary computation.

THIS IS THE FIRST IN A SERIES of three articles which will delve into some typical applications of the popular pocket-size programmable calculator. The recent reduction in the cost of such units as the Texas Instruments SR-56 and the Hewlett-Packard HP-25, have made them more available to the average broadcast engineer. Many engineers now own one or are contemplating the purchase. The purpose of these articles is to show how to save time and effort when making calculations of the repetitious type.

The first article will deal with some simple programs involving decibels, resistors in parallel, finding inductance or capacitance if reactance and frequency are given, polar to rectangular conversion, and rectangular to polar conversion.

The second article will describe programs for calculating L, T and Pi networks. These programs run to 40 or more steps, but once you have taken a minute or so to enter the program, it takes only seconds to get the answers. In the case of the T network program, for example, to execute, all you do is enter the input and output resistances and the phase angle, and very shortly, you have the three required reactances. Once the program is entered, you may solve any number of T networks.

The third article will show how to use a pocket calculator to obtain the horizontal and vertical plane patterns for a two tower directional antenna system.

Once you get into programming, you will find that keeping a program notebook readily at hand is an invaluable aid. For example, when filed away for later use, programs such as the decibel and reactance programs can give you all the information you would normally obtain from reference book tables. Another good reason for keeping a notebook is that some of the more complex programs become very lengthy and it is easy to make a mistake in entering program keystrokes. If you include examples in your notebook, you have a check on both program entry and execution. The writer has access to a Xerox® machine with size reduction capability. This is a great help in condensing material for your notebook. The illustration for this article was originally 11 by 15 inches in size and consisted of a number of excerpts from the writer's notebook pasted together.

No doubt other engineers have accumulated a file of programs for the solution of broadcast engineering problems. The writer has been told by *BM/E* magazine that they welcome contributions from their readers. Send in

Mr. Ing is director of engineering for Mission Broadcasting, Co., San Antonio, Texas.

your programs so that others may benefit. We must also mention that many interesting and sophisticated programs are included in the calculator instruction books.

The following material is based on the use of the SR-56 calculator, but may be adapted for use with the HP-25. Program entry and execution for nine simple programs will be explained.

Program #1, when executed, gives the power ratio when the number of dB is entered. To set up the program, the calculator is placed in the "Learn" mode by pressing the LRN key. Then, in effect, a slot, (marked by a small arrowhead in the keystroke sequence), is left open for the insertion of the variable during the execution process. After the LRN key is pressed, the calculator is told to memorize a sequence of keystrokes which tell it to perform certain operations relating to the variable. The variable in this program, of course, is the number of dB. At the conclusion of these entries, the run/stop (R/S), reset (RST) and LRN keys are pressed to take the calculator out of the "Learn" mode and prepare it for execution. A number of keys have dual functions and must be preceded by the "2nd" key to use the second function.

After the calculator has "learned" Program #1, we are ready for execution. Press the RST key and enter the number of dB, (preceded by a negative sign if there is a power loss). Press R/S for the answer. Enter any other dB value and press R/S for the answer. This process may be continued indefinitely so that, if you have the patience, you may make up a whole table as complete as any in a text book. This program is handy if you are away from the office.

Program #1 may be used to find the efficiency in percent of a transmission line if the loss in dB is known. Suppose that you want to find the efficiency of 500 feet of 1/8" coaxial line at 100 MHz. The manufacturer's graph shows the loss is .2 dB per hundred feet. The total loss may be expressed as -1 dB. If this value is entered, the power ratio is .794, and the efficiency 79.4 percent. If the line efficiency must be greater, try 3/8" line with a loss of .75 dB for 500 feet. Continuing with the program execution, enter -.75 and press R/S. The power ratio is .84 and the efficiency 84 per cent.

If you want to try some other length or type of line, the calculations may be repeated indefinitely, as long as the program is not cleared or the calculator turned off. If the number 20 is inserted in the program sequence instead of 10, dB may be converted to voltage ratios.

Program #2, when executed, gives the number of dB when the power ratio is entered. The execution is not

continued on page 58



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Programmable Calculator

shown but is similar to that of Program #1. After pressing RST, the power ratio is entered. Pressing R/S gives the number of dB. Enter another power ratio and press R/S for the answer. The process may be repeated indefinitely. If the number 20 is inserted in the program sequence instead of 10, voltage ratios may be converted to dB.

Program #3 is for solving the value of a resistor (R_2), which paralleled to a known resistor (R_1), results in a desired resistance R_3 . For example, we need a 182 ohm resistance but don't have a resistor close to this value. However, among others, we do have 270, 300 and 560 ohm resistors. To execute Program #3, we press RST and enter the desired value of 182 ohms. After pressing R/S, we enter $R_1 = 330$, as a trial. Pressing R/S again gives 405.8 ohms as the necessary value for R_2 . This is not a standard value so we try again. After pressing the clear (CLR) key, we enter 182 again. Then after pressing R/S, we enter 270 as a trial. On pressing R/S again, the answer is found to be 558.4 ohms. Of course, a 560 ohm resistor will do very well. We have found that by paralleling 270 ohms and 560 ohms we obtain a value very close to 182 ohms. Notice in the sample executions that

certain displays are labelled "ignore." These are intermediate answers.

If we rearrange the formula slightly to make R_3 equal to the reciprocal of the sum of the reciprocals of R_1 and R_2 , we may set a program to find the combined resistance of any two resistors in parallel. All we have to do to the program keystroke sequence is change the minus sign to plus. On execution, we press RST, enter R_1 , press R/S, enter R_2 and finally, press R/S again for R_3 . After pressing CLR and RST, we can calculate the resistance of another pair. This same program may be used for inductances in parallel or capacitances in series.

Program #4 will find the inductance if the reactance is given. In the execution of the program, two variables will be used, the reactance and the frequency. Looking at the program keystroke sequence, you will see that the first arrowhead shows where the reactance will be entered when the program is executed, and the second arrowhead shows where the frequency will be entered. The run/stop (R/S) key halts execution to allow for the entry of the frequency. The execution shows that if the reactance is 140 ohms, and the frequency is 1.26 MHz, the inductance is 17.68 microhenrys. Press CLR and RST before entering another calculation. The formula shows inductance in microhenrys and frequency in MHz, but the same program may be used if the inductance is in

A sample page from Ing's notebook shows the key to the formulas presented. It is recommended that you maintain a similar notebook.

<p>PROGRAM #1: GIVEN DB, FIND POWER RATIO.</p> <p>FORMULA: $P \frac{1}{2} = \text{Antilog} \frac{\text{NdB}}{10}$</p> <p>PROGRAM KEYSTROKES: $\boxed{\text{LRN}} \rightarrow \boxed{\frac{1}{2}} \boxed{10} \boxed{=} \boxed{2\text{nd}} \boxed{10^x} \boxed{\text{R/S}} \boxed{\text{RST}} \boxed{\text{LRN}}$</p> <p>EXECUTION KEY STROKES:</p> <table border="1"> <thead> <tr> <th>KEY</th> <th>DISPLAY</th> </tr> </thead> <tbody> <tr> <td>RST</td> <td>0</td> </tr> <tr> <td>Enter -1 (dB)</td> <td>-1</td> </tr> <tr> <td>R/S</td> <td>.794 (79.4% Efficiency)</td> </tr> <tr> <td>Enter -.75 (dB)</td> <td>-.75</td> </tr> <tr> <td>R/S</td> <td>.841 (84.1% Efficiency)</td> </tr> </tbody> </table>	KEY	DISPLAY	RST	0	Enter -1 (dB)	-1	R/S	.794 (79.4% Efficiency)	Enter -.75 (dB)	-.75	R/S	.841 (84.1% Efficiency)	<p>PROGRAM #6: GIVEN REACTANCE, FIND CAPACITANCE</p> <p>FORMULA: $C_{\text{uof}} = \frac{1}{X_C \times f_{\text{MHz}}} \times 159155$</p> <p>PROGRAM KEYSTROKES: $\boxed{\text{LRN}} \rightarrow \boxed{X} \boxed{\text{R/S}} \boxed{=} \boxed{2\text{nd}} \boxed{1/x} \boxed{=} \boxed{X}$</p> <p>159155 $\boxed{=} \boxed{\text{R/S}} \boxed{\text{RST}} \boxed{\text{LRN}}$</p> <p>EXECUTION KEY STROKES:</p> <table border="1"> <thead> <tr> <th>KEY</th> <th>DISPLAY</th> </tr> </thead> <tbody> <tr> <td>RST</td> <td>0</td> </tr> <tr> <td>Enter 200 (X_C)</td> <td>200</td> </tr> <tr> <td>R/S</td> <td>.700</td> </tr> <tr> <td>Enter .86 (f_{MHz})</td> <td>.86</td> </tr> <tr> <td>R/S</td> <td>925.37 uof</td> </tr> </tbody> </table>	KEY	DISPLAY	RST	0	Enter 200 (X_C)	200	R/S	.700	Enter .86 (f_{MHz})	.86	R/S	925.37 uof																																
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<p>PROGRAM #2: GIVEN POWER RATIO, FIND DB.</p> <p>FORMULA: $\text{NdB} = 10 \log \frac{P_1}{P_2}$</p> <p>PROGRAM KEYSTROKES: $\boxed{\text{LRN}} \rightarrow \boxed{2\text{nd}} \boxed{\text{LOG}} \boxed{X} \boxed{10} \boxed{=} \boxed{\text{R/S}} \boxed{\text{RST}} \boxed{\text{LRN}}$</p>	<p>PROGRAM #7: GIVEN REACTANCE, FIND CAPACITANCE AT .86 MHz</p> <p>FORMULA: $C_{\text{uof}} = \frac{1}{X \times .86} \times 159155$</p> <p>PROGRAM KEYSTROKES: $\boxed{\text{LRN}} \rightarrow \boxed{X} \boxed{.86} \boxed{=} \boxed{2\text{nd}} \boxed{1/x} \boxed{=} \boxed{X}$</p> <p>159155 $\boxed{=} \boxed{\text{R/S}} \boxed{\text{RST}} \boxed{\text{LRN}}$</p>																																																								
<p>PROGRAM #3: FIND R_2 WHEN R_3 AND R_1 ARE GIVEN.</p> <p>FORMULA: $R_2 = \frac{1}{\frac{1}{R_3} - \frac{1}{R_1}}$</p> <p>PROGRAM KEYSTROKES: $\boxed{\text{LRN}} \rightarrow \boxed{2\text{nd}} \boxed{1/x} \boxed{-} \boxed{\text{R/S}} \rightarrow \boxed{2\text{nd}} \boxed{1/x} \boxed{=} \boxed{2\text{nd}} \boxed{1/x} \boxed{=} \boxed{\text{R/S}} \boxed{\text{RST}} \boxed{\text{LRN}}$</p> <p>EXECUTION KEYSTROKES:</p> <table border="1"> <thead> <tr> <th>KEY</th> <th>DISPLAY</th> <th>KEY</th> <th>DISPLAY</th> </tr> </thead> <tbody> <tr> <td>RST</td> <td>0</td> <td>CLR</td> <td>0</td> </tr> <tr> <td>Enter 182 (R_3)</td> <td>182</td> <td>Enter 182 (R_3)</td> <td>182</td> </tr> <tr> <td>R/S</td> <td>Ignore</td> <td>R/S</td> <td>Ignore</td> </tr> <tr> <td>Enter 330 (R_1)</td> <td>330</td> <td>Enter 270 (R_1)</td> <td>270</td> </tr> <tr> <td>R/S</td> <td>405.8</td> <td>R/S</td> <td>558.4</td> </tr> </tbody> </table>	KEY	DISPLAY	KEY	DISPLAY	RST	0	CLR	0	Enter 182 (R_3)	182	Enter 182 (R_3)	182	R/S	Ignore	R/S	Ignore	Enter 330 (R_1)	330	Enter 270 (R_1)	270	R/S	405.8	R/S	558.4	<p>PROGRAM #8: POLAR TO RECTANGULAR CONVERSION.</p> <p>PROGRAM KEYSTROKES: $\boxed{\text{LRN}} \rightarrow \boxed{X} \boxed{\%} \boxed{\text{R/S}} \rightarrow \boxed{2\text{nd}} \boxed{\text{f(n)}} \rightarrow \boxed{\text{P} \rightarrow \text{R}}$</p> <p>$\boxed{\text{R/S}} \boxed{\text{RST}} \boxed{\text{LRN}}$</p> <p>EXECUTION KEYSTROKES:</p> <table border="1"> <thead> <tr> <th>KEY</th> <th>DISPLAY</th> <th>KEY</th> <th>DISPLAY</th> </tr> </thead> <tbody> <tr> <td>RST</td> <td>0</td> <td>RST</td> <td>0</td> </tr> <tr> <td>Enter 5 (Z)</td> <td>5</td> <td>Enter 47 (Z)</td> <td>47</td> </tr> <tr> <td>R/S</td> <td>Ignore</td> <td>R/S</td> <td>Ignore</td> </tr> <tr> <td>Enter 53.13 (θ)</td> <td>53.13</td> <td>Enter 187 (θ)</td> <td>187</td> </tr> <tr> <td>R/S</td> <td>3.999 (X)</td> <td>R/S</td> <td>-5.728 (X)</td> </tr> <tr> <td>R/S</td> <td>3. (R)</td> <td>R/S</td> <td>-4.05 (R)</td> </tr> <tr> <td>CLR</td> <td>0</td> <td>CLR</td> <td>0</td> </tr> </tbody> </table>	KEY	DISPLAY	KEY	DISPLAY	RST	0	RST	0	Enter 5 (Z)	5	Enter 47 (Z)	47	R/S	Ignore	R/S	Ignore	Enter 53.13 (θ)	53.13	Enter 187 (θ)	187	R/S	3.999 (X)	R/S	-5.728 (X)	R/S	3. (R)	R/S	-4.05 (R)	CLR	0	CLR	0
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<p>PROGRAM #4: GIVEN REACTANCE, FIND INDUCTANCE.</p> <p>FORMULA: $L_{\text{uH}} = \frac{X}{2\pi} \times \frac{1}{f_{\text{MHz}}}$</p> <p>PROGRAM KEYSTROKES: $\boxed{\text{LRN}} \rightarrow \boxed{\frac{1}{2\pi}} \boxed{2} \boxed{X} \boxed{2\text{nd}} \boxed{\pi} \boxed{X}$</p> <p>$\boxed{X} \boxed{\text{R/S}} \rightarrow \boxed{2\text{nd}} \boxed{1/x} \boxed{=} \boxed{\text{R/S}} \boxed{\text{RST}} \boxed{\text{LRN}}$</p> <p>EXECUTION KEYSTROKES:</p> <table border="1"> <thead> <tr> <th>KEY</th> <th>DISPLAY</th> </tr> </thead> <tbody> <tr> <td>RST</td> <td>0</td> </tr> <tr> <td>Enter 140 (X)</td> <td>140</td> </tr> <tr> <td>R/S</td> <td>Ignore</td> </tr> <tr> <td>Enter 1.26 (f_{MHz})</td> <td>1.26</td> </tr> <tr> <td>R/S</td> <td>17.68 (uH) Answer</td> </tr> </tbody> </table>	KEY	DISPLAY	RST	0	Enter 140 (X)	140	R/S	Ignore	Enter 1.26 (f_{MHz})	1.26	R/S	17.68 (uH) Answer	<p>PROGRAM #9: RECTANGULAR TO POLAR CONVERSION.</p> <p>PROGRAM KEYSTROKES: $\boxed{\text{LRN}} \rightarrow \boxed{X} \boxed{\%} \boxed{\text{R/S}} \rightarrow \boxed{2\text{nd}} \boxed{\text{f(n)}} \rightarrow \boxed{\text{R} \rightarrow \text{P}}$</p> <p>$\boxed{\text{R/S}} \boxed{\text{RST}} \boxed{\text{LRN}}$</p> <p>EXECUTION KEYSTROKES:</p> <table border="1"> <thead> <tr> <th>KEY</th> <th>DISPLAY</th> <th>KEY</th> <th>DISPLAY</th> </tr> </thead> <tbody> <tr> <td>RST</td> <td>0</td> <td>RST</td> <td>0</td> </tr> <tr> <td>Enter 3 (R)</td> <td>3</td> <td>Enter 6.02 (R)</td> <td>6.02</td> </tr> <tr> <td>R/S</td> <td>Ignore</td> <td>R/S</td> <td>Ignore</td> </tr> <tr> <td>Enter 4 (X)</td> <td>4</td> <td>Enter -4.5 (X)</td> <td>-4.5</td> </tr> <tr> <td>R/S</td> <td>53.13 (θ)</td> <td>R/S</td> <td>-36.70 (θ)</td> </tr> <tr> <td>R/S</td> <td>5 (Z)</td> <td>R/S</td> <td>7.516 (Z)</td> </tr> <tr> <td>CLR</td> <td>0</td> <td>CLR</td> <td>0</td> </tr> </tbody> </table>	KEY	DISPLAY	KEY	DISPLAY	RST	0	RST	0	Enter 3 (R)	3	Enter 6.02 (R)	6.02	R/S	Ignore	R/S	Ignore	Enter 4 (X)	4	Enter -4.5 (X)	-4.5	R/S	53.13 (θ)	R/S	-36.70 (θ)	R/S	5 (Z)	R/S	7.516 (Z)	CLR	0	CLR	0												
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<p>PROGRAM #5: GIVEN REACTANCE FIND INDUCTANCE AT 1.26 MHz.</p> <p>FORMULA: $L_{\text{uH}} = \frac{X}{2\pi \times 1.26}$</p> <p>PROGRAM KEYSTROKES: $\boxed{\text{LRN}} \rightarrow \boxed{\frac{1}{2\pi}} \boxed{2} \boxed{X} \boxed{2\text{nd}} \boxed{\pi} \boxed{X}$</p> <p>1.26 $\boxed{)} \boxed{-} \boxed{\text{R/S}} \boxed{\text{RST}} \boxed{\text{LRN}}$</p>																																																									

INTERPRETING THE **FCC** RULES & REGULATIONS

Court Of Appeals Decides Three EEO Cases

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

DURING THE PAST SEVERAL MONTHS, the U.S. Court of Appeals for the District of Columbia Circuit has decided three cases involving (1) equal employment opportunity, (2) minority ascertainment and (3) minority programming issues. These cases will directly impact broadcast licensees, for better or for worse.

The Now Decision

The National Organization for Women (NOW) filed a petition to deny the 1972 license renewals of WABC-TV, New York and WRC-TV, Washington, D.C. Leaving aside the procedural details, the Commission ultimately denied both petitions. On appeal, the Equal Employment Opportunity Commission (EEOC) supported NOW's request for a hearing concerning the employment practices of WABC-TV and WRC-TV.

Community Ascertainment: Women

In conducting its 1972 community ascertainment study, ABC failed to list women as a significant group in its service area. The Commission concluded that this was an error, but harmless in effect since ABC had interviewed women involved in women's issues. NOW asserted that the error was material because ABC (1) interviewed an inadequate number of women (only 5 out of 233 community leaders) and (2) the 5 women were "not consulted from the standpoint of leadership in the women's rights movement."

The Court of Appeals¹ held that, while such deficiencies would normally warrant remand for an evidentiary hearing, the Commission's new renewal *Primer* (See "Interpreting FCC Rules and Regulations," July, August and November 1976), requiring *ongoing* ascertainment "presumably" indicates that WABC was engaged in ascertainment of women "at the present time." Thus, no hearing was found to be necessary. Despite this, the Court stated that WABC is under an extra obligation to conduct an ongoing ascertainment of women by means of *more* than the minimum number of contacts with leaders of the women's movement.

Programming: Women

NOW also contended that WABC failed to respond to women's needs in its programming and engaged in "discriminatory weighting of new items" against proponents of the feminist movement. The Court of Appeals held that (1) NOW had not alleged deliberate distortion or news "staging" and (2) ABC had not ignored the news addressing women's issues. The Commission had properly steered clear of NOW's disagreement with ABC's editorial discretion as to the selection, presentation and newsworthiness of news stories, an area clearly protected by the First Amendment. ABC, said the Commission, presented numerous news stories and public affairs pro-

grams that did cover the problems of women.

In conjunction with the previous point, NOW also alleged that women's problems, as covered during the license period, constituted one side of a controversial issue of public importance that is subject to the presentation of opposing viewpoints pursuant to the Fairness Doctrine. For instance, innumerable advertisements allegedly depicted women as mindless household maids and consumers. The Court of Appeals disagreed with NOW and found that even if the role of women today constituted one side of an issue of public importance, the station had afforded a reasonable opportunity for the airing of contrasting viewpoints.

Both WABC-TV and WRC-TV were attacked by NOW for sex discrimination in employment of women. The Commission found WABC-TV's employment of women to have fallen within the "zone of reasonableness." The Commission failed to draw an adverse inference against an EEOC determination that there was reasonable cause to believe that WRC-TV had been involved in employment discrimination (i.e., maintenance of segregated job classifications, limiting female employment in certain job categories and discriminatory female recruiting policies).

The Court of Appeals held that an EEOC finding that a license *may* be in violation of the anti-discrimination statute does not *require* an evidentiary hearing. The FCC is *not* the agency charged with primary responsibility for enforcing the Civil Rights Act. Once the EEOC complaint has been conciliated or tried in federal court, the Commission has a duty to fully review the finding in light of the Communications Act and the Commission's standards.² Most importantly, pursuant to the Communications Act, the Commission must consider a licensee's employment practices insofar as those practices (1) "affect the obligation of a licensee to provide programming that reflects the tastes and viewpoints of minority groups" and (2) "raise questions about the character qualifications of the licensee."

Finally, the Court of Appeals stated that the Commission may measure the effectiveness of a licensee's EEO program *in part* by that program's *results*. Thus, past license term minority employment may indicate that an affirmative EEO program instituted during the license period under review has come to fruition and is adequate. However, analysis of aggregate employment figures may not be enough. Minority employment in the upper job categories is important and should be subject to "zone of reasonableness" analysis, too.

The Bilingual Case

In a decision³ that has ominous implications for broadcasters, the Court of Appeals held that, where a responsible party petitioning to deny a license renewal makes allegations that constitute a clear showing of employment discrimination, the party *must* have an opportunity to (1) "flesh out" the underlying facts and (2)

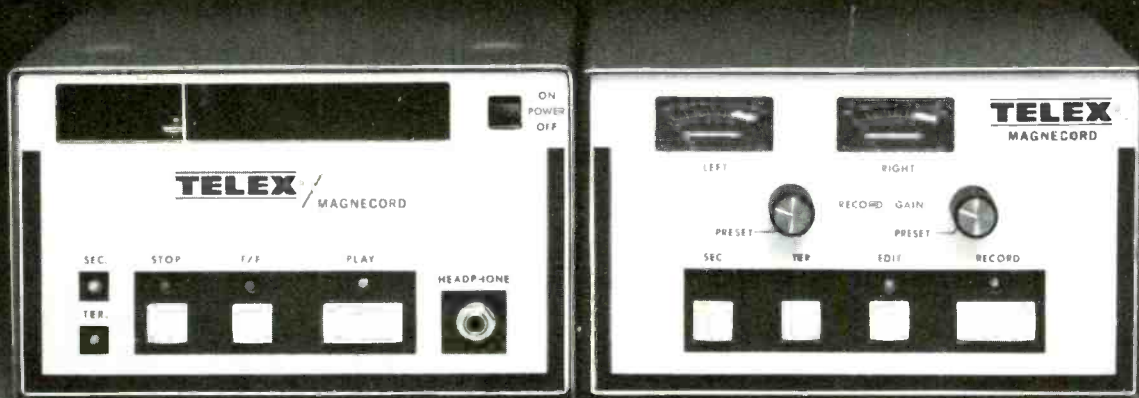
¹National Organization for Women, *New York Chapter v. Federal Communications Commission*, 40 RR 2d 679 [U.S. App. D.C., 1977].

²See *Horizon Communications Corp.*, _____ FCC 2d _____ 39 RR 2d 1731 (1977).

³*Bilingual Bicultural Coalition on Mass Media, Inc. v. FCC*, 40 RR 2d 785 [U.S. App. D.C., 1977].

Continued on page 62

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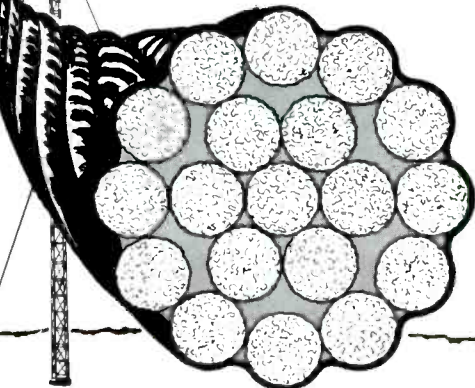
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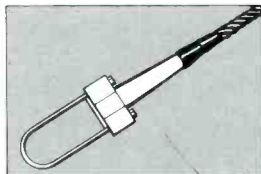
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FCC Rules & Regs

inquire into the "appropriateness and effectiveness" of alternative sanctions.

A clear showing may be made in two ways. First, statistics may indicate a substantial disparity between a station's minority employment and the local minority work force. Second, in the absence of statistical disparity, overt instances of discrimination may be brought to light.

What constitutes "fleshing out" the underlying facts? The party opposing renewal must be given the opportunity to test the licensee's response to the party's petition to deny by means of interrogatories (written questions). Answering interrogatories can be time-consuming, costly and may lead to development of a much stronger case by the petitioner against the renewal applicant. Only after giving a petitioner such prehearing discovery rights can the Commission act to renew a license without designating it for hearing.

The *Bilingual* case is a significant extension of the rights of organizations that petition to deny selected renewal applications. The Commission opposes the new prehearing discovery rights and has petitioned the Court of Appeals to review its decision.

The Black Broadcasting Coalition Case

The Court of Appeals pulled in the reins on past employment practices in this case.⁴ A Richmond AM-FM-TV combination employed only one part-time black employee out of 94 full and part-time employees, clearly outside of the zone of reasonableness (the area work force was 25% black). Qualified blacks were rejected for employment and there had been two instances of discrimination. The Commission looked only at the *past* license term minority employment statistics, ignored the license term statistics and renewed the licenses.

The Court of Appeals held that the Black Broadcasting Coalition had made responsible claims of overt discrimination and a strong case for designation of a renewal hearing. The Court noted that:

"[N]o amount of prehearing discovery would have obviated the need for a hearing . . . there must be a more meaningful accounting for conduct during the contested license period and more exacting standards established for the future.

Conclusion

Broadcasters should come away with three lessons from these cases:

(1) Community leaders (minority and otherwise) should be interviewed from the perspective of that portion of the community which they represent; this designated perspective should be identified in the renewal application community ascertainment exhibit.

(2) A petitioner to deny will be given an opportunity for prehearing discovery by means of interrogatories to station personnel whenever a clear showing of employment discrimination is made; this discovery opportunity must be given before the Commission grants license renewal without a hearing.

(3) Where minority employment is below the zone of reasonableness during the license term and there are overt instances of discrimination, a renewal hearing will be required; in such a case, improvement of *only* post-license term minority employment is insufficient.

The one remedy to avoid license renewal hearings on minority employment issues in the future is to adopt and enforce an effective affirmative equal employment opportunity program.

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⁴*Black Broadcasting Coalition of Richmond v. FCC*, 40 RR 2d 815 [U.S. App. D.C., 1977].

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GREAT IDEA CONTEST

15. A System To Alert Studio Personnel To Intrusion On Transmitter Site.

Lee B. Ellis, Technical Director, KGLO-AM-TV, Mason City, Iowa

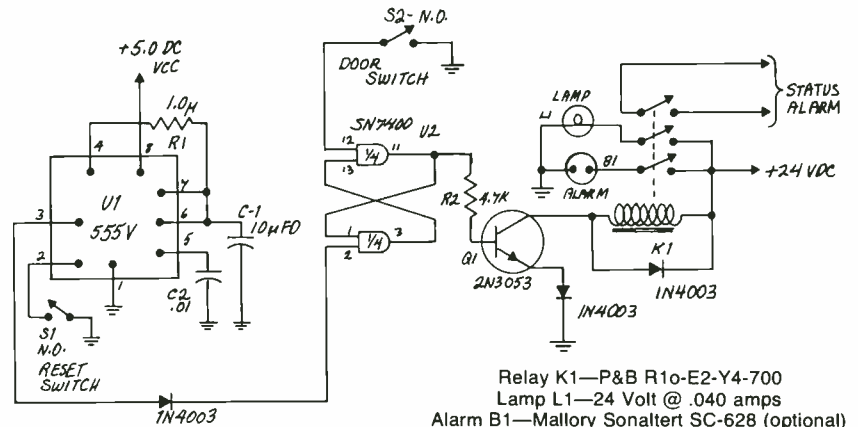
Problem: To construct a simple circuit which will alert studio personnel when the door of the transmitter site is opened.

Solution: This alarm circuit is basically an R-S Flip-Flop with a timing circuit consisting of U1 used for resetting the Flip-Flop.

When the door switch S-2 is momentarily closed upon opening the door, a low is placed on pin 12 of U2. Since the other three inputs, pins 1, 2 and 12 are already low, this causes the output pin 11 to go high and remain in the high state until reset. As pin 11 goes high, it feeds this level to the base of Q1 which is an NPN. As the base goes high, this transistor is turned on causing current to flow through the relay K1 and activates an alarm, alarm light and remote status lights and alarms.

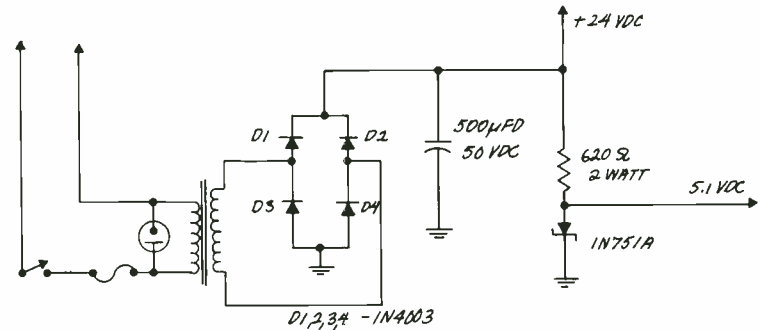
After entering the building the door is closed but the alarm will still be activated until the reset switch S-1 is momentarily closed. Upon closing S-1, a low is placed on pin 2 of U1 which is the trigger input. This causes the capacitor C-1 to start charging through the 1.0 megohm resistor R-1. When the 10 ufd capacitor C-1 has reached $\frac{2}{3}$ charge the output pin 3 of U1 goes high momentarily and then falls to a zero level again. This momentary high is fed to pin 2 of U2 and resets the Flip-Flop to its original state thus silencing the alarm.

The combination of R-1, C-1 gives an approximate timing of 15 seconds which will allow you to leave the building and close the door before the alarm is activated again.



Intrusion alarm by Ellis.

Relay K1—P&B R10-E2-Y4-700
Lamp L1—24 Volt @ .040 amps
Alarm B1—Mallory Sonalert SC-628 (optional)
Resistors— $\frac{1}{2}$ -watt 10% tolerance



Intrusion alarm power supply.

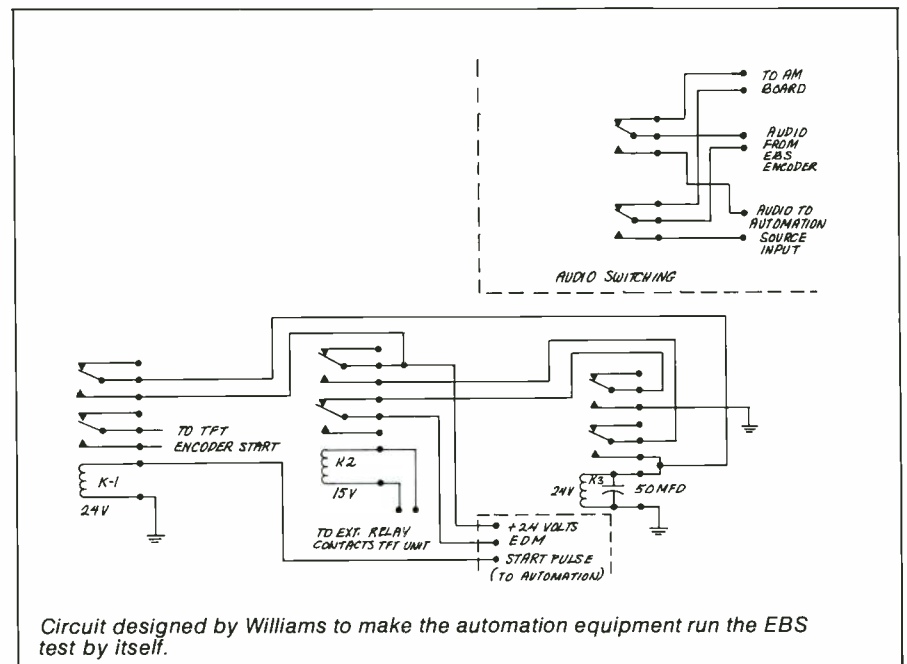
16. Handling EBS When You're Automated.

David L. Williams, Chief Eng., KUKI, KALF-FM, Ukiah, CA

Problem: As with most automated broadcasters, it didn't take us long to realize that the new EBS system was a

bit of a problem.

Solution: Making the automation equipment run the test by itself seemed to be the only answer. First, I modified our TRT EBS unit to reset after the tone thus automatically removing the VCC to the external relay contacts. Here's how the whole process works: a start pulse from the automation gear pulls in K-1 which starts the encoder and latches K-3 and the encoder pulls



Circuit designed by Williams to make the automation equipment run the EBS test by itself.

in K-2. K-3 also switches the audio from the AM console to dedicated source on the automation equipment. When the tone is sent, K-2 opens up, releasing K-3. C-1 holds K-3 long enough (about a half second) to EOM the automation. The system has been working here about three months.

17. Circuit Compresses Audio Level From "Data Deck."

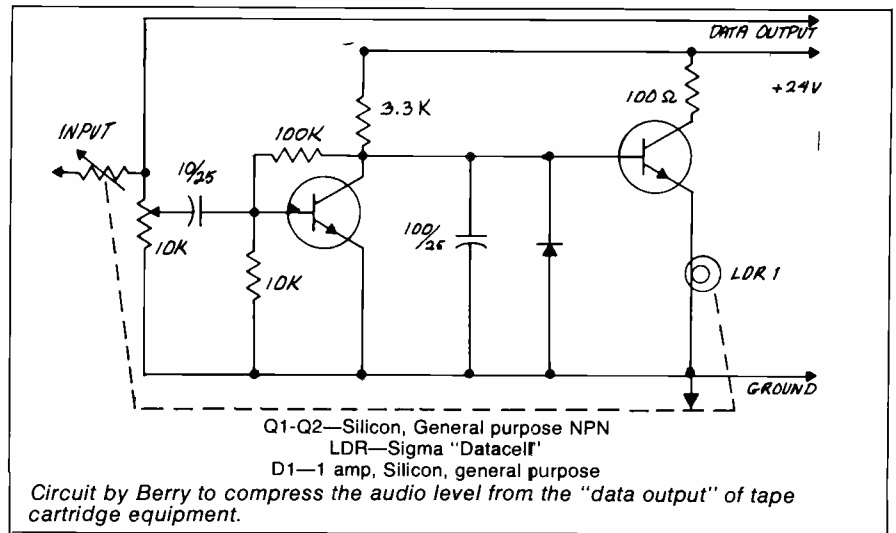
Frank L. Berry, Director of Engineering, WIOS Radio, Tawas City, MI.

Problem: Logger teletype printing errors due to excessive recording level on tapes "data track."

Solution: The circuit shown will compress the audio level from the

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"data output" of tape cartridge equipment. Unless this level is fed into the logging decoder at the proper level, severe signal clipping will take place, resulting in printing errors. The use of this compressor amp between the data output of all cartridge equipment and the input of the data decoder will maintain proper data levels and assure proper decoding.

The active element in this circuit is a "datacell" which is a light dependent resistor manufactured by Sigma. The lamp inside the LDR unit is drive by amplifiers Q1 and Q2. Q1 is a standard

AC amplifier which is direct coupled to Q2. Q2 is a DC amplifier/driver. Conversion from AC to DC takes place in the base circuit of Q2 where a diode shunts all negative voltage to ground and allows positive voltage to be applied to the base of Q2. Release time is controlled by the action of C1, across diode D1.

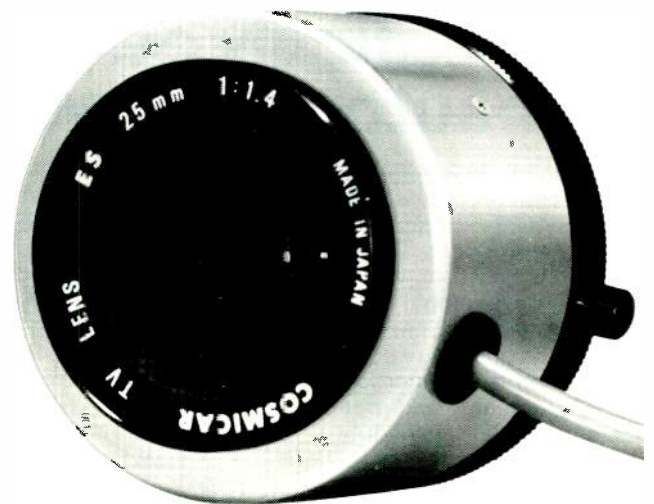
Compression is adjusted by increasing or decreasing the input level through pot R1. Satisfactory operation occurs with about 10 dB of signal compression. Make sure the input
continued on page 66

PERFECT YOUR CCTV SYSTEM WITH COSMICAR® LENSES

NOW AVAILABLE COSMICAR ES SERIES LENSES, newly developed high sensitivity VIDICON LENSES with AUTOMATIC IRIS that operate for the ranges from 1.4 ft-c to 100,000 ft-c. SMALLEST in sizes, ECONOMICALLY priced and provide VERY WIDE APPLICATIONS.

NEW COSMICAR ES SERIES LENSES

- F.L. 8.5mm f/1.5—ES for 2/3" cameras
- F.L. 12.5mm f/1.4—ES for 2/3" & 1" cameras
- F.L. 16mm f/1.6—ES for 2/3" cameras
- F.L. 25mm f/1.4—ES for 2/3" & 1" cameras
- F.L. 50mm f/1.8—ES for 2/3" & 1" cameras



Circle 142 on Reader Service Card



COSMICAR LENS DIVISION, ASAHI PRECISION CO., LTD.

424, Higashi-Oizumi, Nerima-ku, Tokyo, Japan Cable Address: "MOVIEKINO TOKYO"

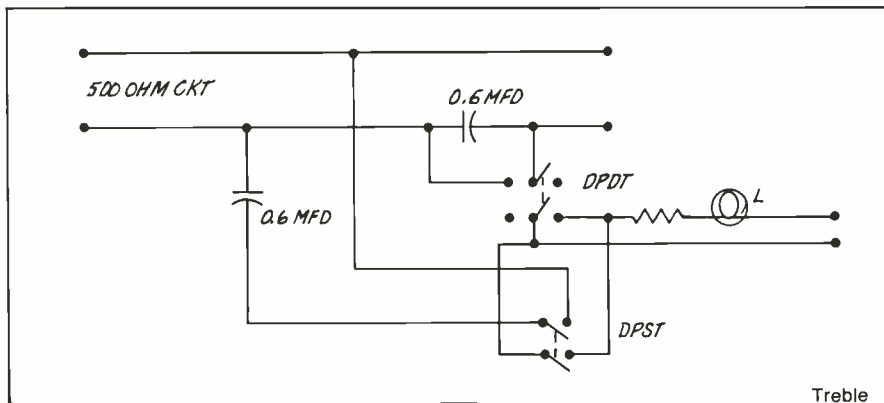
Great Ideas

level control on the decoder is adjusted so as to slightly clip the output of the compressor.

18. Inexpensive Equalizer Unit Built In A Small Box.

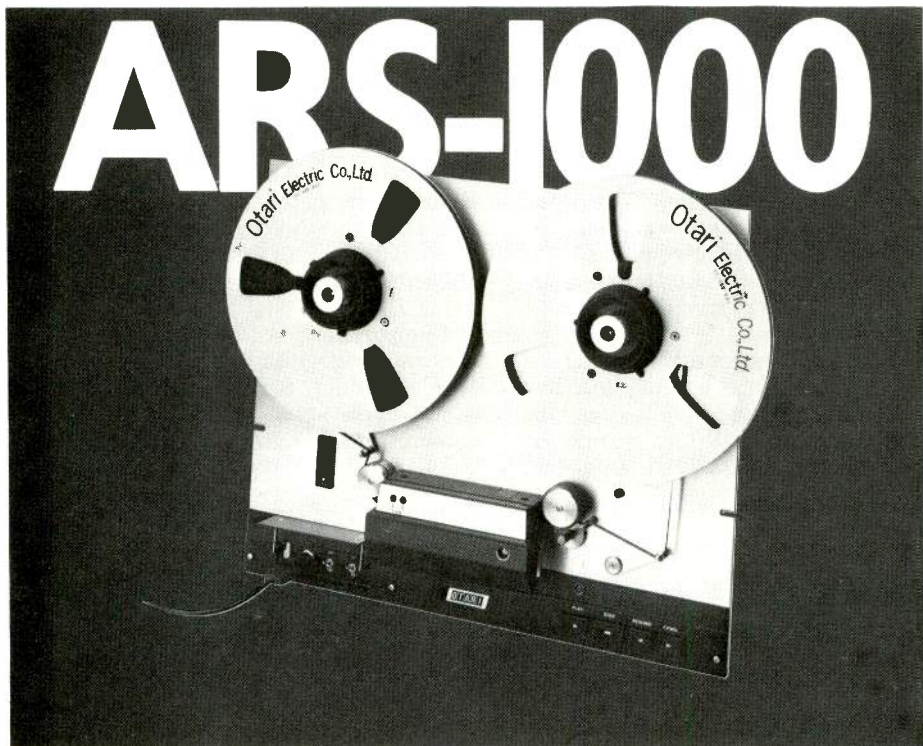
Luther Crumbaugh, Chief Engineer, KGER, Long Beach, CA.

Problem: Two problems can be



Hum Filter Portion	Freq.	Treble Filter Portion
-20 dB	50 Hz	
-16	100	
-8	200	
-4	400	
	800	-2 dB
	1000	-4
	2000	-7
	4000	-12

L—to operate with available voltage
R—to provide 10% drop to lamp
(lamp is out when ckt. is normal)



Specifically designed for automated systems

Otari, Japan's leading producer of professional recorders, announces the ARS-1000 Automated Radio Station Reproducer. This new machine is based on the successful MX-5050 professional recorder, with several components modified to meet the special needs of the automated broadcaster for consistent quality and greater reliability under heavy duty continuous operating conditions.

Compare these features: 2500 hours MTBF; 7½ or 3¾ ips; front switchable speeds; preamp in

head assembly for minimum RFI and improved S/N; optional 25 Hz sensor; improved low frequency response for reliable 25 Hz sensing; +4dB 600 ohm output; improved flutter performance; plug-in boards with gold-plated contacts; nationwide parts and service from Otari MX-5050 service centers (mechanical parts are interchangeable); one year parts and labor warranty.

If you're considering automation, ask your automated system supplier for full details on the ARS-1000 or call Otari.

OTARI

Otari Corporation
981 Industrial Road
San Carlos, California 94070
(415) 593-1648 TWX 910-376-4890

Circle 143 on Reader Service Card

handled with the unit; one, the incoming phone call that modulates the transmitter 100% with hum and about 20% with voice. Second, the program source that is all "highs" with sibilants paralyzing the limiter amplifier and "hissing" like escaping steam.

Solution: An inexpensive equalizer unit assembled in a small mini-box with cables long enough to reach operating position. This equalizer will help either or both of the problem situations. The switches operate independently and either switch will light the lamp to alert the operator that he has the filter(s) in use.

The capacitors shown work well for us but other values can be tried. We are not trying for fidelity but we are able to get a useable signal on the air or on the tape.

Rules for BM/E's Great Idea Contest

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 but 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: Relative ranking of each month's entries will be published periodically. Top-rated entries for various categories will be republished in late 1977 for a second and final round of scoring. Final winners will be picked in February 1978 and notified by mail. Winners will be published in the March 1978 issue of *BM/E*.

6. Prizes and Awards: Three top prizes will be awarded: a slide rule engineering calculator for the entry receiving the most votes in the respective categories of AM,

FM and TV. Ten pocket business calculators will be awarded as secondary prizes for the highest voted entries in the following additional categories (except the three top winners): audio (three prizes one

each in categories AM, FM, TV; RF (three prizes one each in the categories of AM, FM, TV); Control (three prizes one each in the categories of AM, FM, TV); Video (one prize in TV).

Mail to: Editors, *BM/E*
295 Madison Avenue
New York, New York 10017

1977
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 _____

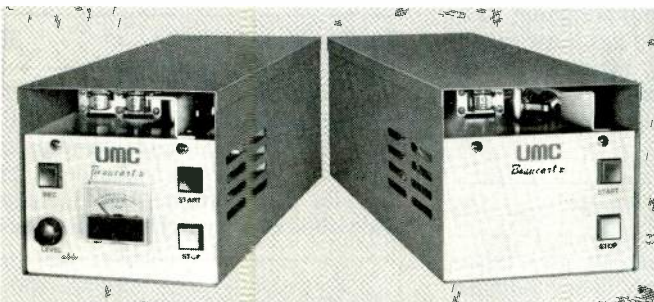
Objective or Problem: (in few words; use separate sheet for details) _____

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 _____

The frill is gone.



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If you thought our original Beaucart® tape cartridge machines were something, just wait until you get a look at our new Beaucart II. Great features! No frills! And lower price! Meets or exceeds NAB specs, of course. Incorporates the unique Beau pancake motor and our own Beau audio heads. Mono Record/Playback or Playback only for A-size carts in a compact 5¼" x 15" x 5¼" machine.

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— Ric Hammond
KNX Radio (CBS)
Hollywood, Calif.



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■ Pattern is generated electrically.

No tube is used.

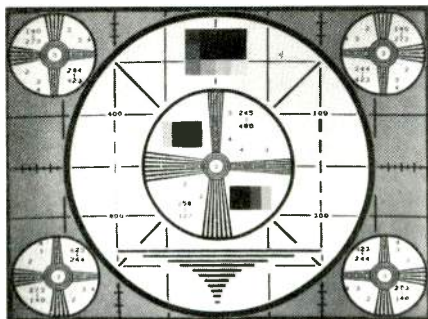
■ DRC (Digital Rise time Controller) is employed to produce an image having the same feeling as that of a pick-up camera tube.

■ Plug-in unit system by function makes maintenance easy and another resolution can be made.

■ Any desired pattern can be produced.

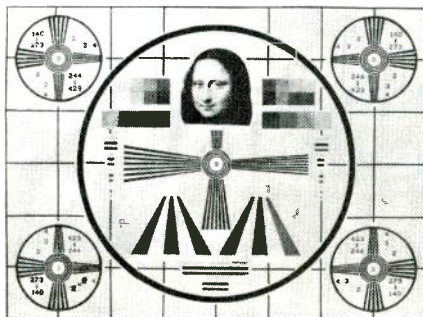
Send us your pattern diagram and we will send you an estimate.

MODEL 525 DIGITAL MONOSCOPE SIGNAL GENERATOR



Basic pattern of conventional television signal

MODEL 535 COLOR MONOSCOPE SIGNAL GENERATOR



Simple pattern. But perfect color test signal generated. Flying spot face projection is unnecessary.

MODEL 529 DIGITAL NETMARK SIGNAL GENERATOR



DRC system provides an extremely stable picture equalling that of a camera. High maintainability generator which does not distort to effect any electron beam.

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BROADCAST EQUIPMENT

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

Videotape Timer, Edit Control 300

Dual videotape timer and edit control has four functions; reset, freeze, store, and search. Model 300 interfaces directly with Sony 2800 and 2850 video cassette recorders with no modification and independently keeps track of master and slave during edit. Total time is 99 minutes, 59 seconds, displayed from control track, or when initially searching, recording new control track, unit automatically switches to 60 Hz reference and displays record time. Activating "store" puts current time into memory; then "search" will automatically stop tape at stored time when winding back. Option supplies thumb-wheel switches for presetting time. Unit also interfaces with Sony RM-400 edit control. \$695; with preset and edit options, \$995.00 ARTISTS' ENGINEERING.

Fluid Camera Head 301

New fluid head is designed to handle film and video cameras weighing 10 to 30 pounds. Model 30 has independent pan drag, pan lock, tilt drag and tilt lock. Pan is 360°, tilt $\pm 60^\circ$; counterbalance is field adjustable. O'CONNOR ENGINEERING.

Optical Video Still Store 302

Video disc consisting of glass sheet coated with thin metal, 30 cm in diameter, stores from 50,000 to 100,000 color still pictures with laser recording and retrieval system. Reproduction and retrieval take from 0.5 to 3 seconds. Address codes are recorded simultaneously with pictures, and computer circuits supply high-speed random access to any picture on disc. S/n ratio of reproduced picture is more than 40 dB. Track width is 0.8 micrometer, recording laser beam 1 micrometer in diameter, reproducing beam 0.6 micrometer. HITACHI, LTD.

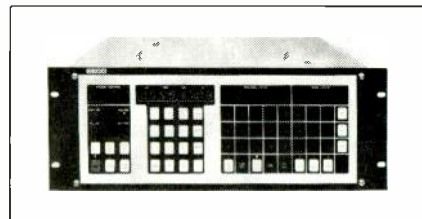
Total Zoom Lens 303

Lens for RCA TK76 is a basic 9.5-142mm, f/1.8 zoom. The 15 x 9.5 "total zoom lens" has front and rear

mounted accessories for extreme flexibility, providing all angles from 1° to 70° without removing lens from camera. ANGENIEUX.

Audio-Video Synchronizer 304

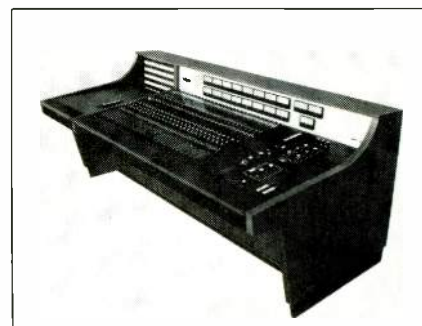
Microprocessor-based synchronizing system can cue and synchronize any three magnetic tape transports, including video, audio, and magnetic film simultaneously. MQS-100 series uses SMPTE/EBU edit code for indexing tapes; tapes with drop-frame and non-drop-frame formats can be intermixed. Modes include high speed search and cue, follow-the-leader, syn-



chronized playback, fast and slow resynchronization, and roll-back with automatic resynchronization. Code readings can be captured "on the fly," individually or simultaneously. Plus or minus offset of any interval can be applied to each slave. AMPEX OR EECO.

Studio Console 305

New console series is specifically for multi-channel music recording. "Eclipse" series uses discrete op amps and specially designed transformers, and modular construction. Also included: wide choice of interchangeable equal-



izers; solo in stereo with echo; solo of monitor channels; two pannable effects returns; two programmable mutes on each input; many others. SPHERE ELECTRONICS.

Audio Mixer 306

Rack-mounting mixer accepts six line



Miser.

Belden/Lee Compact Source iodide discharge lamps with instant restrike. Doesn't exactly sound like a synonym for Scrooge. Until you discover how much they can do, for how little.

More flux for your bucks. Efficient CSI singles ask only 1,000 watts, but give you output comparable with 3-5,000 conventional watts. Or more. Drawing only 1/2-1/3 the current of any comparable daylight-corrected source. (Double unit actually delivers 5,000 fc at 20' and full spot!)

Won't waste weight (or space). Single-unit head weighs only 20 lbs.; measures just 17x13 1/2x12 1/2". Double unit is a mere 35 lbs.; measures 17x25x12". Cool operation and weatherproof head design lets you use them anywhere. And, you can operate them up to 500' from their compact ballast.

Pennypinching PAR's. PAR 64 CSI bulbs deliver lowest per-hour operating cost of any large-source lamp.

Value-stretching versatility. With CSI you can change patterns without relamping. Use output as-is for video. Filter up for daylight. Filter down for tungsten with 1/4-stop loss. For more information about purchase or rental, please write or call.

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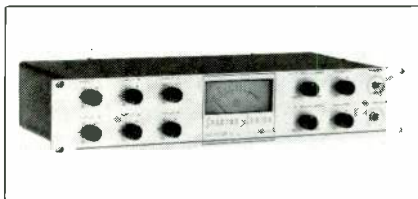
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JULY, 1977—BM/E

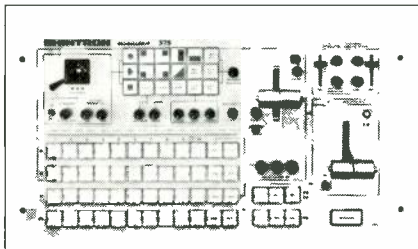
or six microphone inputs, for monaural output. Model 1100 has monitor capability and VU meter. All inputs and output are transformer isolated. S/N is rated 78 dB on microphone inputs, 80



dB on line. Output is +24 dBm; THD and noise .02% max, .01% typical. Equalization is ±20 dB at 20 Hz and 20 kHz, +14 dB at 100 Hz and kHz. \$800.00. SPECTRA SONICS.

Video Switcher 307

Chromatic production switcher for medium scale broadcast operations has 12 inputs, vertical interval switching. Model 375 has an (A/B)-C bus structure with independent preview bus;



downstream crosspoint system handles separate preset and program outputs, coupled by AUTOTAKE circuit. System has built-in chroma keyer, soft and edge wipes, 10 patterns on wipe generator, modulated by audio generator, two independent background color generators. SHINTRON.

Environment Monitor 308

System measures humidity, barometric pressure and temperature, and displays them on three separate digital readouts. Environmental Monitor System shows relative humidity in percent, from sensor which requires no maintenance. Temperature readout is available in either Celsius or Fahrenheit, barometric pressure in milliliters, inches of mercury, millibars or kilopascals. Sensors are on a separate 10" x 10" panel which can be up to 150 feet from readout assembly, which is rack mountable. Optional ASCII interface allows sending data to computers or printers. \$2,350. NATIONWIDE ELECTRONICS.

Four-track Recorder/Reproducer 309

Audio tape machine has combination

continued on page 70



Color, Action, Hands-free Mobility

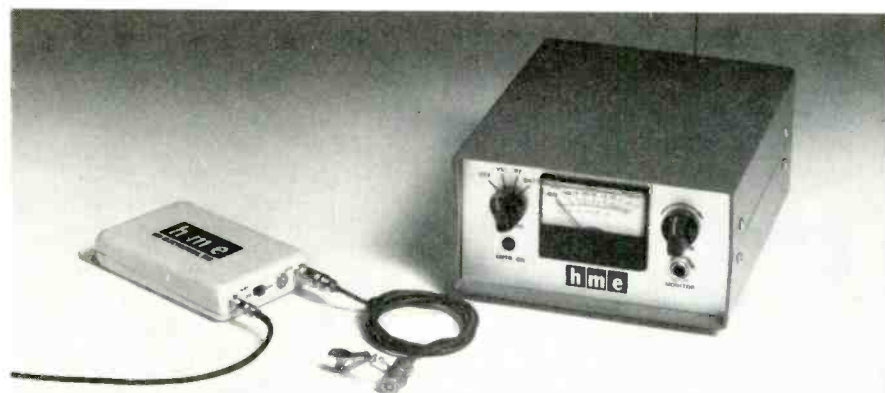
Combine the finest omnidirectional dynamic boom mike with an equally high performance binaural headphone and you have the superior Sportscaster headset...the Telex CS-90. For live broadcasts, from the station or on remotes, with cue and program monitoring and hands-free convenience. The audience hears every word, clearly, crisply, with crowd noise for background color and atmosphere. Circumaural ear cushions screen out noise in the immediate area so that special acoustic facilities are unnecessary. Supplied with convenient in-line, mike-muting "push-to-cough" switch. The Sportscaster headset. Color, action and hands-free mobility. For complete information please write:

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The new name for professional RF wireless microphones

Only the name is new. You will recognize the picture as the same field proven system that has gained universal acceptance in the industry under the label of the leading professional microphone manufacturer. But now this fine product is available from the people who engineered and built it: HM Electronics, Inc.

The System 22 is HME's top-of-the-line VHF Hi Band wireless microphone intended for

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HM ELECTRONICS INC.

use by professionals. Critical adjustments can be made by the audio engineer such as soft compression, transmitter power (can be switched to legal maximum), and internally supplied power for Electret microphones.

To learn more about the System 22 or our new executive and universal lines call or write HM Electronics, Inc. 6151 Fairmount Avenue, San Diego, Ca. 92120 Ph. (714) 280-6050

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Positions, involving domestic as well as international travel, offer excellent professional growth and opportunities to use your full potential in solving total system as well as systems integration problems.

Requirements include technical strength in television broadcasting, at least 4 years of related TV broadcast experience, and an ability to handle total problems with minimum supervision. Applicants must exhibit technical strength in television broadcasting acquired by four or more years of related broadcast experience and completion of at least a two year technical school. They must also have the ability to handle total technical problems with minimum supervision.

Starting salary will be commensurate with your education and related experience. **Benefits are liberal and a bonus along with full expenses are given for International assignments.** Relocation expense will assist you with your initial move. Please send your resume, including salary history data, to: Mr. Lawrence R. Carlstone, Professional Employment Supervisor. **HARRIS CORPORATION BROADCAST PRODUCTS DIVISION, Quincy, Illinois 62301.**



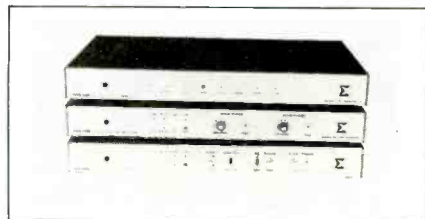
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Broadcast Equipment

record/play head, erase head and monitor head. Model 40-4 records 4-track, has integrated circuite logic, motion sensing and memory stop, 15 and 7½ ips speeds. It has LED overload indicators, optional four-channel dbx, remote control and mic preamp. Specs claimed: wow and flutter 0.5% (NAB WTD) at 15 ips, 0.07% at 7½ ips; S/N dB weighted, distortion 1% at 1000 Hz. Under \$1600. TEAC CORP.

Color Sync Generator 310

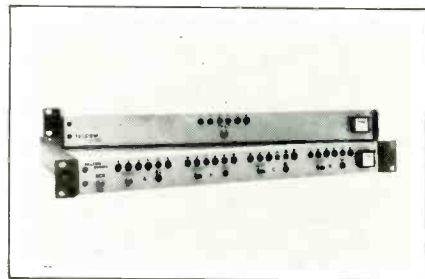
Series of color sync generators includes



the CSG-100, with built-in black background generator; the CSG-200, with, in addition, subcarrier phase shifter designed to handle up to three color cameras; and CSG-300, same with genlock to an external color video signal and to most helical VTRs. All use digital techniques. \$675 to \$990.00. SIGMA ELECTRONICS.

Low-Density Alarm System 311

Microwave alarm system has dual scan security, sensor input transient suppression, loss of communications channel indication, and single-button acknowledgement of alert. Series 140



LD alarm and control multiplex can interface with an orderwire, voice mux, CATV or TV audio subcarrier, or telephone line. Each 6-point remote sends a digital FSK tone to central alarm, which handles up to four remotes. Each 6-point remote, \$227; 6-point central terminal, \$294. TELCOM DESIGN.

LED VU Readout 312

LED VU display system, used in port-

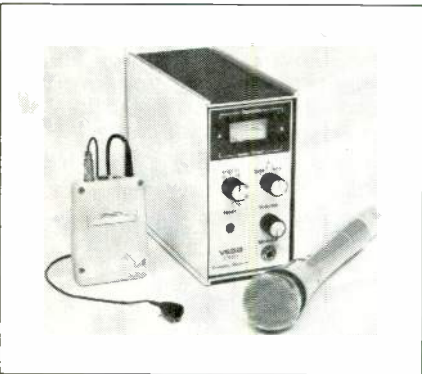
able mixing consoles, is available separately. Modular group consists of four digital displays, each with range from -20 to +3 dB. Input can be set for 0 dB at any level above +4dBm. Tracking is assured by use of a common dynamic reference signal. Attack and release times conform to NAB requirements for VU meters. \$115 in small quantities. 2005AD, INC.

Automatic Gamma Balance 313

Option for 1550 series telecines corrects substandard film color caused by exposure errors and fading. Auto-Gamma Balance has four models of operation, with variable differential gamma correction. It can be remotely controlled. It also provides manual gamma balance with "Gamma Paint." COHU, INC.

Dual-Diversity Mic Unit 314

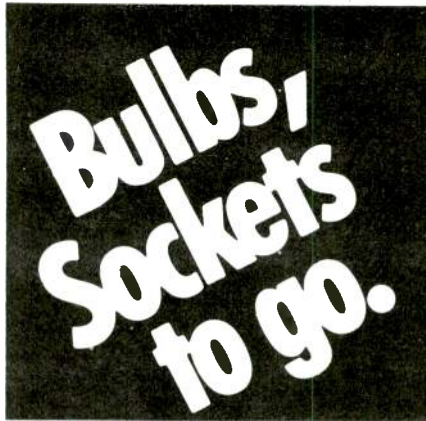
Single-unit dual diversity microphone receiver consists of two high-sensitivity receiver sections. Each receiver in the Model 63 is connected to a separate antenna; the two antennas can be put in



different parts of the room, so that there is very little chance of a signal drop out at both simultaneously. Electronic combiner automatically selects the better signal to feed receiver. Selection process uses integrated-circuit electronic switching to avoid clicks and pops. Front panel has LEDs to show presence of RF and audio, VU meter for audio or RF from either section, switch for diversity or single-channel operation. VEGA.

Intermix Units 315

Intermix systems give automatic switching among three sequential and one real time program source. Model 3000-STB (stereo) and one 2000-B (mono) switch on receipt of 25 Hz cueing tone, with beginning or end of tone switch selectable. There is also a continued on page 72



We're now national distributor of sensational new OSRAM HMI bulbs. And still the country's biggest in-stock source of GE and Sylvania bulbs and sockets for studio, theater, tv and A/V. Now plus Leecraft sockets, too.

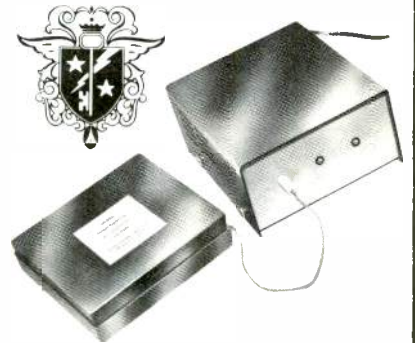
We specialize - we've got it all for you! Send for 108-pg. stage/tv Lighting Handbook (50¢ mail and handling, please).

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Broadcast Products Division

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The Broadcast Products Division of Harris Corporation is seeking broadcast engineers interested in expanding their personal growth in the international broadcast market. Many opportunities are available in our organization which is rapidly growing to meet the existing and future requirements.

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You will be fully responsible for managing the marketing of our broad range of radio and television broadcast products in a selected area of the world. Management of the distributor network and customer relations are essential.

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We offer favorable career prospects in a growth environment, competitive salaries, excellent benefits, and relocation assistance. Please direct resume in confidence, giving full pertinent details including salary progression, in confidence to Lawrence Carlstone, Professional Employment Supervisor, Harris Corporation, Broadcast Products Division, Quincy, Illinois, 62301.



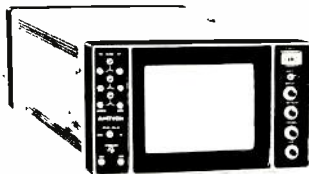
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AMTRON RACK MOUNT COLOR MONITORS

AMTRON AM-5



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Single-gun Trinitron® color system and Amtron know-how makes the AM-12 color monitor the choice of the professional. RGB gun switches, underscan int/ext sync and talley light are standard. Optional pulse cross A/B video input and rack-mount slides.

TM Sony

AMTRON AM-17



A standard in broadcasting, teleproduction, education and government the AM-17 color monitor features the superior single-gun Trinitron® color system RGB gun switches int/ext sync and underscan plus optional pulse-cross display and A/B inputs.

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GLASGOW TELEX 779469

Circle 152 on Reader Service Card

Broadcast Equipment

built-in variable delay which operates in either mode, and a silence-sensing system to operate when program material is missing. Also: photo cells for noiseless switching; built-in cueing and monitoring speaker; LED program stage indicators; pushbutton rapid advance; VU meters. \$1195 for 3000-STB; \$1045 for 2000-B. VIF INTERNATIONAL.

Portable VTR Systems 316

Black and white ½-in. videocassette systems are available built on VT-300 videocassette recorder and VC-300 video camera. With optical, clip-on viewfinder and 16mm C-mount lens, suggested retail is \$1450. With detachable three-inch electronic monitor and internal speaker, allowing on-the-spot playback, price is \$1650. Electronic viewfinder replacing optical one, and 8:1 C-mount zoom lens (11.5-90mm) price is \$1750. With both electronic viewfinder and three-inch monitor, price is \$1875. AKAI AMERICA, LTD.

Receive-Only Earth Antenna 317

Antenna for receive-only earth stations in satellite service is 4.5 meters across. It has high efficiency (44 dBi gain at 4 GHz), and a wide stance three-point mounting. ANDREW.

Program Limiter 318

Program-type limiter had "duck" mode which drops level momentarily when microphone is turned on. Model LDA-31 has 5 millisecond attach time and factory-set 250 ms release time. Threshold of limiting is adjustable from 0 to 30 dBm. Nominal gain is 10 dB, dynamic range in excess of 40 dB, S/N over 60 dB. THD is below 1%. Unit is available in variety of card formats. \$69.00. DYMA ENGINEERING.

Video Editing Control 319

Electronic editing control for two CR-8300U VCRs allows remote operation of master and slave for high speed bi-directional search and manual or automatic assemble, insert edit, with preview of all edits. Model RM-83U also permits slow motion and still-frame viewing. Pre-roll buttons put in 4 seconds of playing time. Two independent LED time counters read minutes, seconds and tenths, reference control pulses on tape and provide accurate editing point memory, accessi-

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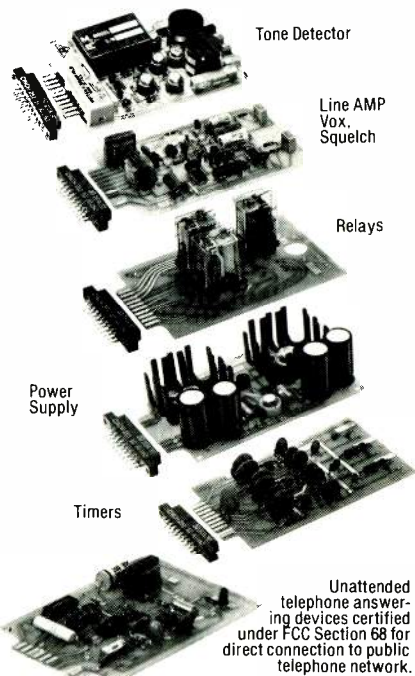
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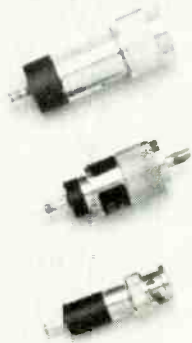


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ble automatically. All edits can be made within ± 5 frames of actual timing in preview. \$2150. JVC INDUSTRIES.

Aligner For Vidicon Cameras 320

Optical device for aligning vidicon cameras is fitted in place of the lens, puts a test pattern into camera. Model VI Diascope has its own light source, with rheostat for setting light level. Appearance of test pattern on monitor will indicate proper axis alignment of



vidicon tube, proper distance of sensitive surface from the "C" mount, and other characteristics. The unit is sold with batteries, lamp, carrying case; slides for a variety of tests are available. TELE-MEASUREMENTS, INC.

Pedestal Generator 321

Instrument converts bandwidth sweep used in video amplifier tests into a signal suitable for recorders, monitors, proc amps, etc. Model 1406 combines video sweep, blanking and sync inputs into a video signal format, blanking out the sweep during horizontal and vertical sync intervals. Front panel adjustment sets pedestal level, the amount of blanking raising the video signal above black. Bandwidth is in excess of 30 MHz, gain is 1.0. \$400. VISUAL INFORMATION INSTITUTE.



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News Briefs

losses when the Canadian government decided to disallow certain tax deductions to Canadian business using American stations to advertise. The Wometco report, however, was optimistic that this was a temporary slow-down and expected a bright outlook for the remainder of 1977 . . . **Sonderling Broadcasting Corp.** will purchase the 60 percent interest in **MGS Services**, currently held by **Teletronics International**. MGS is one of the nation's largest distributors of television commercials . . . **The Starr Broadcasting Group, Inc.** reported third quarter earnings of \$639,394

compared to a loss in the same period last year of \$16,889.

Sola Basic Industries and **General Signal Corp.** announced an agreement whereby Sola will be acquired by General Signal for 2 million shares of General Signal common stock . . . A new company, **Satellite Networks Inc.** (SNI), has been formed to provide domestic satellite interconnection facilities and local distribution services. SNI is a joint venture of **Microband National System Inc.**, **Satellite Network Services, Inc.**, and **Oak Industries Inc.** The new firm has under development earth stations in Milwaukee, San Francisco, Sacramento, and Palo Alto.

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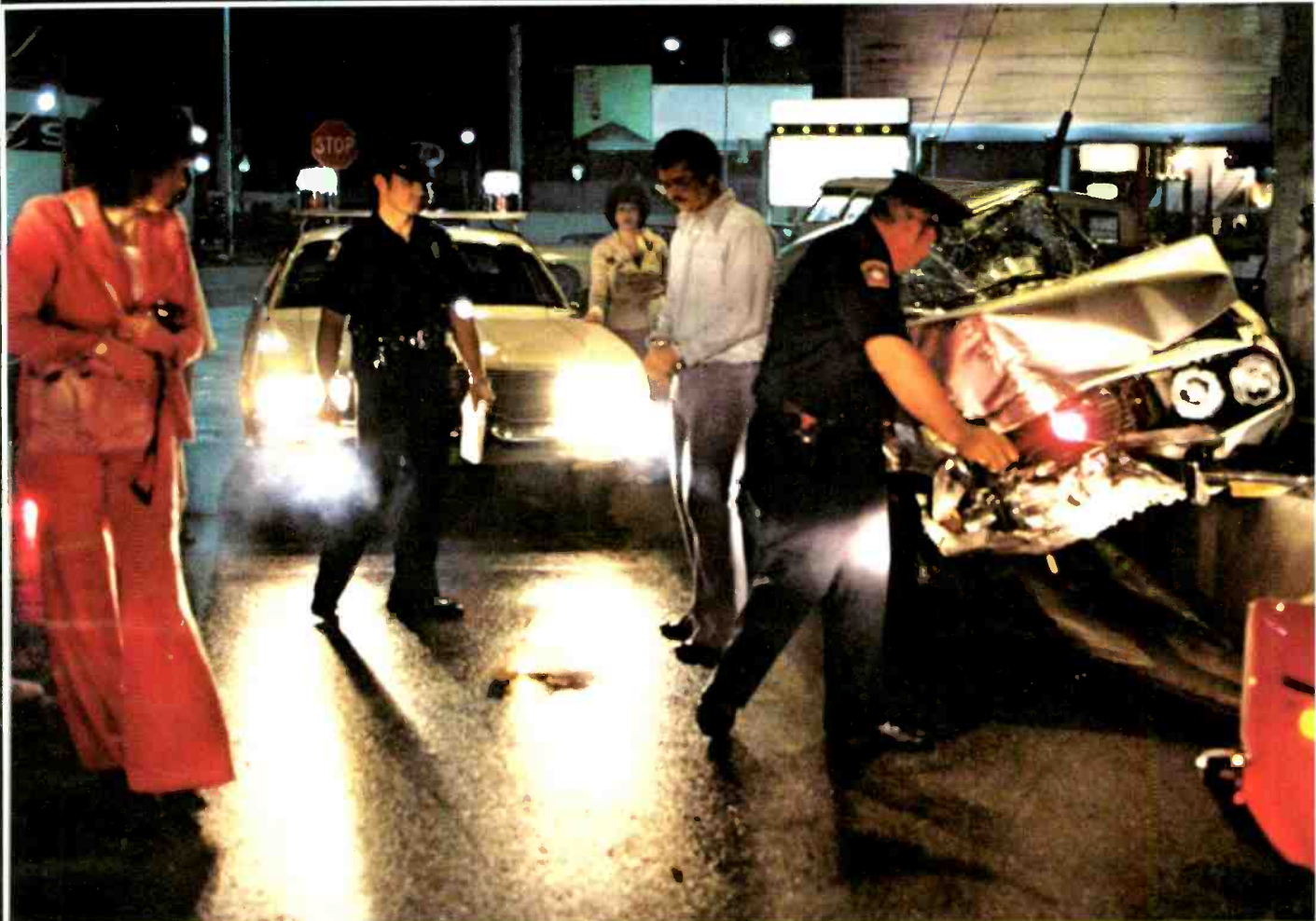
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