JULY 1976

BM/E

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Indiana University
JUL 15 1976
Library

...to afford air personality...

6:30 AM — Opening ID, Welcome
(cart)

6:32 AM — Local news, weather
(live)

6:40 AM — Commercials
(carts)

rts, farm prices

7:00 AM — Special Interview
(open-reel)

7:15 AM — Commercials
(carts)

7:20 AM — Music Intro's Outros
(open-reel)

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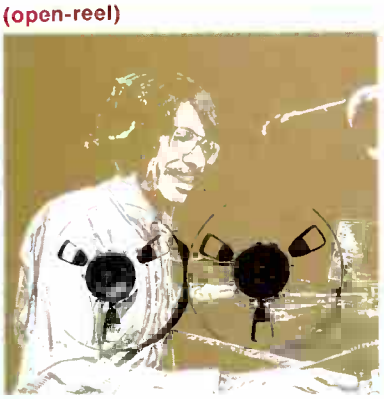
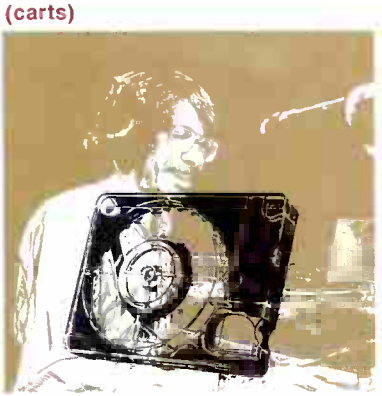


11:15 AM — Music Intros, Outros
(open-reel)



2:30 PM — Commercials
(carts)

4:45 PM — Commercials
(carts)

ocal news, weather

9:30 PM — Commercials
(carts)

12:30 AM — Music Intros, Outros
(open-reel)

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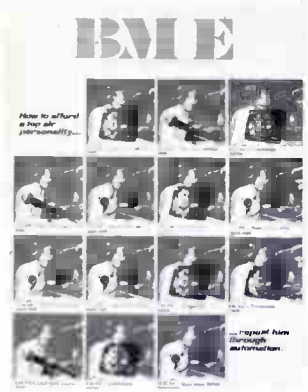

This month's cover symbolizes how automation "multiplies" a top-caliber radio personality so he can do many jobs, easily and well.

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BPA
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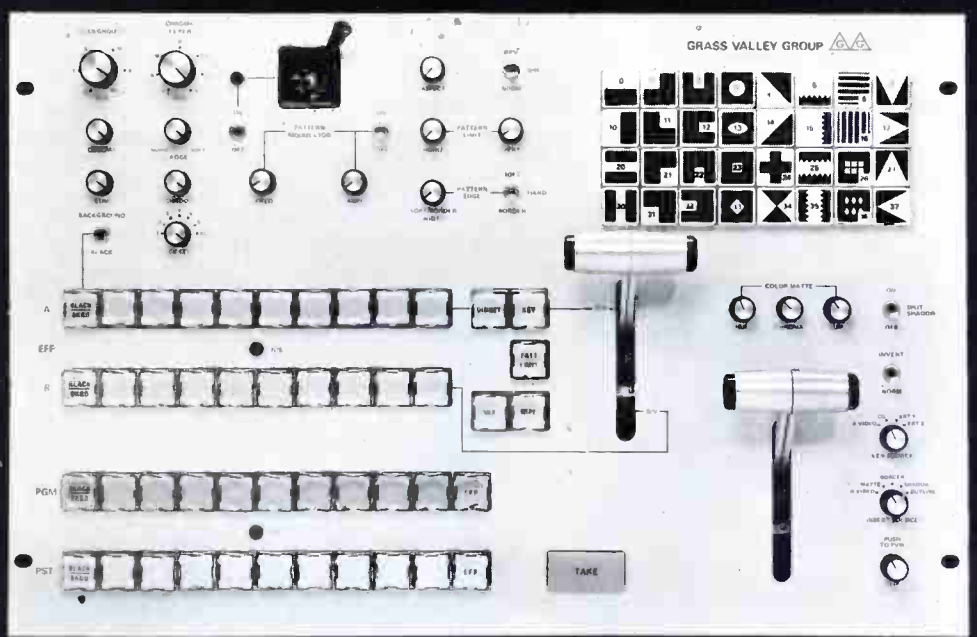

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BROADCAST INDUSTRY NEWS

Microwaves, TV/Studio Cables, Telco Lines Enmesh Democratic Convention Site

Getting the Democratic National Convention Committee to pick New York City was considered something of a coup for Mayor Beame and Gov. Carey. And you might think the three networks would be pleased having the event in their backyard. As it turns out, NYC, and particularly the Madison Square Garden site, is probably the last place in the world that network engineers would have picked. There just isn't enough room to set up. CBS and NBC had to negotiate cable rightaways with four different entities (including two railroads) and pierce 30-inch concrete barriers to get set up. Both CBS and NBC have complete TV complexes in the area. ABC decided to leave its VTRs at home and will connect to them via leased telco lines. This means ABC gets away with only three video control center vans which they managed to snake into the arena having a whole two-inch clearance to play with!

NBC, with a fleet of 12 trailers—six video vans, six temporaries—had a real job jigsawing them into place on the pedestrians plaza to One Penn Plaza across the street from the Garden. CBS was able to pull two switching trailers plus one video mobile unit into garage space at One Penn Plaza (replacing a garbage compactor) but elected to rent 15000 square feet of space on a lower level for its elaborate video control setup—by far the most extensive of the three networks. CBS also rents another 2000 sq. ft. for a lounge/VIP area.

There was plenty of room in the main arena for the construction of separate and quite elaborate anchor booths by ABC, CBS, and NBC, but to accommodate radio networks, the European Broadcasting Union and other foreign broadcasters, AP, UPI, and newspaper reporters, the entire rotunda area encircling the Garden delegate area is taken up. All this was necessary despite the use of the permanent Hughes Sports Network video control room setup that is normally used to broadcast sporting events from the Garden. But because the convention focus is not just on a few players on the central podium but on the thousands of delegates as well, new

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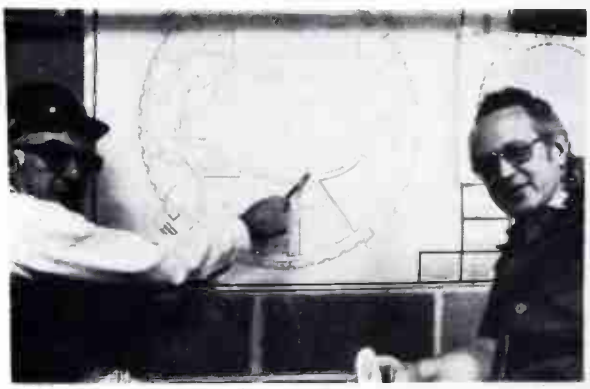
Hy Badler, head CBS convention operations, points to location of CBS Anchor Room in arena. To right is floor plan of CBS video control center (upper drawing) and layout of anchor room (lower drawing).



Bob Daniels of NBC (left) in charge of inside pool, shows how rotunda area beneath arena is subdivided. Looking on is Bob Asman, pool producer.

Madison Square Garden on June 4 showing CBS and ABC anchor rooms being constructed over seats. In center are steel girders for building TV platform.

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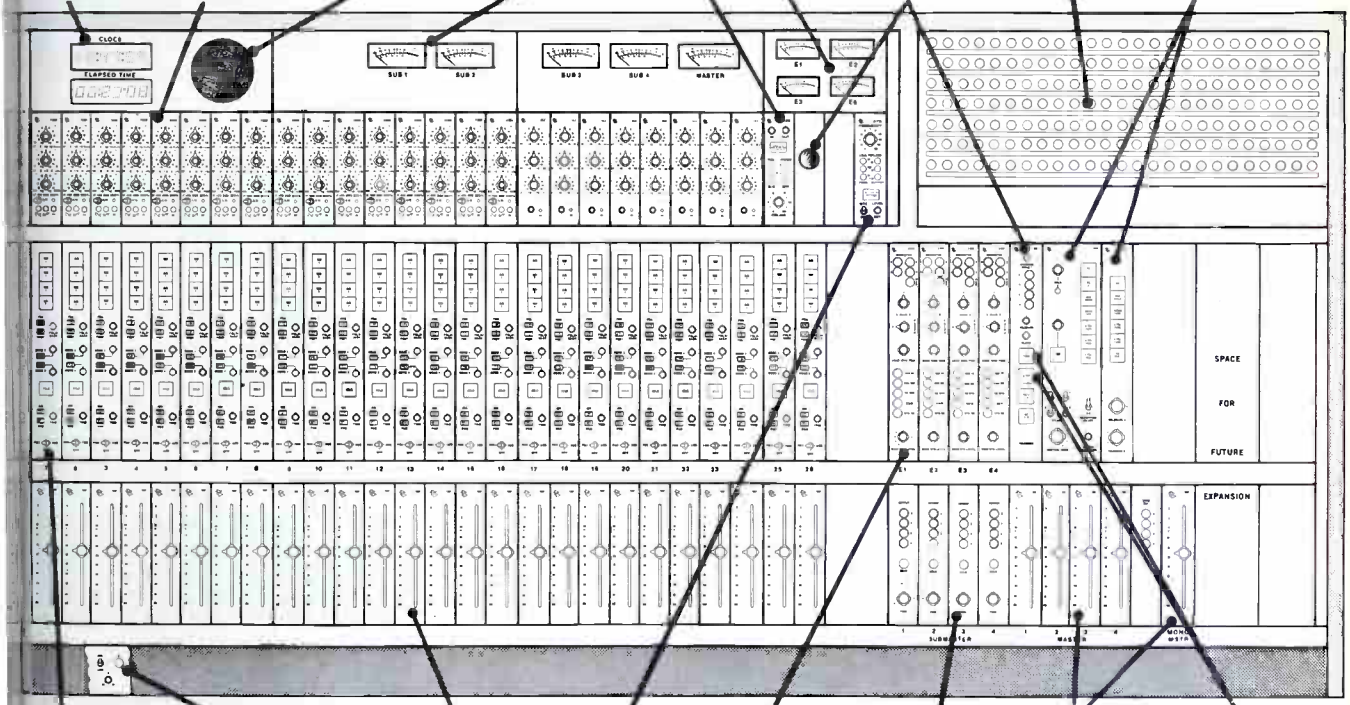

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camera locations had to be found and extra lighting had to be added.

If it were not for the fact that pools of equipment are set up, the demands of the various broadcasters could not be met. Therefore, as a result of a drawing, NBC is in charge of the inside pool and CBS the outside pool. (At the Kansas City Republican Convention, CBS again handles the outside facilities and ABC the inside.) Of course, once off the convention floor, the broadcasters are on their own and it's a real free-for-all consisting of big vans, mini vans, portable VTRs, handheld cameras, portable editors, microwave and pre-leased teleco lines.

On the floor itself there are five Ikegami studio cameras making up the pool. Bob Daniels, NBC's engineer in charge of the pool, reports a special 22 × 1 Canon lens will be used for closeups of podium speakers. Two cameras flanking the podium can catch profiles or "beauty" shots of podium personalities and can be swung around to televise delegates. A "caboose" camera is aimed only at delegates. A audio on the convention floor (delega mics, etc.) is handled by NBC und the direction of the convention cha man and an audio control van is cated in the rotunda area. Helicop TV coverage is provided for under t outside pool arrangement. As outsi pool coordinator, CBS is also charge of lighting of press rooms a all of the hotels, CBS will do the vo tabulations (votes cast are fed nearby CBS data processing co puters and supplied back to the ins pool via character generators.) T pool has 21 audio and video out lines feeding its various subscribers

Pooled cameras are only a fraction the total. The three networks will h two hand held, RF equipped came

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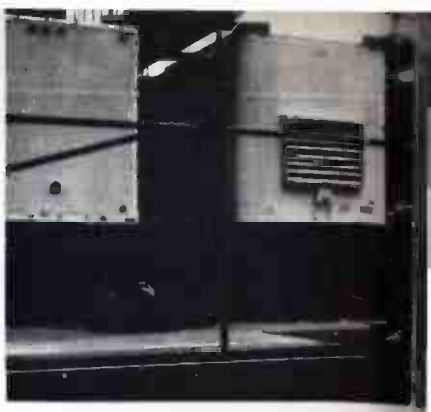
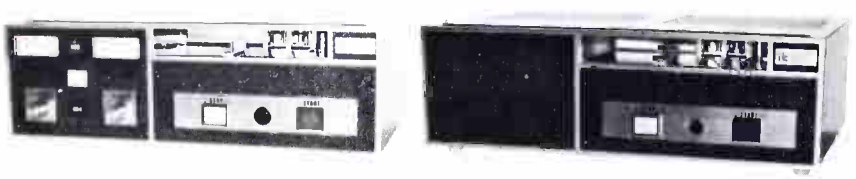


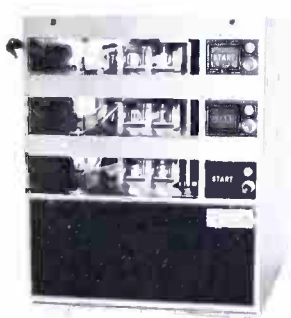
View from 34th St. sidewalk shows three NBC video vans of a total 12 vans and trailers hoisted into place on a pedestria plaza.

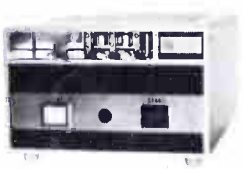
ABC was able to get three technical var inside Madison Square Garden.

Hy Badler inside two switching vans located in garage. (One wall from each van is removed to create one room).

bench mark cartridge machines







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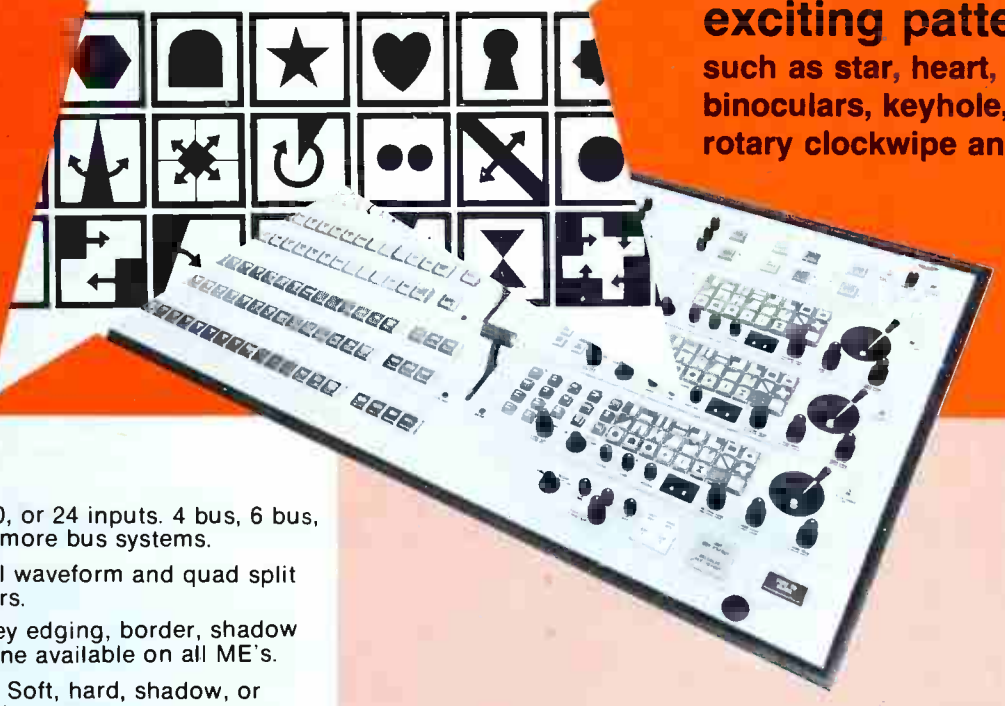

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each on the floor (the maximum allowed by the convention) and there are 18 other cameras in 8 positions on the perimeter of the floor divided up amongst the three networks.

The unilateral activities off the convention floor is where the competitive spirit begins. CBS and NBC, both providing gavel-to-gavel coverage, will be battling head on. ABC will do a taped recap at night and will, therefore, try to jam into its on-air hours highlights that will steal viewers to it. All three will be reconnoitering the city for hot stories and can move in with tanks or light combat vehicles as the case may be, to get a story back to their respective anchor rooms for live or taped playback.

CBS, reports Hy Badler, will have five "flash" units and five electronic film replacement (ENG) units. All of the flash units incorporate switcher and 2 GHz microwave equipment. All ENG units will have 13GHz "window" microwave equipment. CBS has just added to its microwave system and has relay points from the Chrysler Building, Gulf and Western, Empire State and One Penn Plaza. In addition each of the major hotels has been equipped with AV phone taps so any mobile unit can wheel up and get to the control center via leased telephone lines. CBS's elaborate control center includes four separate control areas: central control, perimeter control, remote coordination, and auxilary control (for specials). Several of the ENG units will be equipped with the new Thomson CSF Microcam. New Sony BVU-100 portables will be used. Back at control center, CBS has five edit booths to handle ENG produced tapes. New Sony BVE-500 editing consoles will be used.

NBC will have eight outside vehicles—one big mobile unit outside convention hotel headquarters, the Statler Hilton, plus three mini-vans, three sedans and one roving mobile unit. The mini-vans are microwave equipped. The mobile unit has a switcher for multiple camera operation. Mini-vans and sedans will be equipped with six new RCA TK-76 cameras. Clay Ackerson, NBC engineer in charge of unilateral broadcasting, predicts they will give NBC an edge. He reports, "Control people can't tell whether a studio camera or the TK-76 is on the air." One of the vans in the NBC trailer park is equipped with five electronic journalism editing booths using the new Sony BVE-500 editor.

ABC, according to Joe DiGiovanna, "will have one dinosaur, two antelopes and five bambis on the job." The "dinosaur" is a four-camera unit that will be parked outside the Statler Hilton. The "antelopes" are two-camera Dodge campers including a switcher console, editors, and microwave. The "bambis" are single camera units but all microwave equipped. Cameras will be Ikegamis, either HL33s or HL35s.

An ABC ENG van (microwave dish collapsed). Others will be brought in from Chicago and L.A.

Among some of the new equipment that will be highlighted, in addition to new ENG cameras and editors, are synchronizers—Badler says he will be using six (two NECs and four Quantels)—wireless mics, character generators, microwave, and fancy switchers. ABC says it could keep its VTRs at home because of a fantastic routing switcher which permits dial-up of any VTR from anywhere. ABC will have a full capability Grass Valley

continued on page 1

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NEWS

switcher in its arena anchor roo Chyron character generators will used by several since they have much computer control flexibility. new RF Thomson CSF 960 MHz versity mic will be used by CBS. T racom, Nurad, and Microwave sociates are names mentioned in c juction with microwave.

How much radio/video investmen back of these four days? We do know for sure but it has to be alot. C obviously spent the most. Over NBC, where they had just come out strike, one engineer said, "we're pl pipe rack compared to them" but said it somewhat proudly and not viously. ABC said it must have sa "a million dollars" by virtue of it us only three video vans on site and go back to its New York City broadc center for recording. The effort Kan as City will be less costly. AB in charge of the inside pool there, bring in some NBC vans from Burba because other equipment will h been tied up in Montreal as ABC co the Olympics. NBC will drive its N trailers and vans to Kansas City. C will pack up its gear and ship it Kansas City for installation in trail there. All three networks will br ENG gear from its O&O stations.

And in addition to network cover by ENG, there will be much more independent and affiliate broadcast

FCC Actions

Do Broadcast Stations Need Licensed Operator

That is just one of a score of quest the FCC has thrown open in an inq on the "relevancy of its radio oper rules to the current state of the com nications industry." The inq covers every class of communicat activity, but on broadcasting the piv question seems to be: should th censee, who is basically responsibl proper operation, be allowed to ach that by any means he considers bes the requirement for licensed oper is to continue, to what extent shoul operator be responsible for pr operation? Calling the first or se class operator-licensee, required adjust, repair and maintenance, "service operator," the FCC wan know if the present examination producing qualified persons. A fe the other questions: should the "se operator" be required to notify t censee, or the FCC, or both, in wri of technical discrepancies? Shoul FCC have further "sanctions" fo

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rcing service operator responsibility? ould the service operator be required have an apprenticeship period? ere are many other questions.

Every broadcast station manager and gineer needs to study this inquiry in tail (Docket 20817); it goes to the rt of the broadcast engineer's posi- as a central figure in the broadcast ustry. Comments are requested by otember 1st, replies, September 15.

following reports are in ab- viated form so that, as in the June e, more of the FCC's very high out of important actions could be ered:

Circular polarized antennas for evision: proposed rule making. As dicted in earlier stories, (see I/E's comprehensive March cov- ge of CP for TV), the FCC has ned a proposed rule-making to w CP transmission in television. FCC asks for any additional data ond those submitted on the WLS s) on the actual results of CP trans- sion. (Docket 20802).

M-FM non-duplication is made re stringent. The FCC has an- nced a further limitation on M-FM duplication by commonly ed stations. Effective May 1, 1977, ther station serves a community of e than 100,000 the limit will be FM duplication in an average k (down from the present 50%); communities of 25,000 to 100,000 limit will be 50% (now no limit), this second class also going to on May 1, 1979. (Docket 20016).

ister-station promotions are to be ged as commercials. A rule ndment makes promotional an- ncements for sister stations—monly-owned stations in the same munity—material to be logged as mercial. The requirement is not icable to educational stations. cket 20558).

bscenity: new law proposed, e rules clarified. The FCC asked gress to pass a law making it a inal offense to disseminate ob- e or indecent material by means of communication or cable televi- . "Obscene" would be defined ac- ing to recent decisions of the US reme Court—material which peals to the prurient interest of the age person applying contemporary munity standards and which lacks us literary, artistic, political or ntific value." "Indecent" would epresentation or verbal description human sexual organ or function is "patently offensive under con- porary community standards." law would give the FCC power to ose sanctions; it is necessary, says

continued on page 14

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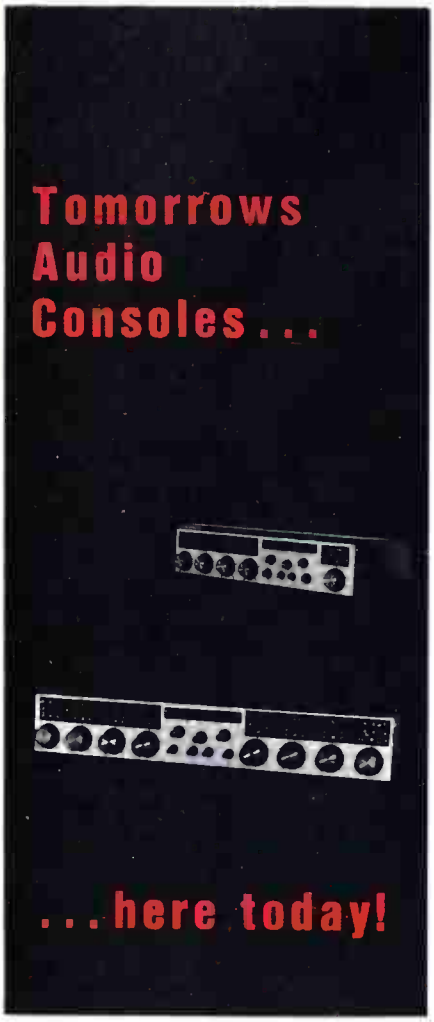

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NEWS

the FCC, because the electronic media comes directly into the home and the audience is in a sense "captive." Thus the law would make it a defense if the material involved a per-program charge, or otherwise minimized the risk to children and to those who might not wish to receive the material.

As to cable "access" material, the FCC says the operator is not responsible for a first offense slipping in but must exercise reasonable care, based on advance information or experience, that the material is acceptable. The actual promulgator of obscene access material would be liable to criminal action.

No change in rules on political broadcasts. The FCC turned down a number of requests that: free air time be mandated to each qualified candidate for office; short political spots be at least 4 minutes 30 seconds long. The FCC elected to continue the rule that rates for candidates are limited to the lowest unit charge, with no requirement for free time. Furthermore, "spots" can be any length, said the FCC.

FCC Briefs

The date for **comments on the inquiry on radio network rules** was extended to July 9 (replies August 6) . . . . All applications for **equipment authorizations** are now on one form, #731, (effective May 17th) . . . . A report, **"Regulatory Developments in Cable Television,"** summarizing major rule-making actions since 1972, can be had at the FCC's Information Office, Room 207, 1919 M St., NW, Washington, D.C.

Romance sprang alive in the FCC as **cross-ownership taboos were waived** for owners of two broadcast stations who plan to marry, Lady Sarah McKinney-Smith (WDXR, Paducah, Kentucky), and J. Shelby McCallum (WCBL, Benton, KY): the FCC's cool language did not conceal its warm heart . . . . The **sixth pay television system** was approved. "PTV System 3," a development of Pay Television Corporation.

WNYC Faces Takeover Proposals

New York City's unique Municipal Broadcasting system may yet fall victim to the budget crunch.

Two major proposals seek to avert the demise of WNYC AM, FM, and TV. One proposal put forth by WNET, the local PBS station calls for a

continued on page 16

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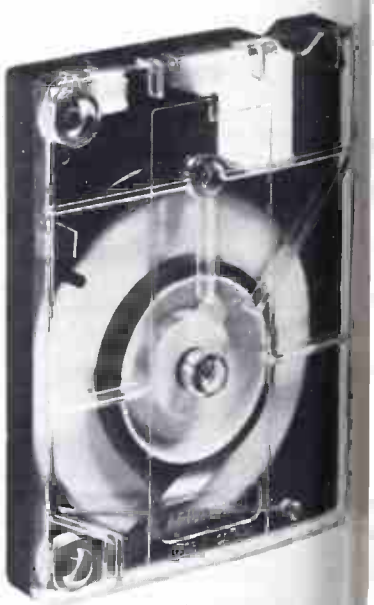

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NEWS

takeover of the city facilities and th conversion of the AM and TV station to an "Open University" concept o educational programming. Mayo Beame, on the other hand, favors a pla that would transfer the station license to a new Public Benefit Corporatio and continue the WNYC tradition o community related programming.

Though the budget for WNYC ha already been slashed to the bone, it sti costs the city $2.1 million a year to operate it. The plan favored by Beam would put the station in a position o competing for contributions fro foundations and the public, much th same way as WNET already does.

WNET feels that this plan w merely split the funds available fro contributors and in no way bene either station. Its own plan, howeve still requires the city to make sizeab contributions to the station's operati expenses over a period of years follo ing any takeover.

'Tug-of-War' over CATV Continues Before House Subcommittee

The House Subcommittee on Comm nications continued to hear argumen from NAB, NCTA, and public inter groups over regulation of the CAT industry.

Robert L. Schmidt, president NCTA, told committee members enact legislation that would create separate title in the Communicatio Act to provide "broad policy guidan to the FCC in its treatment of not j cable television, but other new bro band communications, technologies If the fundamental policy issues rai by CATV were not resolved soon, said, the positive opportunity co well be lost.

NAB president, Vincent T. Wa lewski, told the committee that bro casters were not afraid to compete w CATV, provided that competition w fair.

Wasilewski pointed out that ca has built an $800 million industry the strength of the programming or nated by broadcasters without pay for the product. He refered to a pro sion in the pending copyright bill, said, it is not a competitive situat "when one industry takes the proc of the other at prices set by the cong far under marketplace values, and t uses the product to injure the pu interest and those operating in public interest."

Numerous public interest groups tified generally expressing fears poor regulation of CATV and pay

continued on pag

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hen we put our new system on-air 974, Ch. 29's 'A' market coverage t up 68% to 9,870 square miles," orts Taft Broadcasting Corporate e President Bill Hansher.

.'A' market coverage up 68%."

Viewer reaction was extremely orable—we were even getting onses from Manhattan, Baltimore Western Pennsylvania.

Our 5 megawatt signal makes AF-TV the most powerful nidirectional TV station where—but we achieved our ximum ERP with operating ngs of 25%, thanks to RCA ning.

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More than two years later, we're lly pleased with the RCA system's ormance."

or more about the WTAF kage, see **Broadcast News #155.**

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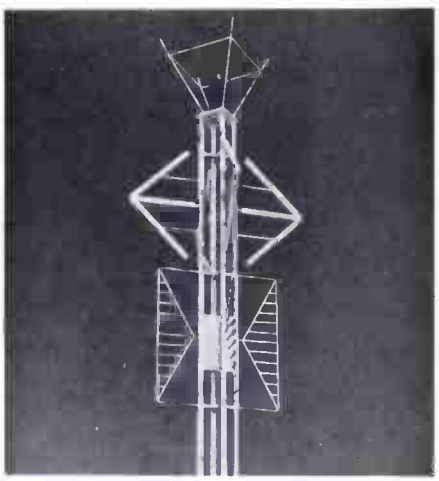
When FCC approval is granted, RCA will be able to help stations improve their signals with three circularly polarized TV antennas.

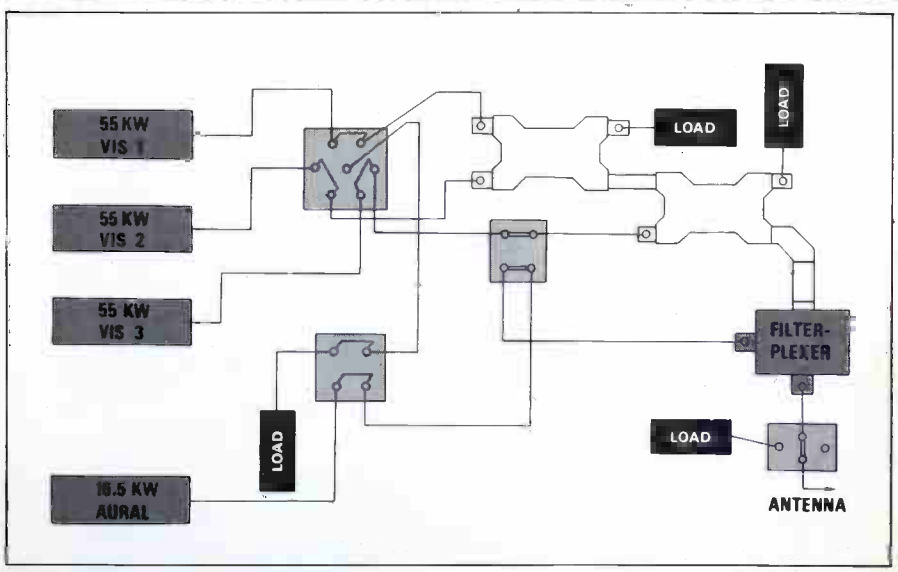
One is a top-mounted Fan-Vee for Channels 2 through 6. It uses individual radiators for horizontal and vertical polarization. They are phased to produce the circularly polarized pattern.

Another circularly polarized antenna, the End Fire Helix, is for Channels 7-13. It uses three small reflecting dishes mounted per layer around the top-mounting pole to produce an omnidirectional circularly polarized pattern.

A panel antenna for face mounting on the tower (Channels 7-13) may be installed as a horizontally polarized antenna, with the ability to be converted to circular polarization.

Ask your RCA Representative for full antenna information.





Four 55 kW vapor-cooled klystrons are used in the TTU-165c. A unique triplexing system developed for the WTAF-TV transmitting plant combines the outputs of three of the klystrons. As shown in the diagram, visual amplifiers 1 and 2 are combined through a 3 dB combiner to produce 110 kW peak power. The signal is fed through a 4.77 dB combiner where it is added to the output of visual amplifier 3 for combined visual peak power of 165 kW.

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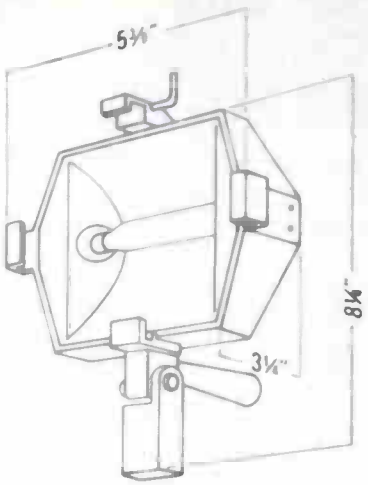

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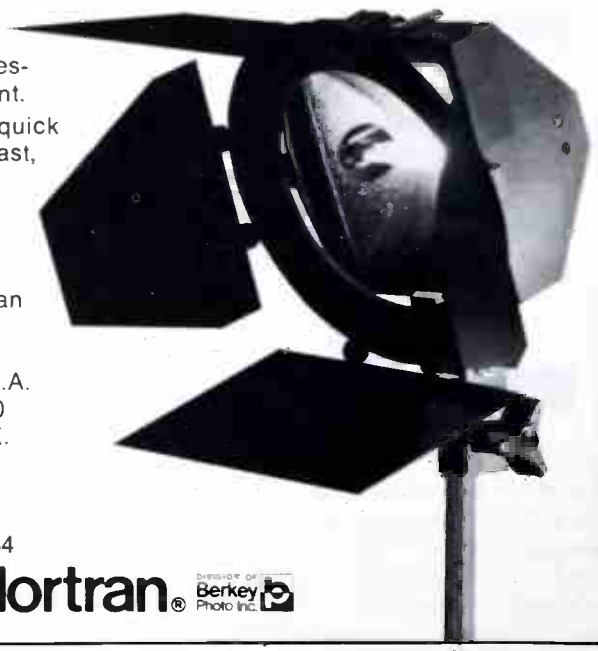

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NEWS

could result in the draining awa sports, and other major programm from free broadcast television, a leave shut-ins, persons on fix income, rural residents, and oth persons, locked out from a source entertainment and information up which they depend.

Sun Sets on 'Midnight Blu

Manhattan Cable Television, Inc. ca celled the controversial progra "Midnight Blue" which ran on public access channel.

The program which has been va ously described as "soft core," an "hard core" pornography was the on show affected by a ruling of Manhatt Cable that said, "in order to protect t valuable community service provide by public access programming, (Ma hattan Cable) is suspending all publ and leased access programs which ha exhibited a regular pattern of flouti governmental requirements related t obscenity."

"Midnight Blue" producer, Al Bennett, claimed that Manhattan action caused "a growing fear of i timidation on the part of access produ ers." He called his program "a sati on TV" portrayed "in a loving manne . . . with taste, with art . . . It h never intended to be indecent and o scene." As for the criticism that t show offended local community stan ards, in New York, said Benne "there's a hooker on every block."

Food Advertising Propos 'Incompatable With Broadcast,' Says NAB

The proposal by the Federal Tra Commission which would require a vertisements to convey specific nutri data to consumers, was called " compatable with broadcast media," the NAB.

In its filing, NAB said the propo "raises substantial and signific questions both as to its legal valid and its appropriateness as a means cure the alleged nutritional de ciencies."

The FTC proposal would prohi nutritional claims unless the avera portion of the product contains at le 10% of USRDA (Recommended Da Allowance). It would further requ listing of serving sizes, amounts of trients, fat content, and other da NAB contends such information, e if it could be given in short comme spots, would tend to confuse nutri information rather than clarify it, es cially when several such comme

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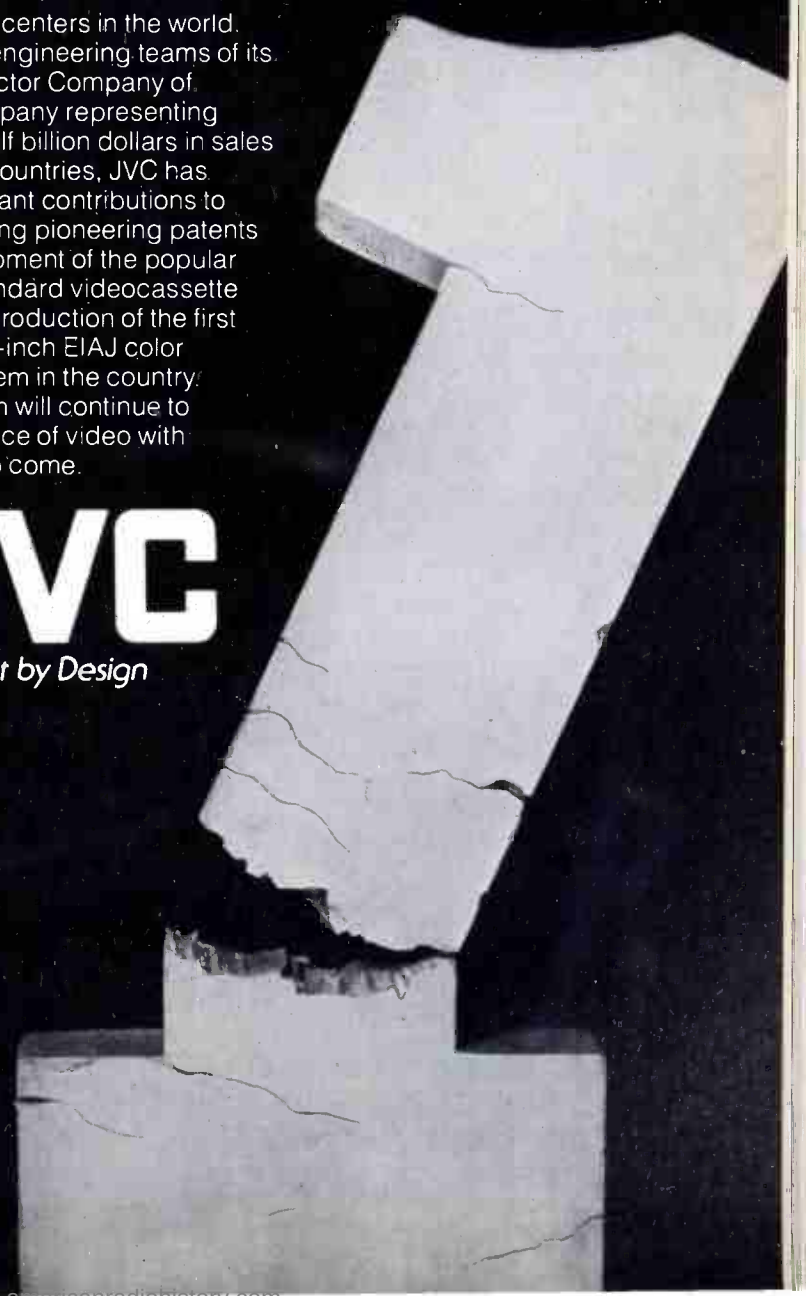

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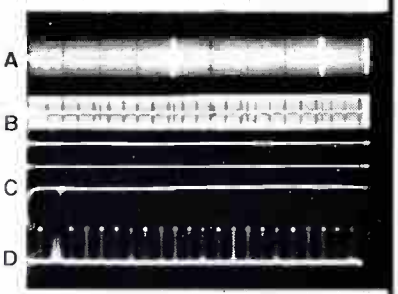

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are run in clusters.

NAB Urges Caution in Adopting Captioning Rule

The NAB urged the FCC to "use ca tion in considering rule changes su mitted by Public Broadcasting Servi (PBS) to reserve all of line 21 of t vertical blanking interval for the excl sive purpose of transmitting caption information to the hearing impaired.

NAB pointed out that, before ca tioning can be practicable, a reasonab priced decoder must be developed. T uncertainty of the decoding device a its price could undermine the whc concept of captioned programmin according to NAB.

NAB also stated that the PBS prop sal says a capital investment of $25,0 to $50,000 would be necessary plus cost of about $1,000 per program hc for actual captioning. At that rate, a cording to the NAB, to caption 5 hou of program material a week would c more than $250,000 annually and too expensive for many broadcaster

NAB also said that line 21 should r be exclusive to closed captioning b must be made available for oth broadcast related uses. NAB suggest "a more efficient use of line 21" evaluating a data rate of between and 5.0 Mbs. "Future technologi advancements cannot just be lock out," said the NAB.

FCC Embroiled in 'Forma Change' Squabble

A citizen's group, WNCN, Listene Guild, charged that the FCC "] operated on false assumptions and nored an important federal court de sion in attempting to disengage its from issues relating to changes in ra program format changes."

The NAB, on the other side of issue, complained that any volvement by the FCC in radio for changes would be "contrary to seve sections of the Communications and to the First Amendment to the C stitution."

The citizen's group, which moun a successful campaign last year to h WNCN return from a rock m format to classical music, asserted licensees are "moving more and m toward a bland uniformity of progr ming," and that such FCC regulatic needed to assure diversity in progr ming for minority audiences. N took the opposite viewpoint, sugg ing that "experimentation would crease" as a result of FCC interfere

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Monitor photograph of commercial promoting TV director Charlotte Zwerin as lecturer on the subject of editing . . .

. . . the commercial was made with ENG equipment and the setting, as shown, was Zwerin's dimly lit editing room. Producer Daniel Kennedy is shown with Zwerin.

ENG Equipment Moves Out of News

Recent months have seen minicams and portable VTRs move outside of the instant news arena and into the production of commercials, drama, promos, and documentaries as well. In June, BM/E described Barry Rebo's experiences in using ENG-type equipment in producing Time Life's syndicated feed, "Money News Inserts."

KSTP-TV, St. Paul, flagship station of Hubbard Broadcasting, recently used its minicam ENG gear to shoot a specially-produced pre-Easter program, a half-hour remote of a Lenten ballet, "Los Seises." This historical religious piece performed by the Andahazy Ballet Borealis Company, was shot completely with minicams at the Incarnation Catholic Church in Minneapolis.

Producer Steve Hammergren said of the cameras, "Their adaptability for such usage is tremendous. Because of their mobility we could shoot camera angles impossible with fixed cameras. We were able to shoot every area of the church used by the dancers and take angle shots which were truly unique. And we were able to monitor the entire shooting as we went along." *Variety*, in a review, said "Los Seises provided a touch of artistic class seldom seen on

"Los Seises" hammers and nails danc staged at church was shot by KSTP w minicam equipment . . .

. . . TV producer Steve Hammergren checks quality of taping with choreographer Anna Andrianova Andahazy and her husband, Lorand.

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mmercial TV."

Hubbard stations use the minicam r such diversified production work as stant promos, regular promos, com-ercials, and cameo segments in the ation's Minnesota Memories Bicen-nnial effort. Hubbard station TOG-TV, Tampa-St. Petersburg, es ENG gear specifically for com-ercials.

An aggressive user of ENG gear for mmercials is O.J. Reiss of KTVU, kland. Reiss uses his Ikegami/Sony 00 system about three times a week. ients include such names as Macy's $2.5 million TV retail customer), perty House (a large local retailer), d RCA. Although film (both 16mm d 35mm) is the predominant medium KTMU some customers are showing preference for videotape because of immediacy and quality (they know at's going on the air). Reiss says 's more comfortable working with n (and cinematographers as opposed engineers) but says final ENG prod-t is fine if care is taken in lighting and dubbing to quad.

Another station to use the portable nera for commercials at least once s WBTV, Charlotte, N.C. Lately, camera (a LDK-11) is too busy ng news on a regular basis to be cated to commercial work.

BM/E reported in April the produc-

TV does commercial in a drug e . . .

some of the equipment used to view the commercial.

WTOG shoots commercial for Hoods milk with a minicam.

tion of commercials for the South Carolina Arts Council. The producer, Daniel Kennedy, used a Sony Trinicon camera and the VO 3800 portable recorder. Kennedy's next project will be a documentary series for an Ivy League university. Kennedy sees the trend to ENG gear increasing because the equipment lends itself to producing "film style" videotape. Video cassettes are easy to use and can produce good quality at very low costs, says Kennedy, making it a strong competitor with film. With frame accurate

continued on page 24

DP-2

all new automation system from SMC

It's here! The all-new DP-2. Microprocessor controlled, it offers more custom features than any other unit available today... features such as 8,000 event capacity; built-in external function control; automatic record of network; automatic transmitter logging option; mag tape, paper tape and solid state storage facilities; interfacing to business computers; sub-routines in any size; video readouts and programming; and up to forty audio channels.

The DP-2 is available in low-boy console with desk as shown or in standard racks. It's versatile and inexpensive . . . and it's from the people who invented computer assisted broadcasting—SMC. It's loaded with features that will "hype" your station's air sound and profits.

Get all the facts on the new DP-2 system for yourself. Return the attached coupon today for more information.

SMC

Systems Marketing Corporation
1005 W. Washington Street
Bloomington, Illinois 61701
309-829-6373.

Broadcast Automation—our only business

YES I want to know more about DP-2. Send complete information and have your Representative call me.

Name _____

Station _____

Address _____

Zip _____ Phone (area code) _____

75-105

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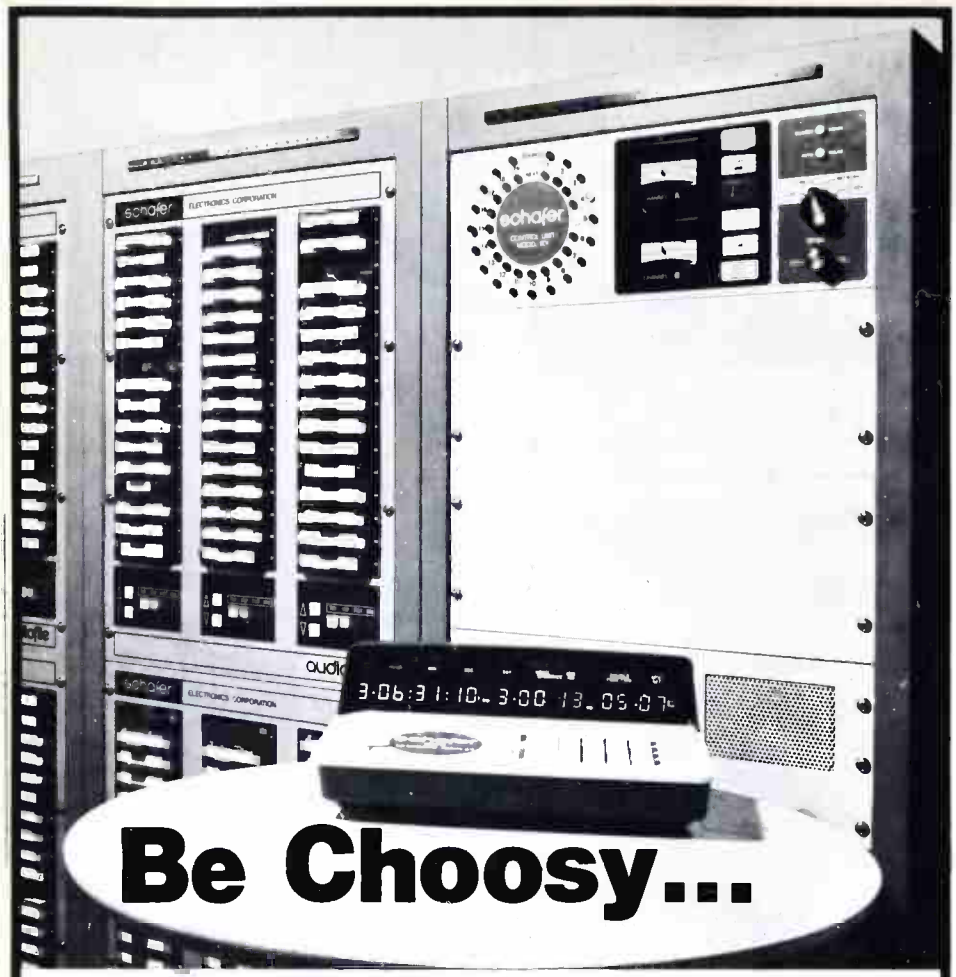

Choosing the right automation system for your station is not easy. We know that.

That's why Schafer offers a wide range of different models, each with different capabilities.

That's why Schafer has specialists in automation . . . all with radio backgrounds . . . to work with you in making the right decision for your station and format.

That's also why we offer professional programming assistance, and have written a booklet called, "The Financial Advantages of Schafer Automation," which outlines tax and operating savings that you should know about.

There are a lot of good reasons to be choosy when you're making an important investment in your radio station. That's why the people at Schafer do much more than just make the best automation. Find out for yourself. Our automation specialists are as close as your telephone. We can make the right decision a lot easier for you.

YES ! I want to be choosy . . .
show me your '76 lineup.

NAME

TITLE

STATION

ADDRESS

CITY STATE ZIP

schafer
a Subsidiary of Cetec Corporation

Schafer Electronics Corporation
75 Castilian Drive, Santa Barbara Research Park
Goleta, California 93017 (805) 968-0755

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NEWS

editing now quite readily available, one has creative flexibility and can get tha desired "tape look" simultaneously Kennedy works with commercial pro duction company Ross-Gaffney Films to offer on-location, film-style videc tape production to advertising clients

Although commercial production a many stations is a big and growing business, according to Roger Rice president of TVB, because of th success of stations in converting retail ers from newspaper advertising to TV use of ENG equipment is still in it infancy. Shelly Schwab, WAGA, At lanta, says 16mm film is fine. "We ca sell a client on Monday, do storyboard on Tuesday, film on Wed nesday, and air it Friday. We don't se the need for ENG equipment rigt now."

Arts Council Urges Improved TV Sound

The National Council on the Arts rec ommended that the National Endow ment for the Arts join PBS in de veloping a new system for deliverin greatly improved network televisio sound.

The council called on manu facturers, common carriers, broad casters, and the FCC to cooperate i improving TV audio.

After a briefing on the PBS Digita Audio for Television (DATE) system by PBS officials, Endowment Deput Chairman, Michael Straight said, "It i appropriate that the National Endow ment explore this vital area of techno ogy . . ." in connection with its com mittment to making fine arts availabl to all Americans.

Effects Of TV Not Understood

The effects of TV on the attitudes ar intellect of viewers is not yet ful understood, according to Vernone M Sparkes, an associate professor of ma communications at Syracuse Un versity. But the possibilities are serio enough that both producers and viewe need to become more conscientio about the content of all TV prograr ming, he said.

"The critics of American com mercial television often asked t wrong questions, measuring th medium solely in terms of the trad tional functions of high culture and t fine arts, but failing to appreciate t medium's value as a source of relax tion and respite," Sparkes said in recent interview. "The pressures modern life have made this function entertainment and cultural self-

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ression particularly valuable."

In recognizing and accepting the entertainment functions of TV, however, is easy to overlook the fact that TV is medium of communications and that ven in the content of entertainment values are being endorsed, ideas gued and biases expressed," he said.

IAB Radio Board Members o Assist Radio Committee

our members of the Radio Board of irectors of the NAB have been named work with NAB's Research Committee to conduct a study of the future radio. Appointed are John R. Anderson, president-general manager, CCW, Traverse City, Mich; Walter May, president, WPKE, Pikeville, .; Donald A. Thurston, president-neral manager, WMNB, North lams, Mass. and Virginia Pate etter, president-general manager, ASA, Havre de Grace, Md.

CC To Expand itizens Radio Service

e FCC, in a recent action, has committed itself to expansion of the citizens dio service, John Sodolski, Vice esident Communications Div., Electonics Industries Assoc. said. The inease discussed in a new FCC proceedi; (FCC News Release dated March , 1976) will increase the number of annels available to the citizens radio svice from the current 23 channels to ne larger number.

Because of the widespread use of CB io, some broadcasters have found a uv way of getting valuable drive-time ffic reports. CBers do a better job n a helicopter traffic watch in getting ely information, according to some adcasters.

ve Years Of Lightning rike Prevention

htning Elimination Associates, wney, Calif., recently celebrated its n year of guaranteed lightning pretion and has installed 180 systems. h customer is given a guarantee ch stipulates that in the event of a itning strike to the protected area, A will either pay the damages or rease the protection at no additional t to the customer. Although several he protected facilities required some ork, none required warranty payits and all are now functioning satisorily.

w EIA Standard

Electronic Industries Association ineering Dept. has a new standard ilable from its office, RS-425, andards for Reproducing Discrete r-Signal Disc Records." This new

continued on page 28

STRAIGHT TALK FROM YOUR DITCH WITCH MAN

"My job is helping you do your job!"

"All equipment dealers talk about service after the sale. Let me tell you what service means to me. Selling and servicing Ditch Witch equipment is my *only business.* The way I see it, my job is helping you do *your* job. I do that by providing the quality equipment you need and helping you maintain it. Ditch Witch equipment is built to last. It's basic design makes routine maintenance easy. But, like any construction equipment, it sometimes requires repair service. I maintain a full inventory of Ditch Witch parts and a staff of professional factory-trained service personnel who are ready to serve you wherever and whenever you need them. At Ditch Witch we tell it to you straight!

Call (800) 654-6481 Toll Free
for the name of the dealer nearest you.

Professional Ditch Witch sales personnel know their product line and the needs of customers in their territory.

Ditch Witch . . . equipment from 7- to 195-HP.

CHARLES MACHINE WORKS, INC.
P.O. Box 66
Perry, Oklahoma 73077

DITCH WITCH

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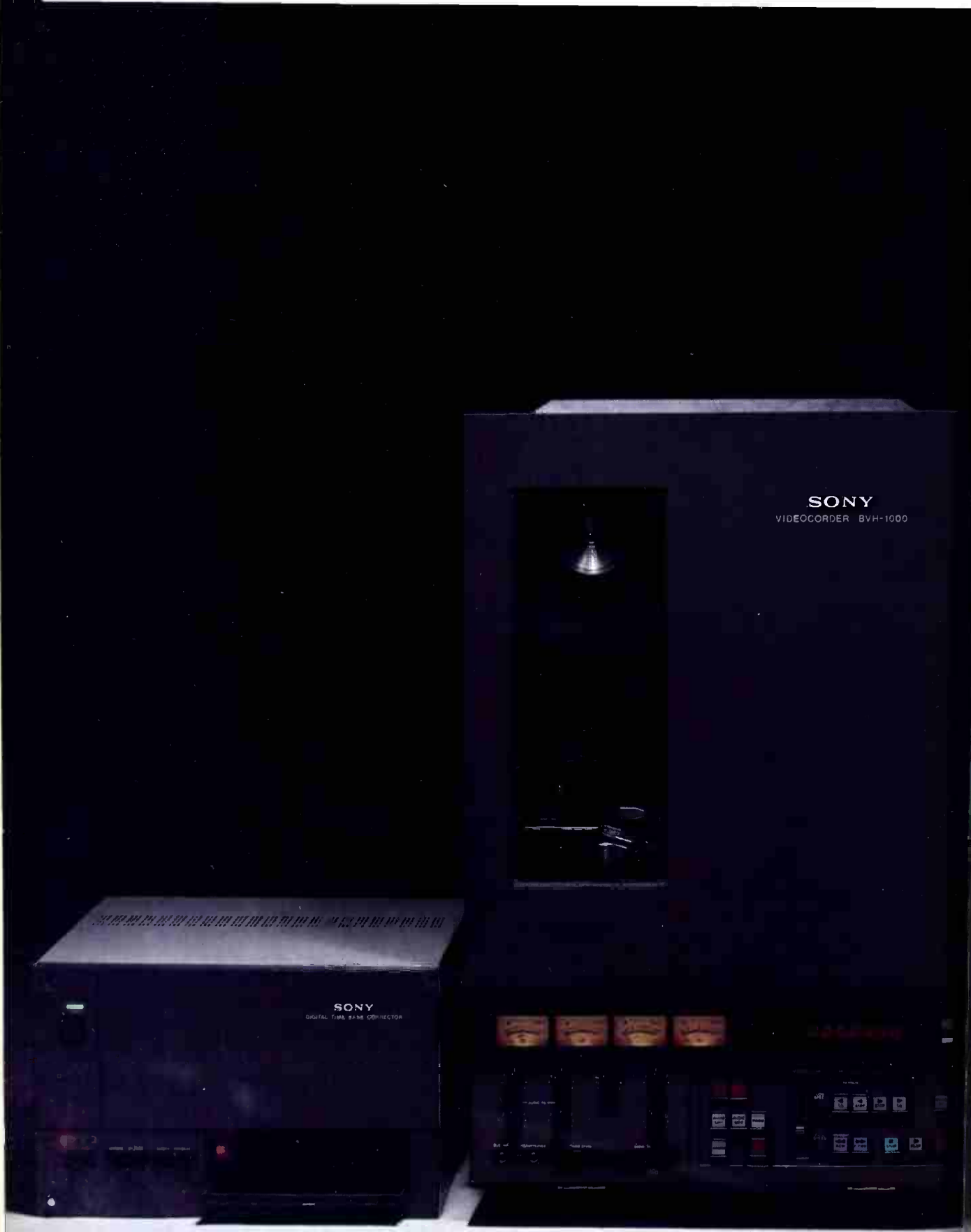

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The Sony BVH-1000. Consider the concept.

The BVH-1000 brings a new, two-in-one concept to professional high band video recording. It meets current broadcasting needs for a top-of-the-line recorder, and does it in an economical package without compromising video or audio quality.

But more than that, the BVH-1000 is the machine of the future. Designed for production and post-production applications, it is a 1" video recorder that can compete with 35mm film techniques.

It wasn't easy, but we have combined transparent picture quality, plus two professional quality audio tracks with advanced editing techniques. That combination simply is not available in any other recorder, no matter what the format or tape width.

Before considering another recorder, examine these eight BVH-1000 features:

1. **Exclusive 1.5 head.** This completely avoids the problem of missing information caused by head switching of single head machines. It also insures, for the quality user, a continuity of video information, as well as VIRS record/playback, which may be required of all machines in the future.

2. **Advanced servo design.** The BVH-1000 incorporates drum servo, capstan servo, tension servo, reel servo. This servo [illegible], combined with dual capstan drive, provides highly accurate tape speed and quality interchange, plus gentle tape handling in fast forward and reverse modes.

3. **Five [illegible].** These eliminate the use of [illegible] and inaccurate belt systems for drives.

4. **Standard VH and color [illegible] modes.** Both are standard equipment [illegible] BVH-1000. Two high quality audio [illegible] separate cue track, plus 400Hz tone [illegible] also standard.

5. **Biderex search control.** [illegible] bi-directional search control allows [illegible] the video tape in either direction from [illegible] jog to high speed rewind and fast forward. [illegible] non-segmented formats allow the operator [illegible] the picture and make fast editing decisions [illegible] manually or with computer control.

6. **Standard tape timer.** This [illegible] special memory that prevents the tape from [illegible] unthreading. SMPTE reader/generator is [illegible] plug-in option.

7. **Versatile mounting.** A flexible mounting system and built-in wave form [illegible] enable the BVH-1000 to be adapted to any number of mounting or console configurations. The BVH-1000 is at home in a small [illegible] studio.

8. **New Sony time base correctors.** The BVH-1000 can be used with Sony's new BVT-1000 time base corrector or any other quality TBC. If you don't require time base correction, an optional heterodyne recovery board is available.

This is just the beginning of the BVH-1000 concept. To learn more about the economy, technical performance and specifications, [illegible] your Sony Broadcast representative, or write Sony Broadcast.

Sony Broadcast

Sony Corporation of America, [illegible] New [illegible] York 10019

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standard developed by the P-8.2 Committee on Phonograph Components & Records is the most recent in a four-part program to develop standards for reproducing information from four channel disc records.

Copies of RS-425 are available at $1.00 per copy from the Standards Sales Office, Electronic Industries Association, 2001 Eye St., N.W., Washington, D.C. 20006.

IMPORTANT NOTICE
TO MANUFACTURERS:
SEE PAGE 71

News Briefs

The New York State Senate voted 46-9 to repeal a tax levied on the state's 800,000 cable TV subscribers. Russell Karp, president of Teleprompter, applauded the action saying the tax would "throttle" development of cable TV in the state.

Broadcasters told the U.S. District Court of Appeals in Washington D.C., that a response by the FCC to charges that its order relaxing rules against duplication of local programming by cable systems "is inadequate in several respects." NAB asked the court to vacate the FCC action as "arbitrary and capricious." . . . In oth actions the NAB opposed a new FC rule proposal that would require broa casters to notify all legally qualifi candidates of free time given to o candidate 72 hours before an electic NAB suggests, instead of a new rule rule change, that would allow broa casters to place information regardi such donated political time in th public files.

The **Small Market Radio Co mittee** of the NAB unanimously pass a resulution calling on the Radio Boa to go on record opposing the licensi of radio stations with power in exce of 50 kW . . . . The **FCC w petitioned by NAB** to return the 94 947 MHz band to broadcasters, exc sively. Broadcast Studio-To-Tra mitter and intercity relay links needed for such remote pickups as tr fic reports from helicopters, news, et and could be carried in this band.

Eastman Kodak Company, acce ted an Emmy for the firm's d velopment of its video news fil Ektachrome 7240.

The **National Advertising Divisi** of the Council of Better Busin Bureaus resolved ten challenges to N tional advertising in April. Sev matters were resolved when vertisers either discontinued the a or agreed to copy changes. Three ca closed when NAD found the clai "substantiated."

The **elderly are portrayed fai and realistically** in national vertising according to the findings the National Advertising Review Bo . . . . There were **657,370 pay TV su scribers** as of March 31, in the U according to a census performed Paul Kagan Associates, of Rockvi New York . . . . Ampex Corp., nounced it has completed delivery the first production run of its n MM-1200 multi-channel recorder domestic and international custom The recorder was first introduced to market on March 2nd.

KETC-TV, Channel 9, will come the first associate member the Rocky Mountain Public Bro casting Network, opening up a n membership category for the organi tion . . . . **Overseas press coverag** French president Valery Giscard d taing's 2-day visit to New Orleans channeled through RCA's new c munications gateway in that city. Under criticism from the governm over increasing subsidies, **the P Opéra** completed the first succes closed circuit transmission of a formance to 3,700 viewers of a l screen projection system in an

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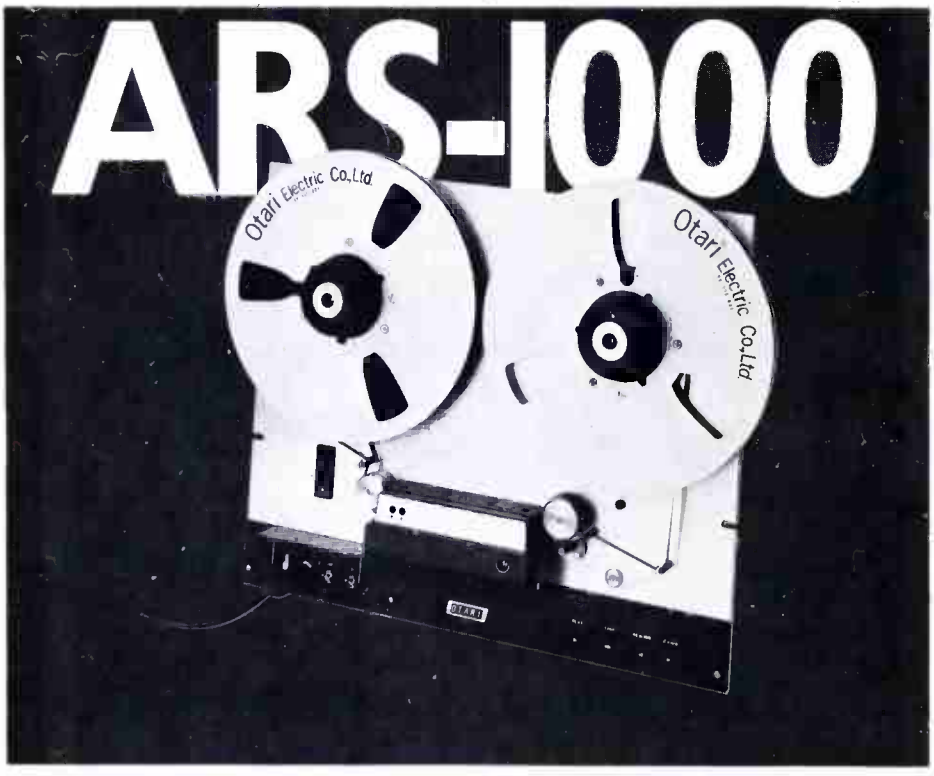

Specifically designed for automated systems

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

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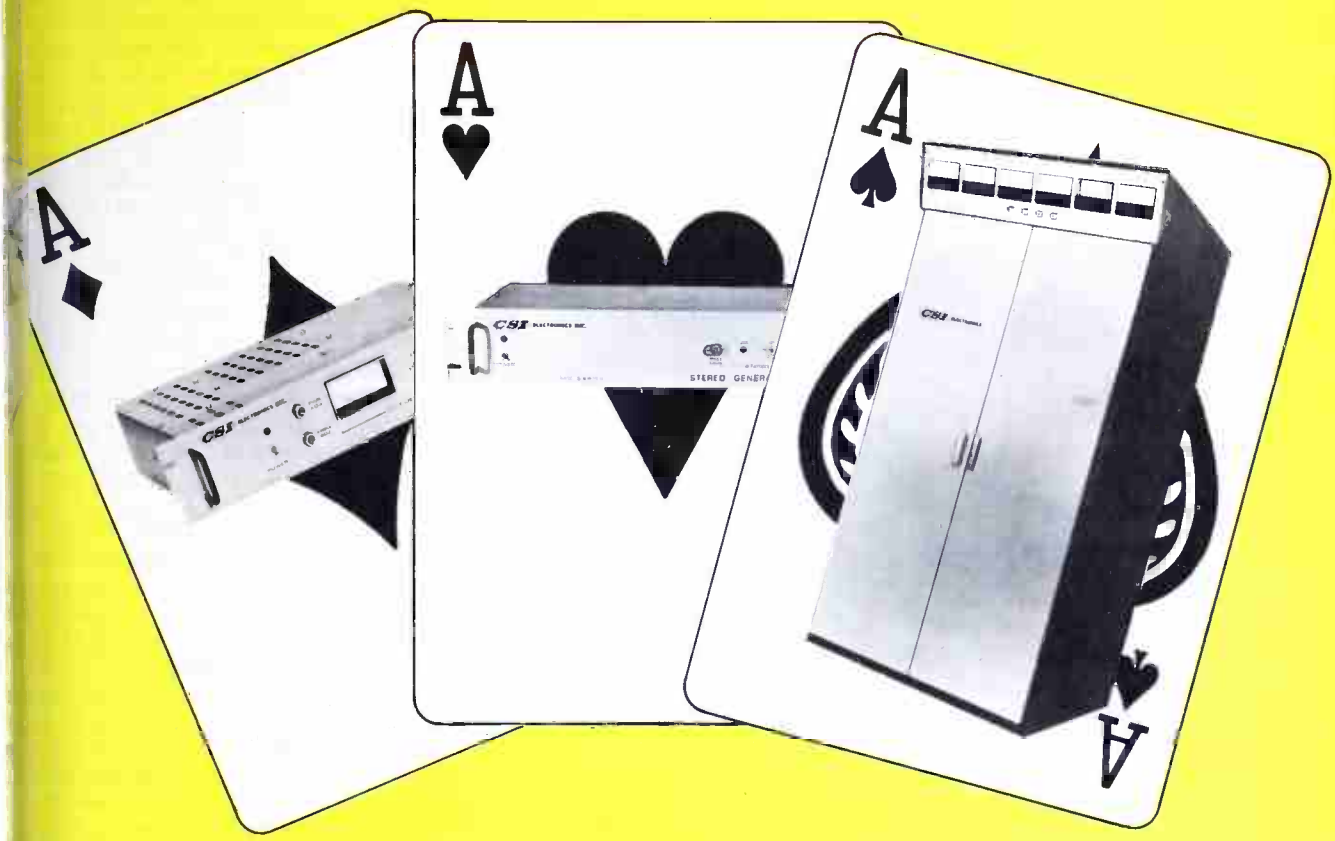
WE'VE GOT A WINNING COMBINATION



THREE ACES FOR THE STEREO FM BROADCASTER

- **Time Division Multiplex Stereo Generators**
- **Solid-State Phase Lock Loop Exciters**
- **FCC Type Accepted FM Transmitters**

tereo Generator is an all solid-state unit that meets or eds FCC requirements for stereo multiplex transmission. omposite signal is generated using the time division tech- to reduce the complexity of the circuit and the number of tments. There is negligible crosstalk and noise, excellent Hz suppression, and excellent channel separation. In- s built in tracked pre-emphasis, remote mono/stereo ning and optional phase equalized input filters.

M Exciter is an all solid-state, phase locked, frequency esized exciter. It may be programmed to operate on any KHz increment in the FM band using a single 8 MHz crystal. No oven is used and stability is ±500 Hz over a wide temperature range. Power output is adjustable from 5 to 20 watts.

Our FCC Type Accepted FM Transmitters have new design features that increase efficiency, provide greater reliability and reduce maintenance. Sliding shorting contacts are used for tuning and loading—and all these adjustments are from the front panel. The final stage uses a grounded grid, zero bias triode for stability without neutralization. Output power is directly adjustable without changing tuning or loading. Low voltage control circuitry, with provision for remote control, is standard.

DEPENDABLE AND EFFICIENT, WITH INNOVATIVE DESIGN FEATURES FOR TODAY'S BROADCASTER

CSI ELECTRONICS INC.

7 RIVER ROAD CINNAMINSON, NEW JERSEY 08077 PHONE (609) 786-1060 TELEX 831679

CSI Transmitters Available In Canada Through International Technical Products (Canada) Ltd.
7 Bovis Drive, Point Claire, Quebec H9R 4W3 Telephone: 514-695-8130 Telex: 05-821-529

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ditorium on the outskirts of the city. The criticism had been based on complaints that the opera benefited only a few elite, and that most viewers were shut-out of the small opera house due to its size.

The **world record for continuous single broadcast was broken** on May 7th, when Robb Capp, WELM morning announcer ended a five day broadcast from a shopping mall. Capp went 112 hours without sleep, drinking only one cup of coffee a day and consuming only high protein foods and large quantities of ice cream, his favorite food.

Business Briefs

The Electronic Components Group of GTE Sylvania, Inc., reported that it does not intend to "embrace the glass technology" recently announced by Rauland Division of Zenith Radio Corp. The decision was made after consultation with Sylvania tube customers had determined that the new tube technology developed by Zen and Corning Glass, did not, in t words of a spokesman, "offer our cu tomers (Sylvania's) any economic a vantage."

Commercial electronics will rema the profit forerunner for **Conr Corp.,** according to Donald Putnam, president. Putnam pointed d that electronics has provided the m consistent growth pattern for the co pany, showing a gain in each of the years the firm has been involved in t electronics field . . . . **Microwa Power Devices, Inc.,** (MPD) a nounced the receipt of an RCA contr in excess of $115,000 to build spa qualified solid state power amplifier

In a move that "will result in grea effectiveness of the sales and marketi force and increased engineering a manufacturing efficiency," all ma activities of **Clare-Pendar,** have be assigned **C.P. Clare & Company,** a cording to James A. Yunker, sen vice president of **General Instrume Corp.** The move is effective i mediately.

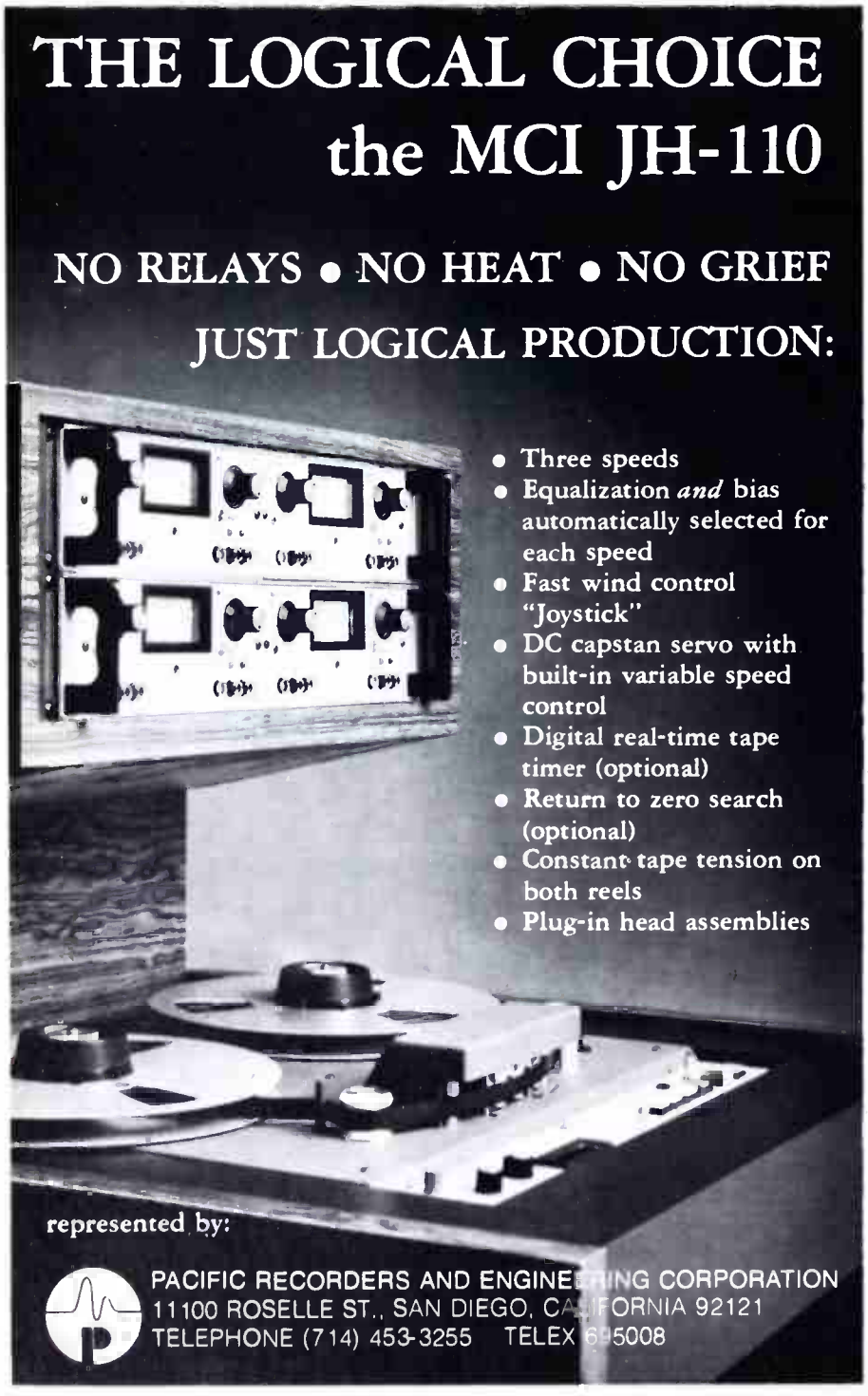
International Video Corp. a nounced the sale of IVC-9000 vid tape recorders to clients in Mexico, a Bangladesh and order in excess $200,000 for three IVC-7000 stu cameras from Radio Televisio Singapore . . . . **Acrodyne Ind tries,** announced that nine of its tel sion transmitters will be installed several locations in the Republic Sudan as that country expands its te vision network.

Sola Basic Industries completed acquisition of **Corotek Corporati** April 1, according to Frank H. R chairman and president of **Sola** . . **EMI Gencom** has acquired Vacuum Photodiode range forme manufactured by **Tung Sol Division Wagner Electric Company.**

VIZ Manufacturing Co., nounced that it has formed a new gr to handle its line of electronic test struments. The line of products or nally acquired from RCA, will now handled by **VIZ Test Instrume Group** . . . . **Omega Video Inc.,** moved to a 10,000 square-foot faci at 14326 Isis Avenue, Lawndale, C fornia.

RCA Broadcast Systems nounced a number of developme including orders for seven BTA 10L2, 5 and 10-kW AM radio tra mitters; a $642,000 order for a co plete tv transmitting system from State of Tennessee; $580,000 order color tv transmitting systems from Itapoan, Brazil, and the first regular of its TK-76 ENG camera in nor station operations by KARD-T Wichita, Kansas.

Stockholders of **Wabash M netics, Inc.,** authorized the compan



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ange its name to **Wabash, Inc.** . . The headquarters telephone mber for the **NCTA,** has been anged to: (202) 457-6700.

SMPTE has announced that booth ace is available for its Equipment hibit of the 118th Conference, set for Americana Hotel in New York, Oc- er 17-22, 1976. . . . . **Goldmark mmunications Corp.,** has granted clusive license to **Microtime,** a divi- n of Andersen Laboratories, Inc., the manufacture and North Amer- n distribution of its Automatic Skew rrector, which improves per- mance of videotape players.

Ampex Corp., announced a con- ct for more than $1 million to supply fessional videotape equipment to .I, the Italian broadcasting network Rome . . . . **W&G Instruments** ., was awarded an open-end con- t from the General Services Admin- ation for telecommunications test l measuring instrumentation. R.R. rray, manager, Government Sales W&GI, said the GSA award is a jor step for the company's efforts to etrate the government marketplace.

Plastic Reel Corporation of Amer- announced the opening of a new ribution facility at 13007 South stern Ave., Gardena, Calif., and, at same time, an across-the-board e reduction of 5% for the majority ts product line . . . . Powell Elec- ics also announced the establish- t of a major western warehouse dis- ution and assembly center in Moun- View, California, to be headed by n Rabbitt.

new firm, **Audi-Cord Corpora-** , is scheduled to begin manu- uring high quality tape recording ipment and specialized electronic ipment when its new plant, at 1845 Hovey Avenue, Normal, Ill., is pleted, July 1st. . . . . **Smith, per Associates** is a new company, ated in Haddonfield, N.J., and rs a variety of management services consulting services to the CATV stry. The principals, Joel P. Smith Frank N. Cooper, have 32 years of bined experience in CATV.

Warner Cable has exceeded its own ections by signing more than 3,000 scribers to its "Star Channel" -TV system in Hampton, VA., in a month of its introduction there

People

t I. Harris, president of Harri- e Broadcasting Corp., has been ed to the Board of Directors of all Communications Corp. . . . . **ce G. Sundlun** was elected pres- t and chief executive officer of The let Company . . . . CATV De- pment Corp., announced the elec- tion of **Johnathan I. Singer** as pres- ident.

John Swanson has been named chief engineer at WTVF, Nashville . . . . Crydom Division, International Rectifier Corp., has appointed **David W.G. Moore** as manager of Product Evaluation . . . . **Eugene A. Reich** has been named manager, International Technical Services, for IVC, Corp. . . . . WLCY-TV has named **Michael B. Schuster** as program-production manager . . . . **Harry J. Wiest** has been appointed program manager of WROC-TV.

Goldmark Communications has named **Alfred Scipione,** director of systems engineering and **Arvind S. Desai,** chief development engineer . . . . **Michael A. Ebertin** has been appointed operations director for calculator, game and microcontroller products at National Semiconductor Corp.

RCA named five executives to new positions; they are: **A. William Brook,** chief engineer; **Carl J. Cangelosi,** general counsel; **Dennis W. Elliott,** director of finance; **Donald E. Quinn,**

continued on page 32

From now on, all other multi-cart machines are out of date.

Beaucart 4D.

Even if you've just purchased a multi-slot broadcast audio cartridge reproducer, you're already behind the times. Because Beaucart has introduced a revolutionary four-slot machine with features so advanced that existing units can't come close.

While standard 3-deck machines use a single motor and power supply to drive three carts, the Beaucart 4D is really four completely independent cart reproducers in one housing. Not only are key operating specs, like wow and flutter, easier to uniformly maintain, but the failure of an operating component will put only one slot out of service. Each machine may be individually removed from the 4D housing, leaving the other three still on the air. Try that with a 3-deck!

Other features? Dozens. 4D is the only multi-slot machine with the new, patented Beau pancake drive motors. And fast forward is available in any (or every) slot. But most important of all is the cost. The Beaucart 4D mono single cue, at $2,537 list, is only $71 more per slot than an ordinary 3-deck machine, which typically lists for about $1,690. And that $71 is a terrific investment.

Let us tell you more about the exciting Beaucart 4D. Models available in Stereo and with built-in recorders. Call today.

UMC

BEAUCART DIVISION
UMC ELECTRONICS CO.
460 Sackett Point Rd. North Haven, CT 06473 (203) 288-7731

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director, public affairs, and **Charles H. Twitty,** director, industrial relations.

Van B. Phillips, vice president of Eastman Kodak Company is to retire July 1; **Anthony Frothingham** will succeed him. In addition, Frothingham and **James S. Bruce** were elected vice presidents and **William L. Sutton** and **Robert R. Ross** were elected assistant vice presidents.

The NCTA has named **Robert L. Johnson,** former press aide to Walter E. Fauntroy, District of Columbia Delegate to the U.S. House of Representatives, vice president for Subscription Cablecasting. NCTA also named **Frederick W. Finn,** assistant general counsel. Other Association appointments include, **Dick Munro,** chairman of NCTA committee on EEO; **Polly Dunn** to head Elections Committee; **Patrick Nugent** will chair the Political Action Committee; **Robert Clasen** will chair the Cable Services Committee, and **Bill Daniels** will be chairman of the Membership Committee.

Cox Data Services' has announc several promotions in its mini-co puter division, including, **Mark C ford** and **Michael Nemeth** to proj leaders, **David Young** becomes pr uct manager for the TV system; **Jud Galitski** is named customer supp manager; **Kenneth Arnold** w become conversion manager, a **Marshall Vaughn** and **Pat Bourge** will be conversion leaders.

The International Radio and Tele sion Society installed five n members to their Board of Governo they are, **Robert L. Glaser, Martin Healy, Walter A. Schwartz, Peter Spengler,** and **Marti Stein** . . Chairman of the National Advertisi Review Board, **James Parton,** nounced his resignation from that po tion to become Assistant Librarian Congress, effective this month.

E. Carlton Winckler of Imero F rintino Associates has been appoin Co-Chairman of the National SMP Conference, to be held this Octob 17th through 22nd . . . . **Edward Lauman** has been appointed field m ager, Saudi Arabia District, by C Electronics . . . . **Frank D'Asce** has been named project manager video products of 3M Compan Mincom Division.

JVC announced a series of pointments which include, **Geo Hawthorne,** national sales manag **Herman Schloss,** national sales ministration manager; **Henry Hermes,** vice president.

Charles E. Smith, Jr. has b promoted to vice president and gen manager of the Western Region Warner Cable Corp. while **L. Al Williams** is the new vice president regional manager for Warner's So ern region and **James L. Gray** become vice president and regic manager for the Central region . . **Ted V. Barros** has been appointed rector of Public Affairs for McGr Hill Broadcasting Co. and KMGH-TV, the McGraw-Hill sta in Denver .

The NAEB Board of Directors elected eight new members to the E torial Advisory Board of the *Pub Telecommunications Review*: **I Bagdikian, Dr. Donna Allen, Jos Aguayo, Karen Farr, Samuel Holt, William Kling,** and **Reg O'Neal** . . . . **Gerald E. John** been appointed Operations Coordin for Great Plains National Library structional Television Library . . **Charles F. Riley,** President of T Color Productions, has been electe the first chairman of the Society Broadcast Engineers, Washing Baltimore and Northern Virginia c ter . . . **William A. Leonard,** Washington, CBS, becomes a mem of NAB's TV Board of Directors.

DIGITAL BROADCASTING

...the future is **now!** and **CHYRON** leads the way in TV•AM•FM SYSTEMS...

- CHYRON II HIGH RESOLUTION GRAPHIC GENERATOR
- CHYRON IIIA TITLING SYSTEMS
- DIGITAL STILL FRAME STORAGE UNITS
- DIGITAL AUDIO SPOT STORAGE UNITS
- DYNAMIC MONTAGE GRAPHIC SYSTEMS
- EBU/SMPTE SUBTITLING SYSTEMS

For complete information write:

CHYRON

TELESYSTEMS DIVISION OF CHYRON CORPORATION

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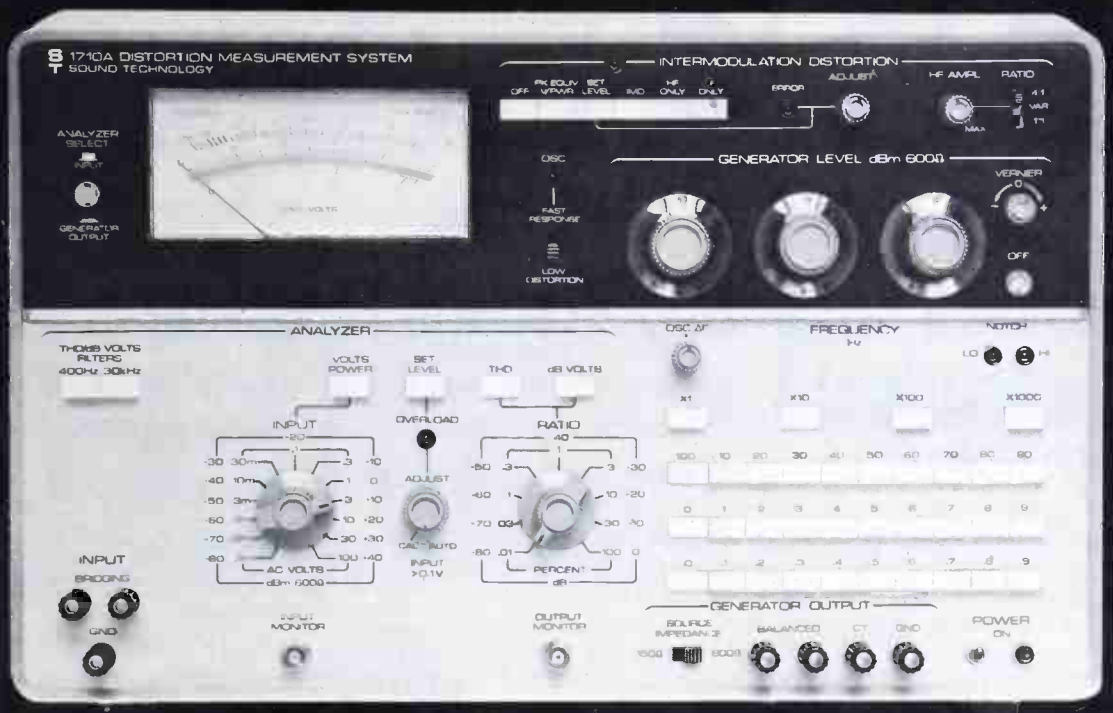

Your new automatic distortion measuring system for balanced measurements

REDUCED OPERATOR ERROR

Here's something you'll like — Sound h's new distortion measuring instrut for use in balanced work.

The new 1710A is much more than a distortion analyzer. It's a system. t contains its own ultra-low-distorin generator tracked with the analyzer. It's a system that greatly simplifies asuring — gives you fast measuring simple operation that reduces opor error.

or example, push the frequency but- and you set both generator and yzer. Push "Distortion" and you have r reading. Automatically. No slow, ous manual null-searching.

eatures in the new 1710A include:

- **a balanced, floating output (600/150 ohms)**
- **a balanced (bridging) input**
- **a high-level +26 dBm signal**
- **+26 to −90 dBm attenuator**
- **distortion measurements to .002%**
- **fast 5-second measuring speed**
- **automatic nulling, optional automatic set level.**
- **both harmonic and optional intermodulation distortion measurements.**

SPECIAL OUTPUT CIRCUIT

In the 1710A you get a transformerless audio generator output that's balanced and floating. No transformer means no transformer distortion. Floating *and* balanced means you can connect to virtually any audio circuit regardless of configuration. And you can set the output from +26 to −90 dBm in 0.1 dB steps.

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An additional optional bonus is that the 1710A also measures intermodulation distortion. After you've made a harmonic measurement, just push the "IMD" button. In 3 seconds you'll have the IM reading. With this option you'll be ready for future IM requirements.

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INTERPRETING THE FCC RULES & REGULATIONS

Revised Commercial Radio Renewal Application: (Form 303-R): Part I

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

The Commission released its long-awaited *Report and Order** on May 3, 1976, revising the application form for renewal of broadcast licenses. Henceforth, FCC Form 303 will be used strictly for television renewal application. New FCC Form 303-R will be the radio (AM and FM) renewal application form.

While the two forms will be substantially similar, this column will be limited to analysis of FCC Form 303-R for radio renewal applications.

A sample Form 303-R is illustrated below. Readers should review each Form 303-R question before reading the analysis below.

Effective date

Commercial radio licensees whose renewal applications must be filed on or after December 1, 1976 (whose licenses expire on or after April 1, 1977) must use new FCC Form 303-R. Those radio licensees whose renewal applications are due prior to December 1, 1976 (whose licenses expire before April 1, 1977), must use present FCC Form 303 and *must comply with present Commission procedures for renewal application).*

Instructional pamphlet

The Commission's extremely thorough *Report and Order* contained in Attachment entitled an "Instructional Pamphlet" which contains a summarization of the different materials needed by a licensee to (1) prepare its renewal application and (2) fulfill its public interest obligations. This Instructional Pamphlet is an indispensable reference tool for licensees. Copies should be obtained from your communications counsel or from the Federal Communication Commission. An outline of the information contained in the Instructional Pamphlet is produced below.

Outline of Instructional Pamphlet

Part I—General Matters

A. Reporting Requirements
   Periodic Reporting Requirements
   Financial Report
   Employment Report
   Ownership Report
   Filing of Certain Contracts
B. Local Filing Requirements
   Local Public File
   Other Required Records
C. Programming
   Licensee Responsibility For Programming
   Obscenity and Indecency
   Lotteries
   Retransmission
   Broadcast Of Telephone Conversations
   Program-Length Commercials
   Fairness Doctrine
   Ascertainment
   Semi-Monthly Announcements
   Citizens Agreements
D. Other Commission Rules
   Rules Tables (Index to Commission Rules That Answer Common QUestions About Routine Station Operations And Operating Authority)
   1. Station Operations (19 Different Station Operation Requirements)
   2. Operating Authority (13 Different Authority Requirements)
   3. Station Operations (5 Rules Regarding, For The Most Part, Extraordinary Station Operations)

Part II—General Renewal Matters

License Term
Action On Renewal Applications
What To File
Number Of Copies To Be Filed
When And Where To File
Supplemental Renewal Applications
Publication Announcements
A. Pre-filing Announcements
B. Post-filing Announcement
C. Proof Of Publication
D. Failure To Comply And Silent Stations

Filing Fee
Late-Filed Renewal Applications
Failure To File

Part III—Instructions For FCC Form 303-R

A. Preliminary Matters
   Exhibit Identification
   Corporation By Reference
B. Cross-Reference Table
C. Question-By-Question Analysis (For Questions 1 To 24)

Part IV—Renewal Check List

FCC Forms
Exhibits To FCC Form 303-R
Publication
FCC Form 303-R (Breakdown Of Parts I-V Of Application Form)

Continued on page 36

*Report And Order in Docket No. 20419, FCC 76-264, adopted March 19, 1976.

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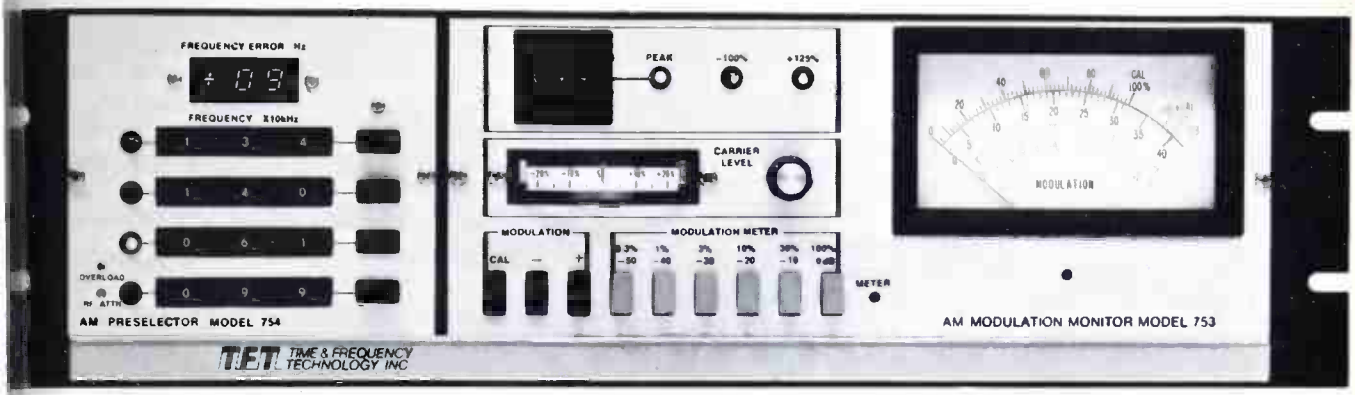

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As can be seen from this outline, the Instructional Pamphlet encompasses much more than simply the information needed to fill out Form 303-R. Information concerning compliance with a large variety of the Commission's Rules and Regulations is included therein.

Analysis Of Form 303-R

The new renewal form has made major strides in decreasing the amount of material to be filed with the renewal application. At the same time, several new reporting requirements have been added (e.g., listings of all composite week Public Affairs and "Other" programs despite the continued requirement that composite week logs be filed with the renewal application).

Another major simplification of the form involves the standardization of exhibit numbers. Henceforth, if a particular question requires that additional information be submitted, the licensee is directed to submit that information under a specific exhibit heading (e.g. Exhibit 4). If the licensee is not obligated to submit any supplementary information, the particular exhibit number referred to in that question is simply not used. Thus, it is possible for an applicant to submit a renewal application with Exhibits 4, 7, and 10 (or any other combination of exhibits) missing.

The new renewal form has not gone without its criticisms. Some complaints have been voiced about the lack of space provided on the form to answer questions. Several public interest groups complained that the reduction of information solicited by the renewal form hinders interested citizens from determining whether or not the licensee is adequately serving the public interest. The Commission pointed out that much of the material no longer required to be submitted at renewal time must continue to be placed in the local public inspection file. This, the Commission says, assures that enough information is available to interested citizens. Analysis of FCC Form 303-R follows.

Part I—General Information

Question 1: This question remains essentially unchanged from the prior renewal application form. The applicant's name should be indicated *exactly* as it is listed on the Station's present broadcast license. Needless to say, any changes in address should be communicated immediately to the FCC; a licensee should not wa until renewal time to do so.

Question 2: Licensees need no longer list the min mum daily hours of operation for their station. Neith need they list the horizontal and vertical powers or t effective radiated power of FM stations. The other i formation requested in new Question 2 can be found the licensee's FCC authorization. Also note that the st tion's location must be *exactly* as specified in the F license.

Question 3: The Commission has greatly simplifi renewal procedures for anciliary authorizations. Renev al of *(1)* auxiliary antenna, *(2)* auxiliary transmitter, alternate transmitter, and *(4)* Subsidiary Commur cations Authorization (for FM's) can be obtained checking the appropriate space provided in Question 3 there are no changes in requested facilities. This mea that an FM licensee need *not* file a separate Form 3 application.

Licensees should note that *(1)* remote control authori and *(2)* pre-sunrise service authority (PSA) are consi ered part of the broadcast license; the renewal of sar

FCC Form 303-R
1976

Approved by GAO
B180227(

UNITED STATES OF AMERICA
FEDERAL COMMUNICATIONS COMMISSION

APPLICATION FOR RENEWAL OF LICENSE FOR COMMERCIAL AM OR FM RADIO BROADCAST STATION

PART I - GENERAL INFORMATION

1. NAME OF APPLICANT

STREET ADDRESS

CITY | STATE | ZIP CODE

Send notices and communications to the following-named person at the address indicated below.

NAME

STREET ADDRESS

CITY | STATE | ZIP CODE

2. RENEWAL REQUESTED FOR FOLLOWING EXISTING FACILITIES:

CALL LETTERS | FREQUENCY | CHANNEL NO.

POWER IN KILOWATTS

NIGHT | DAY

HOURS OF OPERATION

☐ Unlimited ☐ Daytime only ☐ Limited

Sharing with (specify stations) | Other (specify)

STATION LOCATION

CITY | STATE

3. RENEWAL IS ALSO REQUESTED FOR THE FOLLOWING:

AM		FM	
DAY	NIGHT		
			AUXILIARY ANTENNA
			AUXILIARY TRANSMITTER
			ALTERNATE TRANSMITTER
			SUBSIDIARY COMM. AUTHORIZATION

PART II - LEGAL

4. Is applicant's Ownership Report (FCC Form 323) filed with this application as EXHIBIT 4?

☐ YES ☐ NO

If NO, give the date of filing of the last Ownership Report and the station's call letters of the renewal application with which it was filed.

5. Is the applicant in compliance with the provisions of Section 310 of the Communications Act of 1934, as amended, relating to the interests of aliens and foreign governments?

☐ YES ☐ NO

6. Is the applicant or any officer, director, or principal stockholder (any person owning 25% or more of applicant's stock) an officer, director, or 25% or more stockholder in a newspaper publishing company, a CATV company, or a company engaged in broadcasting related activities?

☐ YES ☐ NO

If YES, attach as EXHIBIT 6 a complete listing and description of these interests.

File No:

FOR COMMISSION USE ONL

7. Since the filing of the applicant's last renewal application for the station or other major application, has the applicant or any party to the application been made party to, or been finally adjudged guilty by any court or administrative body with respect to, any suit, action, proceeding, civil or criminal, brought under the provisions of any federal, state, territorial or local law relating to: any felony or other crime involving moral turpitude; lotteries; unlawful restraints and monopolies, and combinations, contracts or agreements in restraint of trade; or the use of unfair methods of competition?

☐ YES ☐ NO

If YES, attach as EXHIBIT 7 a full description, including identification of the court or administrative body, the proceeding (by dates and file numbers), the person and matters involved, and the disposition of the litigation (if any).

PART III - ENGINEERING

8. Are the following technical reports completed and available for Commission inspection?

YES ☐ Equipment performance measurements for each main and alternate transmitter made within four months of the filing date of this application.
NO

YES ☐ For directional AM stations operated by remote control
NO ☐ Annual skeleton proofs of antenna performance made during the past license term.
☐ DOES NOT APPLY

YES ☐ For directional AM stations operated by lesser grade operators: At least one partial proof of antenna performance made during the past three years, and skeleton proofs made the other two years.
NO ☐ DOES NOT APPLY.

9. Transmitters (Main and Alternates)

Manufacturer and Type No.	1.		
	2.		
	3.		
Use (i.e. Main or Alternate)	(1.)	(2.)	(3.)
Total plate current to last radio stage in amperes			
Plate voltage applied to last radio stage in volts			
Efficiency factor F of the transmitter at operating power			
Transmitter power output in kilowatts			
AM: Antenna or common point ammeter reading in amperes			

10. (a) Directional Antenna Operating Values (AM only)

Tower	Phase Reading in Degrees	Antenna Base Current				Remote Indication of Antenna Current			
		Day		Night		Day		Night	
	Day	Night	Value	Ratio	Value	Ratio	Value	Ratio	Value	Ratio
1									
2									
3									
4									
5									
6									

(b) Identify by manufacturer and type the antenna monitor used to take the above readings:

(c) Are monitoring point values within limits specified in the station license?

☐ YES ☐ NO

If NO, attach as EXHIBIT 10 a complete explanation and a statement of what is being done to correct it.

I certify that I represent the applicant in the capacity indicated below, that I have examined the statements made in response to questions 8 through 10 above, and that they are true to the best of my knowledge and belief.

Signature _____ Telephone _____ (include area c

☐ Technical Director ☐ Consulting Engineer
☐ Chief Operator ☐ Registered Professional Engineer

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d *not* be separately requested.

eparate renewal applications must be filed for each the following: *(1)* Auxiliary Broadcast Service Li-se, *(2)* Remote Pickup Station License, *(3)* Aural L Station License and *(4)* Aural Intercity Relay Sta-n License. These applications may be filed on Form 3-R if there are no changes since the last license re-val; if there are any changes, Form 313 should be d.

ancial

he Commission deleted the requirement that a bal-e sheet of the licensee be submitted with the renewal lication. The Commission said: "The licensee's ven ability to maintain the broadcast operation of [its] ion over a period of times affords the Commission sonable assurance of the renewal applicant's financial lification."

arts II to V, the Legal, Engineering, Programming Equal Employment Opportunity sections of the mmercial radio renewal Form 303-R, will be analyzed ext month's column. **BM/E**

Clarification on PSA's and the Program Log

The duration of a Public Service Announcement need not be logged as indicated in BM/E, April, p. 26. However, Pittman Lovett ford and Hennessey counsels "logging of time duration for PSA's is most advisable, especially where PSA's are broadcast during non - entertainment programming to permit accurate computation of program time. This becomes especially important for the Composite Week logs."

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T IV - PROGRAMMING

as applicant placed in its public inspection file at the appropriate mes the required documentation relating to its efforts to ascertain he community problems, needs, and interests?

☐ YES ☐ NO If NO, attach as EXHIBIT 11 a complete statement of explanation.

☐ DOES NOT APPLY.

tach as EXHIBIT 12 applicant's community leader checklist for e preceding license term.

☐ DOES NOT APPLY.

Has the applicant placed in its public inspection file at the ppropriate times its annual list of those problems, needs and inter-sts which, in the applicant's judgment, warranted treatment by sta-on and typical and illustrative programming in response thereto?

☐ YES If YES, attach those listings as EXHIBIT 13.

☐ NO If NO, attach as EXHIBIT 13 a complete statement of explanation.

) Attach as EXHIBIT 14 one exact copy of the program logs for e composite week used as a basis for responding to the questions rein. Applicants utilizing automatic program logging devices must mply with the provisions of Sections 73.112(c) and 73.282(c) of e Commission's rules.

b)

GRAM PES	Previously Proposed		Composite Week Performance		Minimum Proposed	
	Minutes of Operation	% of Total Time	Minutes of Operation	% of Total Time	Minutes of Operation	% of Total Time
ews						
ublic ffairs						
ll other ograms, clusive f enter-inment d sports						
LS						
ublic rvice nnounce-ents	Number		Number		Number	

ach as EXHIBIT 15 those programs in the composite week cluded in the public affairs and "all other" program categories nes 2 and 3 of the above chart), indicating the title, source, type, ief description, time broadcast and duration of each program.

d the amount of time applicant devoted to non-entertainment ogramming (lines 1, 2 and 3 of the above chart) during the com-site week vary substantially from the representations made in plicant's last application?

] YES ☐ NO If YES, attach as EXHIBIT 16 a statement explaining the variation

ee the number of 60-minute segments in the composite week ginning with the first full clock hour and ending with the last ch hour of each broadcast day) containing over 18 minutes of com-rcial matter: segments. List in EXHIBIT 17 each seg-nt and the day and time broadcast with headings of "Amount of mmercial Time in Segment" and "Day and Time Broadcast".

the applicant's commercial practices for the period covered by is application vary from the representations made in applicant's st application?

] YES ☐ NO If YES, explain in EXHIBIT 18 the variations and the reasons therefor.

te the maximum amount of commercial matter applicant proposes mally to allow in any 60-minute segment (Minutes:). State percentage of hourly segments per week this amount is expected be exceeded (%:), and the limits per hourly segment that uld then apply under those circumstances to regular commercial nutes:) and to political commercial matter (Minutes:)

scribe briefly applicant's program format(s) during the past 12 nths:

scribe briefly applicant's proposed format:

21. Does the applicant's station duplicate the programming of another radio station?

☐ YES ☐ NO If YES, state:

(a) the call letters of the duplicated station

(b) the population of the community of license of the duplicated station

(c) the population of the community of license of the station for which renewal is requested

(d) the total number of broadcast hours in the composite week

(e) the amount of programming duplicated during the composite week

22. Attach as EXHIBIT 22 any additional information which, in applicant's judgment, is necessary to adequately describe or to present fairly its services and operations in relation to the public interest.

PART V - EQUAL EMPLOYMENT OPPORTUNITY

23. Attach as EXHIBIT 23 a description of the specific practices undertaken by applicant during the past license term to assure equal employment opportunity for minorities and women and the practices applicant proposes to following during the coming license term to assure equal employment opportunity for minorities and women.

24. Attach as EXHIBIT 24 a brief description of any complaint which has been filed before any body having competent jurisdiction under Federal, state, territorial or local law, alleging unlawful discrimination in the employment practices of the station, including the persons involved, the date of filing, the court or agency, the file number (if any), and the disposition or current status of the matter.

THE APPLICANT hereby waives any claim to the use of any particular frequency or of the ether as against the regulatory power of the United States, because of the previous use of the same, whether by license or otherwise, and requests an authorization in accordance with this application. (See Section 304 of the Communications Act.)

THE APPLICANT acknowledges that all the statements made in this application and attached exhibits are considered material representations and that all the exhibits are a material part hereof and are incorporated herein as set out in full in the application.

CERTIFICATION

I certify that the statements in this application are true, complete, and correct to the best of my knowledge and belief, and are made in good faith.

Signed and dated this____ day of _____, 19____

NAME OF APPLICANT

BY SIGNATURE

TITLE

WILLFUL FALSE STATEMENTS MADE ON THIS FORM ARE PUNISHABLE BY FINE AND IMPRISONMENT. U.S. CODE, TITLE 18, SECTION 1001.

FCC NOTICE TO INDIVIDUALS

The solicitation of personal information requested in this application is authorized by the Communications Act of 1934, as amended. The principal purpose for which the information will be used is to determine if the benefit requested is consistent with the public interest. The staff, consisting variously of attorneys, accountants, engineers, and application examiners, will use the information to determine whether the application should be granted, denied, dismissed, or designated for hearing. If all the information requested is not provided, the application may be returned without action having been taken upon it or its processing may be delayed while a request is made to provide the missing information. Accordingly, every effort should be made to provide all necessary information.

THE FOREGOING NOTICE IS REQUIRED BY THE PRIVACY ACT OF 1974, P.L. 93-579, DECEMBER 31, 1974, 5 U.S.C. 552 a (e)(3).

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President
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May I extend our thanks to you and to those members of your staff who have contributed so much in the preparation, design and provision of this forward looking equipment and especially to Dennis Fraser, Tom Meyer and Leo Lewis. It was great having those people work with us on this project and we hope that they will continue to support us as we come to be more knowledgeable and familiar with the equipment.

I just thought you might appreciate our words of thanks.

Sincerely,

R. C. Smith
Chief Engineer

RCS:rg

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he results?

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Radio Automation Gives Extra Working Arms To Talented People

Once you free the creative people in a broadcast station from routine, they can do more creative and more profitable work, often handling two or more jobs easily and well. That is the gain from automation most frequently cited by radio broadcast managements.

Why is this the biggest year in the history of radio automation?

The scores of station managements who have adopted it give a variety of reasons: they wanted a "smoother," better-controlled "product"; or a "big city" sound in a rural community; or weekend programming without hiring extra help; or to keep the personnel list from growing out of hand; etc, etc. The station stories that follow give more than a dozen specific examples.

But a large majority of the managements interviewed by BM/E for the round-up, in addition to whatever other reasons they put forward, agreed on one thing: automation gives its greatest lift to a station by freeing creative people from the time-tyranny of routine jobs so they can really help the station improve its on air sound, or its relations with the community, or sell more time, or whatever else is needed to raise standards and profits that nobody had time to do before.

As one manager put it (typifying a lot of othe "With the automation, I got my main on-air 'p sonality' away from cueing up a record on the turnta every three minutes and let him make a voice track the whole day's music in an hour every morning. He correct mistakes, redo parts he doesn't like. Then goes to the newsroom, does a beautiful job of putt local news items on the air: he's the best I've got for t Finally, between news stints, he comes into our proc tion room and does voice for some commercials, he's great on that too. He likes the variety—and the that I can pay him quite a bit more than before."

Every station will have its own set of talen workers, its own complement of jobs, but the princ will be the same: whatever talents the people on the s have, automation can, in effect, multiply those tale make them effective over a much wider range, w more than likely increasing the satisfaction the worl

(Above) Schafer 903E full-automation system, introduced at NAB in Chicago, has extended memory for three full days of automatic programming. System shown has six Audiofiles, each holding 48 carts all available for automatic play.

(Above) Collins new A7600 AutoPro, w memory for 2000 events, extendable t 8,000, can control rotary cart machine Instacarts, reel-to-reel machines.

(Left) Harris System 90, here being pu through its paces at NAB, Chicago, h micro-computer control, memory for 1 events, expandable with memory optic

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from their jobs. Two other large benefits noted in er BM/E coverage of automation (see July and ust, 1975 issues) are: the production of an on-air luct that is free of errors, consistent in quality, oth; the supplying of the dominant type of disc ey with a tool that takes all the chore out of playing ences of cart or reel-to-reel music, freeing him to or play the music, at the push of a button. Auto- on can be the good right arm of this kind of DJ, ving him to interpolate talk anywhere he wants into cate sequences of music, with no necessity to load or d cart machines, cue up turntables, throw switches der, etc.

Automation'' does cover a pretty wide spectrum, as May coverage of the NAB showed. The complex end is represented by such machines as IGM/NTI computer-controlled 700 series, with s up to about $90,000 for a basic system. At the complex end are such systems as ESE's 780 Pro- mer-Controller which lets the DJ set up 32 events time insertion basis, and costs about $1400. The nt of ''freedom'' that on-air personnel get will be ly related to the complexity, and cost, of the auto- on system—although even the least complex system an on-air worker a kind of scope he can't get any way.

e stations that use automation cover a pretty wide rum too, from stations that have as few as 20,000 e in the market area (see KULY below) to those in rgest cities (see WBMX, for example). The station s that follow represent a random selection from than a hundred that BM/E readily identified as now using automation. The total is considerably above that number.

In roughly half the stations described here, the reader will note the use of syndicated programming, which is especially convenient with automated switching. A number of the syndicators tailor their material especially for automated use, but this is not invariable. In the August issue BM/E will consider the syndication industry in some detail, describing what a station buys with the various kinds of syndicated programming.

A development that looks important for the first time this year is *total automation in radio stations* (see stories on WRMN and WBEN below). By interfacing a data-processing, traffic-control system (PSI) with the switching automation (Harris), WRMN, for example, has machine control of the operation right through from the writing of a commercial order, to the airing of that commercial, the issuance of the bill, production of log, etc. This will come much more slowly in radio than in television where it is now a strong trend, but the door has been opened by development of the interface systems by several manufacturers: a number of the larger radio stations will move into this field.

A rationale that emerged in several of the interviews: a station in a small community on the edge of a large metropolitan area, in order to compete with the much heavier payrolls of the big-city stations, goes to automation and syndicated programming for a smooth, big-city sound it can afford (see WVIP and WKFM, for example). Such station managements complained that if they did manage to find and develop attractive on-air

continued on page 42

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personalities, the "personalities" were almost sure to be grabbed off by big-city stations with lots more money. Syndication, of course, often includes much more than just a package of music: on-air personalities are a major part of the "buy," recorded in such a way that they can be integrated seamlessly into the station's programs, become in effect, part of its staff.

Here, then, are very brief descriptions of about a score of radio stations of great variety that are automated and glad of it: how they use it, what they have learned from it, how they made a real go of it.

KRIO, McAllen Texas—AM, 5 kW day and night

Charles Trub, president and general manager, depends on a "full-scale" automation system (Control Design) and a syndicator (Programme Shoppe) to help him put out a smooth Contemporary Top 40 format that has the station in a top rating bracket for a market of nearly 500,000 people. But he is emphatic on the point that a station cannot just feed syndicated programming to the transmitter and expect to stay in business against sharp competition (there are 10 other radio stations in his area). A station, he says, must have strong local "commitment" through an active local news department, deep involvement in community activity. KRIO has three full-time local newsmen; the AP national news is picked up on the hour; for state-wide Texas news, KRIO gets a feed from the Texas State network. Actualities from the Texas net are often recorded for later use. Local community spots and short programs go on the air as often as ten times a day. The station was a leading force, for example, in the building of a $6 million hospital, financed with local bonds. A number of the "community" spots are made by the Programme Shoppe DJ's on the West Coast. Altogether, he seems to be getting the best out of each part of the operation, the automation, the syndication, the local activity: it's a combination for success.

WBMX-FM, Oak Park, Illinois—6 kW, 1170-ft. antenna

One of the most successful US stations programmed predominantly for a black audience, WBMX-FM uses an IGM/NTI 750 computer-controlled automation system, with six Carousels, six Instacarts, several reel-to-reel machines, automatic time and weather input. The DJ's make up voice tracks for six hours of programming in an hour, reports Program Director Earnest James. The programming is laid out for as long a stretch as the management wants with the help of the computer; the titles and a number of characteristics of each song are stored in the computer so the type of song wanted can be called up by pushbutton (see story on WEEI, Boston, BM/E July, 1975 for a similar use of the IGM/NTI system). The program list thus assembled is printed out by the computer as a "prelog" for the DJ's and the station management. This makes up the backbone; commercials, ID's, PSA's, etc., all on carts, can be changed, up-dated from hour to hour, inserted where wanted.

WBMX-FM, according to James, will soon join the total-automation trend with a Paperwork Systems "BAT" system that will be interfaced with the IGM/NTI system.

At WISM (left) engineering director Chris Cain operates SI DP-1 automation system, which plays music on Technic reel-to-reel machines in foreground; programs are produ in the station. (Right) RCA DAP-5000A automation systen KMBS-FM, Harlingen, Texas, has 3 Kartwheels, 4 reel-to- machines, automatic logging and time.

WQHQ-FM, Andalusia, Alabama

Here is a newly-owned and revamped station, tal over in January of this year, already billing more t $20,000 a month in a county-wide market of aro 40,000 people. William Hoisington, president and g eral manager, started with an SMC DP-1 automat system, and the Drake-Chenault Hit Parade, syndica rock programming. He reports that the smooth, c sistent professionalism of this combination is gett "fantastic" results for him. Like all other stations t are successful with such a combination, he also p heavy emphasis on local news, local identifications. new ownership also acquired WKYD, a 5 kW full-t AM on the same site, and Hoisington is strongly incli to automation for that too.

WVIP, Mt. Kisco, N.Y. FM

Ken Harris, vice president and general manager, u a Harris System 90 automation system and syndica MOR programming from Audiographics, with emph on "personalities," which come along with the musi a separate reel. Again, the station is heavily oriente local interests, alongside the syndicated programmi He points out that he needs the smooth professional of the syndicated "voices" because the New Y broadcast market is less than an hour away. Since i dication is the best way to compete on quality. He some advice for any station putting in automation: d give up because during the first month or two the wh staff seems to be merely slaves to the machine, adjust their activities to "accommodate" it. After this sha down period, he says, the people gradually take c control and tell the machine exactly what to do. Then station, and the people, too, get the planned-for boos efficiency and morale.

WRMN, Elgin, Illinois—1 kW daytime

Here is the first total application of automatio radio broadcasting that BM/E has come across. Ric Jackle, president and general manager, has interfac PSI BAT system with his Harris System 90 switc system, for a total integration of time sales, schedul "rotation," programming, etc. For example: a 1 week's programming is set up on Computer "A" (P which dumps daily sections into the Harris (Compute for the switching. The actual material put on the a

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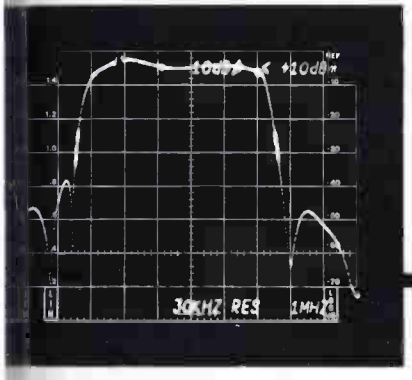

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recorded by the Harris system, "read-back" to the PSI at the end of the day, to prepare a list of discrepancies as well as the final log.

Another part of the operation: information on each commercial, entered into the system at the beginning in a simple manner, allows the PSI to work out the programming according to the conditions of the time sale. This allows the computer, using a specially-written program, to prepare a "load list," assigning tray numbers and positions for carts, so that the cart loader has a number immediately which makes loading fool-proof.

The examples given here are merely to convey the general nature of the operation: BM/E hopes to publish a more complete description of the WRMN operation at a later date.

WKFM, Fulton N.Y.—FM

Here is another station in a small community next to a large one (Syracuse), surviving by using automation, plus syndicated programming, for a smooth, professional "sound." The automation is the RCA DAP-5000; the program is TM Stereo Rock of TM Productions. In its two years on the air, the system has given the station much better control of its programming than it had before, says Robert L. Rooney, vice president, general manager and chief engineer. There are no mistakes and the "personalities" that come with the syndicated programs are far more effective than any he could find locally, or afford to import, says Rooney. Further, the automation makes it simple to extend over to WKFM the on-air work of top announcers on the sister AM station, WOSC. It's a clear case of talented personnel being engaged in two jobs, with no stress to them. And that has helped lift the station from 20th in the market to 5th in the two-year period.

WATI, Indianapolis, Ind. AM.

This station is using a much simpler form of automation, the Microprobe 100-A Programmer, which allows the sequencing of up to 24 events. This is combined, says Robert Lamb, general manager, with FM100 syndicated music programming supplied reel-to-reel tape which is called up by the programm Mr. Lamb likes the FM100 material because it inclu good music not available elsewhere. He says that Programmer was installed, not to cut down on m power, but to give the manpower he has the ability to a program of music going, then be prepared to do ne stock reports, etc., without any panic about keeping music going. He also likes the fact that he doesn't h to stock up music. The new combination of Programr and syndicated music, started in March, has brough many younger listeners, without losing the older o that the station had before with its programming "standards."

IGM's MARC VII ("manual assist remote control") allows DJ to pre-sequence up to 18 events in advance, interrupt sequence for talk or changes at any time; CRT screen constantly shows event on air, up-coming events.

KSFX, San Francisco. FM

Donald Platt, general manager, uses a Schafer automation system to help put out effectively his for of adult-oriented contemporary rock music. The musi on carts and is played from eight Audiofiles, giving station a very long set-up time with the exten memory of the 903. But voice tracks for current formation—weather, traffic, etc.—are made 15 min to 30 minutes ahead of air time. A combination of s current information with very popular "personali segments long established in the evening hours led P to operate during certain hours in what amounts "live" programming. "Those particular hours were popular I didn't want to change them in any way," points out. "The automation has given us a tremend lift in other parts of the program day, so that we are more consistent in drawing power throughout the day

KULY, Ulysses, Kansas. AM

This 1-kW daytime, 500-W nighttime station in southwest corner of Kansas has what its president general manager, Sam Elliott, calls "one of the sma markets in the United States." About 5,000 people a the town, about 20,000 in the whole market area. station is successfully using an MOR format, wi Schafer 903 automation system to help get the musi the air. Voice tracking is done right in the station; automation frees the station personnel to do this more creative, consistent way. "We used to sit and records all day," says Elliott, "now we can do much more useful things."

As an example, he says that he and his sales man tape a "morning show" in a short time every day automation then puts it on the air, along with music other material, while the two executives pick up aspects of their jobs. Elliott also likes the fact that have many more manhours for local news produc and community "identification" programming, esse to the success of any station in a small market.

KRLT, Lake Tahoe, California. FM

Here is a brand new station, scheduled to go on th around July 15th, built on automation—a Schafer system—from the start. Ed Crook, vice president general manager, says the management's reasoni that they must have a very smooth, "professio sound for their audience, made up largely of city fo hand for the prime recreation around the lake, incl the several large gambling establishments on the Ne

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side. In addition to the visitors, working personnel in the gambling houses are largely well-educated young people, in the 20-to-38 age bracket. The programming planned for this audience is Contemporary MOR, and it will be mainly supplied by syndicator Chris Clauson. The station will also do heavy local news production, try to serve the community in a variety of ways. "Consistent quality control and economic control were two main motivations for our adoption of automation," says Crook. "We believe we are starting off with the best possible formula for success."

KWIX-AM, KRES-FM, Moberly, Miss.

This broadcast operation uses two kinds of automation. On the FM station (50kW) there is an SMC DP-1 full-scale automation system which allows the station to put out, according to Richard Womack, operations director and chief engineer, a very tight and error-free program compounded of modern country, hit country and old standards. The KRES audience has been responding strongly enough to keep KRES very high in the ratings. On KWIX (1 kW day, 250 W night) there is a completely different mix, consisting mostly of "information" programming: stock reports, prices on Chicago and Kansas City boards of trade, weather, crop information, many others. The music here, says Womack, is used mainly to bridge between segments of the information programming. The data material is done "live"; the music is pulled "through" by a Microprobe 100A controller, on which the operator can set u many as 24 events for automatic sequencing. This sided approach to automation, says Womack, has g the station just what it needs in the two areas. It h lights the *flexibility* of automation, its capacity to great variety of broadcast requirements.

KSLN, Brownwood, Texas, FM

Stephen Pasquini, general manager, has chosen MOR format, produced with the help of an Autog time-insertion full-scale system. The music is on c reel recordings; announcements, commercials, PS etc., are on carts. The Autogram system was installe December, 1975 to give the station payroll stabilizat and, according to Pasquini, has succeeded in that well as in improving the smoothness and consistenc the on-air sound. The programming is put together 5 "sequential" channels and 3 timed entry channels; combination is available with the Autogram system. station also belongs to the ABC FM net, and ha active local news operation.

WXKW, Allentown, PA. FM

"Contemporary good music" is the way Craig K caid, executive of the group owner, Rust Comm cations, describes the format of this station. The gramming is put out with the help of a Control De automation system, with four carousels to hold the on which commercials are recorded. The music i reel-to-reel tape. Again, payroll stabilization, the ficulty of finding satisfactory manpower, and the d

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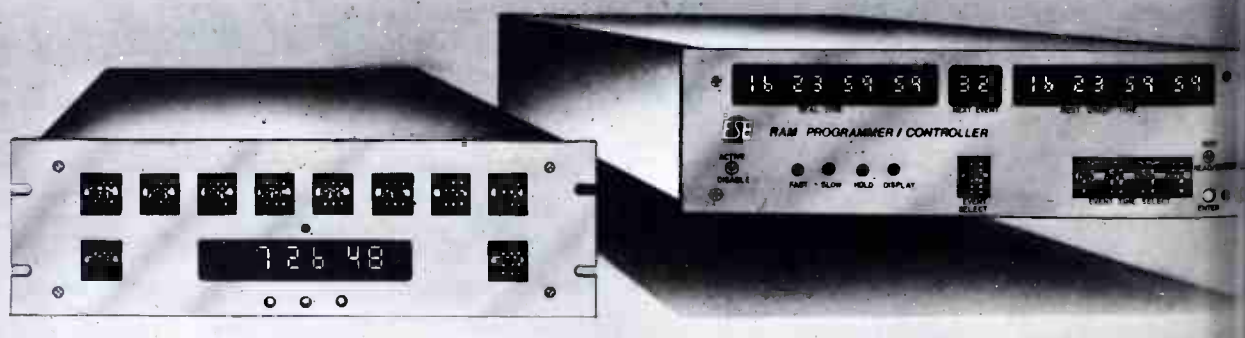
PERFECT TIMING



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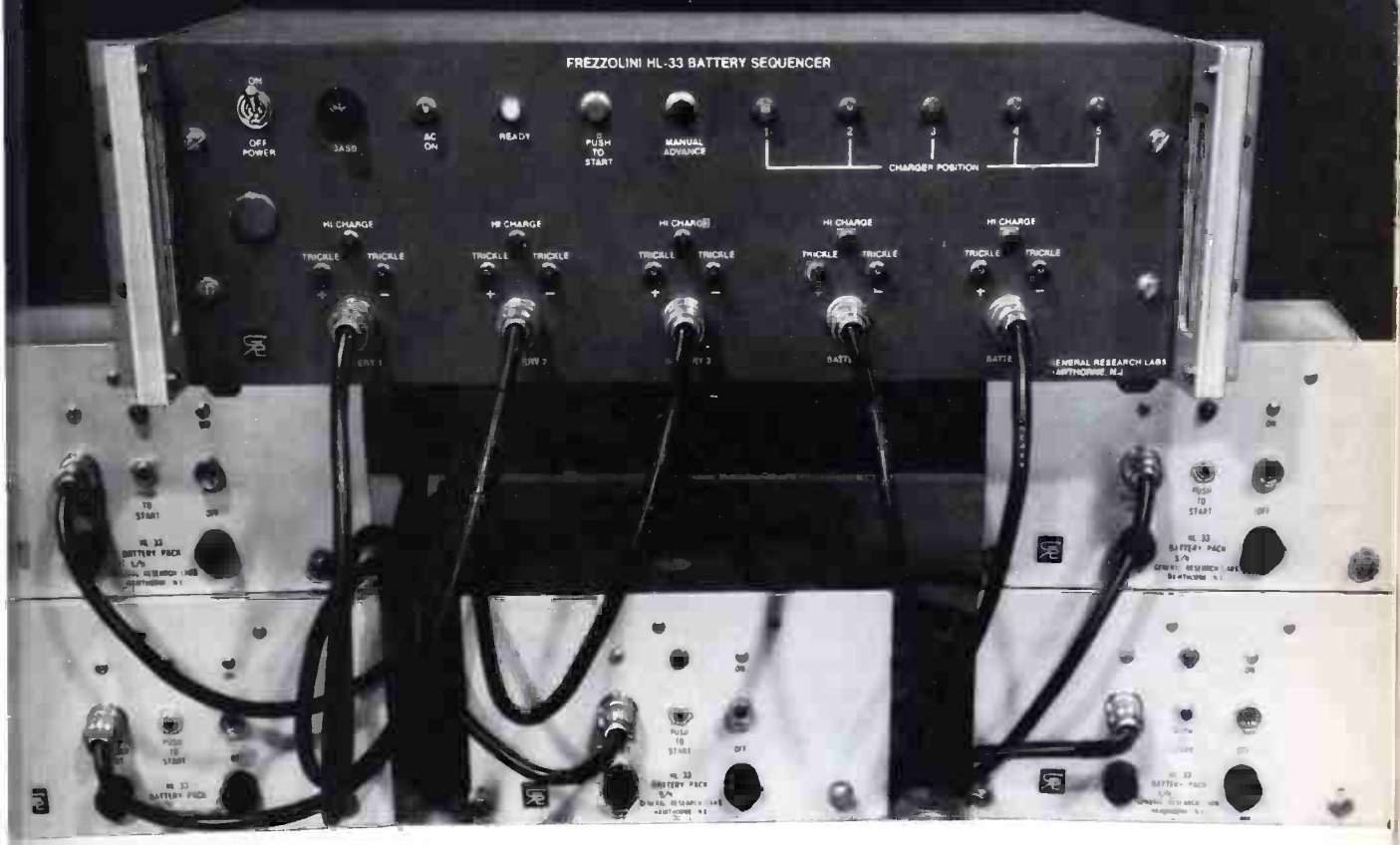

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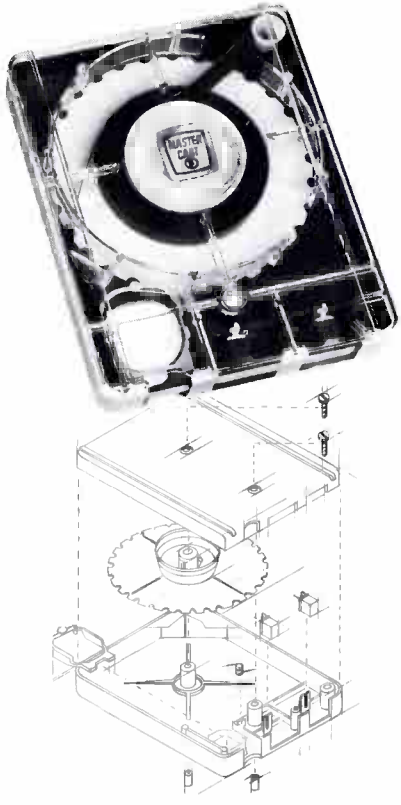
for a consistent on-air sound were the major considerations behind the move to automation. It has met all those expectations, says Kingcaid, with the bonus of giving station executives time to think, plan, advance better than before.

WBEN, Buffalo, AM and FM

These two radio stations use (or soon will use) a combination of automation operations that makes them good contenders (as far as BM/E can determine) for the title of "most automated AM/FM combo in the nation." As described in a detailed article in the July, 1975 issue by Gerald Klabunde, technical director, the AM operation is based on "live" work by DJ's, but with an automatic sequencing system for the music, on carts, allowing 15 to be set up in advance. The DJ has a simple pushbutton system for starting the sequence, interrupting it at any time, etc. About the time this article sees print the AM will have in operation, during the midnight to 6 AM period, a total automation system, an SMC DP-1, to let the staff, Klabunde says, "catch up on maintenance, creativity, sleep, etc." The FM station has been totally automated with an SMC DP-1 for several years, and will continue "happily" on that basis. But that's not all: the two stations will jointly use a Paperwork Systems BAT System for data processing—the equipment is already on hand—which will be interfaced with the SMC DP-1's for "total automation." When? "I'm not setting a schedule," says Klabunde, "it will be when we everything connected together—the sooner the better

WISM, Madison, Wisconsin—FM

One of a group owned by Midwest Family, Inc., "flagship" station is the center of an unusual operati a "self-syndication" through which the programs three of the owned stations—and eventually more wil served—are all produced, on reel-to-reel tape, WISM-FM. The program formats differ. WISM us MOR music, some of the others using rock music. all production is at WISM. All three stations also automation to put the programs on the air, in each c an SMC DP-1 system. Chris Cain, engineering dire at WISM, describes the equipment setup he uses to p duce the programming: "We have Technics direct d turntables, and Scully tape machines, with a DBX n reduction system to make sure the music gets on t with extremely high quality. Because we use noise duction, we can record in quarter-track stereo v automatic reversing at the end of a reel, and for this Technics tape decks have worked out well as part of automation system." The station's smooth on-air "p sonality" and sound have helped greatly in lifting it contention with another station for top rating positio the large southern Wisconsin area. The automation, C points out, allows his skilled personnel to give car attention to the program production for the group of tions. BM



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What To Expect When Shopping For Automation

Several hundred radio and TV stations have made the conversion to automated business operations. Many are making the conversion to full automation by adopting interfaces with their technical operations. Many more stations expect to automate within the next few years. As a result, any discussion of the pros and cons of station automation becomes almost academic.

Extensive interviews with broadcasters and suppliers of automation services reveal that there are only two reasons for a station to reject the idea of automation. One is simple economics. There are many stations, especially radio stations, that are just too small and do too small a volume of business to justify the rather impressive start-up cost for an automation system or to justify the monthly fees charged by the suppliers. The second reason is poor management.

Any station that is poorly managed or organized now, cannot expect that automation will bring order out of chaos. In each case, suppliers of automation services agreed, that the secret to successful automation was not their particular hardware package, nor the ingenuity of their software, but rather strong and aggressive leadership at the station.

Recent surveys indicate great satisfaction on the part of station management with automation. Most stations have experienced increases in efficiency of inventory utilization that more than justify the expense of their automation system. In short, most of the systems, and most of the firms that supply them, have lived up to, or beyond, original expectations.

What then should station management look forward to when considering an automation system? First of all, management can expect a whithering argument from various firms regarding the virtues of their particular system. There are time-shared on-line systems, off-line batch systems, in-house mini computer systems, network, and distributive systems, and systems that offer combinations of approaches. Some companies will sell the hardware while others rent it. All provide software support and arrange for maintenance of the hardware.

As far as reports go, they all offer multitudinous reports. Many of the systems will offer up to four different versions of the same report depending on how a station likes it. BIAS, a division of Data Communications Corp., has in its "plain vanilla system," 200 individual reports to select from.

Perhaps the most serious challenge to clear understanding of the virtues of various systems will be the use of the term "unique." All of the systems are unique. And that is as it should be since they all accomplish about the same thing but with subtle differences in method, price, speed, and equipment.

A station can, however, prepare to sort through all the information that is available and come up with its own best selection of an automation system. The secret is to know what you want and what you need. The major pitfall is to expect from the automation system something that it cannot do or do well.

Automation systems are really designed to perform complex clerical tasks at high speed. To believe adoption of an automation system will lead to signifi savings in labor cost, however, is to misconstrue automation is all about.

Now that the systems have been in the field for s time, it is apparent that they do not eliminate jobs one vendor put it, "we displace workers. When w in, we frequently have to rewrite a lot of job descript but rarely are more than one or two low-level cle positions eliminated."

Most of the automation systems will do just a everything a station would want done. Each of systems prides itself on its expertise in broadcastin well as computers. Jefferson Data and Cox Data are extensions of broadcasting companies. Compu/Net division of Arbitron; while BIAS, BCS, and Colum all point to the staffs they have built utilizing ex-br casters. PSI (Paperwork Systems, Inc.) was founde a group of men with long experience in broadcas The understanding of broadcast operations that eac these companies offers is extensive. In addition, firm has some method of continually up-grading software packages based on the experience and dem of their clients.

Though each company would dispute the notion there are no significant differences in their capabilit the evidence of satisfaction from their clients tend support it. The question remains, however, how do station choose an automation system?

The first step is for station management to mak exhaustive study for its current operations. Consult the department chiefs in engineering, traffic, account sales, sales/service, and elicit from each a list of t that they would like automated.

Carefully determine the reports that are currently and determine what reports each operation would lik have and what use they would make of the reports if t had them. This is the tricky part. There is a high pr bility that some reports are unnecessary and re mainly from a need to reassure yourself that certain fi tions are under control. Automation will provide su volume of data that it is imperative for station m agement to make a clear determination based on ac utility they can derive from any given report.

David B. Ridge, vice president of Columbine, p this way. "There is a distinction between the *requ ments* of a station for data and the *features* of an a mation system." When reviewing the available rep included in the features of a system, understand h each report can be used to improve the way the sta operates. The automation firms have developed t programs from an interchange of experience with m broadcasters and their features may well include rep that were not on your list but should have been.

Rick Aurichio, president of Compu/Net, suggest fairly simple criterion for determining which reports important. "Ask yourself," he said, "how can report make me money?" Most of the systems clair

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CANON'S NEW P18X16B2* 'INSTANT CLOSEUP' LENSES HAVE TURNED WPIX'S YANKEE BROADCASTS INTO A WHOLE NEW BALLGAME". Otis Freeman

Vice President/Engineer, WPIX-TV

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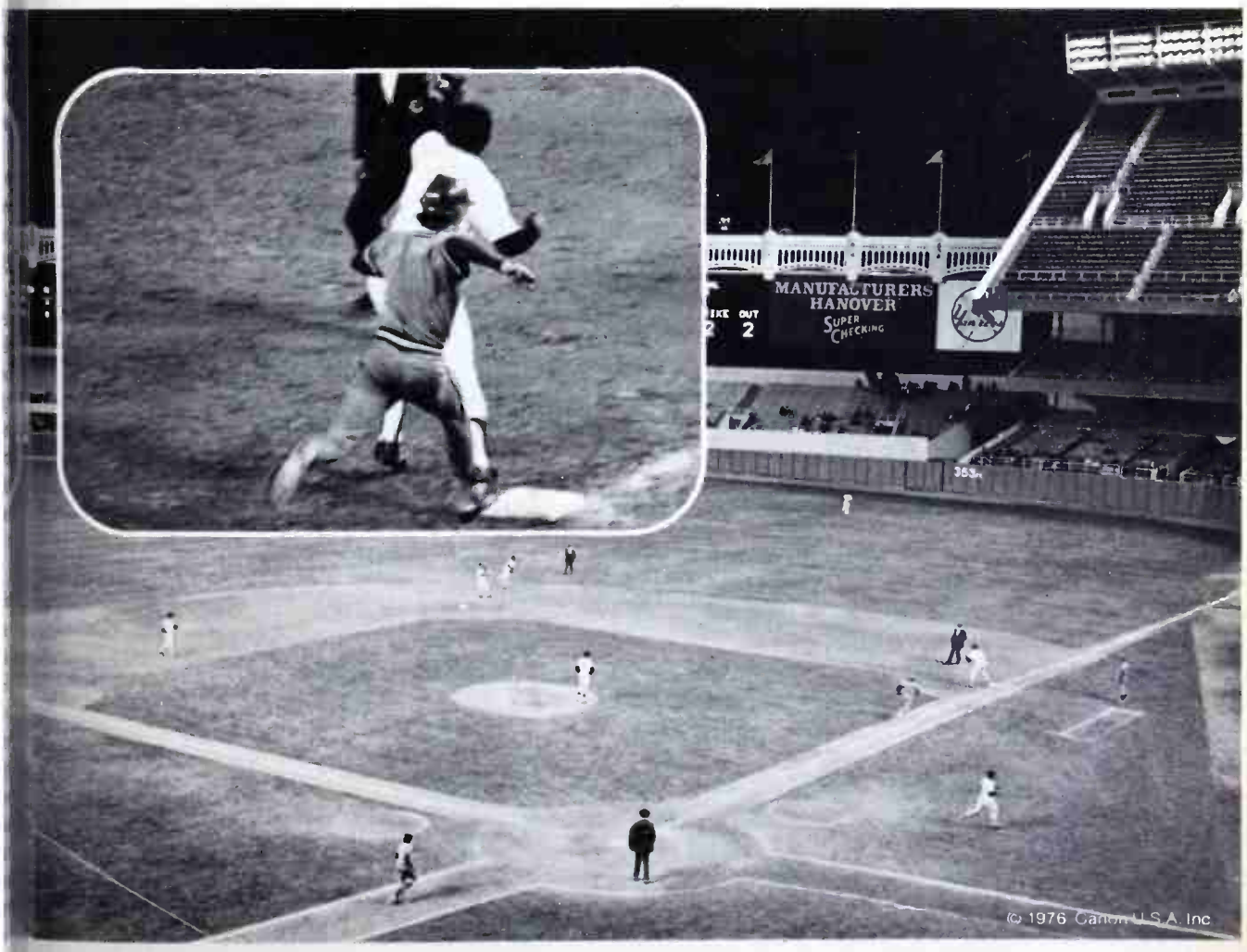

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be sales oriented and seek to give station management the information it needs to efficiently "sellout" its inventory at the highest possible price. Each system does it differently but essentially the reports include several types of avails to provide information to sales managers, reps, and salesmen. Each member of the organization may need different types of information and a thorough questioning of each affected person may provide you with genuine insight into the relative advantage of each type of report.

In addition to daily sales operations, most systems provide data that are helpful in planning sales strategy. Director of Marketing for BIAS, Patrick Choate, said, "The name of the game today is not just 'sold out.' No smart sales manager is going to be happy just because all his available spots have gone. He wants to be certain that they have gone at the highest possible rate." One way BIAS hopes to make this possible is through the use of a new report they have programmed called the Base Rate Report.

The BIAS Base Report is an inventory evaluation program that compares actual performance to goals projected. If a sales manager can see that he is exceeding sales projections in time, rather than be merely sold-out, he can up the price of spots and achieve greater revenues. The Compu/Net system also provides this kind of historical analysis but achieves its purpose by allowing the sales manager to set priorities, usually determined by price, to assure that those high priced spots are not preempted or blocked out by lower price spots even though they might have been sold earlier. Each company, in fact, has many such "management reports" that will help to increase the effective use of inventory.

Accounting reports are also in abundance. And, they too, can help the station make money. One thing to consider is how long it takes to get those invoices out. Faster and more accurate invoicing will result in a better cash flow situation. All of the systems provide a variety of billing procedures but some are more tolerant than others of different accounting procedures that may exist at any given station.

Another important area to consider when shopping for a system is the support and training that the supplier will provide. The method of delivering this very important element varies from company to company. Some firms begin by performing a "station survey" in which they send a team to your station to analyze the way you operate now and to suggest how you might best organize to use their system. Then, the firm might have station personnel come to a seminar held at their headquarters to learn how to use the equipment and input data. Some firms believe that these training sessions are better conducted at the station. Reports from stations experienced with both approaches reveal no distinct advantages, one way or the other.

Top management involvement in the process is considered essential by all the automation firms. Some, like BIAS, BCS, and Columbine, insist that management personnel attend seminars specifically designed to show management how to get the most out of the system. It is also important that management fully understand the procedures of every department.

If a station has decided that it can benefit from automation, management should not begin by talkin salesmen from the various firms. Instead, ask each to provide you with a customer list and talk to the m agement people who have already gone through automation and get their reactions. They will proba be quite satisfied with whichever system they have they will let you in on the nature of some of the pr lems. Usually, the probelms are of a human natu Some personnel will resent the computers and not able to adjust to new methods of doing jobs they they have been performing well for years.

It is important to convey to affected workers that adoption of the automation system is not a rebuke poor performance. In fact, one station, KUTV in Lake, said that after adopting automation they were prised at how efficient their old manual system had be The new system just gave their highly motivated e ployees a better tool with which to do the job. M stations report improved morale now that routine laborious tasks are being done by machines. Workers finding that automation has reduced the pressure coo atmosphere they were used to.

A new and developing area that could affect the cho of an automation system is its ability to interface w technical operations. Currently only BCS has an op ational interface for TV at WTCN, Minneapolis. WNE New York, however, should be operational by the en June with their BCS to CDL configuration. Cox C Services is also scheduled to have a technical interf operational at WIIC in Pittsburgh when their new Gr Valley 2000 system goes on line. Each of the other fi are either working with the major switcher manufactu developing software for the interface or are design programs to accomplish such an interface. Columbin the only major firm not racing toward a technical interf in the immediate future. David Ridge said that Columb would wait on this phase until they had a specific requ from a client to perform such an interface. He add however, that they did view this as a likely developm

Choosing a system will become an almost subject process. The choice will more likely be made on basis of which system management perceives as easi to adopt. Arguments for and against on-line or off-li in-house and shared, will no doubt rage for some tir Criticism of response time and telephone line cost levied against on-line systems while return volleys fired at the limited capacity of in-house systems. T revealing nature of this combat, however, is that it waged arduously by the competitors in the busin while users of the services, whomever their suppli seem quite tranquil and pleased with results. The co plaints from users that are heard usually occur during trauma of conversion and subside after the birth pa pass in a few months following installation.

Though some stations have switched allegiance fr one firm to another, the losses and gains seem to about even. BIAS has done a marvelous job acquir the lion's share of TV stations but the competit remains supremely confident that they will have th day. Those systems that started in TV are moving i radio and the radio automation firms are moving i TV. The major thing management cannot expect wi shopping for automation, is an easy choice. On the ot hand, no matter how specialized their need, managem can expect to find a hardware and software package t suits them. BM

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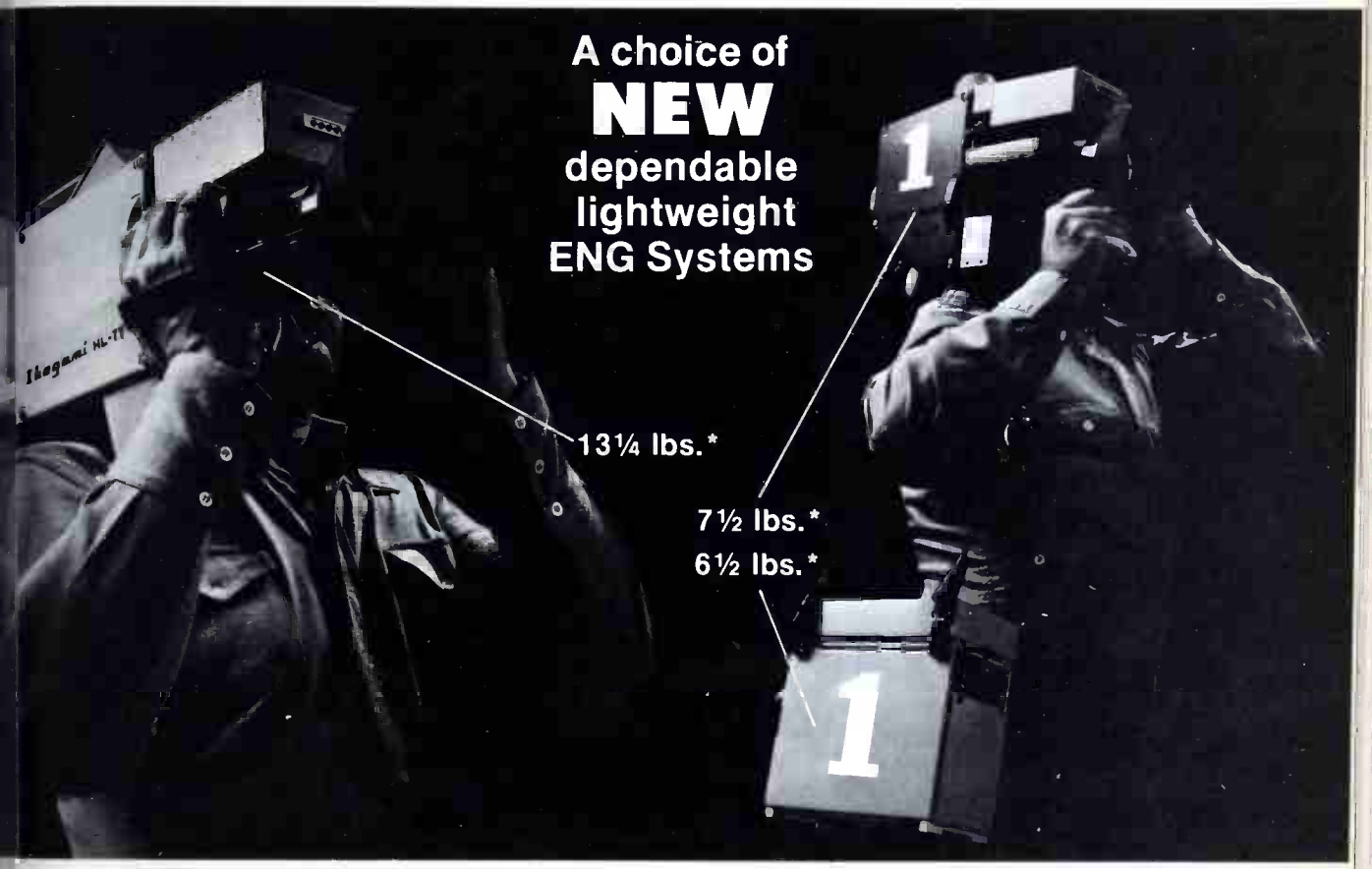

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Who's Who In Automation

Each automation systems company has developed a strong assortment of programs and solid set of arguments for why their system is the best.

At first we considered making a comparative analysis of the various firms that offer specialized automation services to broadcasters. What we discovered, and what any broadcaster will probably find, is that there is really very little that can be accomplished by comparing one firm to another. The choice will likely depend more on the nature of the station than on the nature of the computer firm. Each broadcast station has its own way of doing business and, as a result, the firm it selects will probably be the one that most nearly conforms to the current operating and management style of the station affected.

In Memphis, BIAS uses its "super computer," Burroughs 6700, to handle most of the business computing for its clients. The machines are constantly on line to the station terminals (below).

Station personnel use a variety of equipment to communicate with the central BIAS computers in Memphis. Here, a member of the traffic department receives hardcopy over the station's printer.

The fact is clients of the various firms each rate t choice they made as the best. Each automation fi proudly suggests that you speak to its clients for an sessment of their performance, and when we did, were frankly surprised by the uniformity of praise. Ea client has problems adjusting to an automation syste but considering the scope and breadth of the change quired by automation, it is surprising that few static experienced trouble beyond their first few months operation with the new systems.

So, instead of a comparative analysis, what follows a series of brief sketches of each of the major vendors automation systems and services:

BCS (Broadcast Computing Service) is a division Kaman Sciences Corp., of Colorado Springs. Curren BCS' client list includes 10 radio stations and 40 tele sion stations. As of this writing, BCS is the only fi that has an operational interface between business au mation and technical operations, at WTCN, Minneap lis, a Metromedia station. Metromedia stations in N York and Washington, D.C. are scheduled to go to to automation shortly. WNEW, in New York, is to operating with the interface in late June.

BCS uses a system they refer to as "distributive Essentially, the system includes an in-house mi computer at the station which performs many da routines such as data collection, data display and editi including numerous types of avails, log manipulatic projections, and worksheets, billing address files, and the case of total automation stations, the interface achieved in a "hard wired" set up with the techni operation.

The minicomputer is also interfaced with the B Master Computer in Colorado Springs. Once a day, B initiates a contact between the master computer and t station mini for the handling of more complex routir such as rotations, minicomputer update, report gene tion, and compilation of the many BCS reports. Perip eral equipment in the station includes one or more pri ers, a number of CRT and keyboard devices, and t data phone for talking to the master computer.

The precise equipment configuration used by a given client station depends on the needs and budget the station. BCS offers the 1100, its top of the line, t 800 for the middle market, the 800B for smaller marke and the 100 for radio stations.

The software for the radio system was developed Radix Corporation and was used and marketed by ano er major supplier for several years before becomin part of BCS.

BCS maintains a full training and installation team a provides for continual enhancement of its software pac age. Hardware maintenance is provided by BCS.

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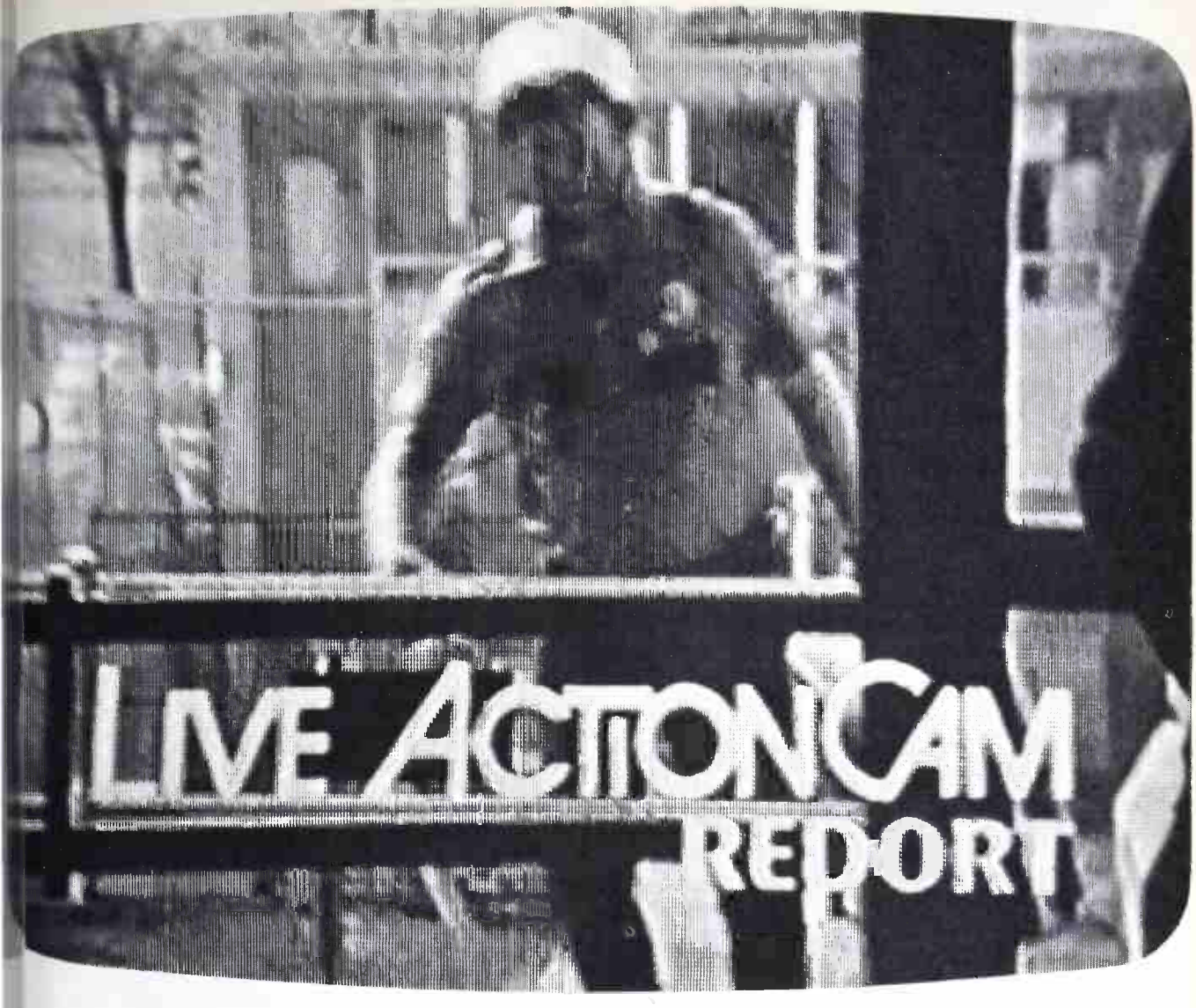

ON SEPTEMBER 11, 1975, THIS WAS THE SECOND HALF OF "THE HOLLYWOOD SQUARES."

On September 11, 1975, WTVF scooped all the Nashville news media with live, on-the-scene coverage of a riot in progress at Tennessee State Prison. They did it using some of the most advanced Electronic News Gathering (ENG) equipment available today. Equipment which included, not surprisingly, an ENG microwave system from the Communications Equipment Division of Microwave Associates.

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WHO'S WHO IN AUTOMATION

BIAS (Broadcast Industry Automation System) is a division of Data Communication Corp., Memphis. The BIAS system is undeniably the leader in television station automation with more than 150 clients and showing no sign of slowing its growth.

BIAS is an on-line system featuring terminals at the station location for in-put and printout of data. The station terminals are constantly on-line to the host computers in Memphis over telephone lines. One of the major claims of BIAS is that no other firm can match the sophistication of its software. BIAS employs more than thirty computer programmers, full-time, who are always up-grading the software and developing new programs for BIAS clients.

The BIAS host computers are large Burroughs 6700 and 4700 machines. While the client station is on-line to these computers via "dedicated" telephone lines, the computers handle data on a time-shared basis. Companies that offer in-house stand alone systems make considerable effort to point out that this time-sharing a proach can lead to delays in turn-around time, but BI points out that the slight delays due to time sharing or the comparatively slow data rate of telephone lines more than compensated for by the sophistication of th software. BIAS provides more than two hundred repo for each client to select from.

BIAS also asserts that as they have the hardware Memphis and maintain round-the-clock service to hardware, this relieves their clients of the bulk of wo over hardware failures. BIAS also points out that no m can compete with the power of its large computers.

Nevertheless, where "response time" is a proble BIAS has offered an optional terminal package whi offers the station a minicomputer CRT printer to perfo some tasks off-line such as invoicing and month-e reports. Many of the BIAS clients have taken this optio

BIAS has been forging ahead in a number of areas. addition to software enhancement that most firms offe BIAS has been experimenting with a tie-in between t Donovan Data Systems, which handles agencies, a Blair, which represents a number of TV and radio s tions. Eventually, this approach will match up the r quest of agencies for spots with the avails with dem graphics of Blair and complete a station/rep/agen cycle. Patrick Choate, Director of Marketing, howev indicated that this tie-in has had to take a seconda position to BIAS' effort to perfect a technical interfac

BIAS has been working closely, as have other aut mation firms, with the three major manufacturers automated switching gear, Grass Valley, Cent Dynamics, and Vital. BIAS expects to announce a su cessful interface shortly.

Compu/Net, a division of Arbitron, is based in L Angeles. Both Arbitron and Compu/Net are subsidiar of the giant computer company, Control Data Corp. the past year, Compu/Net has gone through some radi changes. In 1975 they had 47 radio station clients a through a conscious program based on a restructuring the organization, managed to shed 13 stations that th felt were unprofitable. Now, with 35 stations, Rick A richio, president of Compu/Net, feels they "are back the road to pretty good health."

As a measure of confidence, Compu/Net is aga building its sales staff and intends to reactivate its m keting.

Currently, 100% of Compu/Net's clients are radio s tions. They utilize an on-line, time-shared system w large host computers in Los Angeles. Unlike other c line systems, Compu/Net utilizes the network of Cont Data Corporation's regional offices to provide the tie to the host computer through CDC "owned" lines. T means that clients are not subject to rising telephone c since, for most of them, they need only dial up a lo number.

Now that Compu/Net appears to have settled its ma agement problems, they are establishing a major effor the area of television automation. One of their first st was to bring in Joe Chaplinski to head up their TV effor Rockville, Maryland. Chaplinski had been intimately volved with the BIAS system when he was with Sto Broadcasting. Compu/Net's plans, however, do not c for a "BIAS type" set-up. Instead, their television pl will use a combination of approaches. Virtually all d and operations will be handled by the in-house co

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How the Automation Sweepstakes Stand Now

The past year has seen phenominal growth in the number of stations adopting automation systems. In addition to the growth there has been some juggling going on between systems companies.

Last year BM/E reported that Compu/Net had signed its first TV client through Nationwide Communications, Inc. Compu/Net already served all but one of NCI's radio stations. During the management upheaval at Compu/Net, however, NCI shifted WATE-TV, its Knoxville station, back to a manual system. Currently, another NCI television property, WXEX-TV, Richmond, VA, is using Jefferson Data systems. The NCI radio stations, to date, are still in the Compu/Net column.

With the move of KUTV, Salt Lake City, from BIAS to Cox, the first major shift of a station from one-line, to in-house has taken place and the change-over will prove interesting over the next few months.

BIAS, which last year added its first radio station, now has 26 and is developing programs for medium/small market radio stations with which it hopes to increase that tally.

The automation system companies are not ignoring the smaller markets either. One company now has a television client in the 182nd market.

Though all the systems are still working out bugs and some stations still report complaints and demand more sophisticated software, it is clear that automation is here to stay and already out-performs manual systems to the point of "no contest." The field is competitive and the stakes are high. The situation, however, is fluid and no system as yet is the odds on favorite.

*Here's how they stand:

	Radio	TV
BCS	10	40
BIAS	26	126
Columbine**	72	36
Compu/Net	37	—
Cox Data Services	—	13***
Jefferson Data Systems	19	16
Marketron	34	—
PSI	170	10

*The figures quoted for client totals in this "box score" are the latest information available and were obtained just prior to going to press. The totals quoted in Who's Who in Automation were obtained earlier and therefore, in some instances, differ from those above.

**Approximate, has an additional 36 stations signed, waiting to be installed.

***Stated that by the end of the year they expected to have 19.

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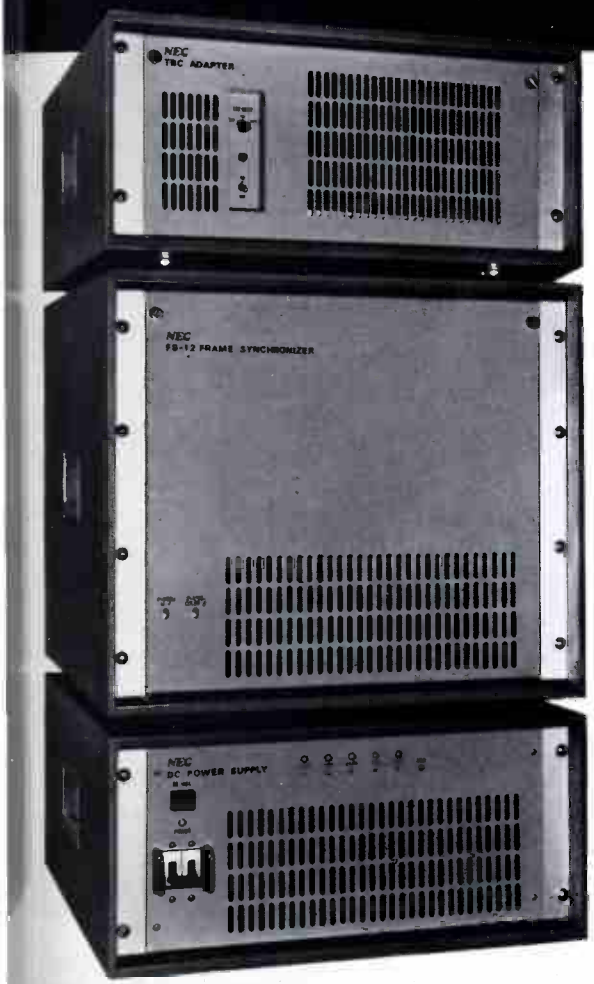

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Some stations prefer to own their own computing hardware. Above, a BAT 1500 system from PSI, provides the station with all the computing power this customer needs. As the power and price of minicomputer technology improves the interest in in-house systems increases.

puters which may be of CDC design. Certain functions, however, especially those that can use the Arbitron type data, will be handled by a central computer, connected by the CDC local network system.

Much of the system's design is being handled by Greenwich Data Systems where the "Wizard of Avis" and the American Airlines "Sabre" system was developed. In addition, Compu/Net will be using the aid of the Service Bureau Corp., another Control Data subsidiary. When asked if Compu/Net's late entry in th area of automation might represent a serious proble Aurichio said "one way to tell the pioneers is th they're the ones with the arrows in their hat. We inte to benefit from the experiences of those who ventur into this field before us." Compu/Net's TV syste should be available in late summer of 1977.

Cox Data Services, Inc. is a division of Cox Broa casting Corp., located in Atlanta. Cox is the major pro onent of the in-house minicomputer approach. Origin ly, Cox developed their data services for the Cox Broa casting Stations. At the outset they used an on-lin time-sharing system that eventually shifted to the i house minicomputer when they came to believe that t development of low-cost, high-power minicomput technology would provide certain advantages to broadcaster.

According to Cox, on-line time-shared systems suff from a number of disadvantages that stem from the dependence on telephone lines. In addition, the sup computers were not living up to expectations. Addition clients were exhausting the capacity of the comput faster than anticipated. So, Cox made the decision switch to minicomputers. They believe that many broa casters will prefer the mini because of the security controlling your own data on your premises.

They also believe that minicomputers will ultimate present advantages in the area of technical automati since their system will be "hardwired" and operate in conventional mode with the mini or micro-computers master control. Cox's competitors dismiss these adva tages simply stating that whatever system a station use

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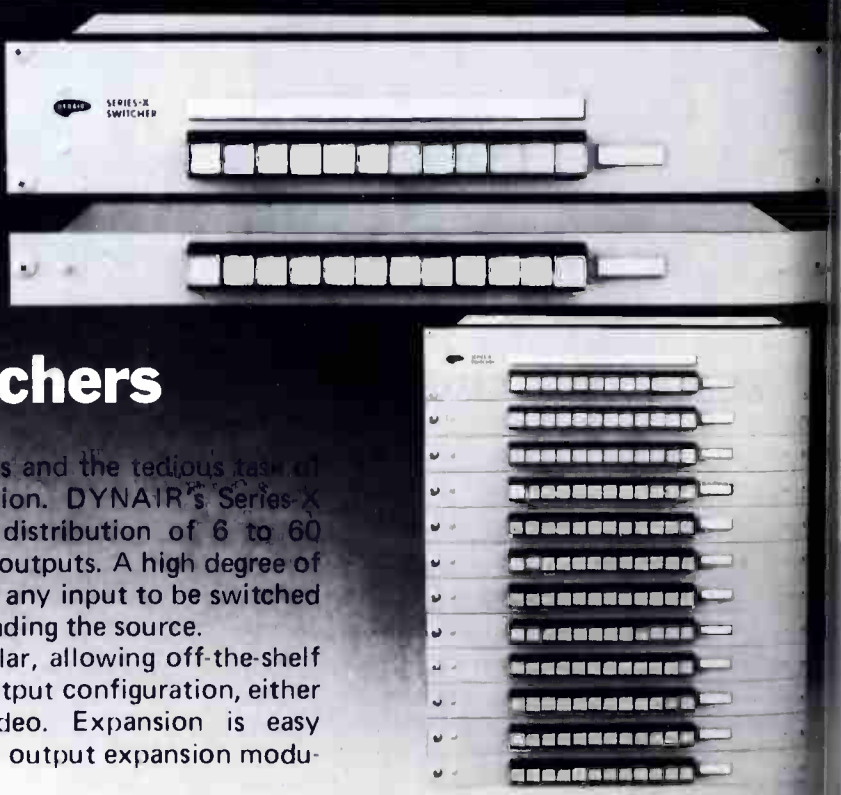
STILL the best buy ...DYNAIR's Series-X Switchers



Forget about messy patch cables and the tedious task of re-patching to change distribution. DYNAIR's Series-X Switchers provide pushbutton distribution of 6 to 60 color sources to as many as 120 outputs. A high degree of input-to-output isolation allows any input to be switched to any or all outputs without loading the source.

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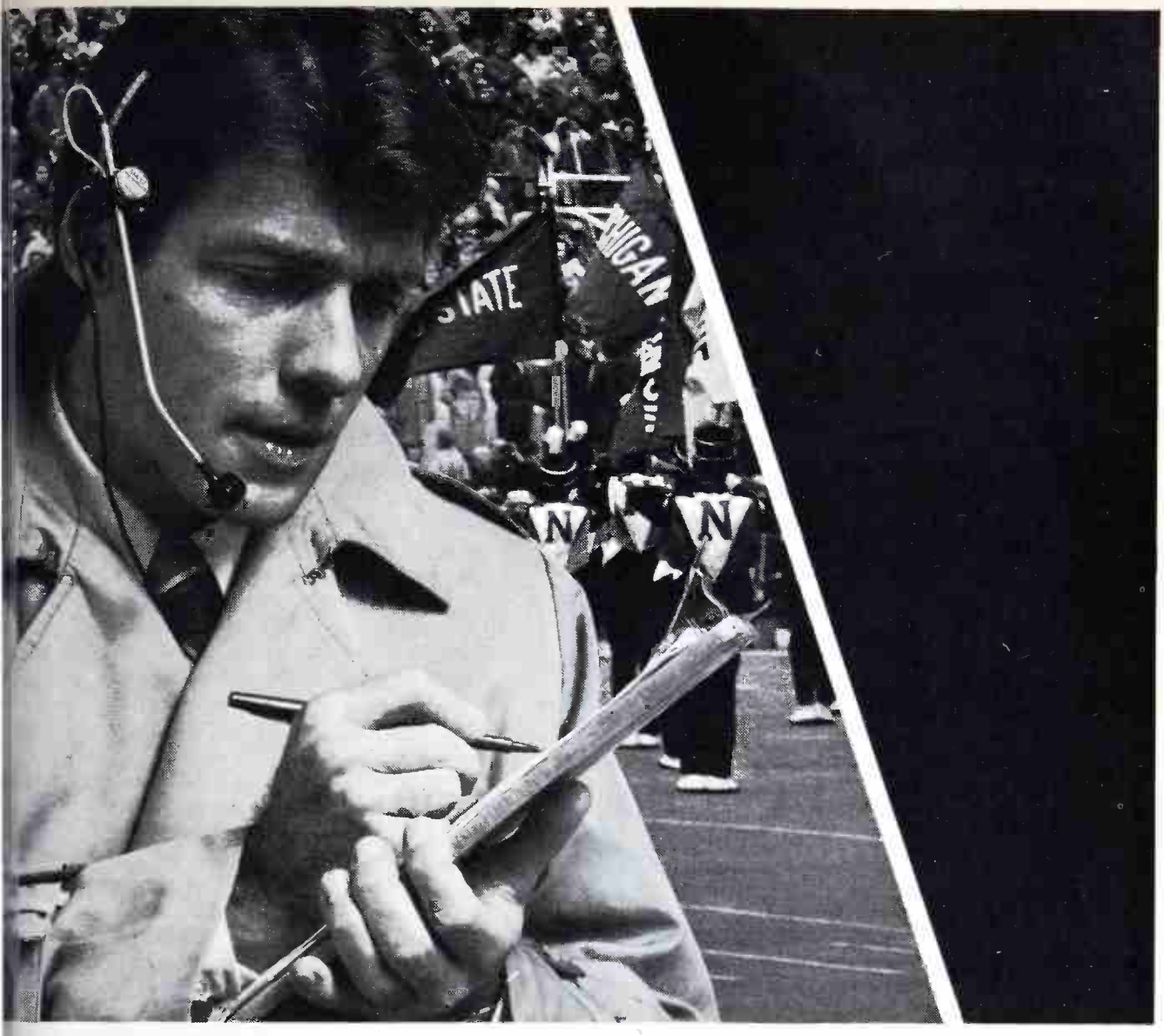

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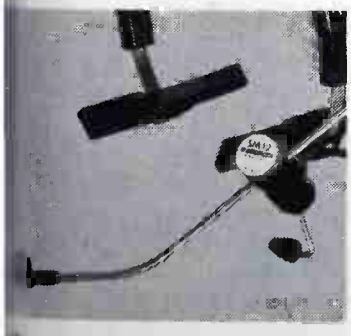

Shure's new headset microphones are coming through loud and clear. With their unique miniature dynamic element placed right at the end of the boom, Shure's broadcast team eliminates the harsh "telephone" sound and standing waves generated by hollow-tube microphones. The SM10 microphone and the SM12 microphone/receiver have a unidirectional pickup pattern that rejects unwanted background noise, too. In fact, this is the first practical headset microphone that offers a high quality frequency response, effective noise rejection, unobstructed vision design, *and* unobtrusive size.

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all of the technical interface requirements will have to be met.

Cox Data Service is scheduled to complete a technical interface very shortly, at WIIC, Pittsburgh, where the system will utilize a Grass Valley 2000 automated technical operation. Cox has been working very closely with the major manufacturers of automated technical operation equipment and has been told by one manufacturer "that the interface with a Cox minicomputer system will cost the client $25,000 less than an interface with some other business automation systems."

Cox Data Services now has 13 client TV stations and expects to increase that to 19 by the end of July. Though the in-house approach represents a small portion of all automated systems in use now, a recent survey indicated that a growing number of stations were interested in such an approach and expected that they would adopt it. If real advantages in technical automation do materialize with the in-house minicomputer system, then Cox can expect a real shot in the arm for their marketing effort.

Cox now offers two systems for lease or purchase. The System 2000 is a dual configuration using 2 Nova II minicomputers from Data General, 3 disc drives, 4 TEC CRTs for input, and 2 tally printers for output. The System 1000 is single configuration and uses 1 Nova II, 2 disc drives, 2 CRTs and 1 tally printer.

PSI (Paperwork Systems, Inc.) is based in Belingham, Washington and has become a major force in the broadcast automation competition in a very short time. PSI was formed in 1974 by Joe Coons, Lee Facto, and Christopher Young. The first BAT (Billing, Accounting, Traffic) system was installed under the IGM label in 1973. PSI was formed soon after and by the end of 1974 had signed 60 stations. Now, just two years later, PSI has a client list of more than 180 stations, all but about 10 are radio.

PSI offers five basic systems; BAT 1350, BAT 1400, BAT 1450, BAT 1500, and its most recent entry, BAT 1750. The BAT 1750 was demonstrated at the NAB convention in Chicago and made its first sale to WHK Radio, Cleveland, Ohio recently. (In BM/E's coverage of the NAB we incorrectly reported the price of the BAT 1750 as $57,000. The correct price is $78,950.) One major change in the BAT 1750 is a switch from a "diskette" to hard disc memory and the number of programs and reports provided.

The PSI systems feature an in-house concept with the core of the system, a video display unit and a Centronic's line printer. Each of the BAT systems, from the smallest up, can be up-graded with the addition of various pieces of PSI's hardware "family."

PSI sells its system through a lease/purchase agreement. Commonly, the lease is five years and the monthly charge varies, depending on the system, from $702.90 to about $1318. The price includes installation, training, and first year hardware service. There is no software service charge.

PSI is already interfaced with technical operations of both radio and TV according to PSI spokesman.

PSI is moving ahead in several areas to maintain the firm's standing, according to Joe Coons. "In the TV area," said Coons, "we've added a Film Inventory program which will be of interest and we're planning a system to handle automatic scheduling of music sele tions for radio broadcasters. We're expanding our ele tion reporting capabilities for all BAT systems and we' waiting for our first customer to give us the "go ahead for installation of the BAT 1500 and 1750 systems station reps or agencies for limited scheduling fur tions."

Marketron, Inc. based in Menlo Park, Californi has been in the broadcast automation business for s years. It has only been in the past year, however, th Marketron has emerged as a major factor.

The company, according to its president, Jer Cronin, maintained a low profile intentionally. The pu pose was to sew-up as many major O&O station clien as it could without being committed to offering system to large numbers of medium and small statior

However, with all the CBS radio O&O stations on client list, and with all the ABC radio stations with t exception of Houston accounted for, as well as thr Metromedia stations and WMAQ-AM/FM, KNER-AM of NBC radio, Marketron has come out of its shell with bang.

The firm was formed six years ago and until thr years ago, was purely a time shared operation with software package, ACT I, providing sales and resear analysis of the standard ratings. Three years ago, Mark tron went into ACT II, an in-house system concept t traffic and billing, featuring minicomputers and oth stand-alone equipment and has been slowly up-gradi its client list in the top markets.

Marketron primarily serves AM-FM stations and Jer Cronin estimates it has systems in more than 1 markets, either radio, TV, or station reps. ACT III, t reps, takes the rating oriented sales and research pr grams off time sharing and puts them in-house for ma rep firms.

"We've had to move slowly," said Cronin, "becau we were mostly shooting first for the owned and operat network stations. Some of the stations already had au mated systems so we had to bide our time."

Marketron got a big break when Compu/Net started shed some of its clients. ABC-AM-FM which was usi Compu/Net in some of its stations at the time, was formed that the service would be withdrawn effecti December 1st, 1975. ABC executives selected Mark ron as a replacement and soon moved the rest of th stations into the Marketron camp.

The Marketron ACT II system is the core of the co pany's concept. It utilizes a Cincinnati Milacraon mi computer, Cincinnati CRTs and a Tally line printer. T system is leased for between $2500-3200 per month d pending on the needs of the station.

Marketron plans a modified ACT II system for th in-house approach. Cronin believes that "with the st of the art in minicomputers changing rapidly we will able to create a modified in-house system which will well within the reach of smaller stations throughout country."

Jefferson Data Systems, Charlotte, North Caroli is a Division of Jefferson Pilot Broadcasting Co. L Cox Data Services, Jefferson began by developing automation system for the Jefferson Pilot stations then branched out to offer those services to other tions. The Jefferson system, however, is interesting that, though it uses an off-line time sharing system, it is busy developing an in-house stand-alone system.

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he System 80 that Jefferson began with uses station computers tied into a large host computer in Char-. The mini conducts daily business within the station is connected to the host computer during evening s for more complex functions. A new system from erson uses a Sycor 440 computer which is an ex-ely powerful mini. It will function completely as an ouse stand-alone system and will not rely on the lotte computers.

here are no plans at Jefferson to abandon the System which they feel is ideal for medium size stations and be used in a number of configurations to handle any of broadcast operation including AM/FM/TV sta-

fferson will continue software enhancement for both ms and is also offering their System 80 software to ons regardless of what hardware they currently have. rson believes that many stations, especially those created their own software will welcome this way f the EDP business. Plans and programming for the ical interface are well underway. Jefferson is work-with Grass Valley and Vital and expects to have ed out the software problems in the near future.

fferson Data serves 26 radio and TV stations and has duled 12 more installations for the remainder of

olumbine Systems, of Golden Colorado, is really rent in its approach. While Columbine remained f from the fray, it managed to sign 134 stations. Of otal subscribers, 108 are installed, ⅔ are radio and e TV.

olumbine is strictly a software house. Columbine not sell or service equipment. Instead, they recom-d to their clients a hardware package, usually the System 32. The basic purpose behind this recom-dation said David Ridge, vice president of Colum- "is the reliability of IBM hardware and demonstra-bility of IBM to support their hardware around the d." There is no formal arrangement between IBM Columbine.

olumbine merely puts the client in touch with IBM nakes recommendations for the hardware the station equire. The station does all the negotiating, decid-o lease or purchase, and IBM performs the in-tion.

olumbine trains station personnel and management naintains software enhancement. In addition, they h to the station from time to time as software con-nts and keep tabs on how the station is succeeding. price structure is based on the annual gross billing e station for the year preceeding installation and ins set at that level from that point on. The cost of vare is determined between IBM and the station but ly runs in the neighborhood of $1000 to $1300 per h. The software charge for a station with an FCC ted annual gross billing of $1 million would be monthly.

ftware development at Columbine is continuous. 3 months Columbine provides a software update ents at no additional charge. Recent programs in-general ledger and accounts payable. Though did say that Columbine sees the development of a ical interface as a future requirement, they have not t devoted a great deal of time to it since they have received a request for it from any of their s.

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Making A Heavy Radio Spot Load Easy And Economical To Handle

By Garry Schmidt

This system built for radio station WGPR-FM, Detroit, gives the operator, both in the studios and at remotes, easy, accurate access to any cart in four rotary multi-cart machines; playing is automatic in clusters of up to five carts. A novel feature is the use of the associated TV station's in-house monitor system to show cart status at all control positions.

Radio station WGPR, in Detroit, recently became radio-TV station WGPR, making history in the process as the first black-owned organization given a construction permit for a television station. The change involved moving to new, much larger quarters which would hold both radio and television facilities, with the radio facilities greatly enlarged because of the outstanding success of the radio operation.

As a part of the expansion plans for the radio station, WGPR's management specified an increase in the capacity and utility of a custom built cartridge handling system designed for the station by ASI some five years ago.

This system was described briefly in a November, 1973 BM/E article. Basically, the system allowed the selection, for play, of any cartridge in either of the station's two Carousel machines, via a telephone dial controller located at the console. The number of the cartridge (1 to 48, with 24 in each Carousel) was simply dialed in and the system commanded the correct carousel to rotate and tray the selected cartridge. A digital readout located in the studio verified the cartridge number and "cue up" status to the operator.

The system also had the unique ability of being controllable from a remote broadcast site, using phone lines to transmit data to the studio, and the station's SCA channel to send status verifications back to the remote site. In this way the man on remote could play all his own cartridges back at the studio via remote control, eliminating the need to have a studio "producer" perform the task. Because of the unusual audio switching and processing techniques we employed, a side benefit of the system was that the MCR studio could do double duty as a production studio during remotes since it was not required for cartridge playing.

While the system more than proved its worth, especially for the many remote broadcasts the station does, the ever increasing spot load at WGPR demanded an increase in capacity from two multi-play machines to four. This in turn required additional control circuitry. However, since the original system was designed so long ago, it performed its primary logic functions with relay/stepper circuitry. To add more of this type of circuitry would be both expensive and non-state-of-the-art, to say the least.

Mr. Schmidt is president, Audio Services, Inc.

It was decided at the outset by ASI's design engine that the new control system would be centered arou microprocessor circuitry. This revolutionary technolo allows the creation of a small scale, pre-programme on-board computer system economically and with only handful of components. This approach in turn opened a tremendous amount of design flexibility as well as t realization of further circuit economies. For exampl the need to provide a large number of discrete circuits perform functions as a result of specific input data eliminated by simply "instructing" the microprocess during its initial programming to carry out the designat functions itself. Thus, equipment control functions c be permanently stored in the microprocessor and carri out instantly upon receipt of the proper input conditio What would have required complex circuitry simp becomes a computer programming function with micr processor technology.

In addition, like its full scale counterpart, a mic processor computer's memory functions are unaffect by power failures, brownouts or other disruptions. Th a tremendous advantage over conventional TTL fl flop, latch-gate-shift register type memory circuitry c be realized since these devices are all voltage depend for proper memory functions.

By contrast, the only way a pre-programmed mic processor can be made to "forget" its designated fu tions is by exposure to ultra-violet light. Otherwise has been estimated that microprocessors can retain th memories for at least 20 years. Since ASI as a pionee the field of microprocessor technology for broadcast plications had already made the necessary commitme in equipment and personnel, work began immediately a functional design for the overall cart handling syste

One area of the original system that needed updat was the handling of multiple spot breaks. When the o inal system was conceived, WGPR's spot load was s that the need to dial up each cartridge manually was an operational problem. However, the increased load the station carries today made a change necessi Utilizing the memory capacity of the microproces our engineers developed a more flexible control sys in which a cluster of up to five cartridges can be ent into the system's memory at any time. As the numbe each cartridge is dialed, the memory automatic commands the multi-play machine in which it is loc

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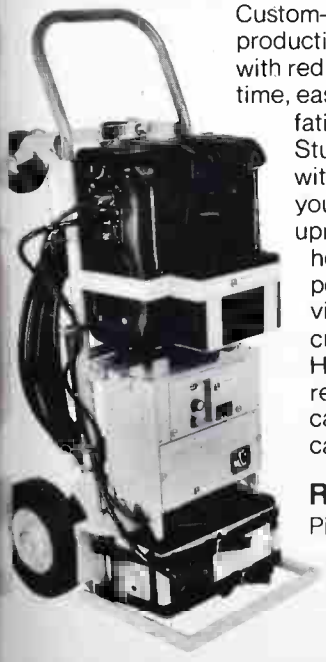

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to seek and "tray" (cue up) the correct cartridge.

The only deviation in this procedure comes when two cartridges in the same machine are scheduled in the same cluster. Obviously, since rotary tray type machines are used, the two cartridges can't be played back to back without dead air. This is the only concession that must be made in the scheduling of carts. However, if the first of the two "same machine" carts is run first in the cluster and the second in the third, fourth or fifth position for example, the computer commands the machine to seek and tray the first cartridge while retaining the identity of the second one in its memory. As soon as the first cart has played and re-cued itself, the memory would then automatically command the machine to seek and tray the second cartridge.

Thus, with the exception of two spots in the same machine running back to back, any cartridge in any of the four machines can be dialed up in any order. Audio switching from one playback machine to the next in the order called for by cartridge selection is also automatic. The point at which switching takes place can be controlled via the standard NAB EOM tones recorded on the cartridge. Audio from the next machine is switched on via the leading edge of the tone while the first machine is switched off as a function of the tone's trailing edge.

Further flexibility within the memory system was added so that the spots could be pre-programmed to follow one another automatically after the sequence was manually started with the "Take" button. Alternately all or some of the spots could be programmed to play one at a time by hitting the "Take" button for each spot. In this way a cluster with a live tag after the third spot, for example, could be entered into the computer in such a way so as to cause the first three to run automatically and then stop. The live tag would be voiced by the announcer who would then hit the "Take" button again to allow the remaining two spots to run automatically.

Each cartridge is assigned a number which appears on the program log for ease of selection. There are three digit numbers; the machine number (first digit) and tray number of the cartridge (last two digits). Thus, cartridge 322 would be located in tray 22 of machine 3. Spot numbers as well as double spot/non-double spot and "Take" commands are entered into the memory via telephone-type keyboard remote control units (the old system used standard phone dials) located in each of the stations' three new air/production studios as well as the new MCR and announce booth.

This remote control placement in itself offered several advantages. First, of course, was the ability to control the system from any studio in the station. Second, there were the cost savings realized by not having to equip each studio with a set of standard cart machines since each could access the centrally located cart system via the remote control. The third advantage was the elimination of the usual clutter of cartridges and cart storage racks as the multi-play machine is by its nature an automatic cart storage facility. In turn this central storage feature also meant that to move on-air operations from studio to studio was a simple matter of carrying the copy book and program log from one studio to another instead of also having to move all of the cartridges.

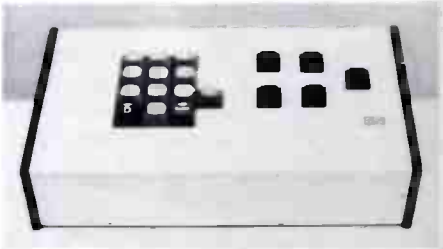
Playing news actualities

To facilitate operation of the system by the News Department, yet another function was programmed into the computer. Under normal operation, a cartridge commanded to play would do so only to the next stop cue recorded on it. It would then be ejected and the next cartridge to be played in that machine would be found and loaded on command of the computer.

However, for News Department use, when a number of actualities or outside reports are recorded on a single cart in sequence, this normal routine would be impractical. To solve this problem, the microprocessor was made to recognize the standard NAB 8 KHz tertiary tone as a command to not eject any cartridge with such a tone recorded on it.

To return to normal operation, the 8 KHz tone is simply omitted from the last cut on the cartridge. In this way, the newsman can dial up his actuality cartridge and play each cut in sequence as he needs it simply by repeatedly depressing the "Take" button. After the last cut, the system automatically goes back to normal.

Of course, the system would be totally useless without a readout device to provide a status check to the announcer/operator. With the old one-at-time cartridge selection system, a simple digital readout showed the cartridge number dialed and whether or not it had been



(Left) Announcer has control box under his left hand, can enter five carts for automatic play, or interrupt play at any time for live tag. TV monitor on his right shows carts entered for play, cued up, next in line.

(Above) Close up of control box for automatic cart-play system shows buttons for entering cart numbers in microprocessor memory, and function buttons that start and stop play.

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trayed. This arrangement would obviously be less than adequate for the new system which could dial up 5 cartridges in advance. Added to this came the need to indicate cue-up status, plus whether or not the cartridge had been flagged to double spot. The need for a more elaborate readout system was obvious.

It was here that the building of the TV station gave us an unexpected benefit. This was the decision by station management to simulcast the audio portions of some of the new TV station's programs in stereo and SQ Quad over the FM station. In turn, this necessitated TV mor toring facilities in the radio station's studios to ke simulcast operations coordinated. Therefore plans h already been made to run lines from the TV station in-house RF video distributor system into the rad studios.

The RF system was chosen so that inexpensive col or black and white home type TV receivers could be us for non-critical monitoring applications such as in offic and the radio studios. This would also allow easy mo toring of competing TV stations plus WGPR's ov closed circuit feeds on the vacant channels. Since t system would be available in all the radio studios a since there were still some vacant channels unassign for closed circuit use, some interesting ideas began develop.

We needed to display, for the announcer, a great d of information about the cartridge handling syste operation. This data was to include an "Edit" readout show the number of a cartridge as it is punched up on t keyboard. This function allows the operator a chance determine if he indeed selected the correct number. change a number he would merely enter the corr number for automatic erasure of the first.

If the number is correct, however, he would then en it into the "Next-To-Play" position of the memory hitting the "Enter" key on the control unit. This proc is repeated for the four remaining memory positions ea of which would also require a readout of a cartri number. Additionally, there was the need to disp "Cue" confirmation for the "Next-To-Play" cartri and whether or not each cartridge was meant to p automatically at the conclusion of the proceeding on

Our original intention was to use LED digital displa but then thoughts began to turn to those unused chann on the video distribution system. Why not use one them in conjunction with a character generator to disp system data? Not cost effective was the initial reacti Discrete digital readout systems were still more e nomical despite the large amount of data they wo have to display.

But then other ideas began to emerge as additio factors were entered into the equation. Factor 1: station had purchased an ASI Syncron Master Cl system to display synchronous real time and "b time" (for video taping purposes) at several po around both the TV and radio facilities. Additionally, electronic thermometer option for the clock had b ordered so that outside temperature could also be played on any of the system's remote readouts. design of the clock system was such that all of its fi tions could be displayed on a TV screen if another cl option, a character generator, was also purchased. Fa 2: The station had also ordered from us a custom signed studio switching system that allowed remote trol switching of any studio, the announce booth, cartridge handling system and certain remote lines t transmitter. This device also had status tally outputs could be easily interfaced to a character generator.

Factor 3: The station had purchased a Moseley DC digital remote control system for transmitter oper which also possessed status outputs that could easil interfaced to a character generator. Why not combin of this information and turn the TV monitor into a c plete station status center? At a glance the announ operator in any studio could not only see every me

Adapting The WGPR System To Other Stations

As a result of the success of the system at WGPR (see accompanying story), it was decided that other stations which employ multiple studios and/or originate a great deal of remote broadcasts could also benefit from such a unit. While remote broadcasting hasn't been used to any great degree by pop music stations in large cities for a number of years, our research showed that the "remote" is still alive and well at black, country-western, and ethnic programmed stations as well as the vast majority of small market stations.

And it is these very stations, most of which are smaller facilities operating on a tight budget, that could most benefit from the savings in equipment and personnel cost offered by the system. However, the original system was designed for one specific client's application. Therefore, some additional options were created in order to make it useful to a broader spectrum of stations.

For example, because WGPR plays all its music directly from records both in the studio and at remote sites, no provision was made in the system for handling music recorded on cartridges. However, since many stations do prefer to record music on cartridges, we developed two options that would facilitate this type of system utilization. One is a new remote controlled device that operates via the FSK data transmission system. This unit allows the operator/announcer on remote to fade under any music cartridge being played by the system back at the studio.

Alternately this could be done by the station itself by using the announcer's voice as a control input for a limiter which would pull down the audio level of the cartridge. However, if a slow fade is desirable, this method cannot be employed, tied as it is to the relatively fast attack time of most limiters.

The second device is actually a programmed function of the microprocessor. It's called the Format Follower and its function is just that. The station's record rotation is programmed into the system. This data is then used to guide the announcer/operator via the readout, allowing him to select music carts that fall within the group (hit, oldie, album cut, etc.) established by the format. If the station wants to exert a high degree of control, the Format Follower can also be made to prevent positively the selection of a music cartridge that is not within the proper rotation category.

For the station that requires only system data to be displayed in each studio, an LED type studio readout system was developed as an alternative to the more expensive TV readout. This unit displays all memory positions plus cue and double spot status. Interface units to match the microprocessor computer to the multi-play cartridge machines of a number of manufacturers were also developed. These include interfaces for the common-capstan non-rotary type units with which back-to-back cart playing in the same machine is possible. (The rotary-tray type machines employed at WGPR do not allow this, but offer greater capacity per machine which is why they were chosen.)

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Auitor displays current status of cartridge handling system, including "next to play." Announcer can make changes if needed by simple "edit" process.

tion, double spot or cue tally of the cartridge system, could also have digital readouts of time, temperature transmitter parameters as well. It was further pointed hat tally outputs of the switcher could allow a read- n words as to which studio or other audio source was ing the transmitter.

ıg the system from remotes

ıe final result can be seen in the photos; the various elements are described in the captions.

ıe concept of the original cart-play system was that it the production of the large number of remote broad- the station did each week, with in-studio use as a benefit. Today the station maintains an even larger ote broadcast schedule. Add to this the extra burden large number of multi-spot breaks and it's easy to vhy remote capability was just as critical for the new em as for the old. Thus, a great deal of time was ted to making the new system an even more ver- remote-broadcast production aid than was the orig-

ıe old system utilized a series of discrete, steady or ed tones (for cart number dialing) to trigger specific tions via phone line back to the studio. A similar system was used to transmit cartridge number and e up" status via the station's SCA channel back to remote site. Obviously the new system's expanded rolling abilities plus the large amount of status in- ıation required meant that the old discrete tone ap- ch could not possibly handle the data load between remote and the studio. It was determined that fre- ıcy shift keying (FSK) techniques would be the only tical way to move this amount of data reliably.

/e had gained considerable experience with FSK as a lt of our Syncron Clock System which uses the tech- e to transmit time information from the master clock to the remote units. Thus, it was a simple matter to interface the cartridge system to our already existing FSK designs. In fact, as a cost saving device, we decided to use a portion of the station's already purchased clock system FSK chain as the transmission medium between the studio and the remote. This was possible as a result of the Syncron design which sets aside a portion of the FSK chain for the transmission of user generated data via suitable interface options.

This link was used to transmit status data between the studio and the remote via SCA channel. Also, to save cost it was decided that the TV type readout would be replaced by an LED digital readout display. It was further decided that this display would consist of only two of the system's memory positions—"edit" and "next-to-play". These are the two most important positions in the system and represent the minimum information necessary for reliable operation. The readout unit also displays "Cue" and "Double Spot" status via individual LEDS.

The remote-to-studio data link was designed around a keyboard control unit similar to that utilized in the studio but with the addition of the FSK transmission circuitry. In this way, the entire system with its greater flexibility could be remotely controlled just as easily as its predecessor. The system was fed to the studio switcher as well as through normal console inputs in all of the studios. In this way both the remote broadcast's audio line and the four multi-play machines in the system can be fed directly to the transmitter through suitable audio processing gear. Thus, all studios are free for production duty during remotes just as with the old system.

The completed new cartridge handling system was greeted with a great deal of enthusiasm by the stations staff and management. All of the announcer/operators have been able to operate it flawlessly after only a short training period. **BM/E**

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ertical resolution and horizontal nts of 29 ns width. Twenty-eight , plus black, white, and two s of gray are optional. TELE-DN, INC. **308**

eather Antenna Tuning Unit) made of solid 3/16 in. num, is sealed, and finished with in-Williams Polane Polyure-Enamel to resist everything from ater to gasoline. ATU is vented, lid brass hinges, view port, in- bowl, hasp type lock and can be or wall mounted. FISHER-E. **309**

message generator capable of up to 16 lines of pre-pro-ned messages to existing video nation, has a library of 128 fine- characters which may be mixed order to make up fixed messages. ne titles are stored permanently in pated circuit memories. An inter- eyermixer adds shadow edged ters to color or monochrome signals. Controls allow ad- nt of character height and width rtical and horizontal position of messages up to 32 characters in . KNOX, LTD. **310**

station antenna terminal is de- to receive network quality tele-

continued on page 70

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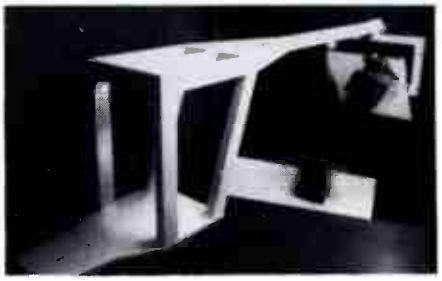
Noise reduction system card, K9-22, is a direct plug-in replacement for the

CAT-22 noise reduction card which forms the basis of the Dolby "A" system. Card option allows any 361, M16, or M24 Dolby "A" equipped studio to convert to dbx noise reduction. Cards are supplied in a Halliburton instrument case for ease of carrying. K9-22 cards may be purchased in any quantity at a cost of $250 per card. DBX, INC. **312**

Mirror/boom assembly, Model MBA 2, is an improved custom built unit designed for behind the camera control of a safe "Mylar" front surface reflector.



Primary use is in televising surgical operations but can be used wherever an overhead shot is required. Only camera requirement is reverse sweep capability. ACHRO-VIDEO, LTD. **313**

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bination lock and top carrying handle, filled with foam padding, pre-cut to accept CP-16R reflex camera, zoom lens, three 400 ft. magazines, two NC-4 battery packs, two NCC-6 chargers and other accessories. Case for standard CP-16 camera is also available. $250. CINEMA PRODUCTS CORP. **317**

Compact Dimmer Packs are designed for professional lighting applications and generally meet the stringent specifications of the industry. Type 620A provides six independent outputs of up to 2 kW and Type 450A provides four independent outputs of up to 5 kW. The power input for both units is 220-240V, 50 Hz single phase. Will interface with the Datalite 300, Datalite 100 (memory) and manual lighting control systems or any other control systems which provide 0 to +5 volts. DYNAMIC TECHNOLOGY LTD. **318**

Air-cooled tungsten-halogen light designed to be used hand-held, camera

mounted, or on a light stand is available. "Jet-Lux" is a 115 V light which uses an 850W, 3400K lamp and will project a light beam of 150 fc at 10 ft, and has a built-in motor-driven cooling system, 7.5 ft power cable, 'thumb' switch to turn off lamp and other features. CINE 60, INC. **319**

Telezoom Extenders for both the CP-16R and BNC-R, are designed to double the focal length of lenses for these cameras. The extenders slip on and off, and have "superb" optical resolution and color correction. Telezoom for CP-16R converts the 12-120mm Angenieux to 24-240mm and the 9.5-95mm. The Telezoom for the BNC-R fits both spinning mirror and pellical Mitchell cameras, as well as Mitchell and Arri Hard Fronts. It also doubles the focal length of prime lenses. BIRNS & SAWYER, INC. **329**

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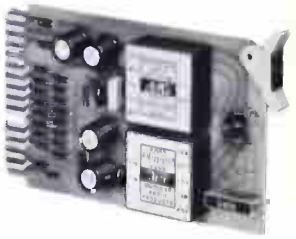

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"An Introduction to Software a Consultants" is an 8-page book that provides advice on the select and use of software consultants. Hew lett-Packard. 25

An 80-page catalog offers comple **data on base station and vehicul antennas,** cavity resonators, duple ers, transmitter combiners, receiv multicouplers, mounting hardwa coaxial cable and cable accessories. separate section is supporting technic data. Phelps Dodge Communicatio Company. 2

Brochure and data sheet on the **DF 3000 Digital Framestone Synch nizer** is available. Micro Consultan Inc. 2

A 12-page, two color catalog G, d scribes the features and applications **precision test instruments** for mea uring phase/gain, impedance, curre voltage, quality factor time/frequenc Dranetz Engineering Laboratories 2

A 16-page brochure describes ho products in SR line **of sound rei forcement components** handle critic sound requirements ranging in size a complexity from those presented mammoth outdoor concerts to intim lounges. Shure Brothers, Inc. 2

A new **catalog of lighting i struments and accessories** is ava able. Features developments in qua lighting, fresnel, and follow spo Packaged Lighting Systems, Inc. 2

A new **newsletter, 4-Channel F Forum,** began with its March/Ap issue. Provides news of developme in discreet quadraphonic broadcastir JME Associates, 6363 Sunset Blv Hollywood, California. 90028.

Literature describes the Sniffer **leakage and ingress detection syst** designed for trouble-shooting CA plants. ComSonics, Inc. 2

A 4-color brochure provides **specifi tions on a continuous Belt Ta Eraser.** Garner's Model 70 is signed to erase tapes in one 4-secon "hands-off" operation. Garner Indu tries. 2

A 4-page, 2-color data sheet descri **a new line of television transmitte** The transmitters described inclu VHF and UHF models ranging fr

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W to 2½ kW. Acrodyne Indus- Inc. **258**

w technical publication, Catele- , is being published to provide V and CCTV system engineers, actors and users with detailed lical and application information coaxial cable communications ms. Emphasis is on interface of , data, and audio signals with band networks. CATEL. **259**

ew 4-page brochure describes Series of **carrier noise analyz-** gives detailed specifications and a al description of new test sets, ned for rapid characterization of from microwave energy sources. eon Company. **260**

V: bibliography on cable televi- provides current research into ophysical effects of broadcast l radiation, $25. Communi- ns Library, 1535 Francisco St., Francisco, CA. 94123.

w 6-page brochure details the fea- and specifications of the Philips -25, **studio and field color ra.** Philips Audio Video Systems . **261**

ort form catalog describes **com- line of solid state amplifiers** linear Class A medium power to Class A/B or C high power 1000 W solid state RF amplifiers. Also includes a chart to determine the proper amplifier series based on the RF/modulation input versus RF/modulation output requirements. Microwave Power Devices, Inc. **262**

A guide to **The Standard Graphic Symbols for Cable Television** is now available. The guide provides a list of the most frequently used cable graphic symbols. Copies are available to NCTA members for $5 or to non-members for $8. Engineering Department, NCTA, 918 16th St., N.W., Washington, D.C. 20006.

The Broadcaster's Idea Booklet is a sketch pad of electronic systems for automatic transmitter logging, studio tape timing, program loggers, and remote transmitter logging. Employing readily-available components, these systems can be built by station engineers. Nationwide Electronic Systems. **263**

A new 513-page directory entitled, **Motion Picture Market Place 1976-1977,** has more than 7,000 entries which range from ad agencies to equipment sources, to production facilities, to wardrobe houses, nationwide. The directory contains 71 categories in all. $12.95. Little, Brown and Company, 34 Beacon Street, Boston, MA 02106.

A new 44-page catalog lists more than 400 **current and forthcoming books,** including subject areas such as: Broadcast-Management, General & Legal Broadcast Production, Films & Videotape; Broadcast Programming & Announcing; Broadcasting-Technical & Engineering. Tab Books. **264**

A new joint catalog has been issued which lists more than 1,150 types of **internationally used electron tubes.** In addition a comprehensive Equivalents Index lists nearly 4,000 types that can be replaced by these tubes. The GEC Electronic Tube Company Ltd., Chelmsford, Essex, England, CM1 2QU.

A 12-page, four color catalog describes a complete 1976 **line of TV-VTR furniture.** Features a new walnut woodgrain finish, and includes completely mobile lock-up and open shelf TV and VTR centers. Bretford Manufacturing Co. **265**

A **comprehensive plastics catalog** is available designed to convey current, concise information applicable to purchasing plastic material. The last 9-pages contain property charts, specifications and useful conversion charts. AIN Plastics, Inc. **266**

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