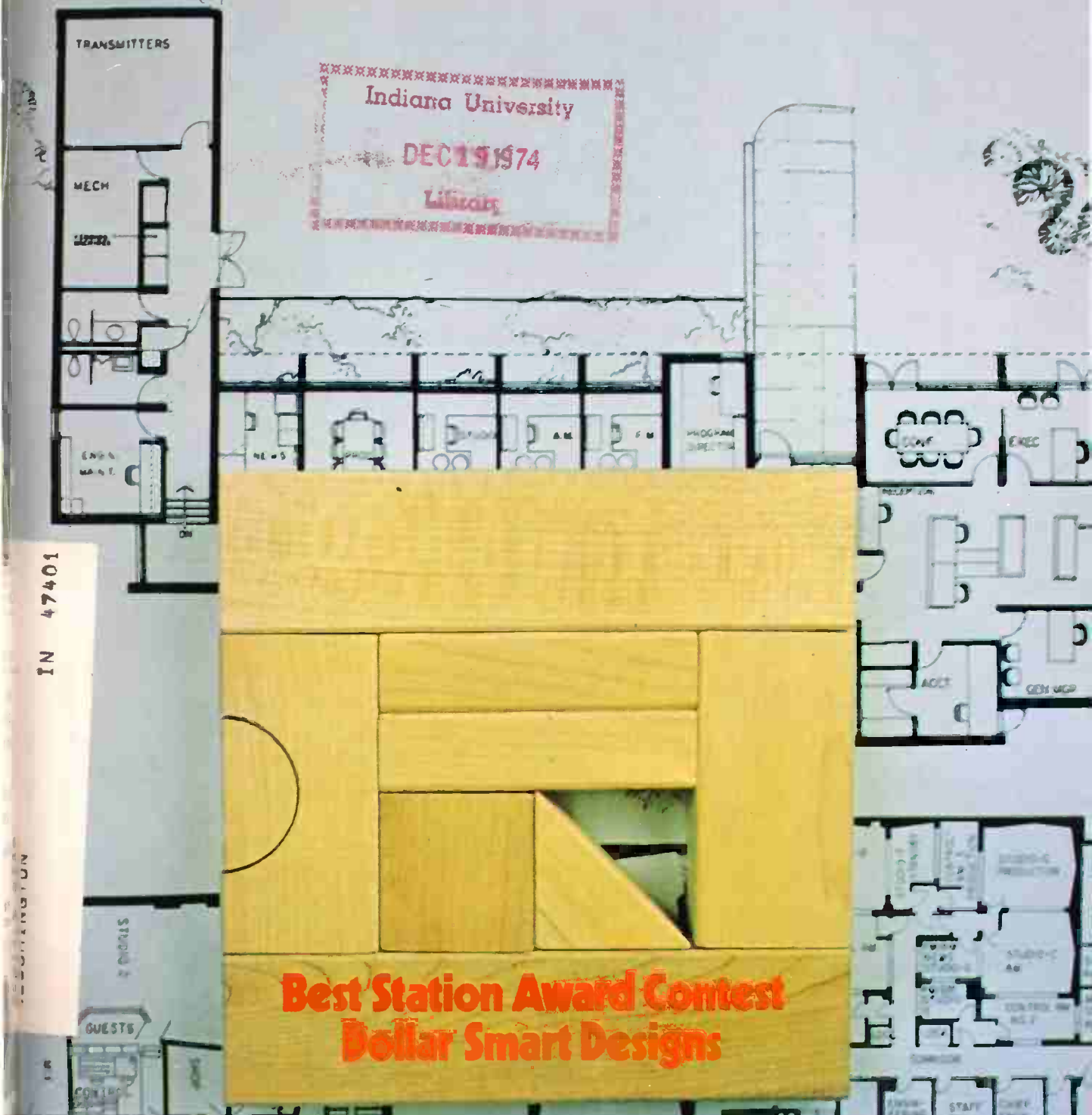
DECEMBER 1974

BM/E

BROADCAST MANAGEMENT/ENGINEERING



Best Station Award Contest
Dollar Smart Designs

Any editor, film or video, can master our EA-5 helical VTR editing system in less than 15 minutes. That's a fact!

Furthermore, we will install the EA-5 system in less than an hour. And that's a fact.

How does it work?

In some respects, TRI's film approach to video tape editing will remind you of a film editing table. You edit, in a "hands on" technique, picture by picture. The electronics? 12 fool-proof buttons run the whole show. No time code. No tones. Just normal off-the-shelf tapes.

Availability? Well, we've already delivered 80 systems around the world and, we can deliver your EA-5 system in 30 days.

The price? $4,600.00. Complet Total. No add-ons. Period. Seem fair to us.

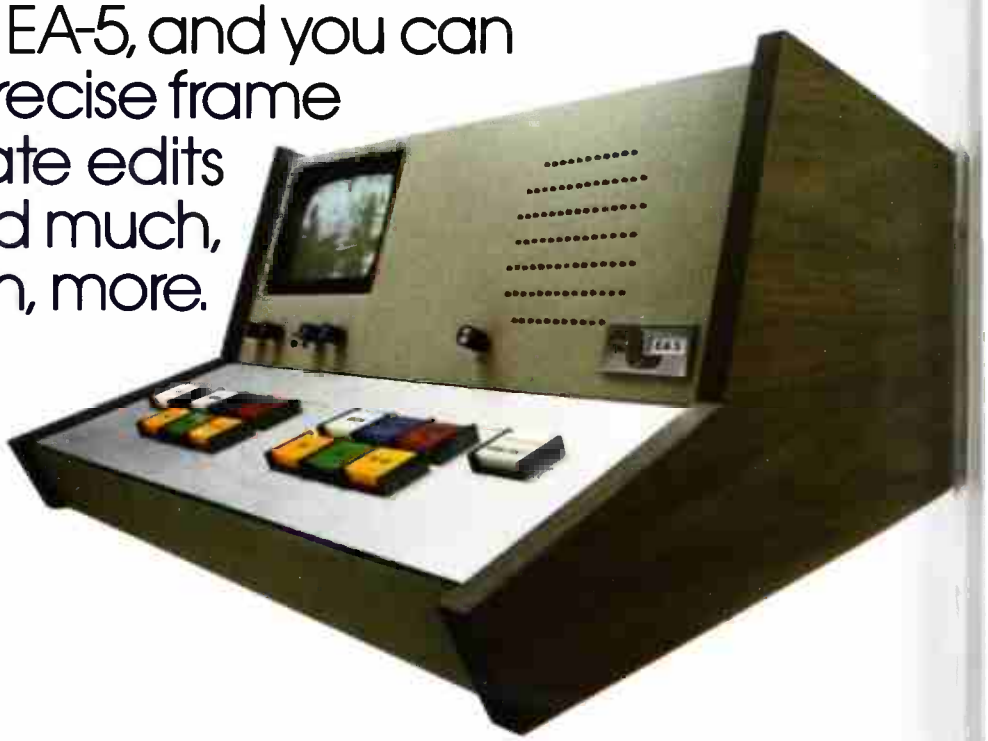
Want more information? Conta us or the best video systems distributor in your area. Chances are he's our distributor.

TELEVISION RESEARCH INTERNATIONAL, INC.

TRI

"Manufacturers and distributors of Creative Freedo

Take two helical VTR's, add our EA-5, and you can make precise frame accurate edits and much, much, more.



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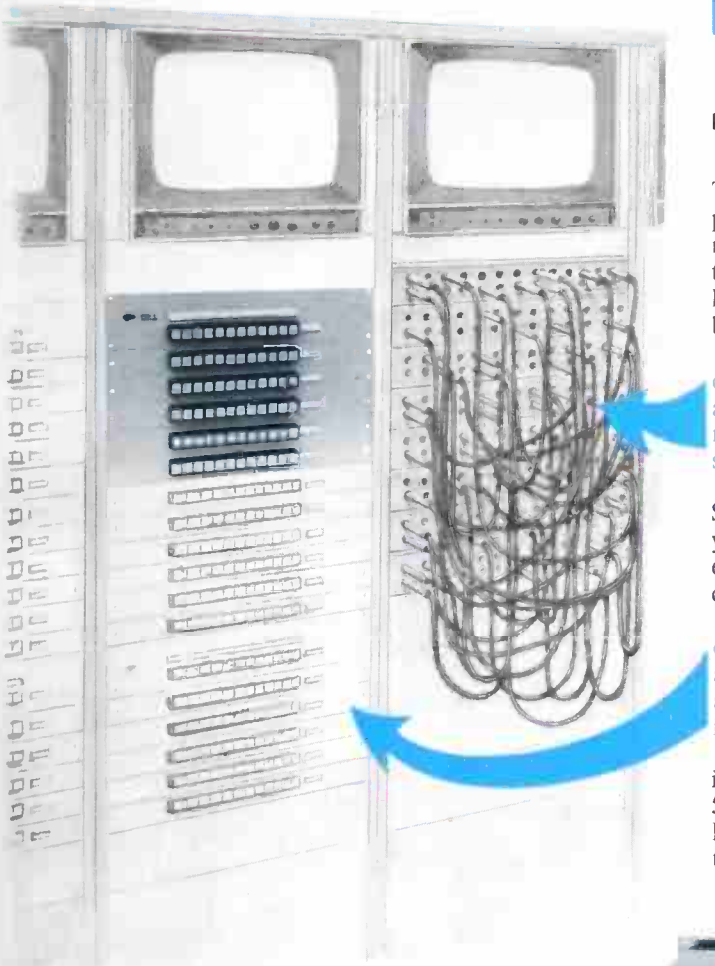
Circle 100 on Reader Service Card

EXPANDABLE AUDIO/VIDEO SWITCHER ELIMINATES PATCH CABLES



DYNAIR'S SERIES-X SWITCHERS ARE TOTALLY MODULAR WITH FIELD EXPANSION CAPABILITY

That's right. Now you can replace your video/audio patch panel with a routing switcher made up of off-the-shelf modules. You get the versatility of a custom system with the price and reliability of volume-produced electronics. It makes your signal routing easier and your system looks better too.

Messy, tangled patch cables are a thing of the past. The confusion of patching is being replaced with the simplicity and professionalism of pushbutton selection . . . a more reliable, more compact and – in many cases – less expensive approach.

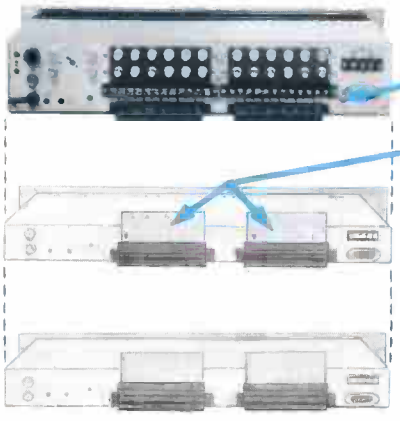
You receive a lot of other extras when you go the Series-X route. Like illuminating pushbuttons, which give you an instantaneous indication of signal routing. And . . . each pushbutton can be easily labeled in the field to indicate the signal it controls.

Expansion is easy too . . . you simply add input or output expansion modules as required. Up to 36 inputs and 120 outputs without adding external DA's. Inputs are added in increments of six or twelve, and outputs are added in increments of one.

Unlike many other switchers of this type, the Series-X is a broadcast quality unit. Worst case crosstalk isolation: 50 dB at 3.58 MHz. Frequency response: 12 MHz, ±0.5 dB. Differential gain: less than 0.5%. Differential phase: less than 0.5°. State-of-the-art integrated circuit design.

Plug-in modular construction simplifies servicing and allows various options to be added in field. Liberal use of integrated circuitry.

Precisely regulated power supply designed for continuous-duty applications.



Master 12 x 1 switcher supplies power for up to eleven output expansion units. Unique 3-way connector for signal and power bridging.

Etched circuit interconnect.

Output expansion units provide one additional output each. Receive power and signals automatically when plugged into switcher. Switchers of almost any input-output configuration can be easily assembled from off-the-shelf modules; inputs or outputs can be added in the field.

The new Series-X provides exceptional performance at prices which are, in most cases, much less than competitive versions. For reference, a 12-input, 12-output audio-follow-video Series-X occupies only 22¾ inches of standard rack space and costs only $4495. Wouldn't a Series-X switcher solve some of your distribution problems?

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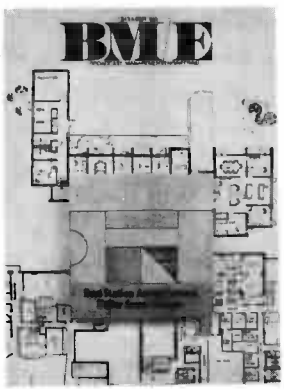

Presenting the entries for the BM/E Best Station Award Contest for 1974. Help pick a winner. Turn to page 26 and vote.

BROADBAND INFORMATION SERVICES, INC.
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Editor
James A. Lippke

Associate Editor
Robin Lanier

Washington Editor
M.L. Hollowell

Contributing Editor
Robert Wollins

Assistant Editor
Djuna Zellmer

Art Director
Gus Sauter

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Helen Horan

FCC Counsel
Pittman Lovett Ford and Hennessey

Publisher
Charles C. Lenz Jr.

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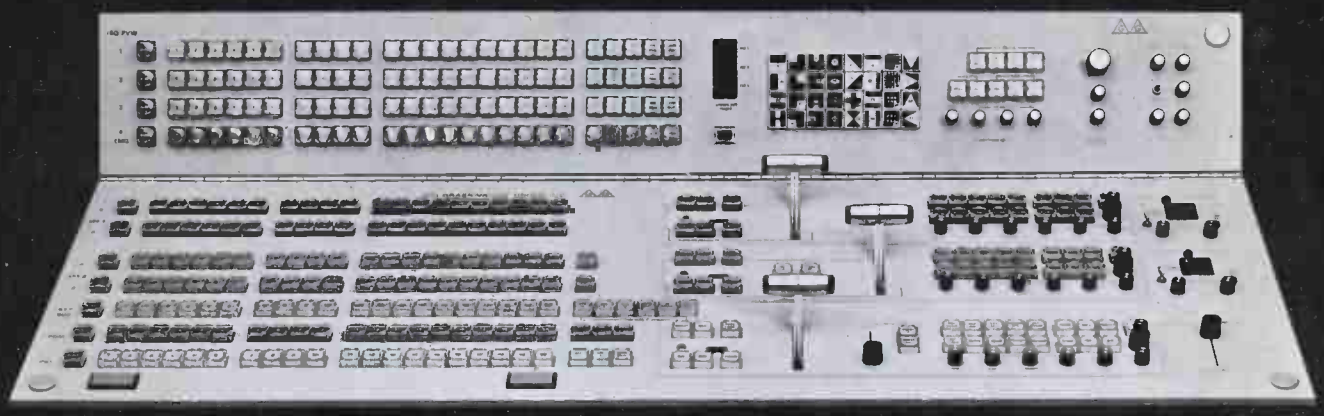
However, should your requirement indicate the need for a modified or custom-built system, our staff of experienced system engineers is available to work with you to provide a switcher which meets your exact needs. In particular, our new 1600 Series models employ a flexible design format which can be modified or customized with relative ease.

Consult your nearest Grass Valley Group field office for further information.



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BROADCAST INDUSTRY NEWS

FCC Moving Toward Auto Transmitters, Chief Engineer Tells IEEE Meet

The day of the automatic transmitter, with meter logging a thing of the past and performance regulated by off-air monitoring, could come fairly soon if the FCC moves promptly along lines indicated by their chief engineer, Raymond Spence, in a talk to the Annual IEEE Broadcast Symposium in Washington.

The Symposium, October 14 and 15th at the Washington Hotel, drew registrants from coast to coast and as far north as Alaska, with speakers from the U.S. and Japan.

Mr. Spence, in his luncheon talk, emphasized that his projections were "personal," rather than official, at this time, but a strong hope that the FCC would go along was evident. He said that current transmitter technology made meter logging obsolete, with the FCC changing regulatory focus from the *means* of transmitter control to the quality of the *result*. This will throw responsibility on the station operator for *how* he gets the result, with the engineering staff becoming more important in the total scheme.

A highlight of the Symposium was a demonstration of transmission through the ATFS-6 satellite, with a live broadcast from Denver, Colorado, beamed directly to a "ground station" on the roof of the Corporation for Public Broadcasting offices in downtown Washington, just north of the White House. Engineers at the Symposium, in a conference room at CPB, queried the staff of the Federation of Rocky Mountain States in Denver by telephone and got immediate via-satellite answers, on screen in full color. (Editor's Note: A detailed account of the ATFS-6 series of experiments appeared in last month's BM/E.)

continued on page 8

Sportscaster Uses "Split" Phones for Three-Way Listening

Using one phone to monifor program progress, the other of a "split" pair to hear cues from the studio, and with foam sound-transparent cushions that let through a moderate level of ambient sound, Jack Brickhouse, sportscaster at WGN, Chicago, keeps track of three ongoing activities. The attached dynamic mike of his Annunciator headset (Television Equipment Associates) picks up his own commentary. The foam cushions let him hear crowd noises, stadium announcements, and comments of colleagues in the booth with him. All he has to do is keep it sorted out in his head!

BM/E Plans 2nd Tour To Montreux TV Symposium

The TV industry's most prestigious convention, The International Television Symposium and Technical Exhibition, Montreux, will be held May 23 to May 29, 1975. The coming year marks the ninth such gathering which draws visitors from nearly every country in the world. To make it practical for a larger number of U.S. and Canadian broadcasters to attend, BM/E plans group tours to the Switzerland attraction. A large contingent will be those who participated in BM/E's 1973 international TV tour. The tours will include registration fees, round-trip air-fare and up to seven nights at a first class hotel (deluxe accommodations also available). Tour options will permit side trips before and after the symposium. All flights are on Swissair.

Visitors should expect to see the latest developments worldwide in image sensing, color production and transmission. As BM/E tour members learned in 1973, U.S. technology is not necessarily state-of-the-art. (See Montreux Worldmarket place for Broadcasting Equipment, BM/E September, 1973.) Future of digital techniques, satellites, and broadband cable will be explored. Social activities include events at the newly completed casino.

For more details about BM/E's group tour, call or write today: International TV Tour, BM/E, 274 Madison Ave., New York 10016. 212-685-5320.

Enter Stage Two of the U-Matic Revolution... Teleproduction!

The Sony U-Matic Videocassette System revolutionized people's thinking about many uses of television. Distribution and playback of videotape became easy, economical, reliable.

And now, another Sony breakthrough. The Sony VO-2850 U-Matic mastering recorder and editor that will change traditional thinking about teleproduction. A mastering and editing machine that is superior in performance to any existing 1" high-quality reel-to-reel unit.

Technically Superior.
Signal to noise ratio of 45db for video and audio. Separate editing capability for video and *two* audio channels, independently or together. AGC or manual control. Stop-frame. Slow-motion. Feather touch push-button controls. Proven reliability.

And much more.

Precise Electronic Editing.
Achieved through the use of a vertical blanking switcher plus capstan servo system with V-lock coupled to rotary erase heads.

Tape to Tape Editing.
Accomplished by combining two VO-2850 units and the RM-400 automatic editing control unit. This combination provides search (slow speed playback), pause (precise frame location) and automatic tape back spacing for glitch-free edits.

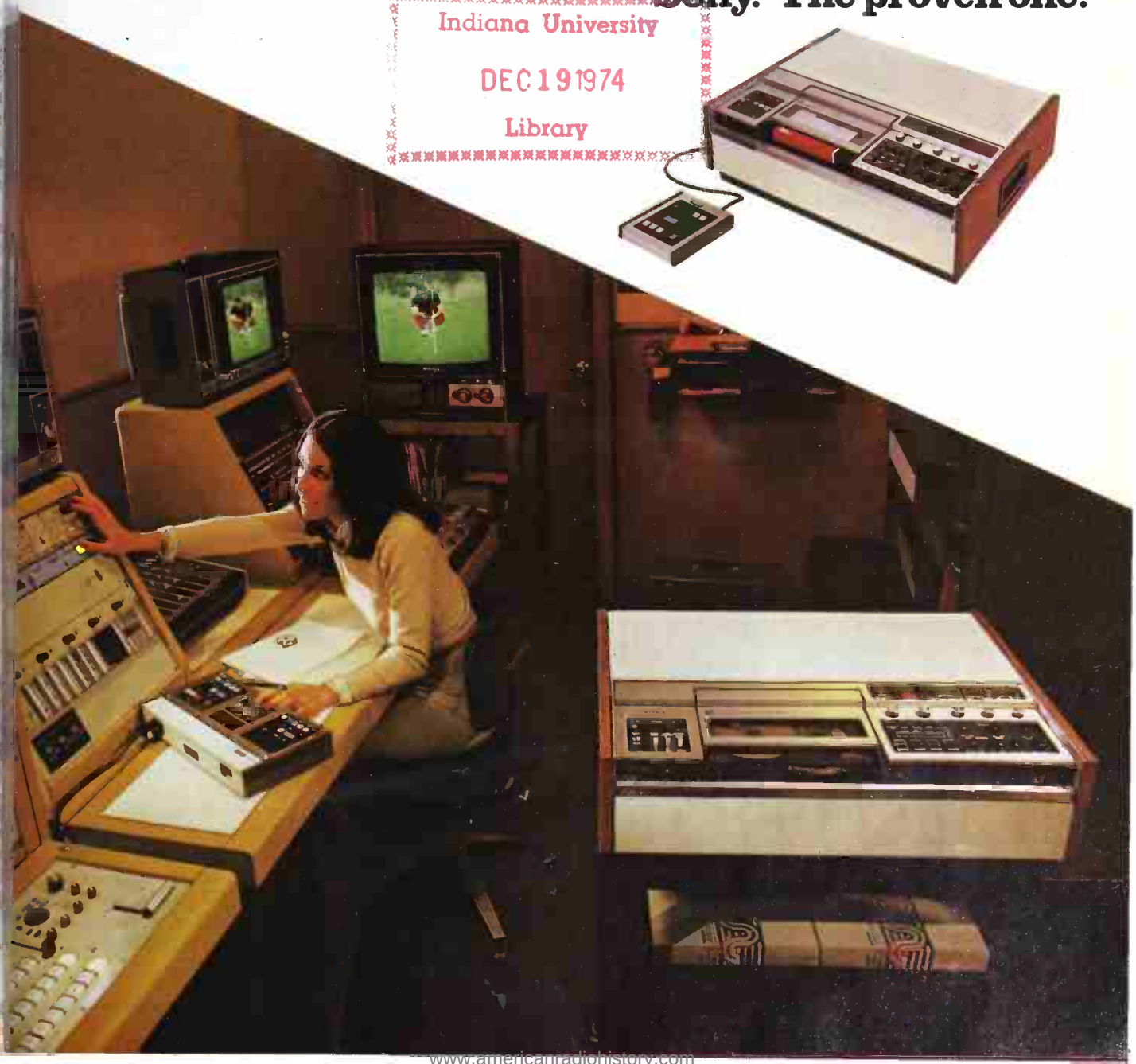
Lower Cost.
The VO-2850 costs substantially less than comparable 1" equipment and affords the continued economy of using ¾" tape.

The VO-2850 can also edit your field-recorded cassettes made on the VO-3800 portable U-Matic recorder. Your finished master is ready for duplication and can be played back on any U-Matic unit. And, in addition, you've saved a generation by working within one format.

Evidence of how significant this new development is can be found in the broadcast industry, which has already begun to change its traditional methods of mastering and editing (for electronic news-gathering) to include the VO-2850.

Hard to believe? We'll prove it. Write today on your letterhead and we'll arrange a demonstration. Once the VO-2850 is in your studio, you'll never let it out. The address is:
Sony Corporation of America
Video Products Dept. BME-124 201
9 West 57th Street
New York, New York 10019

Sony. The proven one!



NEWS

A few of the papers, which covered many aspects of broadcast technology, were: Synchronous Detection of TV Modulation, by A. H. Bott, of Harris Corporation; Digital Video Recording, by Frank Davidoff, CBS; New Electronic News Gathering System, by M. Sugimoto, of NHK; Circularly Polarized TV, by M. Siukola, RCA; Construction of NPR Studios, by George Geesey, National Public Radio; Vertical Interval Techniques, by John Ball, Public Broadcasting Service.

Automatic Transmitter Ruling Coming—Kassens Reaffirms

The number one engineering objective in the FCC's re-regulation campaign has been to rewrite the rules to permit automatic transmitters, Harold Kassens, Asst. Chief, FCC Broadcast Bureau told engineers attending the NAB Fall Conference, New York. Rule making should be out in six months. Once that "biggie" is taken care of, the Bureau will start a detailed reappraisal of all Part 73 rules.

In the meantime, other easier rule changes have been dropped off. Significant item in Docket stage now covers remote pickups (Docket 20189). Kassens said objective is to "try to make it (broadcasting rules) like those covering taxicab mobile radio operations." In an earlier presentation, Fred Zellner, manager of allocations, ABC, outlined key points of Docket 21089, and told engineers to respond, since revisions may effect a station considerably as spectrum space keeps shrinking, and demand for remotes grow.

Kassens said most recent rule change (Oct.) cleared up confusion on how to use extension meters. (An extension meter can now be located 100 feet from the transmitter and located on one floor above or below the transmitter.)

The Bureaus approach to re-regulation, Kassens said, was to first clear up messy items long on the agenda before tackling the automatic transmitter and Part 73 overhaul. Thus the changes in rules covering operators and frequency monitors were accomplished first.

The automatic transmitter rule change will be biggest departure from the past. Assuming the transmitter system will monitor its own frequency, power and modulation and shut itself off if deviations ex-

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EIMAC provides reliability year after year—and now offers a 3,000 hour warranty.

For years, the industry-wide standard warranty for power grid tubes has been 1,000 hours.

For years, the operating lifetimes of EIMAC tubes have exceeded this warranty — reducing down-time and boosting on-the-air time in thousands of transmitters. So, EIMAC offers a new warranty policy for 81% of all standard power grid tubes: 3,000 hours/1 year, with prorated adjustment from 300 to 3,000 hours. Failure during the first 300 hours results in complete replacement.

This warranty is a direct result of reliability that has been built into every EIMAC product for the past 40 years. Our 3,000 hour warranty stands as proof.

For details about which tube types are covered by the new warranty, contact EIMAC, Division of Varian, 301 Industrial Way, San Carlos, California 94070. Or any of the more than 30 Varian/EIMAC Electron Device Group Sales Offices throughout the world.

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ceed limits, there will be no need for meter reading, remote control, and logging rules. There will be no FCC requirement for a first class operator to be on hand. The broadcaster will perform these once-mandatory functions only to the extent that he chooses to do so for preventative maintenance purposes.

In response to questions from the audience, Kassens said any FCC proposed rule making on a discrete quad system is, at the minimum, a year away—if indeed the over-the-air test underway in San Francisco shows that interference with normal broadcasting is not a problem. (The FCC will pick a single compatible discrete system and will not set rules regarding matrix coding and decoding schemes. The public should decide which quadraphonic approach to buy, or listen to, Kassens said.

Kassens said the FCC has no plans for a rule making on sampling standards for directional antennas since the experts are in disagreement. Still in limbo: what constitutes a responsive environmental impact statement (now required for antennas above 300 feet); FCC analysis of OTP's VHF drop in proposals; FCC analysis of FM channel allocations, including, particularly, educational assignments. The FCC's new computer will help in these studies, Kassens said.

Circular Polarized TV: First Tests Positive

Substantial reduction of ghosting and of co-channel interference, without increase of fringe-area interference, appear as potential benefits of circularly-polarized TV transmission on the basis of tests underway at ABC's WLS-TV, on the Sears Tower in Chicago.

Preliminary reports on the tests have been made by consultants Smith and Powstenko. Background information was given in the IEEE paper, noted in the preceding story, by Dr. M. S. Siukola of RCA, who sketched the general theory and technical advantages of circular polarization in TV. RCA built the antennas being used in the WLS-TV tests. Dr. Siukola pointed out that discrimination against ghosts is based on the fact that the sense of rotation of the transmitted signal and of the receiving antennas must be the same for maximum signal pickup; the rotation of reflected signals is reversed, so that a properly designed antenna tends to reject them. Some other benefits noted by

NEWS

Dr. Siukola were: good reception on either horizontal or vertical receiving antennas; general simplification of the receiving antenna problem.

Associated Press Opens News Service in Sound

A news service in sound by the Associated Press began operations on October 1st, with an initial 200 member stations. Fed directly to members are reports from around the country and the world, including spot news as well as "features" on agriculture, business, sports, economics. The first 24 hours included 21 hourly newscasts, 198 actualities and voice reports, nine sports programs, seven business reviews. The new operation, called AP Radio, is based at 1825 KST, NW, Washington, D.C.

Foster Cites Public Groups Favoring Pay Cable

From the other side of the pay-cable battle line, David Foster, president of the National Cable Television Association, said that the FCC should listen to the many public interest groups asking for easing of restrictions over pay cable. "More than 85% of the comments (filed recently) called for relaxation or elimination of the pay cable rules," he said. Support came from many groups with no vested interest in cable, he added, including Lincoln Center in New York, the Kennedy Center in Washington, sports associations, and about 70 other public interest groups, educational institutions, trade unions, financial analysts, government agencies, etc.

NAB Fights Any Loosening of Anti-Siphoning Rules

The battle between broadcasting and cable over the "antisiphoning" rules of the FCC keeps rising in intensity, with the National Association of Broadcasters and the National Cable Television Association firing opposing salvos of "information" and arguments to the public, the Congress and the Federal Communications Commission. Among the latest from the NAB were pleas to the FCC restating the broadcaster's stand that the FCC has a "statutory mandate" to prevent the loss from "free TV" of entertainment and sports programs. NAB specifically

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NEWS

opposed the four-year "experimental" lifting of anti-siphoning rules, saying it would result in "grandfathering" of the relaxation.

equipment, as well as general cine work. Processing facilities have already been opened in many cities, Eastman Kodak announced. The maker also says the new film has considerably improved grain and sharpness characteristics over the former color negative, giving better TV resolution, whether the release form is film or videotape.

New Color Negative Film Speeds Ad Production

A new color negative film from Kodak, 5247/7247, rated 64 in daylight with an 85 filter, and 100 in 3200 K tungsten illumination (four times faster than earlier color negative), is aimed for fast production of location commercials with 16mm

DuPont Will Make and Sell Norelco Video Cassettes

A new source for the ½-inch Norelco VCR cassettes in this country will be the DuPont Company who started to manufacture and market them in October, according to a Norelco announcement. Under a DuPont brand name, the cassettes will be made in the 20, 30, 50 and 60 minute sizes. DuPont has been producing tape for some time for the Philips VCR in Europe.

New Town Starts With Two-Way CATV System

Woodlands, a 20,000-acre new "home town" being built north of Houston, Texas, will have a CATV system with a number of two-way services installed by Tocom, Inc., Dallas cable system manufacturer. Initially there will be up to 31 channels of TV reception, plus fire alarm, police and medical alerts. The system has full potential for pay TV, education and local programming, meter reading, opinion polling, house shopping, remote control of devices, and other advanced communications services. The town is planned for an eventual population of 150,000 people, with a phased construction to be completed in 1992.

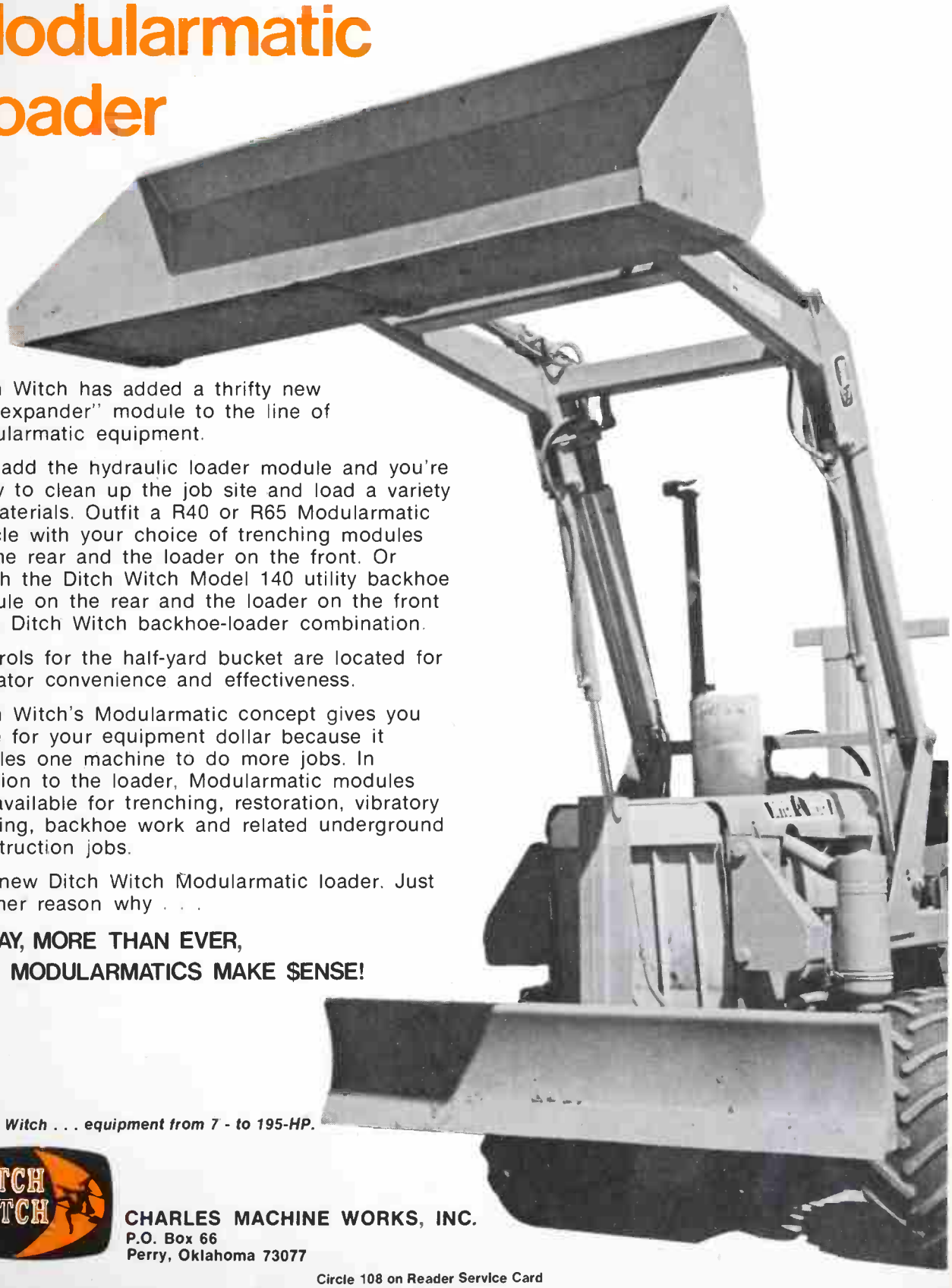
Faster Temporary Cable Authority Under New Rule

The FCC has amended its procedures for handling requests from cable operators for special tempo-

continued on page 21

Today, more than ever, Ditch Witch makes $ense.

The New Ditch Witch Modularmatic Loader



Ditch Witch has added a thrifty new "job-expander" module to the line of Modularmatic equipment.

Just add the hydraulic loader module and you're ready to clean up the job site and load a variety of materials. Outfit a R40 or R65 Modularmatic vehicle with your choice of trenching modules on the rear and the loader on the front. Or attach the Ditch Witch Model 140 utility backhoe module on the rear and the loader on the front for a Ditch Witch backhoe-loader combination.

Controls for the half-yard bucket are located for operator convenience and effectiveness.

Ditch Witch's Modularmatic concept gives you more for your equipment dollar because it enables one machine to do more jobs. In addition to the loader, Modularmatic modules are available for trenching, restoration, vibratory plowing, backhoe work and related underground construction jobs.

The new Ditch Witch Modularmatic loader. Just another reason why . . .

TODAY, MORE THAN EVER,
OUR MODULARMATICS MAKE $ENSE!

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

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That's because the TKP-45 can match the
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And because the TKP-45 is more versatile

Put it on a tripod and you have a broadc
quality camera that's unmatched for mobili

Add the remote pan and tilt system and it
everything, minus the cameraman.

Now add its small price to its small size ar
you have a color camera that will neither c
an arm and a leg nor strain one.

And that's only the half of it. Because whe
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what you've always wanted in a portable c
camera.

For more inside information on the TKP-45,
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N.J. 08102.

45
out

ide the studio, you'll find that the TKP-45
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ples.
ie of which are either too big in size (back-
ng).
ot big enough in quality (heartbreaking).
TKP-45 weighs only 22 pounds (with the
And doesn't require a heavy backpack or
bulky cables that trip you up.
, there are fewer controls to manipulate.
use the TKP-45 has all the famous automatic
es of the TK-45.
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black balance. And automatic iris.
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or more convenience. More operational
city. And greater performance.
TKP-45. Another reason why users of high quality color cameras buy RCA more than all other makes combined.

For more outside information on the TKP-45, write RCA Broadcast Systems, Bldg. 2-5, Camden, N.J. 08102.

RCA

How We Boosted The Efficiency of Our Newsfilm Operation

By Steve Tello

By standardizing on a 16mm camera designed especially for TV newsfilming, WPLG-TV, Miami, in an area tough on cameras, gave the news photographers a big lift in efficiency and greatly reduced maintenance and repair problems.

WPLG-TV's "Magnificent Seven," and their leader. Top Row (left to right): Chief Photographer, Steve Tello, Abdiel Vivancos, Hunter Bloch, John McBride. Bottom row (left to right): Randy Fairburn, Lennie Yeoman, Emilio Rangel, Al Rodriguez.

Steve Tello and Dave Hack of Image Devices, camera dealer in the Miami area, inspect damage to CP-16 camera which was thrown to the ground by an irate news subject armed with a gun. Another potential danger is salt spray but with cleaning, corrosion is no problem.

When I was first named Chief Photographer a WPLG-TV 10, Miami, everybody congratulated me And I was very pleased to have the opportunity t demonstrate what I could do to improve the newsfilm coverage of our station. I guess I really did not know what I had gotten myself into.

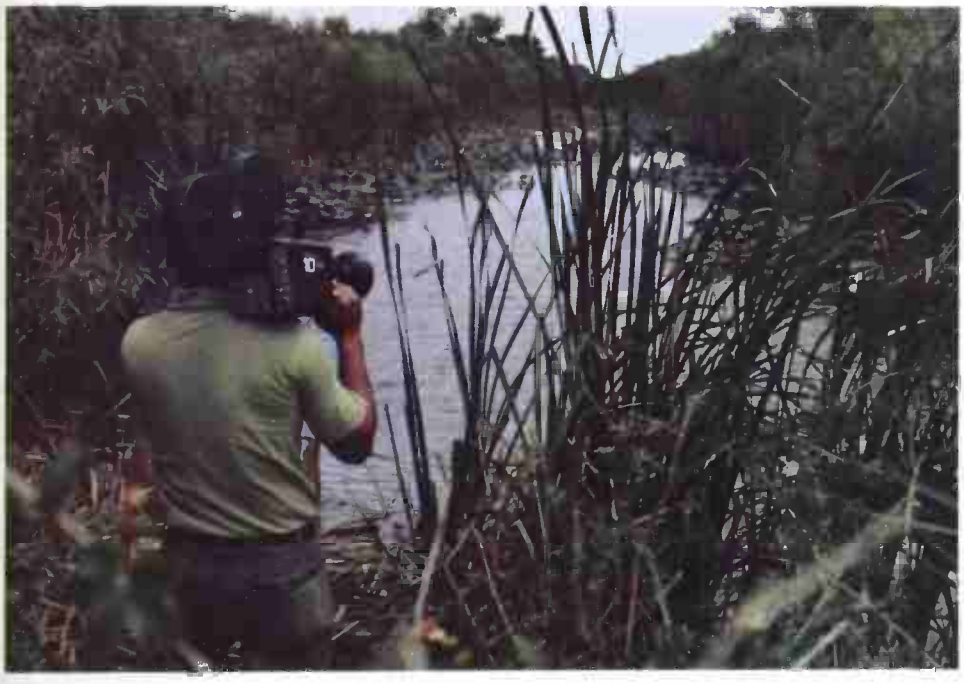
Though I am sure that the kind of problems I ran into are encountered daily by many other Chief Photographers, ours were aggravated by the particular geographic location of Miami and the prevailing weather conditions in the area. This short article is an attempt to present one man's solutions to these problems, I must say though, from the outset, that I was most fortunate in that I had an extremely responsive station management on my side—a critical factor in the successful solution of our problems.

Since Miami is actually a peninsula, with the Atlantic Ocean to the East and the Everglades to the West, our area might seem just a narrow strip down the Gold Coast. But the area we cover in our news is very much larger because we are responsible for any stories that may break in surrounding territory. A recent airplane disaster in Florida is a dramatic case in point. The wreckage of the plane was strewn over a huge area, and the search for the remains of the plane and any possible survivors was extremely difficult. The story took several days to cover. We went back and forth via helicopter and we shot most of our newsfilm from helicopters. Naturally, we needed the lightest equipment to go out there, and yet, we needed full sound capability when we got there.

The Everglades are right at our back door, and certainly anything that happens there, whether an airplane crash or exploratory drilling for oil, is part of our news beat—as would be oil slicks in the Gulfstream and anything else affecting the ocean in our vicinity.

Mr. Tello is Chief Photographer, WPLG-TV, Miami

Steve Tello filming from helicopter. "Because of the Bay, and the ocean and the Everglades in the Miami area, a helicopter is the fastest way to cover spot news.



Al Rodriguez filming in the Everglades. The normal hazards to camera equipment may be aggravated by a dunking in the Everglades muck.

We find that using helicopters is the fastest way to cover spot news in these hard-to-get-to areas. This in turn dictates certain requirements regarding the choice of equipment that we use in our newsfilm coverage: all our equipment must be portable and extremely lightweight. The equipment also has to be extremely rugged to withstand the elements: salt water, sand, torrential rains, "Everglades muck," the Miami blistering heat, etc.

I have been a professional photographer long enough to be fully aware of the fact that cameramen are often at the mercy of their equipment. One of the things I found out when I first assumed my new duties was that I was spending a tremendous amount of time on the phone talking to the manufacturers and service centers of the different makes of equipment we had in our News Department. We had three different makes of motion picture sound cameras, plus conversions. Included were all types of batteries. And, of course, all those assorted cables for power and sound.

I wanted to put a stop to going to three different manufacturers to find parts, and trying to guess which service company would give faster service. I thought our service and maintenance of equipment problems would be much simpler if we dealt with one manufacturer only. We also decided that if we all had the same type of camera, we could interchange batteries, amplifiers, sound heads, lenses, in emergencies.

The Cinema Products CP-16A seemed to have the

Continued on page 18

NEWS FILM OPERATION

qualities we were looking for. It is extremely quick t set up for sound filming, has "modular" features s major units can be replaced instantly, has a pop-ou slide-in five-second magazine reload. All this is ver important for the guy who works as a "one-ma band," shooting and recording sound on film, which the way we work at WPLG. The out-of-sync signa light and automatic gain control features of the CP 16A, make him less likely to commit audio errors.

Understandably, budget considerations make it im possible for any local station to convert all at once t new equipment. Top management at WPLG-TV wa extremely responsive though. Our first new camer delivery was about two years ago. We have recentl received our seventh! This is quite remarkable.

Since converting to new equipment was, of necessi ty, a gradual process, we have taken the precaution o getting an auxiliary side cover for our first two CP 16A's so that if we ever had some trouble with th Crystasound amplifier, we could send it back for ser vice and use an Auricon MA-11 amplifier instead This way the camera wouldn't be totally out of ser vice. We haven't ever had to resort to this type of thing yet. But should the occasion arise, we do hav that option.

Each photographer at WPLG-TV is now assigned Bell & Howell Filmo, a CP-16A, a tripod and a Co lortran lightweight lighting kit. We use the Filmo ba sically for filming at 64 fps. The CP-16A is used fo virtually everything else. A lot of footage is shot with the CP-16 from helicopters because it gives us th added advantage of the zoom capability and natura sound in the helicopter. We have a 1200 ft. magazin which we use for covering football games.

We have no problems shooting sound-on-film inside or outside. We use mostly 7242 film and it works ou very well. We find that the Colortran portable ligh kits are excellent.

We find that our photographers can now cover a least two stories more per day because the equipmen is so portable and so quickly set up and taken down The Assignment Editor of course loves it, because h can count on a much faster pace.

There is no doubt in my mind that switching to standard camera has improved our quality. Becaus of familiarity with and confidence in their camera our cameramen have become much more daring an imaginative in their coverage. The newsfilm shot is s dramatically better than it used to be that the amoun of newsfilm actually aired has now practically dou bled, and we are now averaging 13-14 minutes a da of newsfilm on the air.

I believe my photographers are the best aroundd We are now able to cover the news as it happens. W shoot natural sound on most stories, and the reporter are free to do on-the-scene closes as the news event are taking place. We have certainly set a much faste pace for news coverage in the Miami area. There's great deal of team spirit among our staff. We mee frequently, and we critique our film frequently. Ou reporters have great confidence in our photographer and their ability to bring back a story on film that i truly excellent, not merely air worthy. BM/E

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INTERPRETING THE FCC RULES & REGULATIONS

Daytime AM Station Sign-On Times

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

The Commission has rescinded its interim orders providing for a one-hour advancement in sign-on times of daytime AM stations to "recoup" the morning hour lost by the enactment of year-round Daylight Saving Time (YRDST). Daytime AM stations' sign-on practices will hereafter be governed by their license sign-on times or by the terms of pre-sunrise authorizations (PSA's) issued pursuant to Section 73.99 of the Commission's Rules.

Return To Standard Time

Congress recently enacted a law returning the Nation to "standard" time between October 27, 1974 and February 23, 1975. This legislation supercedes December 1973, Congressional action which placed the Nation on year-round Daylight Savings Time in response to the energy crisis. Certain jurisdictions were exempted from YRDST (including Arizona, Hawaii, Idaho, Indiana, Kentucky, Michigan, Puerto Rico, the Virgin Islands, and American Samoa) due to (1) local legislation, or (2) specific order by the Secretary of Transportation. Should Congress fail to act further on this matter (as is expected), the Nation will return to the "6 and 6" rule of the *Uniform Time Act of 1966* on the last Sunday of April 1975, whereby "standard" time is observed for six months (starting on the last Sunday in October and ending on the last Sunday in April), and "advanced" time is observed for the other six months (starting on the last Sunday in April and ending on the last Sunday in October).

Commission Response To YRDST

Congress recognized that YRDST would impose a hardship on many citizens who would arrive at their place of employment or school before the authorized sign-on times of many programs to which they were accustomed to listening. In response to this problem, Congress mandated that the Commission make "emergency adjustments in the [1] sign-on times and [2] powers of daytime-only stations, with due regard [A] to skywave interference caused to co-channel fulltimers and [B] to the requirements of international agreements to which the United States is a signatory."

In response to this Congressional directive, the Commission initiated orders designed to "maximize the pre-sunrise operations of daytime-only stations without, at the same time, destroying fulltime services being conducted on the same channels." The action most often taken was provision for one hour of pre-sunrise operation at a power of 50 watts or greater. The Commission has estimated that over 1000 Class III daytime stations and 165 Class II daytime stations were affected by these interim orders, with the majority initiating broadcast operations one hour early at a power specified in their PSA's. The granting of greater relief was limited by "interference conflicts between day-timers and fulltimers sharing the same channels under nighttime skywave propagation conditions." Many stations could not be granted such relief due to international treaties and agreements.[1]

Commission Response To YRDST Rescission

The Commission rescinded its interim orders adjusting sign-on times and powers of daytime stations in response to Congressional rescission of YRDST. Congressional intent, the Commission reasoned, was for emergency authority delegated to the Commission to be "exercised only to compensate for the dislocations resulting from YRDST." Therefore, upon the rescission of YRDST, the Commission would be exceeding its authority by retaining any emergency orders it had promulgated.

Hereafter, each daytime station's sign-on time will be governed by the terms of its (1) license, or (2) PSA. The Commission expressed its intention to allow "those classes of daytime stations now entitled to added hours of pre-sunrise operation under the ... [interim orders] to operate between February 23 and April 27, 1975" during those added hours where such stations would suffer "hardship." An order clarifying the Commission's intention and definition of "hardship" will be released in the early weeks of 1975.

Pre-Sunrise Authority

As daytime AM stations may hereafter sign-on at (1) the sunrise time specified in their license, or (2) 6 a.m. pursuant to a PSA, a study of the latter is appropriate to assure conformity to all relevant Commission Rules.

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[1] The United States is presently negotiating with Canada for the pre-sunrise operation co-channel use by 200 U. S. Class II daytimers now prohibited by agreements which give Canada clear channel priorities on certain frequencies. Such a "pre-sunrise" agreement is currently in effect with respect to Mexico, and has recently been agreed to with respect to the Bahamian 1-A clear channel.

rary authority to carry on operations not previously authorized. Previously, such requests were handled as petitions for special relief, but, said the FCC, action was too slow to meet the need. Now the cable operator will ask for temporary authority, and the decision has been delegated to the Chief of the Cable Television Bureau. Such temporary authority will be granted for a maximum of 90 days, with one 90-day extension possible when the facts warrant. Interested cable operators should address the Chief of the Cable Television Bureau.

IBC '74: Stimulating Exhibits, Papers

A spectrum of new products were featured by the sixty-four European and American exhibitors at the fifth International Broadcasting Convention in London, September 23-27, and they drew considerable interest. But to lure attendees to their particular booths, exhibitors offered the always inspired variety of distractions. RCA, for example, appealed to the animal lover with the presence of Sheba, a playful 7 month-old lioness. However, exhibitors such as AKG (with two very attractive Bunnies—as in Playboy?) and Link Electronics (with an eye-riveting reverse strip act) elected to appeal to the animal instinct instead. An ABC observer noted that the Link "reverse" strip tease artists, starting the show with the "bare essentials" and concluding the week relatively demurely dressed, was so distracting that either no one noticed or no one cared that one of the monitors on the stand had blanked out.

Attendance figures during the early part of the exhibit reflected an increase of about 400 over the approximately 1300 delegates of the 1972 IBC, clearly indicating the widening scope of this conference aimed at the international broadcasting market.

Among the exhibitors with U. S. headquarters, operations or representation were RCA, Broadcast Electronics Inc., International Video Corporation, Ampex, English Electric Valve Co. Ltd., Evershed Power-Optics Ltd., Link Electronics Ltd., Marconi, Matthey Printed Products Ltd., Rupert Neve & Company Ltd., Rank Optics, Richmond Hill Laboratories, Tektronix Ltd., TeleMation International, Thompson-CSF and W. Vinten Limited.

The Guild of Television Cameramen made its debut at the Convention with a staff whose purpose was to enlighten interested inquirers of the aims and policies of the Guild, an organization established to improve on and advance the opportunities of the skilled television cameraman.

As always, the BBC and IBA offered exhibits designed to inform the delegates of research achievements in the field of broadcasting. The IBA exhibits had a digital theme, illustrating work on the DICE standards converters, a working demonstration of ORACLE data broadcasting and special techniques for rebroadcast relay and featuring examples of the latest ITV-developed techniques and equipment.

The BBC announced the installation of an experimental CEEFAX system at BBC-1 network. The system, developed by the BBC, will enable viewers to select any one of a number of pages of information which then appears on the screen in place of the normal program. One attraction of CEEFAX is that items can be selected at any time the viewer wish to see them during normal

continued on page 66

FCC RULES AND REGS continued from page 2

The Commission will issue a PSA to Class III st tions[2] and Class II stations[3] operating (1) on cle channels other than Class I-A clear channels, and (on Class I-A clear channels which are (A) "assigne to the United States under the NARBA or the U S./Mexican Agreement" (where located to the we of co-channel Class I-A stations), or (B) "730, 80 900, 1050, 1220, and 1570 kHz, which are assigned t Mexico under the aforementioned agreements."

The above-enumeration of PSA-eligible Class I stations is easier to conceptualize by realizing that th only stations *not* PSA-eligible are those (1) which ar operating on foreign Class I-A clear channels, and (2 for which said foreign government has not agreed (vi formal international agreement) to pre-sunrise opera tion by U. S. stations.

An eligible station may make a PSA request (lette form is sufficient) to the Commission including th information contained in Section 73.99(c) of th Commission's Rules.[4]

Upon the grant of a PSA, a Class III station ma initiate operations with its *daytime antenna system* a 6 a.m. *local time*. Operation with the daytime anten na system continues until *local sunrise* pursuant to it PSA, and thereafter, under authority of its license Pre-sunrise operational power is specified in the PSA but must be less than 500 watts.

For the purposes of operation under a PSA, Clas II stations are divided into two categories. Those op erating on Mexican Class I-A clear channels may ini tiate operation with *daytime antenna systems* at a.m. *local* time, and continue under PSA until th sunrise times specified in their licenses. All othe Class II stations (as defined above) may initiate oper ation with their *daytime* or *critical hours antenn systems* at 6 a.m. *local* time or "at the time of sun rise at the westernmost Class I station located east o the Class II stations," whichever is later. Such PS operation must terminate at the sunrise time specifie in their licenses. As with Class III stations, Class I stations must operate at the power specified in thei PSA's, and, in all events, at less than 500 watts.

Conclusion

The Commission has rescinded its interim order permitting a one-hour advancement in sign-on time of daytime AM stations in response to Congressiona revocation of year-round Daylight Saving Time. Day time stations must now sign-on at the time specified i their (1) license, or (2) PSA. Temporary relief will b provided for those daytimers that will suffer "hard ship" pursuant to rescission of the Commission' emergency interim orders in the period between Feb ruary 23 and April 27, 1975; the provisions of this re lief will be delineated in a future Commission Order.

BMI

[2] Defined in Section 73.21 of the Commission's Rules as follows:
"A Class III station is a station which operates on a regiona channel and is designed to render service primarily to a princi pal center of population and the rural area contiguous there to."

[3] Defined in Section 76.21 as follows:
"A Class II station is a secondary station which operates on clear channel (see §73.25) and is designed to render servic over a primary service area which is limited by and subject t such interference as may be received from Class I station."

[4] The technical and informational data required is not presente herein as any station operating pursuant to the rescinded temporar pre-sunrise authority (PSA) must first have secured a PSA fro the Commission.

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The secret is in our unique fiber optics viewing screen.

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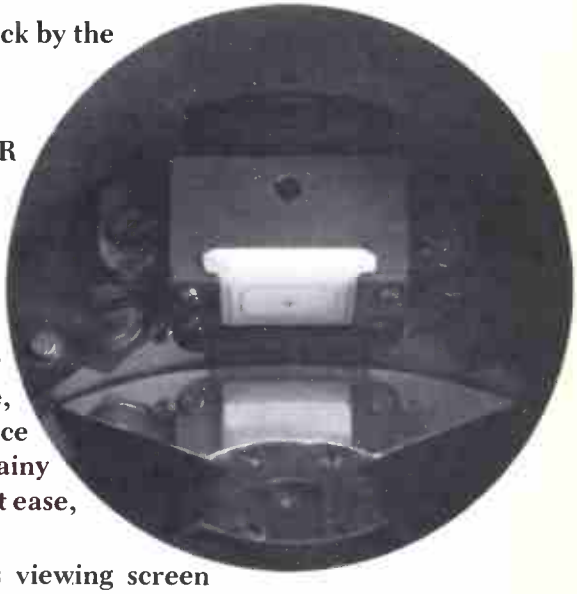
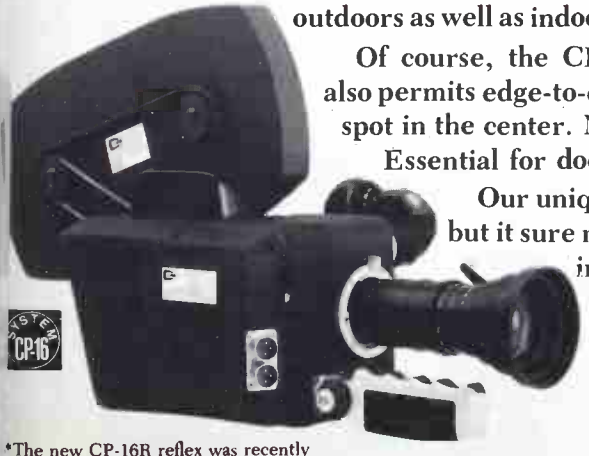


Our fiber optics viewing screen has the same image stopping properties as conventional ground glass. But without the same loss in light transmission. You will be truly amazed at the picture definition, the sharpness of detail in the image you get, whether the camera is running or not. Even in the brightest ambience, when the lens iris is stopped down. Since there is no ground surface on the fiber optics viewing screen, there is no dark, coarse and grainy image. And critical focusing may be accomplished with great ease, outdoors as well as indoors.

Of course, the CP-16R fiber optics viewing screen also permits edge-to-edge critical focusing over the entire field of view. No ground spot in the center. No guessing at the depth of field. Ideal for TV-news filming. Essential for documentary and studio* filming.

Our unique fiber optics viewing screen may look like a "little" thing — but it sure makes an important difference. And it is but one of the many innovative engineering features that make the CP-16R reflex the most outstanding 16mm camera system ever.



*The new CP-16R reflex was recently used by Wolper Productions in the filming of the prestigious six one-hour TV specials on Sandburg's "Lincoln" at Paramount Studios in Hollywood.

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Taming and Controlling Your Directional Array

By Carl H. Menzer

Does your operation with a directional array allow constant monitoring and adjustment of all parameters? Do you suspect the efficiency of your system could be improved? If so, read what author Menzer discovered.

There may be broadcasting station directional arrays which once set up will hold without adjustment but the writer has never seen one. There may also be many hardy souls who enjoy the long hours of after-midnight work required to maintain proper operation of a directional system, but the writer is not one of them. Having lived with such an installation for some thirty years, one picks up a few ideas which may help others in similar circumstances. While systems may differ, the changes suggested could well apply to most. The rewards are complete control of all parameters under power, in compliance with FCC rules.

This particular station operates with a power of 5000 watts and with a directional array consisting of three towers located in line with equal separation. RF feed lines are open, four-wire type, designed for 250 ohms impedance. The directional pattern changes for day and night operation. The directional system was installed in 1940 and was one of the early designs where two two-tower arrays were combined to form a three-tower configuration. At that time there was little data on mutual coupling between radiators. In the original design it was therefore necessary, when determining radiator operating impedances, to make some assumptions which later proved to be somewhat inaccurate. Also it was thought that once the phasor and line terminating networks were adjusted, there should be little necessity for readjustment and that the antenna currents and phases, as well as common-point impedances, would remain unchanged. This assumption was over-optimistic to say the least. Not only did seasonal changes affect the parameters but it appeared that "snow or rain or heat or even gloom of night" had considerable effect. When the system was first set up it was obvious that there were rather high voltage standing wave ratios on the feed lines but as the required patterns were obtained it was felt that any mismatches could be tolerated. However, with only three front-of-panel controls, which changed phases and currents indiscriminately, and with severe interaction between all parameters, more after-midnight hours were required for maintainence than for daily operation. To show what is meant, look at Fig 1, the original design.

After some years of putting up with the situation, it was decided to redesign the phasor and line terminating networks to allow more convenient control of phases and currents. With some advances in the state-of-the-art and considerable help from R. S. Bush of Gates Radio Co., the design shown in Fig. 2 was developed. The new design was necessarily based on some information calculated in the original design as no equipment was available to measure accurately mutual coupling between radiators and, consequently to produce accurate operating impedance figures. It is suggested for those who enjoy an interesting design project that they obtain a copy of *Radio Antenna Engineering* by Laport, a supply of polar coordinate graph paper, and work out their own design. Other

Mr. Menzer is Professor and Director Emeritus. WSUI and KSUI, University of Iowa. He constructed and operated the University's first station, 9YA, in 1919.

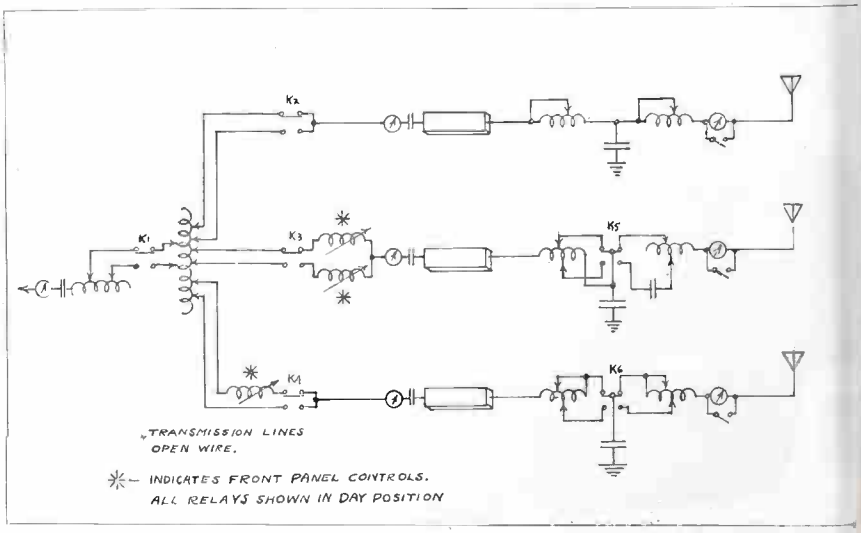


Fig. 1 The original design, with only three front-of-panel controls, which changed phase and currents indiscriminately. More after-midnight hours were required for maintenance than for daily operation.

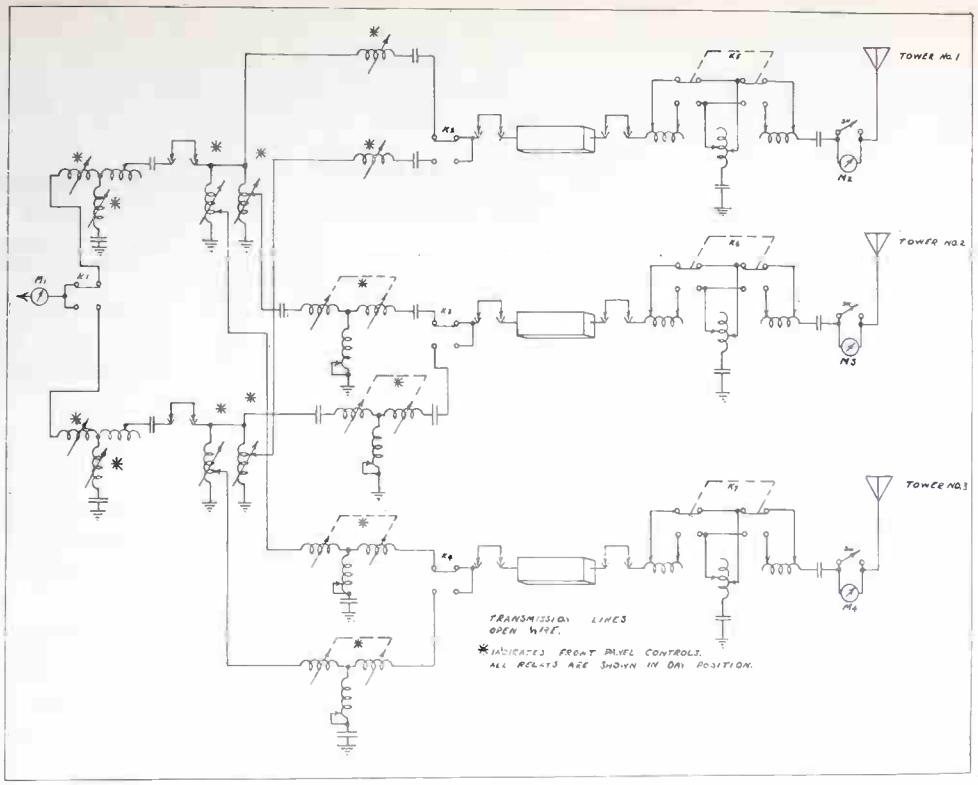


Fig. 2 The new design. The fourteen front-of-panel controls allow phases and currents as well as common point impedances, that can be shifted at will.

references are available: for example, improvement is suggested in Bush's article, "Phasing System Network Sensitivities," in the January 1974 issue of *Broadcast Management/Engineering*.

With the new equipment shown in Fig. 2 in place and the patterns properly set up, it appeared that operation met at least a portion of expectations: principally the fourteen front-of-panel controls allowed phases and currents, as well as common point impedances, to be shifted at will. There was still considerable interaction between these controls but this was to be expected and with a little experience in their effects, presented no problem. However, there were still rather high voltage standing wave ratios on the lines, and network component parts required ratings several times greater than called for in the design. Also, any shift of phases or currents changed common-point impedances and these measurements had to be made with power off. This meant waiting until test periods to bring them within required limits.

For all of the experimental work up to this time the only instrument available for impedance measurements was a standard General Radio Co. RF bridge. This instrument could only be used with a few watts driving power which precluded measurements of common-point or antenna impedances under operating conditions. About this time Delta Electronics Inc. marketed an *operating* impedance bridge which could be inserted in any portion of the circuit with only minor insertion effect, and which would provide measurements with full power. Such a bridge was secured and measurements were taken throughout the system. It was discovered, among other things, that the operating impedances of all three radiators, for both day and night operation, were considerably different from those calculated and used in the system design. In actual operation large phase shifts were being made up by mismatches and accounted for the high voltage standing wave ratios. This required network capacitors and inductors with considerably higher ratings than called for in the design.

With the new information at hand, it was possible to recalculate the phasor and matching networks to more nearly fit actual operating conditions. When adjustments according to the new calculations were made, several things were immediately apparent:

- The high voltage standing wave ratios were materially reduced and brought within normal limits.
- Excessive voltages and currents were reduced to point where component parts could be replaced with those having rated values several times less.
- There was a measurable improvement in efficiency. This resulted in an increase of from 460 to 486 mv/m RMS unattenuated field at one mile for the day pattern, and an increase of from 445 to 493 mv/m for the night pattern—better than 10%.

Finally we come to perhaps the most important feature of this installation: FCC rules require that certain licensed values of common-point current and resistance, at zero reactance, be maintained at all times. The current can easily be adjusted, under power, but without an *operating* impedance bridge the common-point adjustment of impedance must wait until test periods. While phases and currents to the directional array may be shifted, as required, at any time, any such change will result in a shift of common-point impedance. By installing a simple RF switch at the common-point, the operating impedance bridge may be switched in or out of the current at will without interrupting the carrier. Any phasor control change resulting in a change of common-point impedance can be immediately compensated for. Thus we have complete control of all parameters, under power, the operation requires only a few seconds time, strict compliance with FCC rules is assured, and after-hours maintenance is reduced to a minimum. **BM/E**

BEST STATION AWARD CONTEST

We are delighted to present here nominations for BM/E's 1974 Best Station Award, submitted in response to our September announcement. In the eleven entries that follow you'll find some very impressive examples of logical thinking, creative thinking, dollar-conscious thinking. You be the judge and vote for the effort or job done that most impresses you. Vote for the type of thinking that impresses you—try not to be swayed by the overall elaborateness of plant.

We want to reward the response to the challenge—not the size of the challenge. Vote by simply picking the letter entry that most impresses you and circle that letter on Reader Service Card. Pick one best entry from each of the three categories: AM (E, F, G, H), FM (A, B, C, D), and TV (M, N, O, P). The one entry in each category that gets the most votes will be announced in BM/E in March and the winners will receive a Best Station Award plaque.

Manual Control Of Multi-Cart Machines For Program Flexibility

BEST STATION AWARD CONTEST
Entry E **Category AM Class 1 & 2**

Submitted by Lester M. Nichols, Director of Engineering, KVOO, Tulsa, Oklahoma (AM—50 kW).

To help maintain the public's sense of personal contact with the station, and also to give the disc jockey substantial flexibility in the choice of programming within an overall format, the management of KVOO wanted the man on duty to choose each piece, answer the phone, and make his comments "live." To make this demanding job a lot easier, the station's engineering staff came up with an unusual combination: two Schafer Audiofiles holding 96 pieces of music, with a pushbutton panel next to the operator's left hand, with which he can call up any one of the 96.

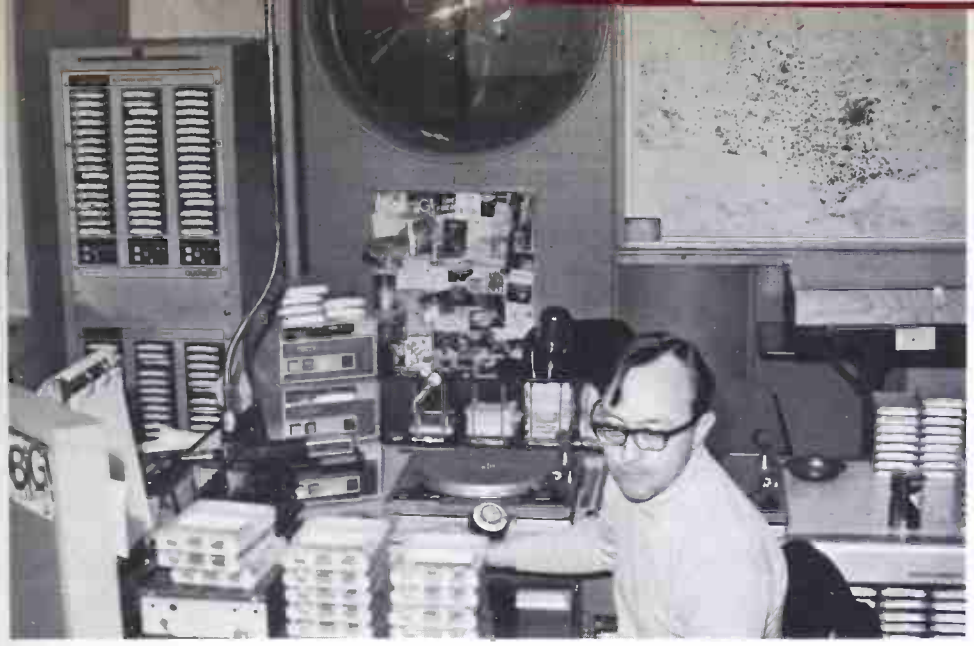
The 96 pieces are the 96 top country and western songs of the week, all carefully recorded onto carts by KVOO's engineers. The disc jockey chooses from the music racked up; he also gets four optional pieces per hour, which he plays on a single cart machine right at his position. The main restriction is against any replay within three hours. Aside from that, the jockey is pretty much on his own with the 96 available pieces. Six carts are always cued up, one in each of the six stacks in the two Audiofiles; these are available instantly from a row of six pushbuttons below the 96 call-up buttons. The jockey can also call up any cart on the Audiofiles, as already noted, but he avoids sequential plays in the same stack to cut access time.

Says Chief Engineer Lester Nichols: "We have several requirements . . . The levels of overall sound have to be very consistent, and quality has to be the best obtainable. Starting time for all carts must be identical. We designed and constructed a custom production control unit to meet these needs. It includes all the audio circuits, and a digital timer, control logic, and control circuits for the turntable and cart unit."

"Each record is previewed to set the correct levels and to check the quality of the sound. At the same time, the record is timed by the digital timer, and the time is stored to be transferred to the cart when it is recorded. The turntable and cart unit are started with the same start button, and the turntable is marked for a fixed back-cue, so this gives an identical start time for every cart. A high quality monitor speaker, and head phones, along with the ability to monitor either cart input or output while recording, assure the quality control we require in the cart recording."

One man records all carts. He was chosen for high technical ability, a good background in music, and former broadcasting experience. This combination gives him the ability to recognize the technical and music quality the management wants.

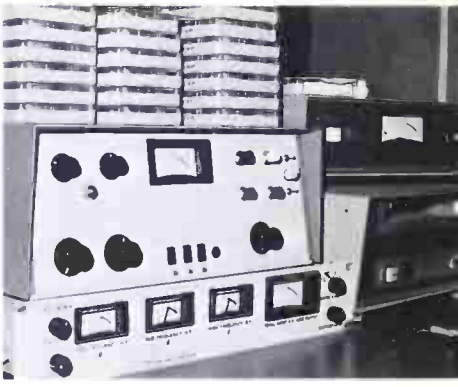
When a cart is started on the air, the time that was



Disc Jock Will Jones in KVOO announcer booth. Audiofile unit is in left-hand corner. Pins in map, incidentally, indicate points from which KVOO has received phone calls.

Control unit for Audiofile seen from announcer's position. Digital timer atop the unit will be replaced with one of KVOO's own design. It will be "countdown" type and will be programmed by time code recorded on control track of music carts.

Control board with three commercial cart machines for optional cart playing. Turntables are not in use.



Close-up of recording facilities: Gates Criterea 80 cart record/playback unit, Dorrough Model 313 audio processor, KVOO designed audio control and digital timing/encoding system. Gates CB77 turntables not shown.

recorded on the cart is transferred to a digital timer. This timer then counts down to zero as the cart plays. This way, the announcer always knows how much time is left for any cart that is playing.

In the on-air sound KVOO shoots for minimum compression and almost no limiting, for the best quality.

Making Two Buildings Work Better Than One

BEST STATION AWARD CONTEST
Entry F **Category AM Class 1 & 2**

Submitted by staff, KRDO-TV, AM, FM Colorado Springs, Colorado

All three operations had been in one building for 21 years. To keep from bursting its seams, KRDO moved the AM and FM operations and studios, and the corporate offices, to a recently vacated 15-year old two story office building a few blocks from the established KRDO location.

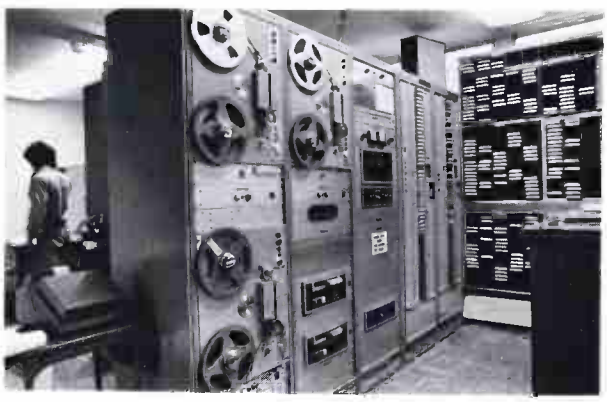
The office building required many renovations for radio and corporate office space. For the radio studios, walls had to be torn down and put into the right locations. Windows had to be installed between the studios. And, of course, a massive electrical wiring job was called for.

As planned by Assistant Chief Engineer Jack Connelly, each wire in the station was numbered and cross-referenced as to location and termination of both ends. Three 4-inch ducts were installed to interconnect the engineering area, all production rooms, the master AM control room and studio, and the FM automation area. A large patch panel went in to terminate all equipment including microphones for more versatile operation. Distribution amplifiers constructed by the engineering staff eliminated all double terminations.

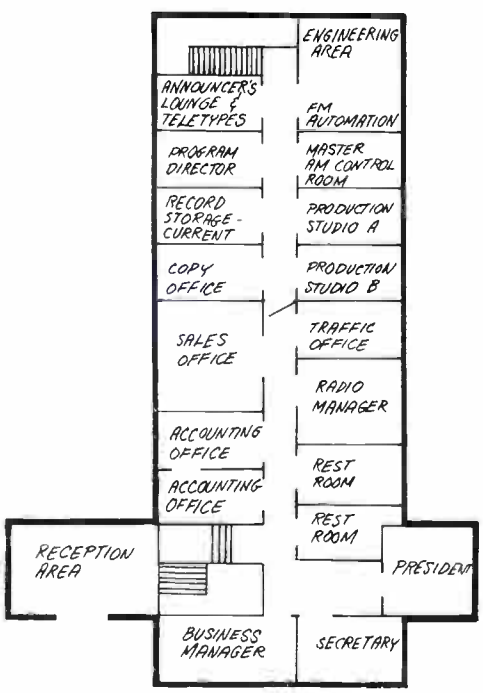
KRDO Radio and Television had always shared a news staff, and it was simply a matter of walking down a short hall between the radio and TV studio.

Continued on page 28

The office building into which KRDO moved its AM and FM studios and the corporate headquarters of Pikes Peak Broadcasting Co.



View of KRDO-FM's automation system. It can be seen through window from Master Control.



Floor plan of KRDO, ground level. Lower level houses accounting, promotion, and includes conference room, public meeting room, and employee lounge plus rest rooms and storage space.

To keep this efficient news use, a versatile audio studio was built adjacent to the news room in the (old) TV building, designed to record from the telephone, the two way radios, radio network audio, TV network audio, the Marti, TV air audio, radio air audio, and equipped with microphones, turntables, etc. The material is transmitted from the TV building to the new radio building via phone lines.

For nighttime and other times when the news staff would not be available, an AP teletype and weather wire were installed at the new radio building. Thus the announcer on duty would have 24-hour access to news, sports, and weather information as well as special news bulletins.

Transmitter locations and STL's

Moving the AM transmitter and tower was determined unfeasable from economic, practical, and legal standpoints. The signal from the new AM radio studios is sent back via line of sight microwave. While the microwave was being installed and approved, a telephone line was used to transmit the signal. The telephone line was retained as a back up.

The transmitter and tower for KRDO-FM, which covers a very large area of Southern Colorado, are located atop 9500-foot Cheyenne Mountain adjacent to the city of Colorado Springs. Linking the FM transmitter to the new location of the KRDO-FM automation system simply required an adjustment in the alignment of the microwave link. The KRDO-TV transmitter is also on Cheyenne Mountain, so one KRDO transmitter operator can maintain the two transmitters.

The new radio building has very few antennas on the roof—just a few small microwaves and a few assorted two-way receiving antennae.

Moving: total planning pays off

The move was carefully planned so that no air time would be missed for either KRDO-AM or KRDO-FM. Both are 24 hour a day stations. The FM automation system was moved during the period from Midnight Sunday, April 21 to 5:00 a.m. Monday, April 22, the time of week the station is normally signed off for maintenance and repairs. Wiring for the automation system had been all pre-installed, and the nocturnal move went off without major problems. The FM station signed on at 5:00 a.m. as usual with the listeners unaware of the gigantic technical effort that had taken place during the night.

For the AM, Production Studio A at the new location was set up with a new control board, turntables, cart machines, and reel-to-reel tape machines so that it could assume the on-air function during the move. As soon as operations were switched over to Production Studio A at Midnight, Wednesday April 24, the dismantling of the old on-air studio began. Most of the equipment from the old on-air studio was put to use in the new master control room for KRDO-AM. During the time Production Studio A was on the air, a period of 10 days, the engineering staff took advantage of the break to update, rewire, and otherwise "tune up" the modified Gates President control board. The transition to the permanent on-air studio was made at Midnight Friday, May 3. Again, the lis-

teners did not miss regular programming.

Improvements: the new AM Master Control

For the master AM control room and studio KRDO made a transition from a stand up board to a sit-down operation. The control room was planned so that all controls would be within easy reach of the announcer. The three Gates cart machines were installed on a shelf above the control board. Weather instruments went in the control room so that the announcer on duty has complete weather information at all times. The new control room has talk back communication with the TV building newsroom via telephone lines. An Ampex reel-to-reel recorder in the control room allows for recording and playback of delayed network programs. For additional recording and playback capabilities, the two Ampex reel-to-reel recorders in Production Studio A can also be remote controlled from the master control room. These two machines are set up to record directly off the network, directly off the air, or through the Production Studio A board.

Features from the old on-air studio that were continued into the new operation included two way radio communication with the mobile news cars and an ABC alert. Remote starts for the two QRK turntables have always been wired into the turntable keys in the modified Gates President control board. AM and FM modulation monitors and transmitter remote controls are located in the control rooms to the announcer's left.

Easy Access: equipment layout

For easy repair and maintenance, all audio processing units past the console are located in four racks in the engineering area, as are all microwave transmitters, two way radio equipment, power supplies, an EBS receiver, air monitor receivers, and frequency and modulation monitors.

Warning lights and Sonolert alert both announcer and the engineering staff if either AM or FM transmitters go off the air. Silence sensors warn of modulation failure.

s the new Master Control Room. That's a window below cart ines (Gates) and above the control board (Gates President) looking roduction Studio A. Behind program director Ed Marks, are remote ol panels and monitors for AM and FM operations. To the left is a w in FM automation room.

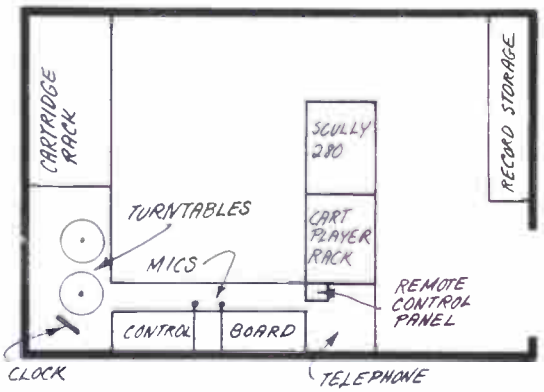
Two-way radios terminate in the master control room and the engineering area, and terminal facilities are provided for both production rooms.

FM automation: next to Master Control

The Gates automation system for KRDO-FM is located directly behind the KRDO-AM master control room. A window between the two rooms allows the announcer on duty to check on the FM system periodically without leaving his place at the AM controls. Provisions have been made to connect remote controls for the FM system in the AM control room if we desire to use them in the future.

Production Studio A during the early construction stage, showing location of turntables. Ampex PR-10's go into right-hand sloped panel. Carts are in left-hand extension. Through the studio window you can see the master control room.

Completed view of Production Studio A. Turner White is at the controls as Mike Weber looks on.



Layout of production studio B is slightly different from that of studio A.

Was it dollar wise?

Says the KRDO management: "Our major considerations were more space, more modern facilities, versatility, and creating a pleasant working atmosphere. However, we feel we can do all of these things and still be dollar conscious. For example, we have used much of the same equipment that was in our former studios.

"Most of the old on-air studio equipment is in use in the new AM master control room. The old AM production studio equipment is now used for the audio studio room in the TV building news room. And the old FM production studio equipment is in use in the new Production Studio B. Only Production Studio A required major equipment purchases.

"Although broadcast equipment is always expensive, KRDO believes in purchasing quality product The equipment we buy is designed to last. And, course, that is the economical way in the long ru The only way we could make so much of our o equipment work in a new situation was that it w quality equipment to begin with, and it was easi compatible with old. We try to buy many of the sam brands, so that we do not have to increase our par stock.

"We saved too by making use of existing building instead of constructing new ones . . . Our careful plan ning meant that we could still use a combined new staff for radio and TV. By installing remote transmit ter controls at the new radio building, we did not hav to hire an additional engineer to man the AM trans mitter 24 hours a day. And the FM system was place so that it can easily be run by the announcer on dut at KRDO-AM. So even though the move was costly it was really worth it from both economic and practi cal views."

Room For Change, Human Orientation, In New AM/FM Studios

BEST STATION AWARD CONTEST
Entry G **Category AM Class 1 & 2**

Submitted by Art Fulton, Program Director, KMWX, Yakima, Washington

Design for now, the near future, and the unforseeable future: that was the premise for the new broadcasting studios of KMWX-KFFM. With the enormous amounts of change taking place in the "state of the art," the management wanted to allow for change, which is sure to come. The design left considerable room for additional equipment and systems, within guidelines of redundance and flexibility.

The management believes the control room, center of the operations, is a combo operator's dream. President Tom Bostic turned the design of the contro room over to Program Director, Art Fulton, who in turn used a combination of ideas from all the opera tors, and technical guidance from Mel Burrill, Chie Engineer.

Bostic's outlook was, "since the operators will b spending considerable amounts of time in the contro room, give them a room they can really feel belongs t them, one they can feel comfortable with." Burrill' most frequent comments were, "give me access an give me ventilation."

The console is the room; the exterior walls are sec ondary. The operator, who may either stand or sit, i surrounded by this console. Every function he mus perform in this room is at his fingertips. Even th lighting, (incandescent rather than flourescent) i controlled by a rheostat on the console.

The board is a Sparta with a custom-built five-po

This is the Master Control Room. The five pots, 25-button extender panel on the Sparta console (right side) eliminates nee for patch panel. The six ITC cart machines operate in sequence.

"Most beautiful radio broadcast facility in the West," is the way KMWX-KFFM producers refer to themselves.

25-button extender panel, which completely eliminates the control room patch panel. The five push buttons serving each pot give enough redundancy to monitor or cross patch any one of several sources.

Two ITC 3-stack cart machines directly in front of the operator give him positive control and maximum flexibility. The cart machines are set up to sequence on an auxillary tone so production is always tight. If the operator must be gone from the control room for up to fifteen minutes, he may use the sequence feature tying both cart machines together. This automatic sequence feature has tightened up the board operation immeasurably.

Between the two cart machines is a panel with an independent mike switch and pot so the operator has the cart buttons and mike within a few inches of each other without having to reach. Below the mike pot and on the same panel are two mobile unit talk switchers, linking the operator to mobile news vans via radio. Directly above the cart machines and below the board is a shelf slot high enough for two carts and long enough for the announcer to set up most of the carts he will be using during an hour on the air.

Within reach and to the right of the operator are two Ampex 440 B's, fed in by push buttons on the board. To the left of the operator is an Ampex PR-10, the workhorse for small reels, phone recording, etc.

The turntables, three of them, are Sparta with vertical fader pots independent of the board. The board operators, after they had used the faders a very short time, preferred them to the board pot.

Both KMWX and KFFM transmitters are at other locations and are remotely controlled. All the controls and indicators are behind sliding glass doors, built into racks as part of the console. There is no independent rack in the control room. The management has found this to be a real advantage keeping the control room operator more aware of any changes or failures that may occur.

The new building has two stereo production rooms that are identical. Each is equipped with a Sparta stereo AS-40-B board, ITC cart machine, two Ampex 440-B reel to reel machines, and two stereo turntables. Either of these rooms may be used as a control room for either AM or FM. The production people find it a great advantage to be able to record different elements of their commercial production on different tracks, even when the final product is mono. Then if a change is necessary in one or a few elements, it can be done more easily. The production rooms are capable of picking up the same outside sources as the control room.

The Program Director's office is equipped with a recorder to pick up network and air from both AM and FM. The music library is adjacent to the P.D.'s office and is equipped with a stereo turntable built into a well planned work surface.

Each room in the building is equipped with built-in stereo speakers which may be switched from AM to FM with a wall switch. Another important feature is a wall plug in every room, which may be used in conjunction with a small mixer to create another studio. So far, this has been used mostly in the conference room to record musicians and forum type programs. The wall plugs feed the control room or production studios.

With the exception of the automation system for KFFM, the first floor of the building is all administrative, President, General Manager, Sales, Accounting and Secretarial Staff. The second floor is all technical, including the Chief Engineer's Office and workshop. This has the absolute advantage of eliminating excessive traffic from the technical area.

The KFFM automation system was placed on the first floor in a separate glass-front room. Since the secretaries are close to this equipment, they service the IGM system during the day, setting up commercials and music. They have proven to be generally more proficient than most announcers.

To warn that the automation needs attention, a

One of two identical stereo production rooms at KMWX-KFFM—which could be used as a control room.

Control Console for the remote control of the AM and FM transmitter.

piercing fire bell makes certain that in very short order the automation is serviced. On the second floor, in the control room, a spotlight shines on the operator's face until any problem with the automation is eliminated. The announcer can remotely operate the FM automation from the control room, but cannot shut the alarm off without going to the equipment.

A separate room was designed and pre-wired for use as a control room, should the management ever decide on a live format for KFFM. It is now being used as an announcer's room. There are also two extra offices available for further expansion if necessary.

When the original wiring was installed by the engineering crew, it seemed as though the job was being overdone, with extra siemon blocks and almost double the pairs of wires that looked necessary for future expansion. But extra cable capacity has already begun to pay off, the management says.

Following the guidelines of redundancy and flexibility, the transmitter is a 5000 watt unit which is actually two Sparta 705D 3kW transmitters combined by a ferrite combiner. Although the cost would have been comparable for a 5 kW and a 1 kW standby transmitter, the dual-redundant design has benefits far beyond those of the main-standby combination. If a failure occurs in one transmitter, the power output automatically drops to one-quarter without any down time. Following the alarm in the control room, the operator pushes a button and increases the power out to one half.

The beauty of this transmitter system is no interruption of service while the Chief Engineer is being informed, which means no loss of revenue. One transmitter can be taken down while the other remains in service.

Chief Engineer Burrill has also designed an elaborate, yet simple, heating-cooling system for the transmitter building. The transmitter heat is circulated in the building to maintain a constant temperature of about 72°. When the temperature rises above that, the remainder of the heat is exhausted to the outside and cool outside air can be called for. During the summer, transmitter heat is not allowed to circulate but is exhausted to the outside and outside air is used for circulation. We do not have to depend on refrigerated air and, therefore, stand the chance of a cooling system breakdown, and overheating of the transmitter.

The building housing the AM transmitter is made of concrete block and sits within fifteen feet of one of the towers. As the building was being constructed, Burrill bonded each piece of steel rod that was installed. The ceiling and inner walls closest to the tower are lined with copper sheeting eliminating RF interference.

Because of this human-oriented flexible facility, the first year of operation has been successful, not only from a monetary standpoint, but in creating pride among the staff members. The operators are completely satisfied with their surroundings and express this with a confident professionalism, deriving great pleasure in working with the finest tools.

View of the dual AM transmitter at KMWX. Twin Sparta 703B units work into a ferrite combiner.

FM automation unit is on first floor in separate glassed-in room.

Making A Production Room Efficient, Without Spending A Cent

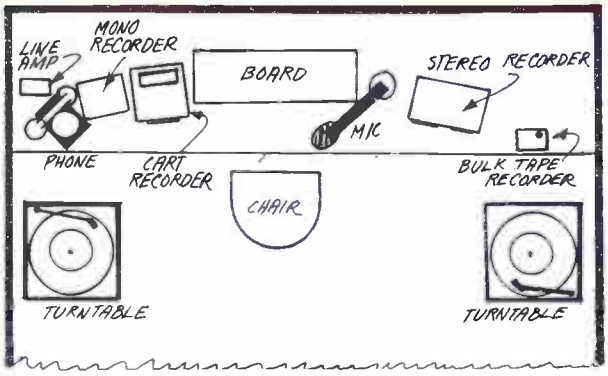
BEST STATION AWARD CONTEST
Entry A **Category FM**

Submitted by John E. Shepler, Chief Engineer, WACI, Freeport, Illinois

The former staff had strewn equipment so haphazardly around the production room that it took a four-armed acrobat to run it. It was so spread out that announcers would waste valuable time stretching to control turntables and tape machines.

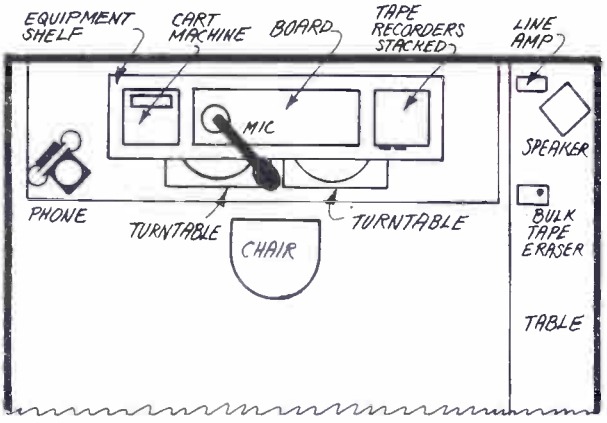
Without spending a cent, Shepler built a setup that

Photo of the compact WACI control facility.



WACI OLD AND NEW Drawings

Before (top) and after (below) Control Room layout At WACI. With the new arrangement, all controls are within sitting reach.



is easy to work with and appealing to the eye.

The equipment table was reworked with a sabre saw to accomodate two turntables. A shelf was constructed out of scraps from an old newsroom and holds the control board, stereo recorder and cart machines. Two Ampex recorders can be stacked if needed. A copy rack and microphone stand sit atop the control board.

The new arrangement has the needed high density. All machine controls are within reach and production can be done either sitting or standing.

To the right is a table constructed from a flush door with legs attached to one side and fastened to the wall on the other. It holds the monitor speakers, bulk tape eraser, and a line amplifier used to record telephone conversations.

Putting A 50-kW FM Station (Every Bit of It) Into a 26' x 44' Building

BEST STATION AWARD CONTEST
Entry B **Category FM**

Submitted by Dutch Doelitzsch, General Manager, WDDD, Marion, Illinois

Planning a new facility is no easy task. When you've got to build a $60,000 building for $25,000, it becomes even harder.

From the time it was decided to consider construction of a new "Home" for W3-D until we moved in, was less than five months. All of the planning was done in less than a month. It took three months to build and another month to install the equipment. I certainly wouldn't recommend this approach, but it can be done if necessary.

W3-D's requirements were much the same as most stations, except that we could only spend about ¼ of what most stations do when they rebuild. Our only answer was to achieve maximum use from every square foot of floor space, and yet make the facility as functional and comfortable as possible. As can be seen from the floor diagram, the "Air" portion of the building represents approximately half of the floor space. The use of an equipment "wall" and the sliding glass door help utilize otherwise wasted space while increasing visibility tremendously.

All of W3-D's wiring ducts are three inch plastic sewer pipe, buried in the concrete floor. This approach was inexpensive and works quite well if the runs aren't too long. The pipe runs weren't practical for some of the lines; they were run overhead. Keep in mind that many of the decisions which we made were compromises between cost and workability.

Practically every available space has built-in shelves. The wall of the studio is floor to ceiling record and tape storage. This creates storage for over 15,000 45's and over 1,000 albums. It helps the acoustic sound of the studio as well. The entire area under the control room counter was custom made for cartridge and record storage. The entire area above the automation is used for 10½ and 14 inch reel storage as well as space for over 200 cartridges. We gave the carpenters a tape cartridge and a reel of tape to use as a guideline and they constructed the storage areas.

Windows can be a great asset. Our window layout works perfectly. The control room operator can view the complete equipment wall including automation and transmitter — he has a complete view of the studio and news room—and he can see the secretary and lobby area. This visibility is particularly helpful since a good portion of the time there is only one man on duty and he can see practically the whole building from one location. Also, the secretary can see the control room and studio to help in locating station personnel for phone calls. As an added bonus, visitors can look at the heart of the station without having a formal tour. The work and storage space behind the equipment wall was a good decision too! Steel shelving was used for storage, and there's still ample room for our gasoline generator, nitrogen tank, work bench, telephone equipment, circuit breaker panels, and parts storage.

Consultations with our insurance representative were held several times to make certain that the proposed structure would be easily insurable. By including his suggestions in our plans, such as steel beams and roof, fireproof materials, fire extinguishers, and proper exits, we were able to cut our insurance bill by half or more. In fact, our fire rate is one of the lowest available. When insuring $75-100,000 in contents, the fire rate becomes crucial.

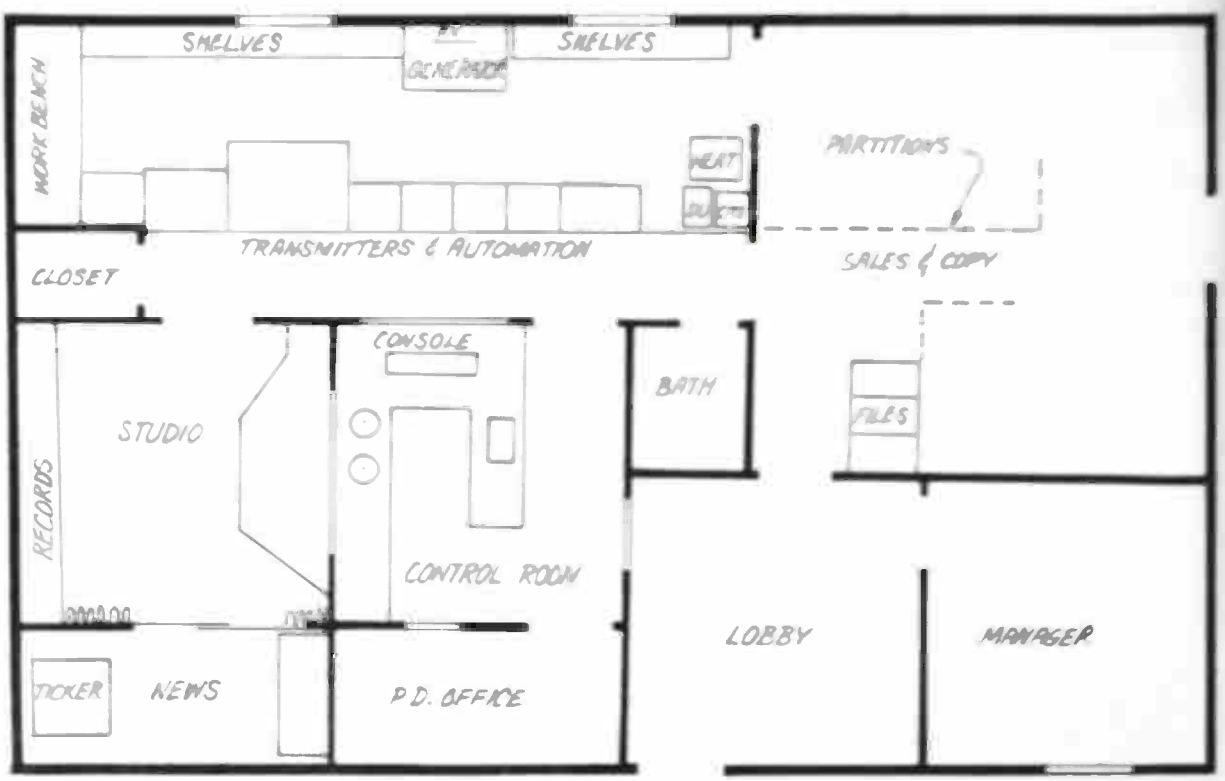
The building was specially wired so that a single switch can be thrown to operate the station from the auxiliary generator. Only the essentials were included so that a smaller generator could be used, one that could remain inside the building for protection and easy starting. The wiring even included a special circuit to turn the call letter spot lights on when the tower lights come on. The utility company was contacted for lighting suggestions. It's amazing the effect a brightly lit room has on a D.J.'s attitude.

Isolation

Unlike most of the articles about new buildings, this one will admit the mistakes we made. Sound-proofing between rooms is extremely difficult. All of the "air" rooms walls are of masonry construction which kills practically all sound transfer. The suspended ceiling, doors, and windows were a constant headache until all of the "leaks" were found and stopped. Originally the Program Director's office was to be another production area, but in spite of our best efforts we could not sufficiently isolate the room from the Control Room. Sound just couldn't be kept out. As it has turned out, we didn't need the additional production space but had to have an office for our P.D.

The Control Room, because of its small size, windows on four sides, and tile floor, sounded like a cave before sound treatment. The addition of special acoustic panels to the walls took care of this problem. The panels consist of 2' × 4' × 1" pressed material which resembles dried straw. The panels are mounted with an inch separation from the walls by using four small wood squares as spacers. The panels are quite effective. In all, we used ten panels in the Control Room. Solid core doors were used in the "air" areas.

While these three foot wide doors are effective in



From the control room of this compact layout at WOOD, the operator can see the studio, the news room, the automation gear across the hall, and even the secretary in the lobby.

At WDDD, one can see the automation gear across the passageway from the window in the control room.

Looking down the passageway from the window in the control room.

sound insulation, they are very heavy and tend to drag the bottom corner—extra strength for these door frames will eliminate this problem. In the studio drapes were added to decrease the hollow sound of a small room. Since they are movable, we open them normally, but for talk shows and other studio work, they are closed. We also carpeted the table to cut down on "finger tapping" by guests.

When we built the station W3-D was a class A (3kW) station using a 3kW transmitter, but when we changed to a class B (50kW) channel, the new transmitter's noise nearly caused expensive sound isolation modifications. Fortunately, a few minor changes solved the problem, including direct ducting of the transmitter to the outside and weather stripping the Control Room door. Another problem (which we're still working on) is the extra heat given off by the control room equipment. Even though this equipment is all solid state, it still makes the room uncomfortable at times. The control room needs a separate heating and cooling system (or at least complete heat shut off and double air conditioning ducts) in order to hold a comfortable temperature.

Temporary partitions in the sales office were added after the initial construction to separate this area from the rest of the station. It gave the salesmen more privacy, but more importantly, it kept visitors in the lobby from being able to look into this office. Salesmen and announcers aren't always as neat as managers would like. The partitions are built in sections of six foot translucent plastic panels with a bottle glass design framed by 2 × 4's. They are easily moved should the need arise and are attractive additions to the room.

After two years with W3-D's new home we are pleased with our decisions and our design has been proven with the test of time. While there are a few changes we would make if we were doing it again by and large we would retain our basic design adding the knowledge we've gained.

They Built Their Own Console, for Lowest Cost and Experience

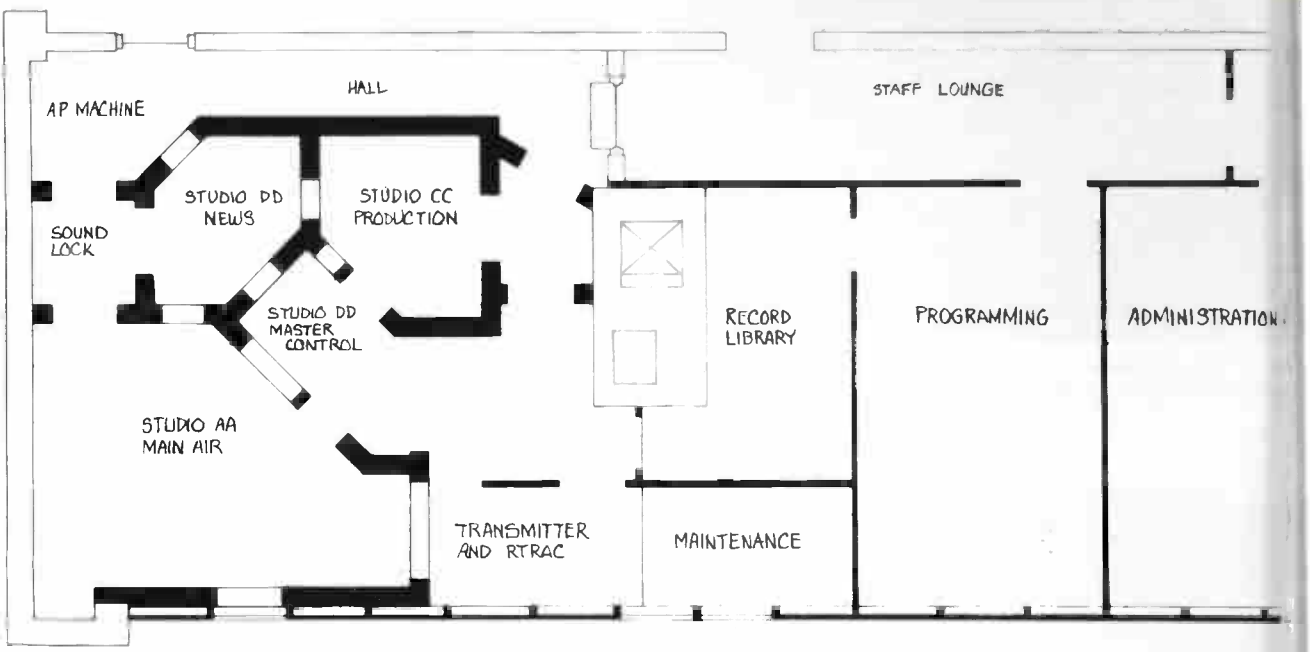
BEST STATION AWARD CONTEST
Entry C **Category FM**

Submitted by Dick Delgauda, General Manager, WNHU, University of New Haven, New Haven, Conn. (FM, 1700 watts ERP)

At WNHU, educational FM station of the University of New Haven (on air June, 1973), money was an especially weighty factor in station planning because the station was built and initially operated entirely on student activity fees; no administration funds were then available. That was one big reason Dick Delgauda, general manager, directed the design of the entire studio complex himself. A second big reason for a "home-brew" installation was the desire of a fledgling staff to experience all facets of broadcast construction. WNHU's staff decided to do everything they possibly could themselves. The first step was analysis of *system utilization,* with very high flexibility as a main objective.

That led to the main on-air console as the point of highest utilization, and the pivot around which the whole would turn. From this console, all programming (except for newscasts) is originated. The relation of this main studio to the news rooms and the production room can be seen on the accompanying floor plan, which also shows how WNHU fitted its entire operation into the very limited space available, with studios of appropriate acoustical design.

BEST STATION



At WHNU, the console was designed first, and the control room around it. Control room is heart of station layout.

The major element of WNHU programming is recorded music, mostly rock with some jazz and classical. Therefore the main equipment the on-air man has to deal with are cart machines and turntables (at his own position), and the reel-to-reel machines in the adjoining production studio.

Delgaudo sets out the philosopy of the main console design as follows: "*I* We felt the best way to achieve harmony between the console and the studio it was in,

continued on page 38

Looking in at the control room operator through one of the several windows. Perspective from operators vantage point is on following page.

Another view from control console showing door into it.

Scully Shows You How To Be Perfect Without Paying The Price.

As a professional, you want the finest in a professional recorder. The best sound reproduction possible. Simplicity of operation. Reliability coupled with ease of maintenance. And, you don't want to pay a fortune to get it. In short, you want perfection at a perfect price. You want the new 280-B Recorder/Reproducer.

Unmatched Performance.

By designing the 280-B electronics around the new high-energy tapes. The S/N ratio is perhaps the best available in any recorder at a comparable price. Up to 72 dB on full track .25" tape at mastering speed. A sharp 68 dB on two-track .25" and four track .50."

The 280-B also features more head room and an increased record level for maximum signal utilizing the high output tapes. And band widths are a very flat ± 2dB, 30Hz to 18 KHz. It all adds up to greater performance than you've ever been used to.

Quick, Simple Operation.

The more sophisticated we've made the 280-B, the simpler we've made it for you to operate. Our new **Optac**™ motion sensing system gets a new standard of efficiency in tape motion control. Now you can go from one transport mode to another without touching the Stop button. And enter and leave Record while the transports in Play. **Optac**™ and the 280-B's new logic circuitry make the exact moves for you at the right time.

Easy Maintenance.

New solid state circuitry and mother-daughter board architecture give the 280-B a greater reliability factor. They also make testing, repair and replacement easier. All signal electronics are in slide-out drawers. No more bending down and reaching around. Individual channel modules go in and out easily, too.

If the 280-B sounds too good to be true, wait till you hear it. And wait till you find out the price. We've made it very easy for you to get the best.

For more detailed information and prices on the 280-B, call or write: Scully/Metrotech, 475 Ellis Street, Mountain View, California 94040. (415) 968-8389. TLX 345524.

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Circle 114 on Reader Service Card

Closeup of WNHU control console. Pushbuttons on left sloping panel control Spotmaster carts, Revox and Scully tape recorders. Above Gates Yard Console is (right to left): annunciator panel which shows which studio doors are open, intercom controls, outside door lock control, EBS indicator, Right sloping panel has pushbuttons controlling telco lines.

and preserve the all important acoustic and aesthetic (for the announcer) conditions, especially since available space was extremely limited, was to first design the console, and then a studio around it. *2* Careful cost analysis indicated we could build a relatively sophisticated console, meeting all of our requirements, for a price equal to or less than that of a roughly-equivalent, commercially-produced, modular package, which even when modified would not be as utilitarian as our own design. *3* WNHU staff would be involved in design and construction work not otherwise available to university students."

Every element was laid out on the console so that the operator could reach it comfortably, sitting or standing. Included are two Gates turntables, with Micro-Trak arms and Stanton pickups, one on each side; cart storage in a swiveling cabinet (upper left); remote control buttons (sloping panel, left) allowing the operator to call up any of the Scully and Revox reel-to-reel machines in the production studio; Gates audio board (center rear); alarm system, intercom controls, EBS alert, center panel over Gates board telco control buttons, sloping panel, right; two ITC cart players, upper right wing; mike boom mount upper right corner. Storage and work surface were carefully and adequately proportioned, disposed as shown on the drawing.

The console was laid out, too, so that maintenance could be carried out without interrupting the announcer, or forcing him to move from his position. Noise-producing machines, the cart players, and turntable were put off the mike axis. Surfaces must be hard enough to stand up to constant use for a long time; and the whole should be fire-resistant.

According to Dick Delgauda, WNHU's main console has proven to be everything they planned it to be. Delgaudo concludes: "No matter what factors other stations hold as important, the basic tenet of design used at WNHU may be helpful: priority in planning was based on *projected facilities utilization;* and individual station design is clearly superior to mass-production concepts."

Great Idea Contest 1975

Finalists of the 1974 Great Idea Contest will be presented in January rather than December as earlier announced. (This will allow more time for November votes to come in.) We are pleased to announce, however, that we are now ready to accept entries for the *1975 Great Ideas Contest,* which will commence with the March 1375 issue.

Prizes have been expanded for the 1975 contest and the categories refined slightly. Details will appear in the January issue. In the meantime, we urge you to start the entries flowing now to assure inclusion in the 1975 contest. Eligibility remains the same as last year, meaning any person affiliated with a station can enter (see rules in any issue of BM/E Jan–June, 1974). For 1975 we have reduced the categories to three: AM, FM, TV. But we will be offering extra prizes in the areas of RF, Audio, Video and Control. The 1974 entries revealed a great amount of ingenuity being applied in the control area and we wish to specifically recognize and award these contributions in 1975.

Pre-Fab Modules Meant Saving Tower and Trees

BEST STATION AWARD CONTEST
Entry D **Category FM**

Submitted by Tom Burns, President/General Manager, WMCB, Michigan City, Indiana

In early 1973, WMCB-FM moved into new studios and offices after four years of planning. The studios, situated on a 7½ acre site across from a country club, are designed to take advantage of the heavily wooded dune overlooking a creek flowing through the property.

WMCB was purchased in August of 1968 from its original owners about two years after the station went on the air. Its "temporary" facilities were a summer-home of about a thousand square feet.

At the time of the purchase the station had two full-time and several part time employees. Upon transfer of ownership, the staff was immediately in-

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It's our revolutionary "two-way" cardioid dynamic microphone. Only AKG has it.

Before our refoow dna reteewt development, whenever one end of the frequency range was expanded, the other end lost. And there was often trouble in-between.

The solution our people came up with was so simple it was beautiful. And patentable. U.S. Patent #3,204,031 to be exact. Build two microphone elements in the same housing. One for highs. One for lows. Phase them together with an integral crossover network and you've expanded your range without any strain anywhere. Sound familiar? It's the same principle of a modern speaker system. A "tweeter and woofer"—only backwards.

In the studio, on stage or on location, you have the range you need. Plus a completely flat response over the entire audio spectrum and natural reproduction up to 90° off the microphone axis. Plus no "booming" proximity effect and virtually no feedback problems.

There are AKG "two-way" microphones available for all professional purposes. See the AKG D-224E. The studio version of the "two-way" principle that duplicates the more desirable characteristics of condenser microphones. Or the highly versatile AKG D-202E that works wonders on live and cinema sound stages. And the all-purpose AKG D-200E "two-way" microphone that adds new dimension to P.A., radio-journalism and recording. Speak to your professional equipment supplier. Or write to us for complete details.

AKG MICROPHONES • HEADPHONES

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Refoow dna reteewt.

(Our secret sound ingredient.)

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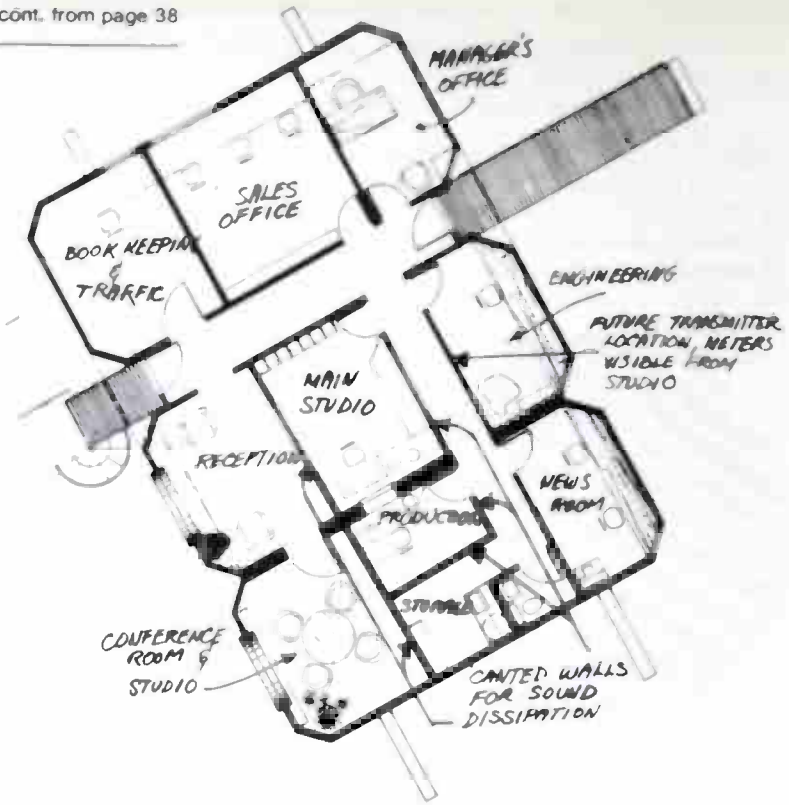
cont. from page 38



Floor plan: Floor plan at WMCB shows how three pre-fab modules were dropped in and combined.

creased to five full-time and several part-time employees. This meant immediate overcrowding. The facilities were so restricted that all office functions, scheduling, billing, programming, news and management were squeezed into a 6-by-8-foot area with two desks. During this period the manager's office consisted of a table at home and a brief case! The only thing which could be said for the office was that it was fully utilized at all time! When anyone got up to get a cup of coffee he could be assured of only one thing—his space would be occupied by someone else when he returned.

Almost immediately upon purchase of the station, it thus became necessary to plan for expansion. But how much and where? The station had no track record, so it was difficult to project needs and billings. How big a plant could be justified? What return could be expected on capital investment? What would the needs be in five years? 10 years?

One consideration was immediately apparent. Any attempt to expand or rearrange the existing facilities would be short-sighted. The basic structure was inefficient. Expanding it would only make a larger inefficient plant.

Another consideration was site. Cost considerations and management control would suggest that any decision to build should give priority to building at the tower site to avoid remote control. Cost of reconstruction of a 300-foot tower and time consumed in gaining approval of the FCC, FAA and local zoning authorities seemed to make the present site the most cost-efficient. In terms of coverage, too, the signal was good where we needed it to be good, to the north and west in communities where the station was beginning to generate significant revenues. We would not be sure that relocating the tower might not cause signal deterioration in these important areas.

We did examine an alternate site on a ridge south of Michigan City which would have given us greater height but engineering studies revealed the additional coverage, and the possibility of loss of coverage in critical areas, did not justify the costs in moving.

The other choice would have been lease vs build. Since we were looking at facilities as a long-term investment, since we wanted to incorporate provisions for further expansion, and because we wanted to control what might be constructed in the vicinity of the station we found building to be most cost-efficient.

We visited a number of newer radio stations and questioned managements to gain from their experience. Most stations, we learned, put least emphasis on studio location, placing it, usually, in one corner of the building. One exception is WFMT, Chicago, where the studios are centrally situated and the facilities ancilliary to broadcasting are placed around the studios. This we copied with happy results. Shouldn't that which is most important, the air product, be centrally located?

Another factor we considered important was provision of a window to the outside world for the announcer. How can an announcer relate to his community if he doesn't know if it is raining or the sun is shining. It is a small, but critical, point.

The site selected was a hillside and the architecture was designed to blend in with the environment. As little change was made in the wooded setting as possible. Alternate proposals, rejected, called for leveling of the hill and erection of a strand steel building. This design is used for insurance offices, auto dealers and any number of other uses. It would not have provided any distinction and would have detracted from the environment.

To erect the building without disturbing the site re-

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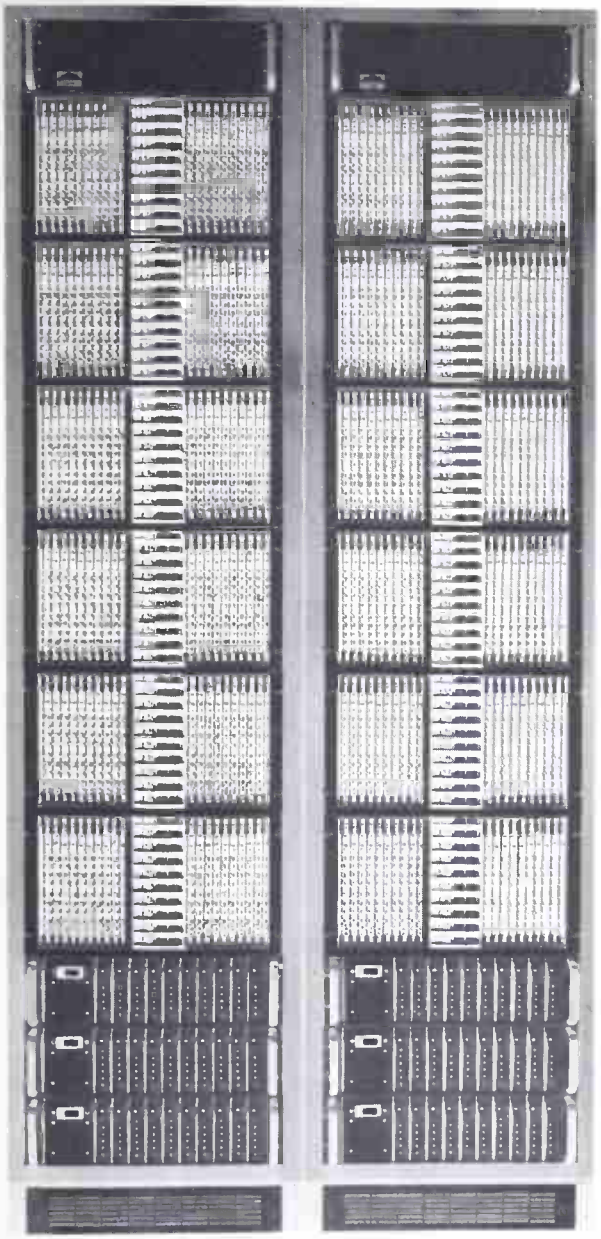

40 x 60 AFV

THE ADC 900

A distribution switching system for those who demand the finest performance available today.

The 900 is the ONLY system to feature a "developed for television" Integrated Circuit Crosspoint to *discretely* switch video-audio-tally, all with superb specifications.

While designed for computer control, the system is supplied with the facilities to accommodate any conventional or non-conventional control scheme.

The 900 is the most flexible, versatile and superior system available today.

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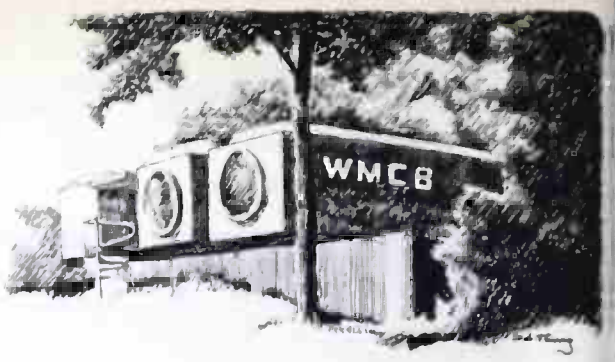
quired that it be modularized. Cost was about $25 per square foot, little different from conventional construction when the construction began in 1972. The building is in three modules on a concrete foundation. To the rear at the top of the hill additional modules can be added later for expansion for more studio and office space.

There were some disadvantages of modular construction, time delays and sealing the unit from rain after it was on-site. Had a more accessible site been used, conventional construction would have been more efficient, but we are distinctive.



Through use of pre-fab modules, WMCB was able to use sloping terrain and preserve trees.

Highest Power Makes A Big City UHF Run Strong Against the V's

BEST STATION AWARD CONTEST
Entry M **Category TV**

Submitted by H. Edward Gordon, Manager of Engineering, WTAF-TV, Channel 29, Philadelphia

Philadelphia has the three TV networks and several independent stations. The Taft Broadcasting Company figured that their UHF station, WTAF-TV, channel 29, needed a lot of power to make a good showing. That is why WTAF-TV went on the air in February, 1974, with 5 million watts of ERP. Taft says it is the "most powerful omnidirectional station in the world." To produce that output WTAF has a three-klystron RCA transmitter, rated at 165 kW, newmmodel TTU-165C, plus a very-high-gain antenna, the RCA TFU-40K, a pressurized Pylon. Engineering studies by William Hansher, vice president for engineering of Taft Broadcasting, indicated that the combination of

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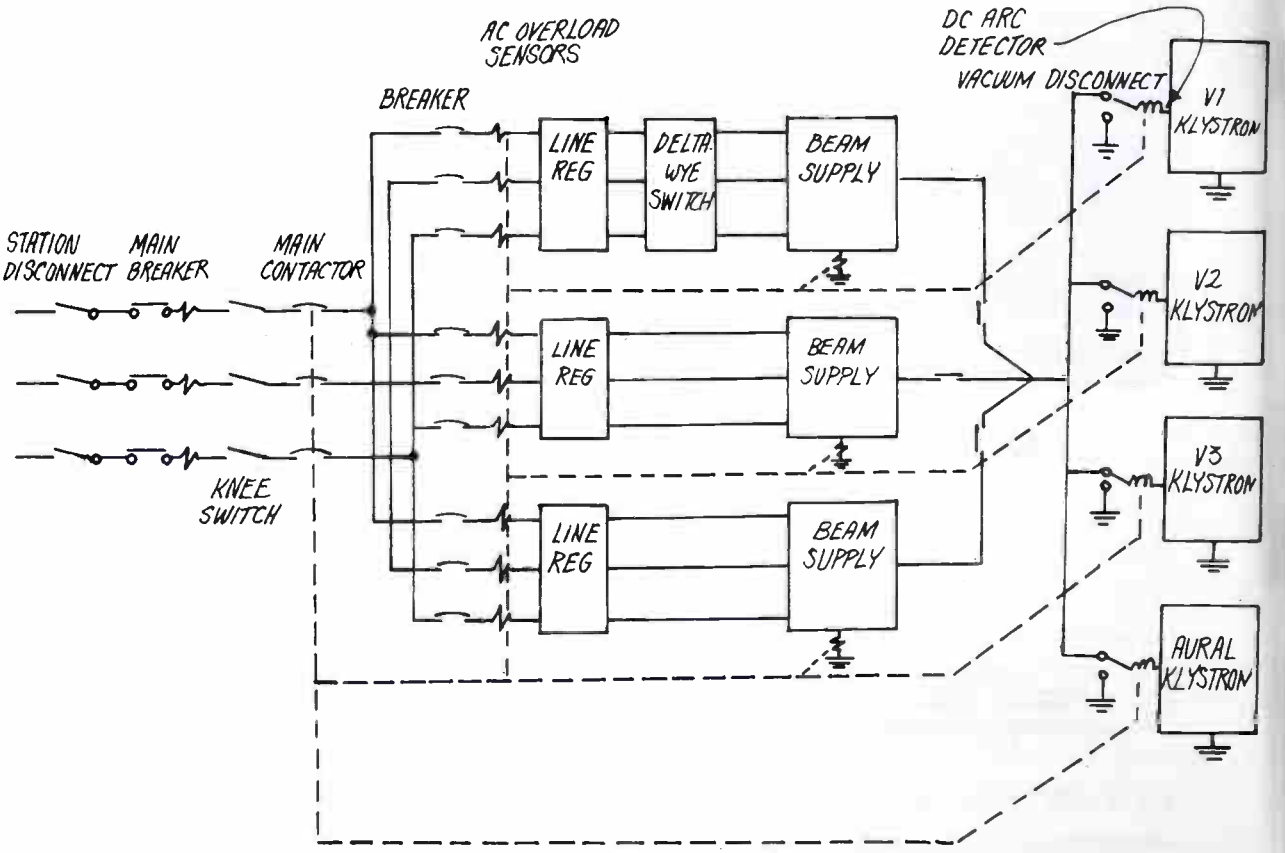
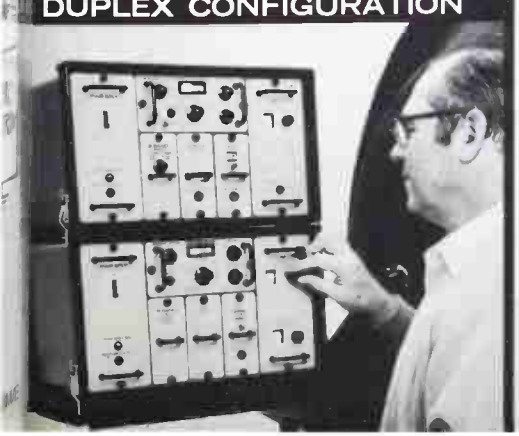


Three transmitters are paralleled to produce 5 million Watts, ERP, at WTAF-RV.

QUICK SET-UP TIME
FOR REMOTE OPERATION

COMPLETE REMOTE
SIMPLEX SYSTEMS

TRIPOD MOUNTED
DUPLEX CONFIGURATION



TCM-6 SERIES PORTABLE MICROWAVE RADIO... the accepted standard

• All Frequency Bands, 1.7 to 15 GHz • Continuous Frequency Tuning • .005% Stability • Built-In Test • Automatic Fault Indication • All Mounting Configurations • Solid-State Modular Design • Internal Sub-Carrier Program Channels

This universal remodulating microwave radio gives high quality performance for up to 1200 FDM voice channels, NTSC video, or high bit rate digital data transmission. Major common carriers and many other leading communicators are using the TCM-6 Series in rapidly increasing numbers.

The TCM-6 Series has been designed for easiest possible operation, testing, and servicing. Quick and simple maintenance stems from a built-in test system, automatic fault isolation indication, plug-in modules and detachable boards. The comprehensive maintenance manual includes a complete list of locally available parts. High reliability is afforded through simple design, high derating of parts, and rugged construction.

TerraCom TCM-6 Series Microwave Radio is available for simplex, duplex, hot standby and diversity operation. Convertible mounting configurations allow rack installation, simplex or duplex tripod mounting, stacking, or vehicular mounting. In each configuration, the RF Unit plug-in modules can be remoted hundreds of feet in weatherproof enclosures at the antenna—eliminating waveguide.

Our customers praise our service. At TerraCom you can rely on personal attention, quick resolution, and fast turnaround. Write or call Bruce Jennings: 9020 Balboa Avenue, San Diego, California 92123, (714) 278-4100.

TERRACOM

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BEST STATION cont. from page 42

a 165-kW (three klystron) transmitter, plus the high gain antenna, was a more economical route to 5 megawatts than a more powerful transmitter and less antenna gain, both in initial cost and in running expenses. It has worked out that way, according to Ed Gordon, engineering manager of WTAF, who estimates about 25 percent saving in operating costs with the less powerful transmitter.

The RCA transmitter has built-in automatic switching to two, or even one klystron, to run at reduced power, in case of any klystron failure. There are three separate beam supplies, any two of which can operate two klystrons—switching is provided for immediate assignment. To further the redundancy of the system, to make it nearly failure-proof for air time, WTAF's staff has added automatic exciter switching and a solid-state standby IPA, providing not only redundancy but meeting the 20% standby power requirement required by the FCC with once-a-week remote control inspection.

The power distribution system, designed by the WTAF Engineering staff, is quite unusual in using separate line regulators for each of the three individual klystron beam supplies (see drawing). "This means the station can lose a line regulator or power supply without going off the air," says Ed Gordon. Using separate regulators, he adds, increased initial cost, but the management is satisfied that the investment was an excellent one.

The antenna, in addition to extremely high gain, is also unusual in its adaptation to a very difficult environment. The Roxborough (Philadelphia) antenna "farm" is situated in the midst of a city incinerator site which provides a toxic, highly polluted atmosphere. To minimize the effects, the Channel 29 TFU-40K Custom Pylon Antenna was modified and re-designed to be completely pressurized. Included is a gasket seal around the slot covers and related components. The top and bottom of the antenna are also sealed, along with a special metallic asbestos "o" ring at the center flange connections of the outer pole. The omnidirectional antenna stands 100 feet tall, weighs 12 tons and is mounted on the station's existing 1082 foot tower.

Also included in the "package" was a new transmitter building with advanced heating and cooling design, and careful layout for efficient operation.

The results, says Taft, have clearly justified the investment, with WTAF running very much stronger than before in the Philadelphia market, hitting the No. 1 position with some programs (mostly local sports). Viewers are overwhelmingly impressed with the "clearer" signal, and careful field intensity studies by Taft have shown the reason: the signal *is* far better throughout the area.

Producing Video For Many Educational Needs—At Minimum Cost

BEST STATION AWARD CONTEST
Entry N **Category TV**

Submitted by David L. Bower, Chief Engineer, Department of Television Services, University of Tennessee

The television installation at the University of Tennessee serves a very large and growing array of educational "markets." As one part of an ongoing enlargement and upgrading of facilities, the University recently completed a new switching and distribution system for three studios that produce programming for the following needs (which are only a portion of the outlets now being served or to be served according to plans for the future):

- Two-inch (quad) color tapes of courses for college credit, distributed on tape to Tennessee's five educational TV stations.
- Helical-scan color tapes (Sony-U-Matic), sent out to 15 Head Start programs.
- Undergraduate courses on monochrome quad tape distributed by RF closed-circuit channels to 150 TV receivers around the Knoxville campus.
- Color and monochrome educational programming to be fed by coax to local cable TV system for city-wide distribution.
- Monochrome helican-scan programs for gradu-

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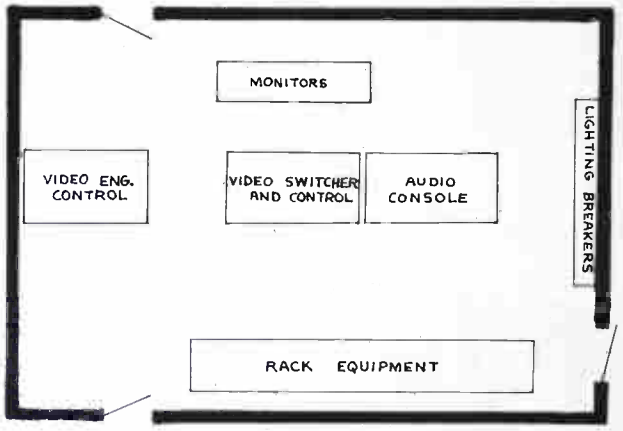
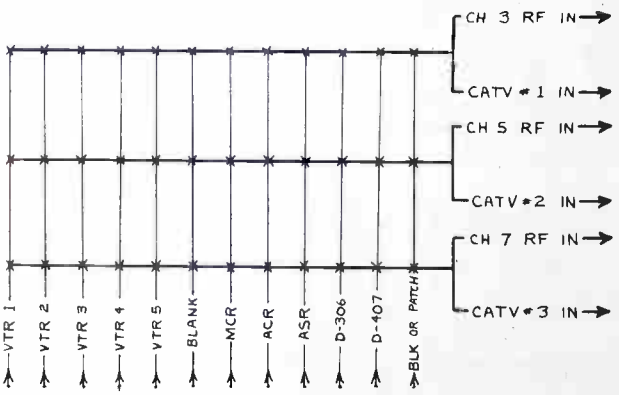


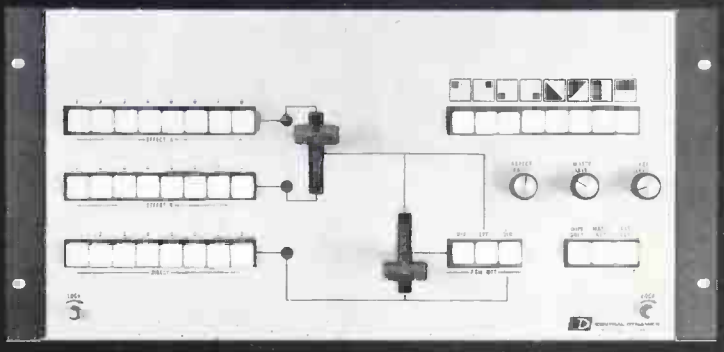
Master control room layout at Univ. of Tenn.



Audio/video switching matrix feeding into multi-channel distribution system.

small... is sometimes BIG ENOUGH!

Central Dynamics Introduces the New VS-10 TV Color Production Switcher for Mobile, CATV, Industrial and Educational Applications



Priced at Only $3350, We believe it represents a major value break-through for professional programming with true broadcast quality

You don't always have to be *big* and sophisticated to make it as a TV Color Production Switcher. The low cost VS-10 is an 8-input, 3-bus, compact, self contained, vertical interval, solid state switcher with ample sophistication for professional programming with *true broadcast quality*. Impressive special effects, mix amplifier, wipe/key amplifier, output selector and broad operational capabilities provide real production talent. A unique automatic special effects preview allows presetting keys and wipes for smooth, dramatic transitions to effects. The VS-10 lets you chroma key, matte key, wipe or dissolve to keys, dissolve or wipe between program sources, dissolve to special effects, or insert titles. Other standard features include a Cut Bus and true On-Air tally system.
The VS-10 is compatible with NTSC, PAL-M and PAL color systems.
All this . . . plus the proven reliability of the largest and most sophisticated Central Dynamics Production Switchers.

Sometimes . . .
SMALL *is* Big Enough!

Control Features

Wipe - Fader positions A & B signals. Aspect Ratio Control varies configuration of 4 corner patterns.

Keys - Wipe Keys on or off. Key Level Control adjusts slicing level of key signals. Matte Level Control adjusts luminance value

Mix - Fader proportionally controls output signals from the Direct Bus and the Key/Wipe Amplifier.

Switches - Crosspoint *and* Output Selection switched in vertical interval with illuminated momentary pushbuttons. Wipe, Key Mode & Pattern switches are mechanically interlocked pushbuttons. Tally lights on each input bus indicate "on-air" signal.

Specifications

Video - 8 loop through inputs (BNC) externally terminated.
1 V p-p composite *or* 0.7 V p-p non-composite synchronous signals.
1 External/Chroma Key input terminated internally. (CDL Chroma Keyer Module is optional)

Pulse - 1 Sync input (BNC) externally terminated, 2 to 6 V p-p.

Tally - Relay interface with 14-pin Amphenol connector with mating connector.

Power - 115 VAC ±10% 60 Hz or 230 VAC ±10% 50 Hz (switchable). 50 VA.

Mounting - Rack frame mountable with hinged front panel. 19" (483 mm) W x 8-¾" (22 mm) H x 7" (178 mm) D. All external connections are on rear of frame. 18 lbs. (8.5 Kg.)

Unit includes module extender, Operating & Maintenance Manual.

Central Dynamics has earned a reputation as one of the unquestioned leaders in TV Broadcast Equipment. Our standard line of production switchers are priced from $11,000 to $70,000.

The VS-10 is the first of a series to be *engineered* and *priced* to fill the gap between inexpensive, inadequate switchers and the more sophisticated, expensive ones.

Solid-state technology, and volume production techniques allow the VS-10 to be offered at this remarkable price.

However, you purchase the VS-10 with complete confidence that it is backed by the engineering experience, integrity and reputation of Central Dynamics.

We are convinced, as you will be, that the VS-10 *Broadcast Quality,* TV Color Production Switcher is the best value available on the market. We're delivering production units now.

Order yours today . . . at only $3350.

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YOU'RE ABO
YOUR BRAND

No matter how demanding you are; no matter what parameters you consider most important, we've developed a new videotape that could change your ideas about performance...consistency...maybe even the brand you should buy.

GETTING DOWN TO BASICS

Before we could even talk to you about broadcast-quality videotape, we knew we'd have to be better than the best. Because the state of the art is already highly refined...and we're "the new guy on the block."

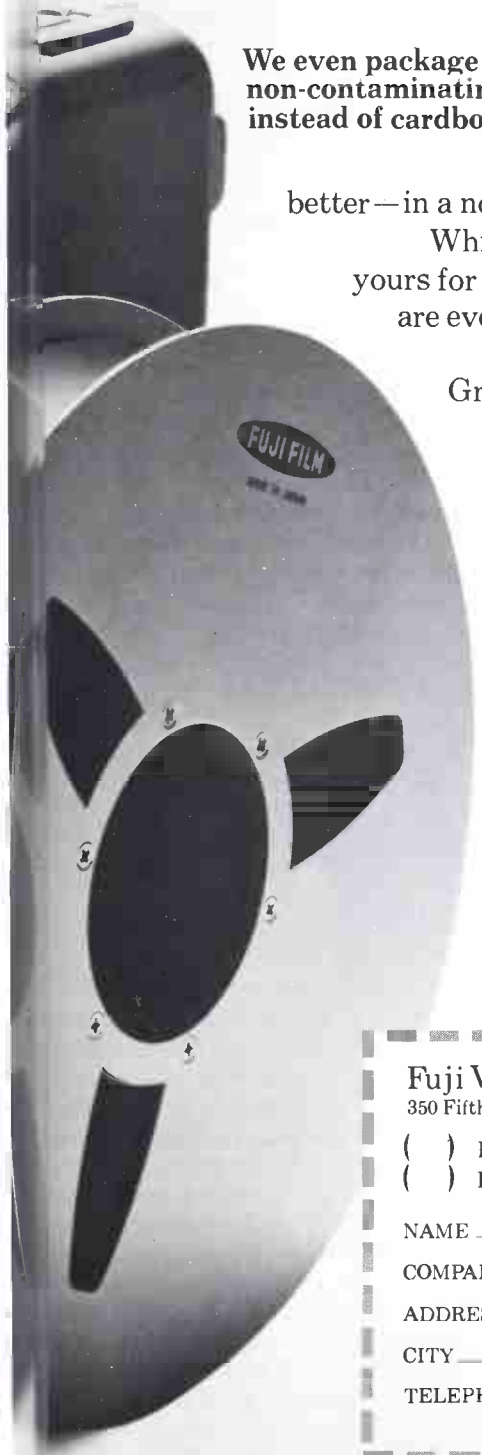
So before we opened our mouths, we opened our pockets. Spent sizeable amounts on R&D and manufacturing facilities. And time: time to work on some of the more annoying and costly tape problems you wrestle day-to-day. Problems like chroma noise, dropouts, edge damage and overall consistency. We took a new look at the not-so-basic basics. Like particle size, shape and composition. Binder material and application. Anti-static treatment. Friction coefficient. And magnetic angle orientation. (To name but a few.)

The result is our new H701 High-Band Videotape: so good, it's already surprised—and impressed—a number of demanding people. Like a major syndicator, who won't use anything else for mastering. Yet finds it economical and durable enough to order 5,000 reels for dupes.

BETTER PROPERTIES: BETTER BUSINESS

If we've impressed people, we can't say we're surprised. In frequency characteristics, chroma level, DG and DP, off-the-shelf H701 tests like a reference tape. Chroma noise, reduced to new lows. Sensitivity, increased to new highs (video and audio). Dramatically lowered abrasion. Improved slitting and winding. New standards of reel-to-reel consistency. We even pack it

TO CHANGE F VIDEOTAPE.



We even package it better—non-contaminating plastic, instead of cardboard.

better—in a non-contaminating plastic box!

While the technical data are impressive (and, incidentally, yours for the asking), the business implications for you are even more so.

Consider: A practical end to the need for tape grading. Greater consistency on A&B roll edits. Longer head and capstan life. Fewer breakages. Longer re-use. And that's just the beginning.

ALL THIS...AND COST SAVINGS, TOO.

All the improvements in our videotape weren't confined to the technical, however. We also found a way to hold down our price. Partly, through refinements in our manufacturing technique. And partly, quite frankly, because we're sincerely interested in your business.

TALK IS CHEAP

No matter how much better H701 is, it won't do either of us any good until you try the tape yourself. Send for our complete information package, and we'll make you an offer you'll find hard to refuse—even if you can resist the specifications.

FUJI VIDEOTAPE

B

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( ) I'm interested. Tell me more about H701 High Band Videotape and your special offer.
( ) How can I lose? Call me about an order.

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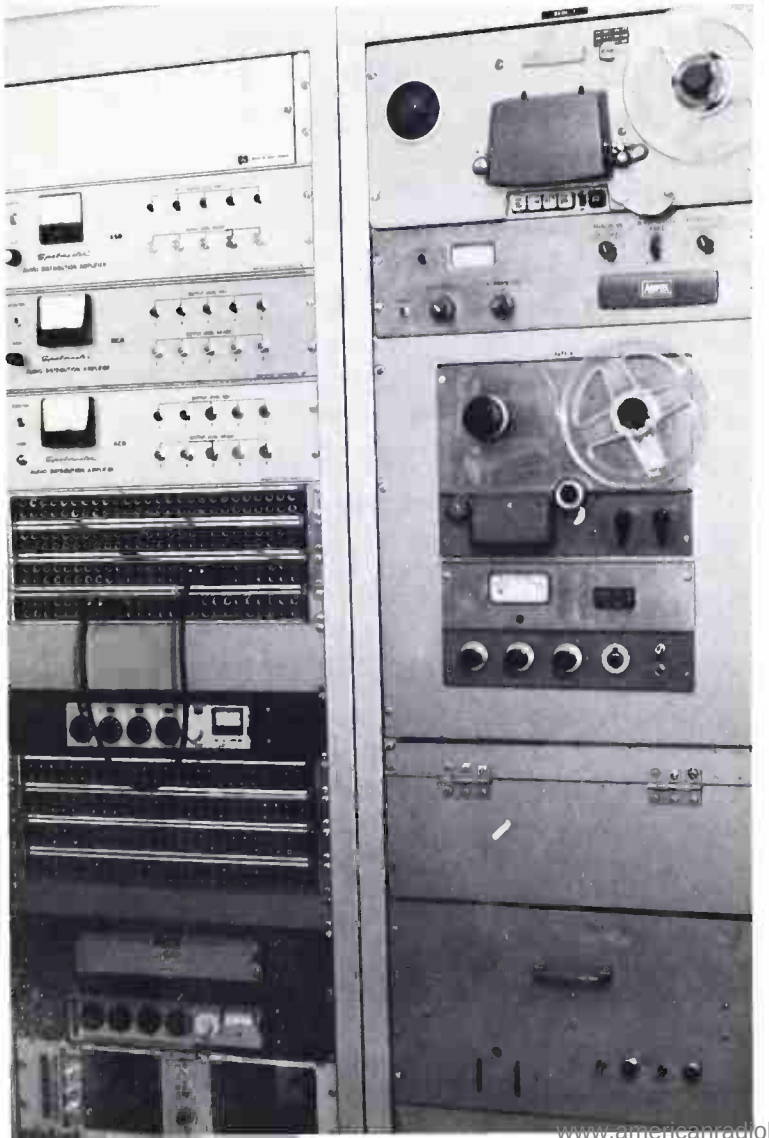
TELEPHONE ( ) _____ _____
AREA EXTENSION

Circle 119 on Reader Service Card

New Fairchild/Robins audio console installed in the master control room at Univ. of Tenn.

Rack containing audio distribution equipment. DAs were required because of extensive feed capability. Photos courtesy of William F. Wilson.



ate-level college courses at educational institutions throughout the state.

All the audio equipment, the color control equipment, and one color switching room have been completed; in process is a new production switching system with related hardware and an audio-video distribution switcher for both the closed circuit and the city-wide CATV capability.

The extensive audio feed capabilities dictated the need for audio distribution amplifiers. Three Spotmaster DA's for the three control room areas provide individual level control on all balanced-transformer outputs, so all can be brought to the proper level (0 Vu). The remaining twelve audio DA's are Television Computer Corporation type with balanced, non-transformer outputs. These were installed with the proper pads to produce a close 0 Vu level throughout the completed system. An extensive patch panel bay is integrated in the audio DA package for testing and bypass in case of failure.

A Fairchild/Robins modular plug-in package concept was chosen for a new audio console. All the interconnection wiring was done here at the University, saving several thousand dollars in manufacturer's construction costs. The board is designed to monitor all incoming and outgoing lines of importance. A studio feed selector amplifier system is built in (with relay interlock) for the three-studio operation. The board provided two similar outputs (program and audition) so that two productions can be handled with the console at the same time.

A cue channel is provided for all twelve high level input lines. All low and high level lines are selectable by illuminated pushbotton control; therefore, patching problems are eliminated. The twelve high level lines are delegated through three fader assemblies. The thirty-six microphone inputs can be selected through nine preamplifiers. All level functions are controlled by vertical faders.

Grounded conduit was used throughout for all low level lines to reduce the effects of external interference. Audio terminal blocks were provided at all critical points in the plant for interconnection. Individual power supplies are provided for audio and relay-light functions.

The quadruplex VTR routing switcher, which was installed soon after the audio console, in an ADC 12 × 5 with four of the five banks being used for VTR inputs. The fifth quad is a playback only machine. This switcher provides video level and pre-equalization control for all outputs on the long runs to the VTR room. The fifth bank is connected to a similar switcher at the educational broadcast station next door (WSJK-TV). Thus, either the production system or the broadcast station can select among any of the various sources as needed. Such an interconnect allows a very large savings through efficiency in equipment utilization.

Purchased was a new color Ampex VR-1200B with editor. Of the remaining quad machines, three are VR-1100 Ampex types and one is an RCA TR-3. In addition, our department employs a mobile broadcast taping van (see BM/E 1973 November issue).

The color cameras, Shibaden FPC-1000A's, were originally procured for high quality helical scan use.

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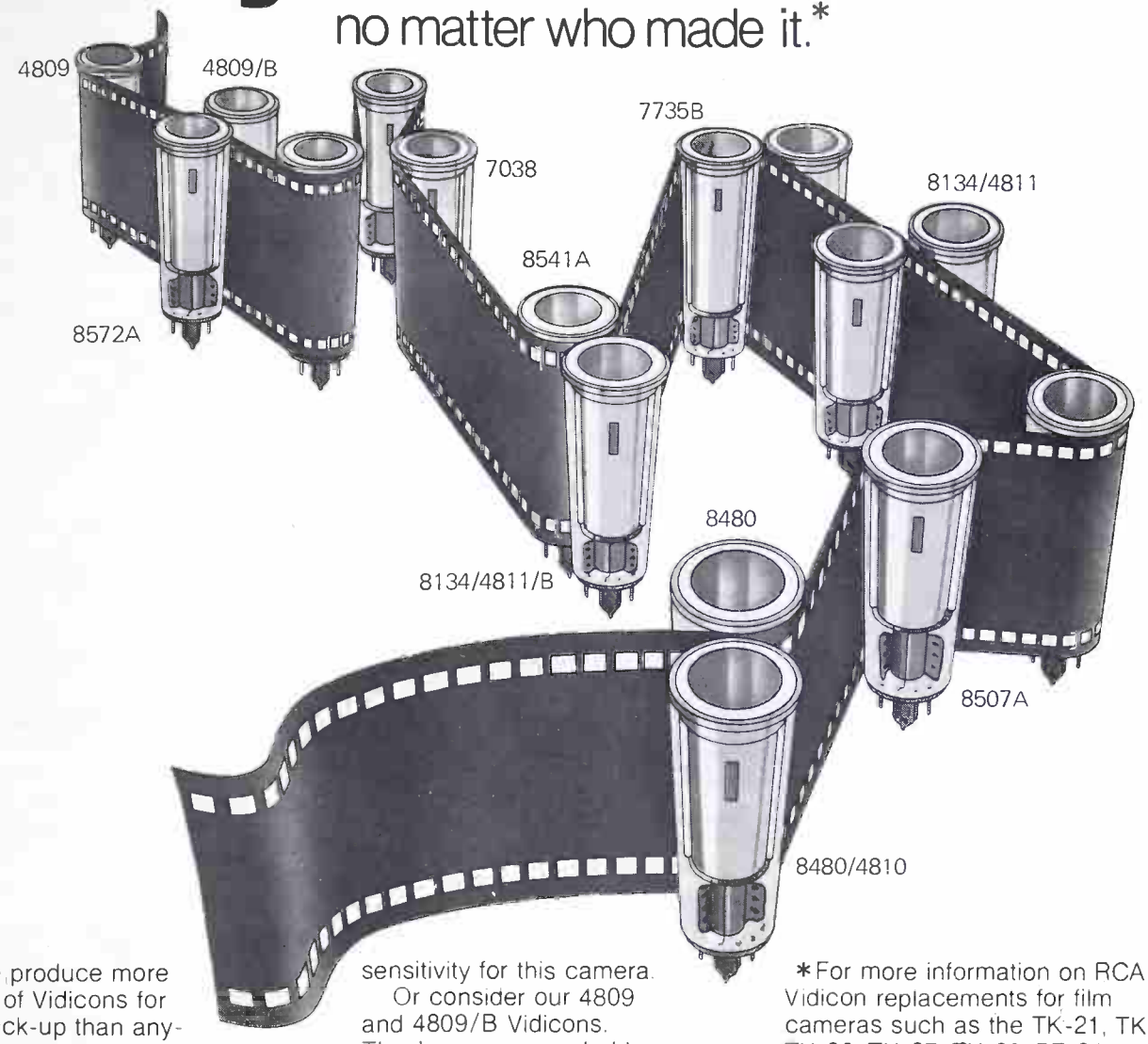
Select RCA film pick-up vidicons for your camera...

no matter who made it.*



We produce more types of Vidicons for film pick-up than anybody else.

We make so many because we've learned that top film camera performance requires tailoring Vidicons to camera requirements. And our applications engineers have studied them all.

Take our 8480/4810 and 8134/4811 film pick-up Vidicons, for example. The specifications defining their performance characteristics are controlled to provide exceptional service in the RCA camera model TK-27. And we also make type 8134/4811/B to assure a high blue-channel sensitivity for this camera.

Or consider our 4809 and 4809/B Vidicons. They're recommended because they are specifically designed, manufactured and tested to produce best performance under conditions imposed by today's 3-tube color film pick-up requirements. The 4809/B is specifically processed and tested to meet blue-channel sensitivity requirements. Both of these tubes have been successfully applied in the RCA camera model TK-28.

This is the kind of tailor-made performance you can count on throughout the full RCA Vidicon line. Take advantage of it now.

*For more information on RCA Vidicon replacements for film cameras such as the TK-21, TK-22, TK-26, TK-27, TK-28, PE-24, PE-240, PE-245, IVC-92, IVC-92B, IVC-210, IVC-230, IVC-240, as well as the 1500 and TCF-3000, see your RCA Representative or RCA Camera Tube Distributor. Or write: Commercial Engineering, RCA, Harrison, N.J. 07029.

RCA Electro Optics.

Color control racks include digital color encoder and imager enhancers to upgrade Shibaden FPC-1000A cameras.

but with consideration for eventual broadcast use. When this broadcast need materialized, Telemation TCE-3000 digital color encoders were purchased to interface with these cameras. A Dynasciences inline image enhancer was also installed. This combination of equipment, while not comparable to top-line state of the art cameras, does produce very good broadcast color quality for a minimal monetary investment. The encoders offer functions such as noise coring, luminance out of green, and black stretch which greatly improves the operation of the cameras. The inline image enhancer, of course, does much to sharpen the response of the switcher output.

At the present time, all color shading equipment is located in two control racks for operation by one man. An ADC remote controlled 12 × 1 video switcher permits selection of the desired sources for shading purposes. This switcher feeds a color match monitor, monochrome monitor, a 529 wave-form monitor and, finally, a Tektronix 520A vectorscope.

Also part of the system will be a Grass Valley 1400-11 fifteen input production switcher, with a processing amplifier and chroma keyer. Preview will be with an external remote controlled switching matrix. The Grass Valley switcher, the RF routing switcher buttons, and all machine-slide controls will be mounted in a Fairchild console housing, identical in size to the audio console.

RF distribution will be with an ADC 12 × 3 remote controlled A/V switcher. This matrix will feed the closed circuit campus system and the city wide CATV simultaneously (see diagram).

Also in process are new Grass Valley video and pulse distribution amplifiers at all pertinent areas of our operation. As with the audio DA installation, the concept will be to provide a one volt P-P video level throughout the system.

In all, the basic system is designed to be operated with minimal personnel at an economical cost. As an example, a major color production could utilize an audio man, video engineer, a camera man and director. For a less complicated monochrome show, the one man plus cameraman is possible.

Independent TV Gets New Plant and Gear To Make Operation Easier

BEST STATION AWARD CONTEST
Entry O **Category TV**

Submitted by Leo Domeier, Chief Engineer, WTCN-TV, Channel 11, Minneapolis, Minn.

The management of Metromedia's WTCN-TV, Channel 11 in Minneapolis, had a clear idea of what they wanted to buy with the approximately $6 million dollars allocated to the reconstruction and re-equipping of their transmitting plant. There were two general objectives: a more finished-looking product; high efficiency in the use of manpower.

These two came into sharpest focus in the design of the new master control room. Leo Domeier, Chief En-

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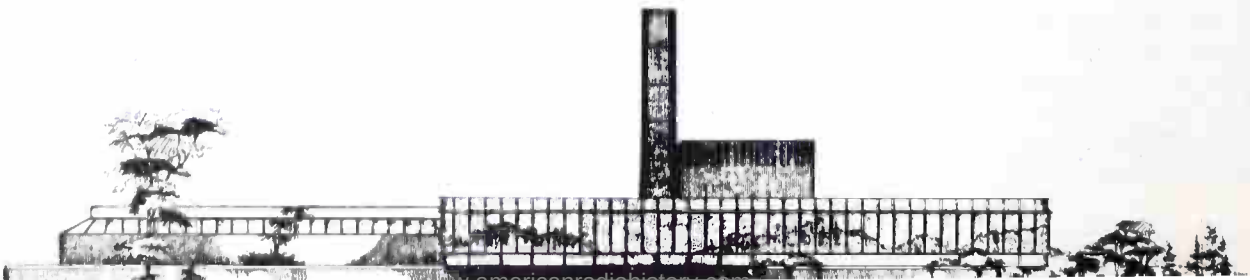

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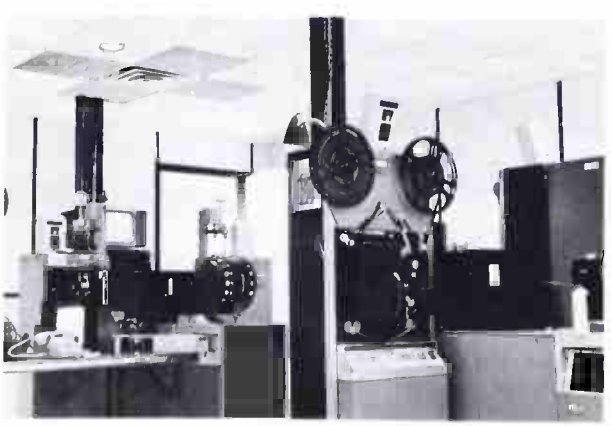
BEST STATION

cont. from page 50

gineer and principal designer of the new technical plant, says: "At our old facility, we had five people working in the master control area, which in a manual operation provided too many possibilities for human error for a really smooth on-air operation. You can get that many people, if they are really good—and our people are really good—to coordinate efforts with split-second precision for an hour or two; however, during the course of a busy eight-hour shift there are bound to be some two or three second lags on fast rolls, which, in the end, adds up to a ragged look on the home monitor."

Through the use of automated switching, master control operators have been reduced from five to three people: master control console operator, a film chain operator, and a VTR operator. Master Control man has plenty of time to keep a sharp eye on monitors.

One man can keep the videotape recorders operating.



Another operator keeps the six film chains working. (The station has a new Pako color film processor.)

Domeier went on to comment that for most independent stations, daily operations are considerably more detailed and challenging than they are for network affiliates. The latter may be able to operate for up to 30 minutes at a time on a continuous feed, while most independents have to roll tape and/or film every six to seven minutes.

Domeier had advice and assistance from Metromedia's director of engineering, Richard Anderson, and from engineering staffs of Metromedia stations in New York and Los Angeles, who had considerable experience with automated editing and computer controlled operations.

The new plant includes a completely new building (drawing), with 65,000 square feet on two floors, and two broadcast studios with 7500 square feet between them. Five RCA TK 45 color cameras, each valued at $80,000, were purchased for the new facility, along with six film islands (four of them color). Three Ampex quad-head videotape recorders were salvaged from the old facility, which was about the only major equipment that wasn't replaced. The two studios are totally sound-proofed, and one provides an audience seating capacity for up to 200 persons.

At the hub of the new facility is a Central Dynamics APC 610/200 computerized control console with associated disc recorders, special effects generators and other peripherals. All the monitors (with the exception of several units delivered as part of the camera and filmchain packages) in the master control room, editing facilities and in the studios are from Conrac. Model RHA-19, the master control facility, along with SNA-9 and 14-inch monochrome models. Totalling more then 50 in all, the Conrac monitors are also used in the editing room, studios and other facilities.

"Monitor selection may seem like a small consideration," Domeier says, "in the overall scope of equipping a new facility of this size. However, we knew that in editing and in master control the image that we record on tape or that goes out on the air is only as good as what we see on the monitors."

Service on the job was accounted for by the availability of a local systems supplier, Jaynus Associates, in Minneapolis, which is knowledgeable and responsive to the station's needs. "When you go into an enterprise of this size and scope," says Domeier, "you don't want anything to go wrong. However, in the beginning when your own experience is limited and most of the new equipment is untested and untried, it means a lot to know that if there was a problem someone capable is available to help. And Jaynus Associates certainly filled that gap."

Fifteen days after the new building was opened in July, 1974, the engineering department moved in. There was no parallel operation, Domeier stresses.

continued on page 54

If You're Spending Too Much On Tape, Metrotech Can Show You How To Cut Down.

When it comes to voice logging, the slower the better. The more tape you use, the more money you spend. Our new 400 Logging Recorder is not only slower and better, but, when teamed with our 4400 Time Code Generator, also surer.

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All that time is also about twice the normal time you get from other loggers. That means you cut your tape costs by at least half.

But being super slow is not the only thing that makes the 400 better. Just check out some of the other features. If a tape should break, a stand-by system can automatically be triggered to take over. Transport control circuitry notes the failure and the memory logic system remembers the track and direction at the time of the break.

New 400 Logger — Now in Production at Mountain View, California

A power failure can't fool the 400 either. The memory will restart the logger in exactly the same operating mode when power is restored.

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The 400 Logging Recorder and the 4400 Time Code Generator—together they can save you everything you want a logger to save. And more.

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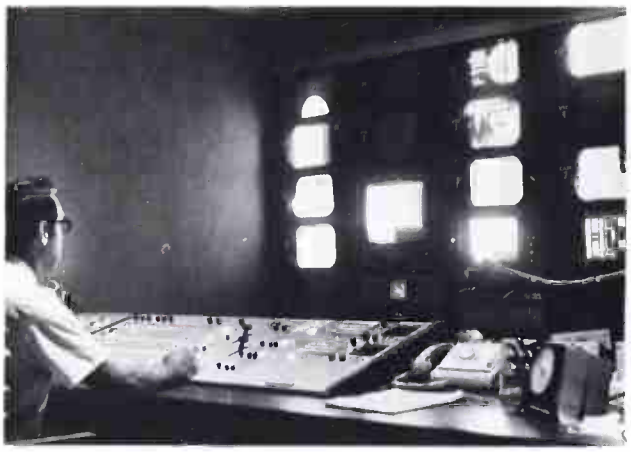
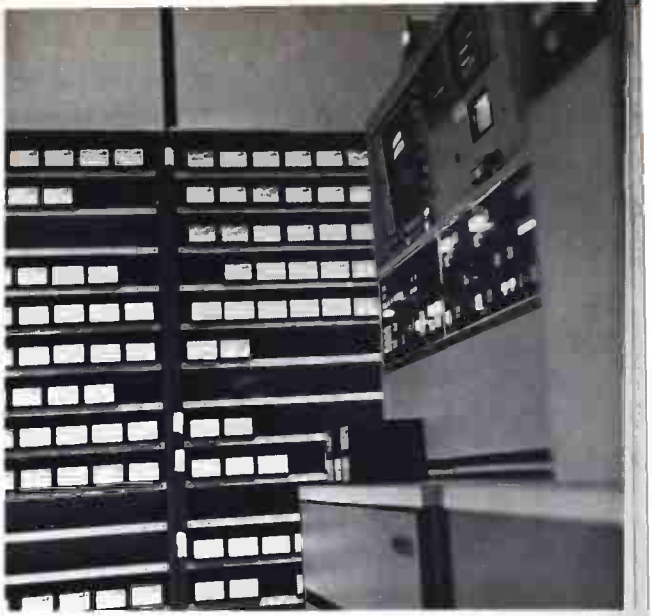


Electronic editing at WTCN speeds and enhances production.



Ampex ACR 25 is vital to operation.

"We moved in one afternoon, and were operating a fully automatic master control facility from sign-on the next morning. Certainly, there have been some technical and operational problems, but these have all been solved with no great traumas."

The master control function is now performed by three—instead of five—people: one at the master control console, one in the film projection room and the third in the videotape area. However, while the manpower savings is a consideration, a more important one is the enhanced smoothness of on-air operations, Domeier says.

The new station isn't scheduled to become fully operational until early 1975, when the second studio—the one designed for commercial production—is ready for use. By then, Domeier relates, a second automated editing facility also will be operative, completely separating editorial and commercial production.

Domeier concludes, "We are definitely transmitting a better looking product. And morale has been boosted considerably. However, it goes deeper than that. Our sales people believe that our enhanced production capabilities and our improved look has given them a considerable edge. Time buyers and sponsors are impressed, both locally and nationally. Certainly, it's much too early to measure the results in terms of increased sales or shares of audiences. But we do believe that some eyes will soon be opened in this regard."

Production, In Studio And Van, For Western Canada's Independent TV

BEST STATION AWARD CONTEST
Entry P **Category TV**

Submitted by Gary Jones, Manager of Production, CITV, Edmonton, Alberta

The first independent VHF station in Western Canada, CITV of Edmonton, went on the air September 1st, 1974 with a very strong commitment to programming designed specially for Western Canadians. The Westerners have long felt their special interests to be ignored by the "Eastern-oriented" network fare they get through the two TV outlets previously set up in Edmonton.

So the management of CITV, as part of the nearly $6 million budgeted to build the station, allocated money for highly sophisticated, computerized program equipment production. The decision to use state-of-the-art production equipment sprang largely from two considerations: todays viewers, advertisers, and ad agencies are used to, and tend to demand, top sophistication in production techniques; the production facilities could be aimed at program work for

continued on page 56

WTCN has two studios providing some 7500 square feet of production space. Station also has 40-foot van capable of operating six cameras.

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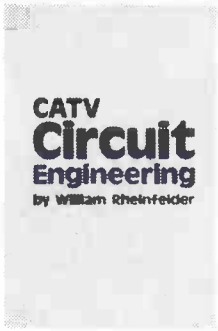

Here, at last, is Rheinfelder's long-awaited text—an entire book devoted specifically to the particular problems of designing CATV circuits, with special emphasis on CATV amplifiers. It's a virtual treasurehouse of practical advice and techniques on CATV design. With this book you will surely and easily meet the demanding circuit specifications of the CATV industry. Drawing on his vast experience in CATV design and manufacture, Mr. Rheinfelder shows you how to avoid all the most common design pitfalls.(gives you the **dos** as well as the **don'ts**).

This book provides ALL the CATV circuit design knowledge you need...tells all about specifications; first-, second-, and third- generation design; and pricing policies for CATV equipment. One Chapter clears up the confusion about the bewildering array of CATV amplifiers in use, with a brief discussion of each. Succeeding Chapters zero in on specific CATV amplifiers. Manual gain control (mgc), automatic gain control (agc), main-trunk and distribution amplifiers—the basic and advanced design of each (showing actual working circuits) is made surprisingly clear.

This is not a heavy, math-laden textbook but a practical, authoritative, and complete guide to the **fastest, most accurate CATV design** possible. The following wide range of auxiliary equipment is covered to make the text truly complete: level monitors, combining networks, power supplies, low- and high-band oscillators, directional taps—and the list goes on! A Chapter on design options covers all bases, including: ICs, amplified splices, FETs, two-way transmission, compound amplifiers, and split-band amplifiers. The sophisticated CATV test techniques explained are complicated, but without them, the designer or manufacturer can easily be led down a primrose path. This book puts you on the **right** path and keeps you there, explaining these tests neatly and completely in everyday English.

Four Appendices round out the book, providing CATV charts, tables, and diagrams, plus a comprehensive glossary. By themselves, these Appendices comprise a minihandbook of CATV data. 294 pps., 138 ill.

"CATV Circuit Engineering" is published to sell at $14.95, but if you order now, you can save $2.00. Pre-Publication price prevails through February 15th, 1975. Order today at our risk for 10-day FREE examination. SEND NO MONEY! Simply fill in and mail the handy, NO-RISK COUPON below to receive your own copy of this helpful volume!

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BEST STATION

cont. from page 54

outsiders, as well as for the station, thus hopefully adding substantially to station income.

Two other main guidelines for the production design were: the feeling of the engineering staff that the audio in most TV production was under-produced, technically too far below the visual quality; and the desire of CITV to produce programs at top quality level, with a mobile "studio" as well as in the main building.

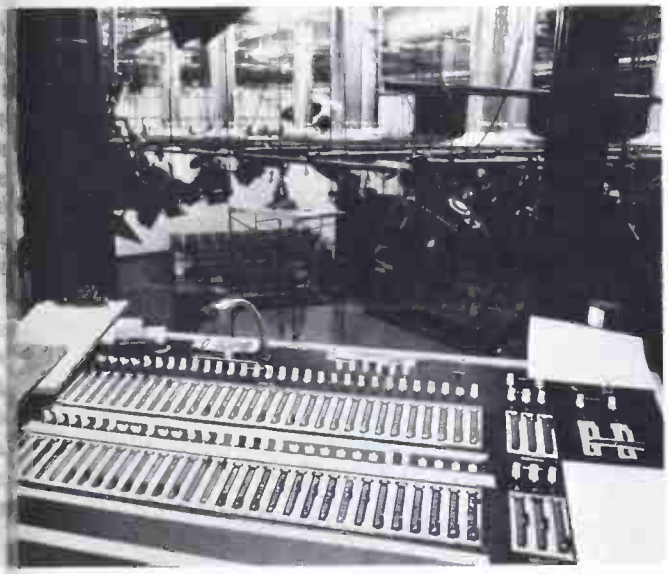
The main features of the plant and equipment assembled by CITV to meet these objectives include a new 40,000-square-foot building, with two full color studios, one of which has seating for 200 people. In the building are seven RCA TK-45 color cameras, three of which have 30:1 Schneider zoom lenses; Sarkes-Tarzian video switchers with the full complement of push-button video effects (280 of them); 16-track, 24-input audio control console custom-built by Ward-Beck, separate from the video switching, in consonance with the engineering staff's desire to upgrade audio throughout the operation; Four Ampex AVR-1's, for the production studios and an Ampex ACR-25 cart machine, for video programming—all commercials are transferred to carts for airing; Ampex RA-4000 time-code editing equipment, for automated editing of videotape programs.

To make the most efficient use of equipment in the post-production phase, special editing tapes are recorded on helical machines at the same time as the quad originals. The editor makes his choices with the editing tape, prepares a complete cut, special effects, and assembly instruction. A technician can then put the final quad tape together during late hours, or when long movies are being run—whenever, that is, two AVR-1's are free.

In addition to the above, which are installed in the main building, the mobile van, which cost about $1 million, is equipped to produce programs at the same high quality level. In the van are two AVR-1's and an Ampex MM-1100 audio recorder; complete video and audio switching and controls (again by Sarkes-Tarzian and Ward-Beck, respectively); 25 kW of regulated power; 60,000 BTU's of cooling; carrying space and inputs for up to eight cameras; and an elaborate

Production area, with three of station's Ampex AVR-1's in view.

Audio control position for mobile studio, looking forward toward video monitors, etc.



View over video switcher looking into Studio #1.

external interconnect bulkhead which allows the van to be parked in a bay in the main building, and hooked into the main plant as another production studio.

However, it is the "on-location" capability of this van that mainly instigated its purchase. Already CITV has put out various sports programs through the mobile van, but more importantly, has recorded local concerts by musicians such as Tom Jones and Paul Anka, and plans many more, including a series by the Edmonton Symphony.

The station's announced programming plans are complex and ambitious, and promise to diversify and enrich the TV fare available in Western Canada. They include a large series of feature films never shown in the area, among them such titles as "Love Story," "West Side Story," and "Paint Your Wagon." The station had about 1000 titles under contract at sign-on. There will be French-language entertainment programs, considered inadequately represented previously, and nightly in-depth news.

Whatever CITV decides to do in programming, the technical capability to do it in a finished style will obviously be available.

NAFMB's National Radio Broadcasters Conference is Off and Running

First conference, separate from NAB, though small, is success. Exhibitors liked notion of being star attraction with no video distractions.

Most FM broadcasters who made the trip to New Orleans expected no more than some good discussion and some good eating. Exhibitors who signed up for what they considered a high risk affair were more tremulous. Would registration get high enough to make the expense worthwhile? The answer came a little twisted: the quantity was low (probably less than 500 honest-to-goodness broadcasters* of 750 registered), but the quality was high. Everybody was satisfied. As it turned out, engineers were practically nonexistant except for those who also happened to own the station. But the non-technical attendees were eager for an education and equipment manufacturers were ready to oblige.

Many took their spouses. (Twice the cost and half the fun, quipped keynoter Jack G. Thayer).

Because FM broadcasters are just beginning to realize that the quick way to bigger audiences is by supplementing one's local talent with some out-of-town expertise, program consultants and programs suppliers attending were happy.

Led by cheerleader Jack G. Thayer, president of NBC Radio (billed as a keynote address), FM broadcasters rose in applause to the notion that they are now professionals and through their genuine enthusiasm will succeed. Nobody loves a pessimist, said Thayer, but people are always turned on by enthusiasm and zest. Quoting Oliver Wendell Holmes, Thayer said "It's not where we are but in what direction we're going that's important."

The ebulient Thayer said enthusiasm makes you feel better, "Don't knock it, don't block it, unlock it." And promoting the power of positive thinking, Thayer declared the saying "I'll believe it when I see it," should be turned around to, "You will see it when you believe"—all of which was to say FMers have been selling their medium short. Customer's impressions of the medium have been set by broadcasters—not from their own knowledge.

Thayer said FMers could perform as professionals if they sold with integrity, enthusiasm and helped others grow. This means being a friend and not a manipulator. As for knowing in what direction broadcasters should grow, Thayer urged keen sensitivity and consciousness to what is going on in society. He noted 33 radio formats now, and expected others to materialize.

continued on page 60

Sessions were well attended at conference.

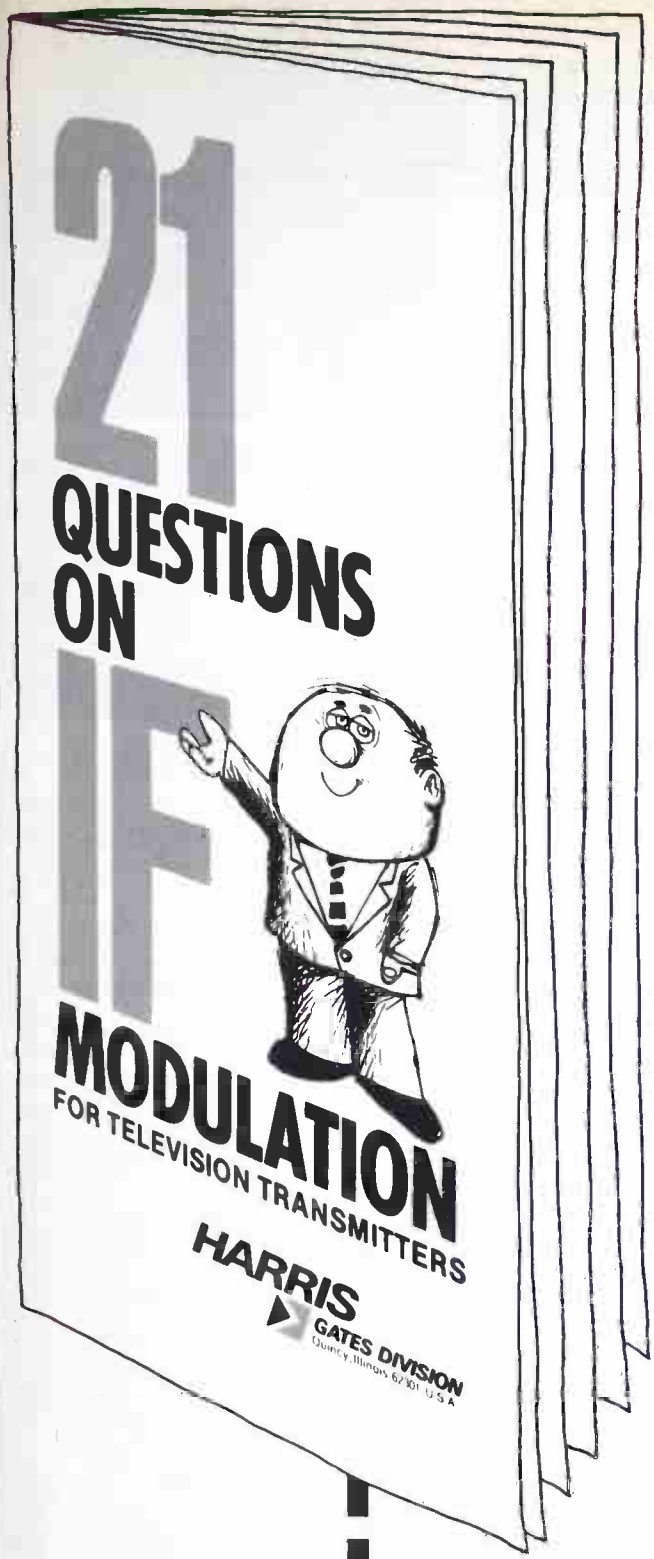
FM Overtake AM in 1981?

T. Mitchell Hastings, Jr., president of WBCN-FM in Boston and one of the pioneers in FM, predicted that FM radio would overtake AM about 1981. While the average FM station is in the red for 1974, the average will be earning $484, 540 in 1981. Growth of FM to total radio will be 23.3% a year, he said, citing a recent Harvard Business School study. Currently FM is getting only 11.23% of the national radio advertising dollar. By 1980, FM car radio sales (now FM's Achilles heel) will equal AM.

Quello Says Don't Buy Peace At Any Price

FM broadcasters will have to devote air-time to community affairs but the broadcaster should not abdicate responsibility in reaching agreement with local groups by buying peace at any price, said FCC Commissioner James H. Quello in a speech before the NAFMB Conference. Quello said he'd be suspicious of agreements affecting programming exacted under the threat of petition to deny. The broadcaster is the licensee and he alone must determine the public's interest through the ascertainment process. The interests of the majority should not be disregarded to accomodate the desires of a relatively few; he said.

Quello also said the Commission will rule on AM-FM non-duplication in smaller markets in the near future, and that this action should forestall talk of common ownership divestiture.



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NAFMB CONFERENCE

Research your audience

Relating to the audience was a recurring theme at the conference. Big market radio has to learn what small market radio already knows—the necessity of talking to an identifiable audience each day, said David Moorhead, op. gen. manager, KMET, Los Angeles. Audiences do change, in other ways than becoming an ever-younger group, he said. Problem in major market radio, with three of every kind of format on the air, is to find the "saleable void." One answer in the immediate era of post Watergate is escape radio, humor, or what might be called "the crazies." Radio is entertainment and information, George Wilson, exec. vp for broadcasting, Bartell said.

Automation equipment was big.

Moorhead stressed that music selection had become a science and by putting science and art together program directors will not lead managers astray. Wilson said the trick was adjusting radio stations for the buyer and that meant program directors and sales managers had to understand each other. Wilson explained how Bartel has succeeded in selling radio in parts: men in the morning, women in mid-day, everybody in afternoon time, kids in the evening.

Research of the passive listeners (the 95% who do not call or write) is important, said Wilson. By such research, the program director can learn a lot more about the likes and dislikes of the audience, which could also be interpreted as, 'tread carefully' on policital issues.

FMers were told to pay heed to those offering program syndication


Sparta showed simple system.

services and consulting services. Broadcasters pooling top flight talents and business acumen is a good idea said George Burns, of Burns Media Consultants. "Pooling good ideas for maximum use is becoming commonplace" he said.

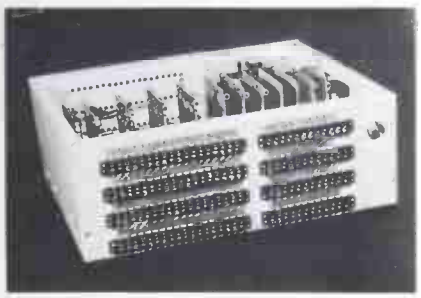
Workshops cover many topics

Programming secrets, as described by Moorhead, Wilson and Burns, was one of ten workshops held during the three days. Others took up such topics as "Sales—The

continued on page 68

BROADCAST EQUIPMENT

Audio consoles are completely DC controlled, allowing any combination of rotary, slide, or pushbutton faders to be used for mixing and switching. Series 35 consoles can be rack or table mounted, or installed to meet



any special design need. Controls can be remotely grouped in any physical configuration, with complete freedom from hum pickup and ground loops. $3200 and up. RAMKO. **337**

Replacement audio, cue, erase heads for Ampex VR-1000, 1100, 1200 and 2000 video recorders have the latest all-metal surfaces to extend life. Heads are rated for improved signal characteristics, to provide

more uniform performance throughout the frequency spectrum than the originals. Also available is conversion of VR-1200 to VR-2000 by addition of additional monitor head stack. INFORMATION MAGNETICS CORP. **338**

New Video recorder/reproducer is non-segmented helical with 1" tape. Model VR-1 has high-band (7 & 10 MHz) signal system, vacuum chambers in tape transport eliminating belts, clutches, mechanical brakes. Bandwidth is ±0.5dB to 4.2 MHz, S/N ratio 46dB. Two-track audio makes stereo available. Among many options are a multiband signal system; editing module; remote control. $9400.00. VIDEO MEMORY CORP. **304**

New UHF tetrode has peak video output of 20 kW. Model TH 491-H requires only 5.5 kW high-voltage power source, and draws 40 Kw av-

erage from the supply, for 50% efficiency. THOMSON-CSF. **300**

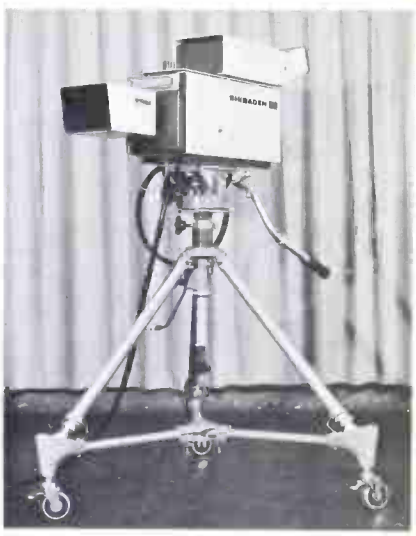
"Blackout" device switches video systems to black when picture is "unlocked" Model VS-21 automati-

cally switches to vertical interval when picture has settled down, prevents broken-up video from being broadcast. ULTRA-AUDIO PIX-TEC. **302**

RF switch/comparator allows testing of two loads simultaneously with single sweep or signal generator. Model 701 allows operator to check either load separately or to switch automatically on alternate generator sweeps. Frequency range is DC to 300 MHz. TELONIC ALTAIR. **305**

Lens adapter allows use of variety of 35mm cine and single lens reflex camera lenses on plumbicon TV cameras. Resolution and angle of view of the original lens are maintained. Under $2000. COMQUIP, INC. **306**

Color TV camera uses the new Amperex ⅔" Plumbicon tubes. Model FPC-1000P camera is a 3-tube design similar in size and weight to the earlier FPC-1000B, but with performance similar to the larger FP-1212,



1" Plumbicon camera. Resolution is rated 450 lines, s/n ratio 42 dB at 15Q foot-candles. $13,000 (complete with CCU, electronic viewfinder, 50-ft. cable and 5:1 rear cable control zoom lens). HITACHI SHIBADEN **340**

Time-lapse video tape recorder has speed infinitely adjustable for 11 to 99 hours of video information on a

standard 60-min. reel of ½" videotape. Gyyr Model TL300S can also

continued on page 62

PRODUCTS

record as a "real time" VTR; playback can be at any speed in the range. $2195. ODETICS, INC. **310**

Sealing compound keeps moisture out of power, communications and CATV cables. Ductsil is in measured packages, with mixing water in right proportions in accompanying packages. COMMUNICATIONS TECHNOLOGY CORP. **309**

Camera mount for outdoor service has variable speed pan and tilt drive. Model 353 APTV has automatic scan, with an override for manual tracking. VICON INDUSTRIES. **311**

Cleaning agent for electronic equipment has high density, low surface tension for penetration into small crevices, etc. Instant contact cleaner removes oils, greases, dirt and organic soils, evaporates with no residue, does not react chemically. LPS RESEARCH LABS. **312**

Motor has linear relation of voltage, torque and rpm. Model 40T has inside-outside design, 15-3003/in of

stall torque, is aimed for takeup and supply at constant tension. BEAU MOTORS. **313**

Storage cabinets for ¾" video cassettes hold 150 in containers. Model

CVT-150G has 10 color-coded indexed dividers and clips, locked

continued on page 64

The new Volumax® Model 4300.

Anything else is a limited limiter.

When it comes to automatic peak controlling, the new Volumax is the smoothest operator around! It's the latest in our quest for the ultimate AM limiter. The only similarity between the Model 4300 and conventional peak limiters is that they both prevent overmodulation. And here the similarity ends!

Volumax patented control action assures maximum utilization of each watt of carrier power, without overmodulating the transmitter and with absolute minimal signal distortion. The Model 4300 features: more precise limiting at maximum allowable limits, easier set-up and proof-of-performace procedures, and extended control range of over 15dB, with less than 1% harmonic distortion.

With automatic peak phasing, negative speech asymmetry is silently inverted for positive modulation to the maximum allowable limit of 125%.

Try a 4300 and listen. You'll see why other limiters are limited. And why we think the new Volumax Model 4300 is the ultimate limiter.

CBS LABORATORIES

A Division of CBS Inc.
227 High Ridge Road, Stamford, Connecticut 06905

Circle 132 on Reader Service Card

PRODUCTS

doors. Other models have smaller capacity. NEUMADE PRODUCTS CORP. **317**

Viewfinder-monitor converts surveillance CCTV camera into studio view camera. Model VFM-50 is a 5-inch plug-in for GBC CTC-5000, 6000 and 8000 cameras. GBC CLOSED-CIRCUIT TV CORP. **318**

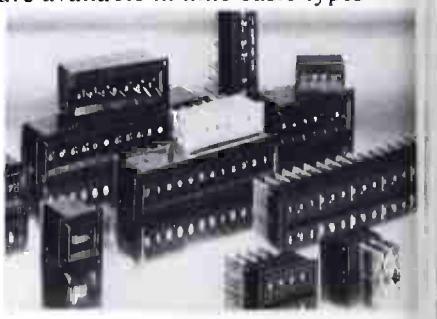
Water-repellent coatings for antenna radomes and RF insulators speeds water drainage and preserves electrical properties. Coatings are available for tedlar, teflon, polyesters and ceramics. $15 quart, $40 gallon. ANTENNAS FOR COMMUNICATIONS, INC. **319**

Compressed video system sends still TV pictures over audio circuits. Model 229 Compressor and 230 Ex-

pander reduce video to about an 8 kHz bandwidth, re-expand to full video bandwidth. About $4000. COLORADO VIDEO. **320**

Aerosal spray cleans electrical contacts. Kontak 61 is also a lubricating and anticorrosion agent. Claims safety on all types of plastics, metals and insulating materials. REGMO DATA CORP. (U.S. IMPORTER). **321**

Thumbwheel and lever wheel switches are available in nine basic types with



hundreds of variations; coded outputs, individual digits, etc. CHERRY ELECTRICAL PRODUCTS. **322**

Triggered sweep oscilloscope covers DC to 10 MHz. Model 1431 has sensitivity of 10 mV/div., auto sync, calibrated attenuator, front panel vectorscope capability, vertical rise time 35 ns. Unit is 4¾″ × 7⅞″ wide by 12″ deep. $399.00. DYNASCAN. **323**

NEWS continued from page 21

program hours, and apart from printed words, the system can reproduce simple diagrams. A specialist session on CEEFAX ORACLE was conducted by the chairman, Mr. K. I. Jones, in support of the system's experimental introduction.

Link Electronics Ltd., a young and dynamic company in Andover, England, demonstrated its new Model 110 color camera and exhibited cooperatively with Prowest Electronics, Autocue and Rupert Neve to illustrate how four individual companies collaborated for the coordination of a total system capability for studios and remote units.

Camera manufacturers demonstrating their new portable cameras were Marconi (the Mark VIIIP) and Fernseh (the Model KCN 40 handheld reporter camera), the latter of which was initially introduced at the NAB convention in Houston. The absence of Philips as a camera manufacturing exhibitor was regarded by some as conspicuous as all other major camera manufacturers were represented.

Demonstrated for the first time at an IBC exhibit was IVC's Cintel 9000 New Generation Broadcast video recorder, Ampex's AVR-2 low-cost quad recorder (initially introduced at NAB'74) and RCA's TR-600 color video tape recorder.

Aston Electronic Developments Ltd. of Surrey, England, displayed a character generator which, according to our ABC contact, offered potential for requirements as yet unfulfilled in some other similarly priced generators. The Aston character generator featured eight sizes of both upright and italic characters, a word-by-word blink and/or coloring from a choice of five colors, and a two-page store holding up to 28 single or 14 double line mid-title or sub-title captions.

The technical sessions offered papers presented by such notable broadcast industry authorities as Messrs. B. VanBenthem, R. H. McMann Jr., and C. Smith, all of CBS Laboratories, who described a philosophy for automatic color balance. RCA's Drs. K. H. Zaininger and J. E. Carnes presented a review of CCD image sensors for solid state TV cameras, and on the subject of transmitters and transposers, Messrs. N. Inoue, J. Yoshida, T. Takabatake and Y. Kudou of OKI Electric Industry Co. Ltd., Japan, jointly presented a paper on fully solid-state, UHF 100-watt television transposers.

The exhibit closed on September

27 with a general consensus of optimism and satisfaction on the part of the exhibitors with regard to the achievements of the convention.—*by Marilyn Pegler, contributing editor*

PEOPLE

John F. Delissio is in the new position of director of international sales for Harris Corp., Gates Broadcast Division .... **Larry Beets** became a sales engineer in Jerrold Electronics Midwestern region .... **Joseph A. Johnson** assumes the new position of director of engineering of Communications Transistor Corp.

Don Palmquist was promoted to the post of vice president-general manager of the newly formed International Division of the Altec Corp. .... **Arnold Kaufman** was elected a director of Cablecom-General, Inc. .... **Bert Wolf** was named vice president and general manager, Jerrold Electronics distributor sales division.

Paul Galburt joined Automated Processes as senior project engineer .... **Dennis Ashcroft** is the new east central-regional manager for Theta-Com with offices in Toledo, Ohio. .... **Floyd Weber, Jr.** was appointed vice president, engineering, for Byron Motion Pictures.

B. A. Olerick, vice president of Ampex Corp., became a member of the San Francisco Export Council, business group advising the U.S. government on export expansion programs .... **L. Donald Robinson** was elected a vice president of Kaiser Broadcasting Company .... **Peter C. Goldmark,** president of Goldmark Communications, was named a member of the Smithsonian Council, which advises the Smithsonian Institution on the expansion of its education activities.

Harold E. Horn is the new director of field services for the Cable Television Information Center, supervising all regional activities .... **Max E. Havlik** became general manager of Theta Cable of California, cable system with some 70,000 subscribers in Los Angeles basin and San Bernardino .... **Timothy Neher** is regional operating manager for Continental Cablevision in Michigan, with responsibility for the system in Jackson and future systems in Lansing and Holland.

Mark Saunders was named product manager, industrial video products, for the Ampex Corp. .... **Chester Sunderland** became chief engineer of Nassau Broadcasting Company with responsibility for WHWH, Princeton, NJ and WPST, Trenton, NJ.

NAFMB CONFERENCE

SMC stressed customer list.

Control design's latest.

Name of the Game," "Community Service, It's Good Business," "Problems and Answers of Large and Small Market Radio (two separate workshops)," "Minorities and Women Equal Profits and Community Service," "Promotion That Works," The Creative Side of Radio," "News, A Neglected Opportunity," and "Management—It Makes the Bottom Line," From these events came such nuggets of wisdom as:

- Advertising will increase if FMers sell radio first; split their AM-FM combination; and give customers creative ideas for advertising (e.g., Macy's selling calculators during income-tax time). Don't overlook importance of retailers.
- A new concept is needed for selling national spots since advertisers and reps can't cope with 7000 stations. Needed: method for compensating reps; simpler, standardized paperwork; simpler and standardized rate cards; and a study of network radio.
- Community service programming can be "exciting, creative, and profitable." Broadcasters must be active in local clubs, organizations to get feedback and to find the community's needs. Radio can help a community grow.
- News credibility relates to rating points and immediacy of radio to TV news is a plus—if the news operation is good, which requires investment.
- Program directors should listen to more records than they do—playlists are too small.
- You don't have to be number one—just profitable.

Engineering for managers

During the sole engineering session, mostly managers, since engineers were few and far between, heard Jim Gabbert (new NAFMB chairman) say that the National Quadraphonic Radio Committee (composed of seven panels) was finishing field tests of five discrete systems and that the FCC might have enough input to propose a rulemaking on one system or another in about a years time. The systems under evaluation include those from Quadracast, Zenith, General Electric, RCA and Nippon-Columbia.

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NAFMB CONFERENCE

Gabbert expressed the personal view that such timing might be good since the overall outlook for the economy now means customers aren't too ready to lay out money for four channels and four speakers. Emil Torrick, from CBS Labs, sitting on the engineering panel, reminded the audience that SQ matrixing was available now. Interestingly, the Conference ducked getting into a discrete vs. matrix controversy—which has earmarked NAFMB conventions before—by not scheduling any session on the topic. There was, however, some promotional material touting both sides. Sansui took exhibit space and filled it with literature such as a colorful piece entitled, "Confused about Quad?" intended for the consumer and a specially-written article for broadcasters entitled, "The Current Status of Quadraphonic Broadcasting." It also passed out a new newsletter "Quadrascope" which listed new albums. RCA wasn't able to get its discrete exhibit to New Orleans but handed out a paper describing its

RCA automation. New audio console in foreground

approach called "Be Discrete." CBS Labs showed a quadrasonic encoder. (BM/E will publish a separate article on the current state of qadrasonic broadcasting in an upcoming issue.)

In a brief presentation, Ross Shelton, engineer from Jampro, said there was no simple answer to good coverage but that FM antennas mounted on one leg of an antenna tower could not produce a good omni signal. His main message was that only through field measurements and field modifications that redirect the antennas can a more desireable or optimum coverage area be obtained. He warned its a "cut and dry" situation depending on local terrain (different frequencies have different patterns). There is no recipe that works every time. Shelton got lots of questions on beam tilt and null fill. Power divided up among lots of bays may help in some situations where there is close-in rough terrain but it could hurt maximum coverage.

Good news, was the message of David Robinson of Dolby Labs. FMers have always faced a problem of 1) having to reduce modulation level for good high frequency fidelity and thus reducing S/N ratio and loudness, or 2) pushing modulation as hard as possible and going into distortion. Now with the new Dolby B system, which incorporated a 25 usec pre-emphasis curve (better matched to today's music), stations can modulate harder without distortion (theoretically up to 8 dB). In any event, a better signal to noise ratio is possible and therefore, for $1300, one might get a louder and cleaner signal depending somewhat on the type of music played—i.e., if dynamic range is important, the system helps immensely; benefits to a rock station may be less obvious.

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NAFMB CONFERENCE

FCC session didn't have answer

Big $2 million question on everybody's mind attending the session headed by the FCC, was the significance of the recent DC Court of Appeals ruling blocking the sale of WEFM (Chicago) because of a switch in format from classical to country. (Related is the WNCN case in New York which would go from classical to rock in a transfer.)

The court said "there is no longer any room for doubt that if the FCC is to pursue the public interest, it may not be able, at the same time, to pursue a policy of free competition." Warren Hartenberger, FCC's head of Office of Plans and Policy reiterated that the Commission wants to stay out of programming. It may go to the Supreme Court to challenge the Appeals Court ruling. In the meantime, Hartenberger suggested, "don't become the last in the market to have a classical station."

Other questions related to the need for 6% of programming to be non-entertainment. The FCC response was that while it still feels FM is different, there remains an obligation to face up to community problems. (See Quello box) The 6% figure need not be a minimum, but it ought to be higher than 0.7% filed by some stations. Basically, the broadcaster must show ascertainment of need and how he will respond. If it's reasonable, it will be accepted.

New Transmitters, New Services, Other Equipment at NAFMB

In the preview of the National Radio Broadcasters Conference & Exposition in October, BM/E reported that CCA Electronics would unveil a new transmitter line complete with a new exciter. When the exhibits opened at New Orleans, Oct. 10, CCA did indeed show its new line, but it was not alone with something new in transmitters. RCA used the show to an-

nounce a new grounded-grid-final 1.5kW FM unit, the BTF-1.5E1. RCA also showed its 5 and 20 kW units and described a new solid state exciter.

Among other brand new items was Ampro's ESF-1 Electronic Splice Finder (which also detects dropouts and other tape problems) It's an option in that company's cartridge recorders. International Tapetronics Corp. (ITC) showed a new moderate-priced tape cart, the PD-II series. Dielectric Communications unveiled a full line of RF instrumentation and drawing keen interest was the new Dolby B Model 334 noise reduction system. Audio Services Inc. displayed a prototype of its Net-Q system which could turn on other equipment as a result of audio tones now sent on the UPI audio network. Control Design showed a new sensor for economical automation.

There were other new products which, while new, were primarily extensions of existing lines. Ampro, for example, showed a 12-channel mono audio control console and a full stereo unit (four program outputs). Burwen had some new noise filters.

A brief recap of other equipment on exhibit follows: **antennas**—Phelps Dodge; **audio tape recorders**—Ampex, Pioneer, ITC; **audio accessories**—Micro-Trak, Stanton, LPB; **automation systems**—Control Design, RCA, Schafer, SMC; **audio controllers**—Broadcast Electronics, CBS Labs; **cartridge equipment**—Broadcast Electronics, Garron; **consoles**—CCA, LPB, Micro-Trak, RCA, Sparta; **facsimile gear**—Fax-Net; **STL and remote pick up gear**—Marti, Moseley; **quadraphonic encoders**—CBS Labs, Sansui; **SCA tuners**—Johnson; **transmitters**—Collins, Sparta; **stereo phase enhancer**—Garron.

New equipment was not the only thing vying for the limelight. The Conference was a good place to see and hear about new services—on the exhibit floor and in hospitality suites. Prominent on the floor was DIR Broadcasting who tied in with Pioneer Electronics and had its King Biscuit Flower Hour rock tapes available for monitoring. King Biscuit Flower Hour, launched in January 1974, had 92 stations—by next spring the number is expected to be 175. The program has been a proven

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NAFMB CONFERENCE

audience getter. WNEW-FM, New York, already No. 1 in its Sunday night time slot, doubled its audience with the program.

Also on the exhibit floor was Broadcast Programming International Inc., with audition booths for all its formats: rock, MOR, easy listening, good music, and country. Alto Communications had a booth for listening to a variety of 24-hour formats, all syndicated. Another program supplier taking an exhibit was American Legacy with its syndicated feature for the Bicentennial.

Most program suppliers were in hospitality suites. Those listed in the "Official Directory" included:

Action Communication Inc.—on-air station promotion, sponsor tie-ins and community participation for Smile America programs.

Toby Arnold and Associates—station promos, IDs, music services.

Bonneville Broadcast Consultants—adult MOR music programming.

Ken Burkhart & Associates—syndicated music.

Century 21 Productions—radio IDs, program consultation, production library, custom commercials, OPUS 74 (complete count-down of top 100 records).

Chicago Radio Syndicate, Inc.—program syndication of a number of programs.

Drake Chenault Enterprises, Inc.—programs for automation (top 40, easy listening country, oldies, jingles).

Master Broadcast Services—beautiful music.

Charles Michelson Inc.—radio dramas ("The Shadow," "The Lone Ranger")

Peter Productions Inc.—syndicated program services.

Ralph Stachton & Associates—beautiful music library, contemporary/MOR tape service, religious programs, sales promotions, IDs.

TM Programming—four programming services for syndication.

SIU Radio Network—public affairs programming.

In addition, there were several other exhibitors: Arbitron, business automation suppliers (Compu/Net and Paperwork Systems Inc.), tube rebuilder Freeland Products Co., and several equipment distributors.

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Videotape Engineer, strong editor, experience with Ampex videotape machines. Need for Southwest production studio. Experience with Norelco and Grass Valley helpful. Salary open. Call Bill Denton. (713) 785-0420.

Position open for technician. Must be skilled in maintenance, TV Broadcast Equipment mostly RCA—including VTR's. First ticket. No age limits. Good climate. Growing community. University of Arizona and Community Colleges. Send brief resume to R. H. Holsclaw, C. E., Channel 4 TV, Box 5188, Tucson, AZ 85705.

POSITION WANTED

Are things really changing? I am an experienced black newscaster-announcer-D.J. with some college. Third phone; will relocate. Tape and resume available. Box 1174-1, c/o BME, Blue Ridge Summit, PA. 17214.

EQUIPMENT FOR SALE

GATES EASTERN SERVICE CENTER

East coast headquarters for broadcast and recording equipment. Gates Broadcast Equipment Division, Harris Corporation, 130 E. 34 St., N.Y., N.Y. 10016 (212) 889-0790.

Broadcast mixer for remote out of studio programming. Can be used as inexpensive second console for college and small radio stations. D.J.'s can now originate programming at home. Simultaneous mixing of two stereo phonographs, a tape machine and a microphone. Precue for all inputs with built-in monitor headphone amplifier. Send for literature. $325. Professional discount, use letterhead. GLI, Box 2076, DEPT BM/E, Brooklyn, N.Y. 11201 Phone: (212) 875-6992.

BROADCAST AND RECORDING EQUIPMENT: Scully, V.I.F. International, Metrotech, Langevin, Electrodyne, Q.R.K., Micro-Trak, MRL, Nortronics, McMartin, U.R.E.I., E.V., A.K.G., Stevenson, Gately, D.B.X., Advent, Altec, Fairchild, Audio Designs, 3M, Magnecord, Telex, Inovonics, Nagra, Uher, Tape-Athon, Package Deals, Installations, Service, Request Flyer. Weigand Audio, Middleburg, PA. 17842. (717) 837-1444.

Solid-state audio modules-console kits, power amplifier kits, power supplies. Octal plug-ins—mic. eq. line, disc. tape play, tape record, amplifiers. Audio & tape bias oscillators. Over 50 audio products. Send for free catalog and applications, Opamp Labs. Inc. 1033 N. Sycamore Ave. Los Angeles, Calif. 90036. (213) 934-3566.

STODDART NM-30A radio interference-field intensity meter. 20-400 MHz. Like New condition—1966 Manufacture. Complete with AC PS, Dipole antennas, cables, tripod, and inst. book. Calibrated prior to shipment. $1,595. Surcom Associates. (213) 382-6985.

For Sale: Approximately 2,000' 51.5 ohm 3⅛" flanged Steatite used transmission line. Line in excellent condition—removed due to complete transmitter plant replacement. Contact Jack Jopling, Chief Engineer, WJBF-TV, Augusta, Georgia, Telephone 404-722-6664

EQUIPMENT FOR SALE (Cont'd)

EDUCATIONAL FM TRANSMITTERS: New low-cost solid-state, compact, reliable educational FM Transmitter line. Stereo and SCA available. Check out our education FM package. Terms available. COMMUNICATIONS SYSTEMS, INC. Drawer C, Cape Girardeau, Mo. 63701.

745' TV Tower, 6 ⅛ Trans. line—6 yrs. Good condition. Channel 62 antenna, Filterplexer. WXON-TV. P.O. Box 20, Walled Lake, Mich. 48088. Phone: (313) 851-3444.

AC power line lightning arrestors. 120 VAC 25.00 per leg. 220 VAC 27.00 per leg. Single phase to three phase converters, any size transmitter. G. DuVall Co., 6838 N. Ottawa, Chicago, Ill. 60631.

MAGNECORD-VIKING-TELEX PARTS: Largest stock in the country. Factory prices. Try us for hard to find items. Dept. M, DUNN INDUSTRIES, 12157 Valliant Dr., San Antonio, TX 78216. (512) 349-2953.

RCA (Moseley) BTR-15BR Remote Control. Includes 110 khz. generator and demodulator and 67 khz. generator. Brand new. WATS, Sayre, PA. (717) 888-7745.

SALE! BRAND NEW! 2 Mackenzie 500-ST stereo playback machines. These units were installed but never used. Call or write with an offer: Dick Lucas, WDAE-FM, 101 North Tampa Street, Tampa, FLA 33602. (813) 229-0404.

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The complete and reliable source for new and used broadcast equipment. Request our free listings. Broadcast Equipment and Supply Co., Box 3141, Bristol, Tennessee 37620.

One stop for all your professional audio requirements. Bottom line oriented. F.T.C. Brewer, Box 8057, Pensacola, Fla. 32505.

TASCAM, AMPEX, SCULLY: Major pro audio lines for broadcast and recording studios. Top-dollar trade-ins. Professional Audio Video Corporation, 342 Main Street, Paterson, N.J. 07505. (201) 523-3333.

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RCA TR-4 LO-BAND COLOR VTR, air bearing conversion with compressor, splicer harness (edit). Reply to Box 1274-2, c/o BME, Blue Ridge Summit, PA. 17214.

Need 36 or 42 inch 500 ft. FM tower. KNXR, Rochester, Minn. (507) 288-7700.

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Brochure describes **super 8mm camera** with both single system and double system sound capability, new Beaulieu Model 5008S. Hervic Corp. **250**

Data Sheet covers MX-202 **indoor distribution amplifier** for cable systems, 50–300 MHz. 25 or 40 dB gain. Magnavox CATV. **251**

Technical application reference brochures cover design and use of **self-latching dry reed switchers and relays,** with review of basic electromagnetic principles, application notes, etc. C. P. Clare & Co. **252**

Solid State linear power amplifiers for RF and microwave application (5 MHz to 4.2 GHz, up to 20 watts output) are described in new Data Sheet. Microwave Power Services, Inc. **253**

Power regulation equipment for CATV is the subject of new 6-page technical brochure, with specifications and application notes. Sola Electric **254**

UHF/Microwave ceramic capacitor kits are described in illustrated brochure. American Technical Ceramics. **255**

Semi-conductor cross-reference book, 1974 edition, shows over 44,000 parts, with IR replacements, plus four pages of transistor specs, integrated circuit replacements, etc. International Rectifier. **256**

TV picture tube product guide lists 975 current tubes with RCA replacements, and also shows characteristics of all such tubes. RCA **257**

New 48-page catalog covers **patch panels, jocks, connectors,** 50 and 25 ohm matrices, switches and systems in Coax, Twinax, Triax. Trompeter Electronics. **258**

Rotary joints for coax and waveguide, single and multi-channel are shown in catalog. Premier Microwave Corp. **259**

Electronic data entry keyboards in 17 standard sizes are listed in bulletin. Cherry Electrical Products. **260**

Pressure and temperature transducers are shown in 160-page catalog which includes very extensive information on transduction theory in general and IC transduction in particular; design, reliability, tables, a glossary, are other sections of what is nearly a handbook. National SemiConductor Corp. **261**

Low-voltage ceramic disc capacitors are shown in new brochure, in 12, 16 and 25 WVDC versions. Murata Corp. **262**

Test equipment line is detailed in new condensed catalog. Eico. **263**

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Station or Co. .....

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City ..... State ..... Zip .....

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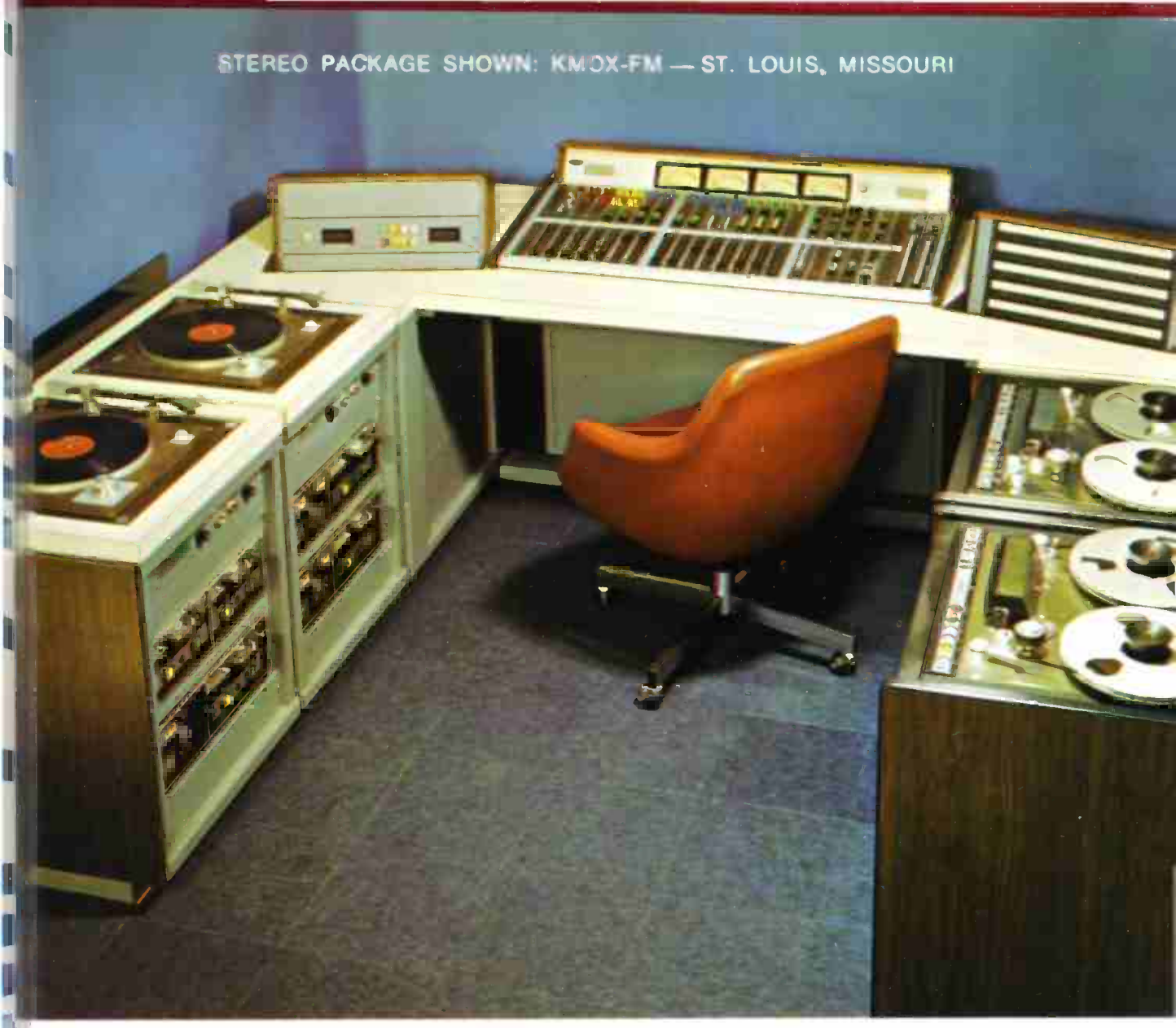

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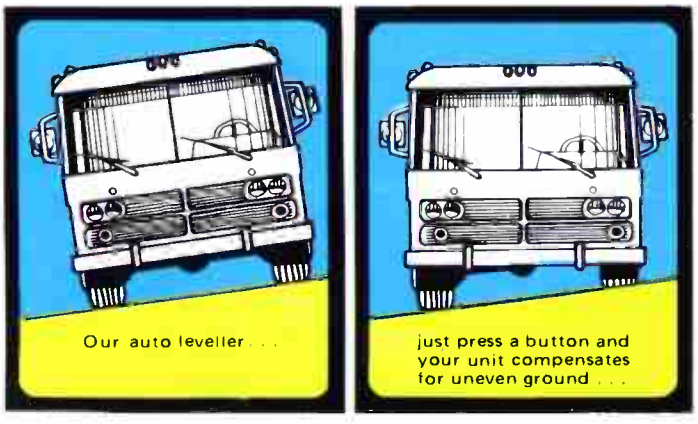

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