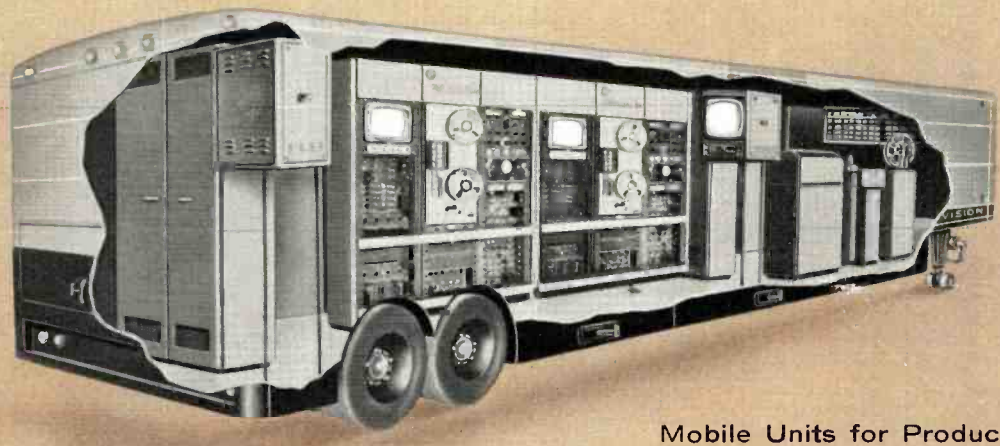
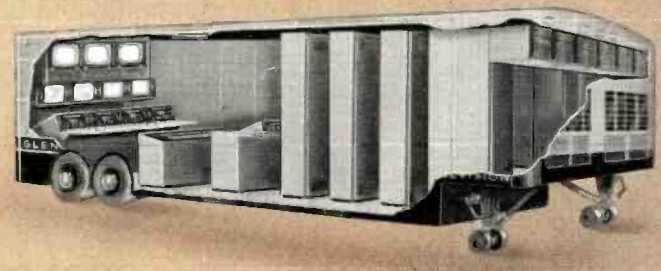
BROADCAST NEWS



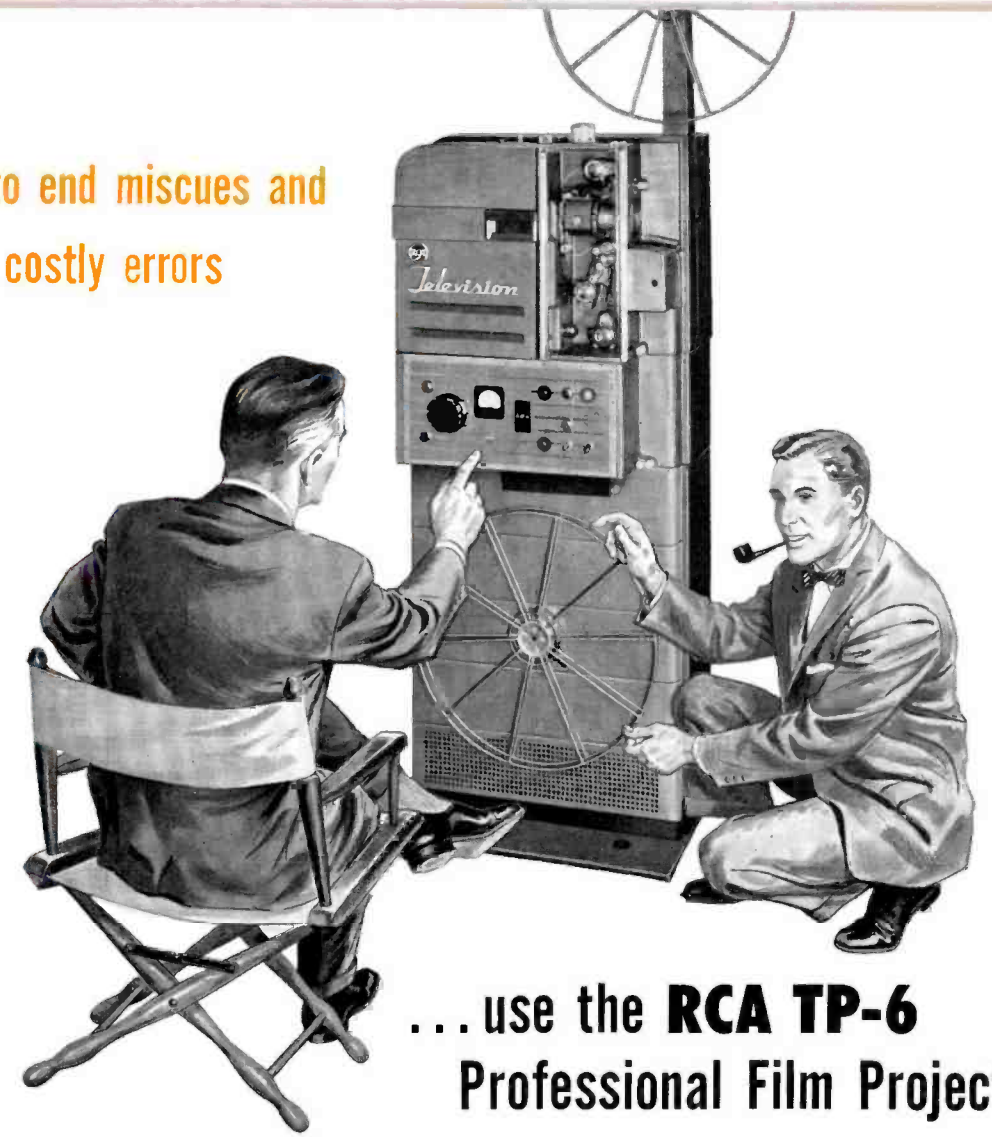
Mobile Units for Production of TV Tape Programs



VOL. No. 108 JUNE 1960

RCA

How to end miscues and other costly errors



. . . use the **RCA TP-6** Professional Film Projector!

Now, in addition to the regular quality points that have made the TP-6 famous, *three new features* are offered. They include Automatic Cue, Rapid Start, Magnetic Stripe Playback!

AUTOMATIC CUE

Now you can stop projectors at any predetermined film frame so that your next film sequence is cued and ready for show immediately.

RAPID START

Rapid start feature provides sound stabilization in less than one second. You can activate projector start and video switch buttons almost simultaneously, thus eliminating roll cues and reducing the chance for errors.

MAGNETIC STRIPE PLAYBACK

Superior reproduction of sound from 16mm. films is made possible by adding a magnetic sound system. Speed preparation of *news films* by reducing process time required between coverage and actual airing. Make your own film *programs* and *commercials*, and apply commentary, music and sound effects this easy way!

You can do all this and gain the business protection and efficient operation that comes from the TP-6's well-known built-in features . . . including automatic projector lamp change, gentle film handling, quick-change exciter lamp, superior picture and sound quality.

SPECIAL
for TP-6 owners
Accessory attachments to provide new features are now available.

Your RCA Broadcast Representative has the whole story. Or write for literature.

RCA Tmk(s)

RADIO CORPORATION of AMERICA
BROADCAST AND TELEVISION EQUIPMENT
CAMDEN, NEW JERSEY

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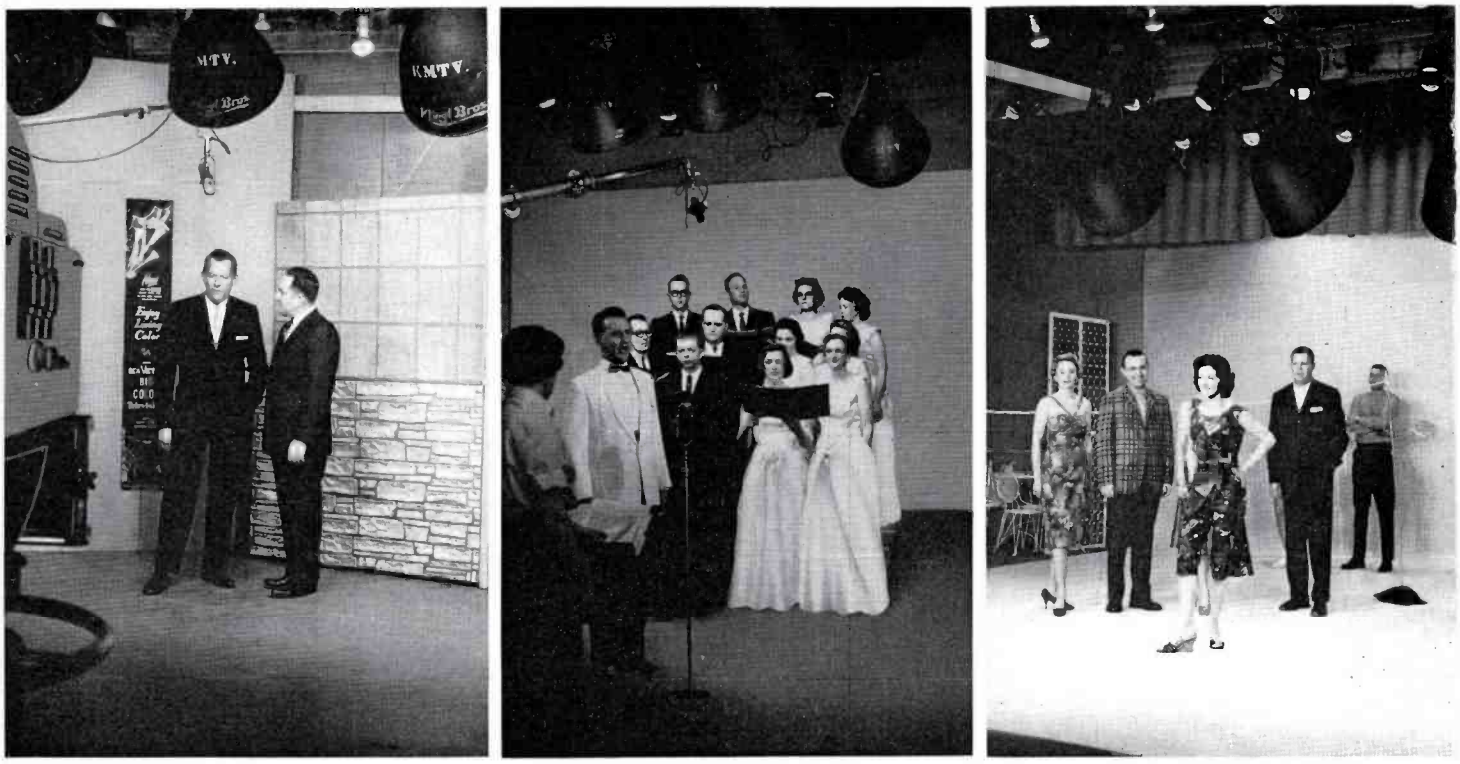


FIG. 1. Scenes from various KMTV local live programs telecast in color. At left Vaughn Monroe appears in color commercial with RCA dealer, Ray Smith. Center, the Omaha Symphony Pot Pourri Singers during the telecast of hour-long "Spring Musical Festival." Right, "Fashions for Spring" program introduced the latest sports, formal, and casual fashions for men and women.

ALL DAY COLORCAST AT KMTV

10 Hours of Local Color Highlights 17-Hour Color-Full Day

Nebraska and Iowa color television set owners were treated to an historic "First" recently, when station KMTV, Omaha, transmitted in color an entire day's programming . . . sign-on to sign-off.

The day, Palm Sunday, included seven hours of NBC colorcasts, and ten hours of locally originated color. It was the first time in history that any station colorcast an entire day.

Ambitious Local Live Schedule

The program day included over three hours of local live color programs, most ambitious of which was the 9 p.m. "Spring Music Festival." It featured the Omaha Symphony Orchestra, the Symphony's Pot Pourri Singers and the Mort Wells Dixie-Land Band. Omaha area viewers were treated to a Pop Concert by the Symphony during the first half hour, and informal Dixie-Land music and dancing during the second half hour. This was the first annual "Spring Music Festival," live and in color, on KMTV.

"Fashions for Spring" was another of the more outstanding KMTV local color productions. The program presented the latest sports, formal and casual fashions for both men and women, and was produced in cooperation with Omaha's J. L. Brandeis Department Store. "Jean's Story Time," "Holiday at Home," "Your Doctor and You" and the news broadcasts are regular KMTV Sunday features. "Jean's Story Time" is a locally-produced children's religious program. "Your Doctor and You" is a KMTV live production in cooperation with the Omaha/Douglas County Medical Society and "Holiday at Home" is a live real estate show.

Color Film Specials

The days news programs included film features photographed in color. A film syndicate supplied KMTV with a special color Rasslin' print which featured Verne Gagne, Wilbur Snyder, The Lisofsky Brothers, Dick the Bruiser and Phil Melby. Other color films included "The Wonderful World of Color," the regularly scheduled "It Is Written" film series, "Popeye" cartoons, "The Cisco Kid," "Raiders of the Seven Seas" and "The African Queen" full length film features.

Color Set Promotion

According to KMTV General Manager Owen Saddler, the all-color Sunday had two main purposes; to treat the approximately 8000 color set owners in the Omaha area with a variety of color programming, and to increase color interest and color set

FIG. 2. About 50 Omaha area RCA dealers opened their showrooms from noon until midnight on the colorful Sunday. Public response to the color programs was overwhelming. Above is photo of one of the dealer showrooms.

FIG. 3. The color program schedule was 17 hours long from sign-on to sign-off. It included seven hours of NBC colorcasts and ten hours of locally originated color, both live and film.

ownership. From all indications, the Palm Sunday color schedule accomplished both purposes.

RCA, through its Omaha Distributor, the Sidles Company, had a large part in the successful campaign. Sidles Advertising Manager, Ben Wiesman arranged for RCA's singing spokesman, Vaughn Monroe to arrive in Omaha about 36 hours before KMTV's color sign-on. Mr. Monroe set the stage with personal appearances on KMTV, in downtown Omaha and at local RCA dealer's showrooms. Monroe also appeared throughout the day on KMTV's local color programs.

About 50 Omaha area RCA dealers were open from noon until midnight on the colorful Sunday. The public was invited to visit those dealers, get a $2.50 rose bush for only 49 cents, and see how great color television really is.

17-HOUR COLOR SCHEDULE . . . SIGN-ON TO SIGN-OFF

Time	Program	Originator
8:30	The Wonderful World of Color	KMTV Color Film
9:00	Jean's Story Time	KMTV Local Live Color
9:30	It Is Written	KMTV Color Film
10:00	Palm Sunday Services	NBC Live Color
11:00	Popeye Cartoon Carnival	KMTV Color Film
11:30	The Cisco Kid	KMTV Color Film
12:00	Noon Edition News	KMTV Local Live Color
12:15	Holiday at Home	KMTV Local Live Color
12:30	Your Doctor and You	KMTV Local Live Color
1:00	Don Giovanni Opera	NBC Color
3:30	Movie: Raiders of the Seven Seas	KMTV Color Film
5:00	Fashions for Spring	KMTV Local Live Color
5:30	The Cradle Song, Hallmark	NBC Color
7:00	Millionaire's Mite, American Heritage	NBC Color
8:00	Dinah Shore Chevy Show	NBC Color
9:00	Spring Music Festival	KMTV Local Live Color
10:00	Floyd Kalber News	KMTV Local Live Color
10:15	Rasslin'	KMTV Color Film
11:15	Movie: The African Queen	KMTV Color Film

Results

People watched it . . . Sidles called it a "perfect promotion" . . . broadcasting leaders said it was one of television's major "firsts" . . . and KMTV's advertisers supported it by making the day sold out from sign-on to sign-off.

Each Omaha dealer attracted in the neighborhood of 250 to 600 people. And the outstate Nebraska and Iowa dealers did even better, per capita. According to the Sidles Company General Sales Manager, Ken Donahoo, some 500 persons visited a dealer in one of the smaller Nebraska towns. Gold's Department Store in Lincoln rented a suite of hotel rooms, offered free refreshments and roses, moved in their entire line of color receivers and opened the doors. Eight-hundred people came, and at least eight color sets were sold on the spot.

Most dealers, however, were not trying to sell merchandise on the all-color Sunday. They were just inviting people to drop in and see color. But they were all optimistic about future color set sales.

Industry Kudos

Everyone expressed pleasure and enthusiasm for KMTV's full day of color. Sidles' executive Ken Donahoo called it the "most successful color promotion we have ever had, anywhere . . . a perfect promotion." KMTV General Manager Owen Saddler received high praise from industry leaders. Robert W. Sarnoff, NBC's Chairman of the Board wired: "Heartiest congratulations from the National Broadcasting Company for your unprecedented achievement of providing a full day's broadcast of color television programs from sign-on to sign-off. Color television will add new richness, meaning, beauty and enjoyment to these programs. Providing color television in such wide variety and diversity on a full day's basis is an historic achievement in major firsts. This pioneering achievement will enhance KMTV's leadership in the industry with its large and appreciative audience."

From White House Special Assistant Frederic Fox came this wire: "The pioneer venture is indicative of the enterprise and capability of station KMTV. It provides another fine opportunity to serve the people of Omaha in the American tradition of free and responsible communication."

RCA president, John L. Burns wired: "This is an outstanding and laudable venture . . . another color first for KMTV." RCA color executive W. E. Boss said, "Your April 10 all-day color programming has made your area one of the leading color markets of America." Other messages of congratulations included wires from Helen Hayes, Judith Anderson, Siobhan McKenna, Charles Bickford, David Wayne and Cesare Siepi . . . all stars of NBC Palm Sunday color special.

FIG. 4. A jazz segment of "Spring Music Festival" featured Mort Wells Dixie-Land Band with dancers shown in the foreground patio set.

FIG. 5. In another segment of "Spring Music Festival" viewers were treated to a Pop Concert by the Omaha Symphony Orchestra.

Color Pioneer

On its sixth anniversary as a TV station, September 1, 1955, KMTV took steps to prepare for its color future. Within two weeks a live color camera had been purchased and by the end of the month the first color program was telecast. The next month a regular daily schedule of live color shows was inaugurated. This was increased to the point where in March, 1956, 66 local shows were programmed, in addition to 56 NBC network shows, making an impressive total of 112 color shows for Omaha in a single month.

Now in 1960 KMTV has achieved a historic first. It has broadcast an entire day's programming, 17 hours from sign-on to sign-off in color. Results of this colorful day have been threefold: area viewers were enthusiastic, color sets in the area have increased, and Omaha has been established as one of the leading color TV markets.

RUSH SHIPMENT OF RCA EQUIPMENT, HELP OF FELLOW BROADCASTERS KEEP FIRE-TORN WSPA "ON AIR"

At 12:15 A.M., May 16, a night hotel clerk saw smoke billowing from the radio and television broadcasting center of station WSPA in Spartanburg, South Carolina. By 2:00 P.M. both the radio and television studio facilities were charred shambles with damage estimated in excess of $250,000.

Middle of the Night Service

At 2:20 a.m. that morning, Walter J. Brown, WSPA President and General Manager, was talking by telephone with Dana Pratt, Manager of Broadcast Equipment Field Sales. A quick call to Mal Passeri, Manager of Broadcast Order Service put the night shipping crew under the supervision of Frank Marshall into action. Thirty minutes after the phone rang at Dana Pratt's bedside, RCA workmen were getting equipment items at the RCA warehouse. For lack of available air freight service to Spartanburg, an RCA truck was rushed into play, speedily loaded to the tail gate and sent on its way.

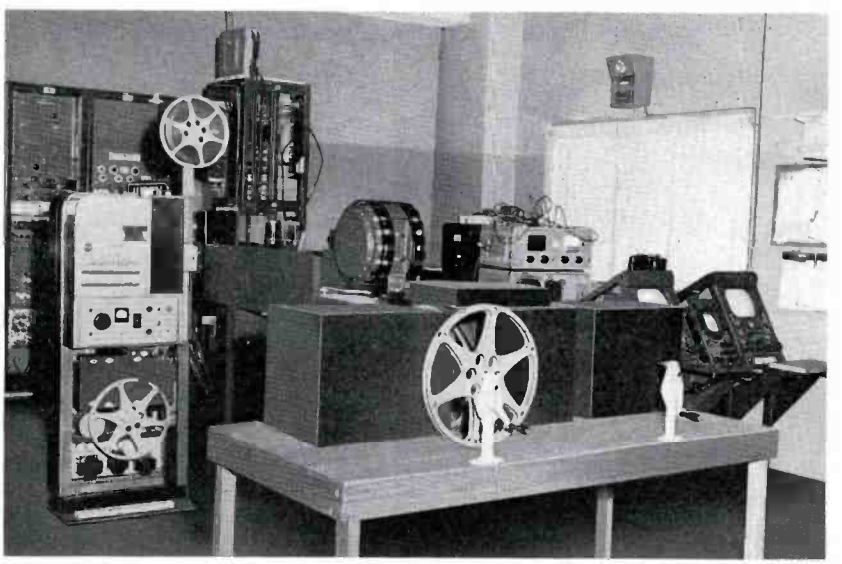


FIG. 1. Paris Mountain operation as temporarily setup.

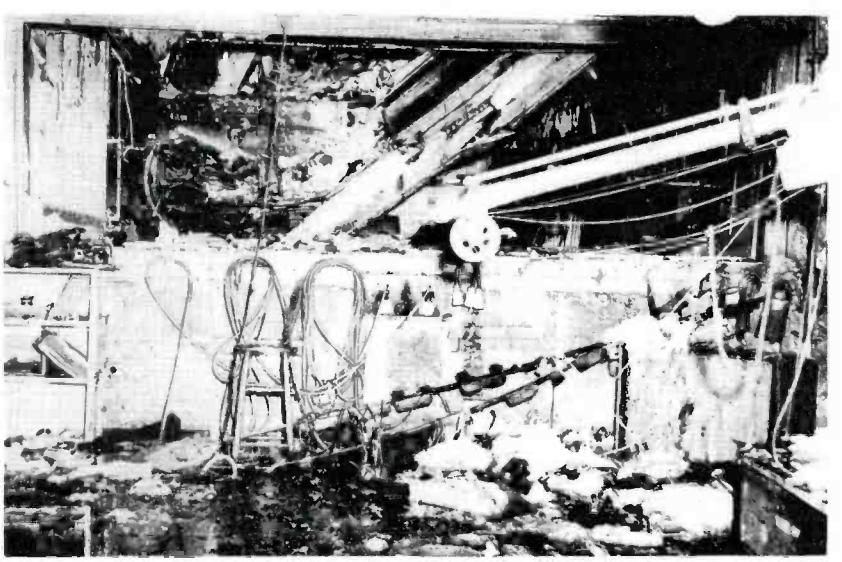


FIG. 2. Burned control room at WSPA.

Just 24 hours later, TK-11 replacement studio cameras, a pair of TK-21 vidicon film camera chains complete with two TP-7 Slide Projectors, two multiplexers, and two of the latest design TP-6DLA film projectors, a sync generator, switcher and other necessary equipments were at Spartanburg. A second RCA truck followed with other units added to the list as a result of a more detailed assessment of the fire damage.

Neighboring Stations Help

Meanwhile, WBTV, Charlotte, and WFBC, Greenville, voluntarily dispatched their mobile broadcasting units to the WSPA transmitter site at Paris Mountain. Thanks to the "good neighbor" action by WBTV and WFBC and the speedy shipment of new RCA equipment, Mr. Brown said "not an hour of broadcast time was lost." Radio and television broadcasting service was carried out by WSPA both from its radio and TV transmitter sites.

Full Broadcasting Schedule

Although some local programming had to go by the board, Mr. Brown said a full broadcasting schedule was made possible, including news and weather reports transmitted while firemen were still at the scene of the fire.

"This was unsurpassed demonstration of all-out cooperation from fellow broadcasters, the manufacturers who rushed into the breech so efficiently and quickly, and the telephone company which installed emergency cable out line service," Mr. Brown said. He also praised the WSPA staff for their round-the-clock work.

WSPA-TV is now operating from new studios in Spartanburg with complete new RCA equipment.

FIG. 1. This is the combination studio-control room with Vernon Kuehn, KBRI's program director seated at the control position.

BRINKLEY, ARKANSAS GETS NEW RADIO STATION

KBRI Builds A Practical Yet Economical Modern Small Market Station

Located half-way between Memphis and Little Rock, Brinkley has a population of about 5500. KBRI's 250 watts serves this primarily agricultural market with all local programming. The station is owned by Mason W. Clifton, publisher of the *Brinkley Argus* a weekly newspaper. Mr. Clifton operates KBRI under the name of the Tri-County Broadcasting Company. Operation began on October 25, 1959—only two months after construction was begun.

Studio Construction

KBRI has achieved well designed, low-cost studios with excellent acoustical qualities. The studio building is built along an existing building, utilizing one of its walls. The other walls of the studio building are of double brick construction. Two-by-four lath on the walls permit the insertion of fiberglass between the wall and the ¼-inch birch paneling used inside.

All inside partitions are of double offset stud design with batt insulation between walls. The 9½-foot high ceilings are covered with acoustical tile. In the control room and studios the tile is continued down the walls for 4-feet. Double plate glass windows between all rooms are set in rubber for sound isolation.

Fiberglass insulation is also used between the rafters of the single-story combined studio and office building. Storm windows on all outside windows plus complete weather conditioning inside give KBRI year-around sound isolation.

Studio Equipment

All operating equipment at KBRI is placed in an "L" shape around the operating position (see Fig. 4). The BC-3 consolette is placed in front of the window facing the studio. The console is fed from SK-46 microphones and transistorized BA-26 turntable preamplifiers. Turntables and

FIG. 2. Directly behind the control position is this rack of equipment. Transmitter remote control equipment, tape recorders, and the usual audio equipment for the entire station are conveniently located in the single rack.

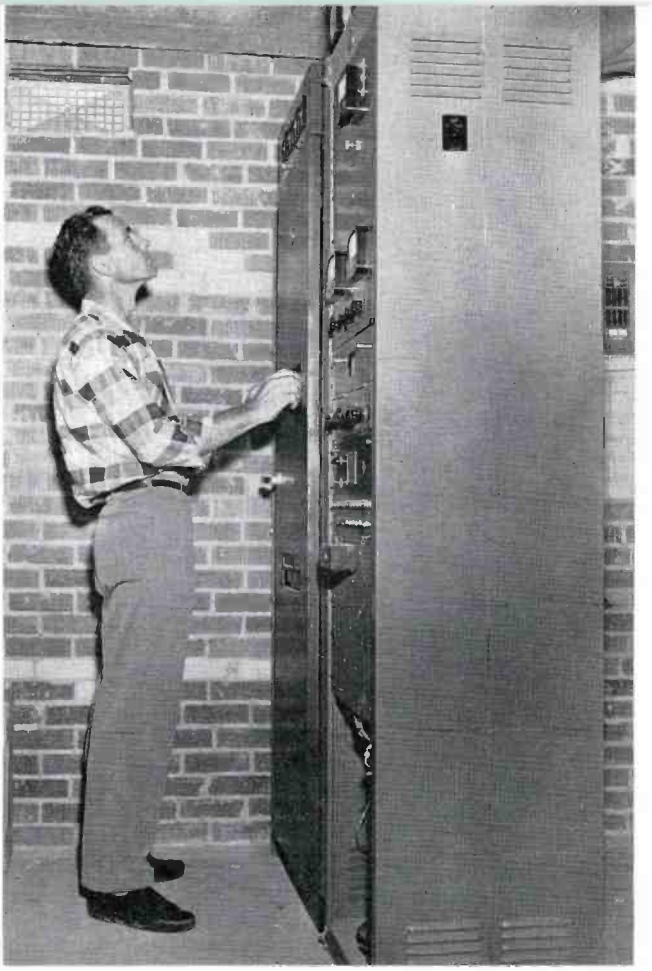


FIG. 3. Chief engineer, Edward Travis, is shown tuning the BTA-250M transmitter. Along side the transmitter is a rack that contains the stations montiors, remote control equipment, and speech input equipment. The transmitter plant is housed in a small brick building 1½ miles south of Brinkley.

weather measuring gear are also placed on the table. Speech input, tape recording, and transmitter remote control equipment are placed in the rack at the rear of the operating position. This type of equipment layout makes operation extremely convenient, and it also gives a custom-built look to the control room. A single announcer-engineer has complete control of all operations including the remotely controlled transmitter.

Remote-Control Transmitter

A flat-roof brick structure 1½ miles south of Brinkley houses the KBRI transmitter. A BTA-250M transmitter and a single rack are placed side by side with ample front and rear access space for maintenance (see Fig. 3). The single BR-84 rack contains speech input equipment, modulation and frequency monitors, and remote control equipment. A single Stainless tower, located immediately behind the transmitter building, radiates KBRI's high quality signal.

The KBRI building has been designed for efficient radio operation. The long interconnecting hallway provides access to each studio without going through another. It also eliminates the need for sound interlocked doors. KBRI's studio layout is designed for maximum convenience, yet it is an economical approach to modern radio.

Modern Approach To Radio

KBRI like many other small market stations has found that a well constructed and well equipped station pays off over the years—yet KBRI kept initial costs low. Approximate cost of KBRI's entire facility including buildings, land and equipment was only $35,000. Careful investment has given KBRI a facility equal to many costing much more. Most of the credit for planning and supervising construction at KBRI can be given to W. H. Mayo, general manager.

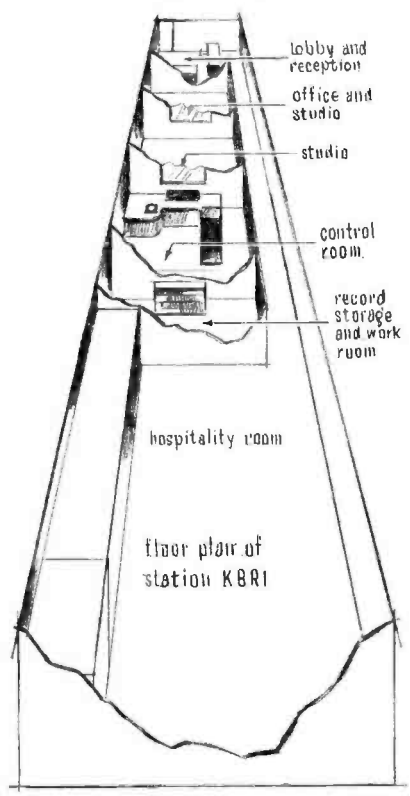


FIG. 4. This is a cut-away drawing of the KBRI studio building. The control room operating position provides a view to the two studios, and the long hallway provides easy access to any room.

FIG. 1. Entrance to the RCA exhibit featured by TK-12 camera display. Two cameras, one in actual operation, where displayed along with an operating TK-41 color studio camera.

NEW RADIO AND TV EQUIPMENT AT NAB

New Studio Camera, Automated TV Broadcasting, Advanced TV Tape Recorder, New AM and FM Transmitters Highlight RCA Display

Sharing the spotlight on new RCA equipment shown for the first time at the NAB Convention in Chicago were a new TK-12 monochrome camera employing a 4½-inch image orthicon tube, an advanced TV Tape recorder featuring a new completely transistorized processing amplifier and air-bearing headwheel, and a TV station automation system designed to handle a full day's programming with improved operating efficiency and at lower cost. Other major developments also shown for the first time were new 1-kw and 10-kw FM Transmitters designed for both standard and multiplex operations and a new 5-kw AM Transmitter featuring newly-designed high efficiency circuitry for better sounding, more economical radio transmission.

The automation system, camera, and tape recorder have been designed to work as a team, enabling TV broadcasters to produce pictures of higher quality than ever before possible, whether live or on tape. Use of the TK-12 camera in TV Tape systems enables production of third or fourth generation tape recording copies which are more nearly comparable to the original. The camera is also ideally suited for inclusion in an automation system. Because of its innate stability and minimum of controls, the TK-12 camera can function automatically over long periods of time.

At the Convention there was considerable interest in the new FM equipment. In addition to the 5-kilowatt BTF-5B model, RCA now makes available 1-kw and 10-kw high quality FM Transmitters using the direct FM system.

New 4½-inch Image Orthicon for Sharper, Crisper Pictures

Television pictures of near photographic quality, finer detail, freedom from halo and blooming effects are characteristic of the all new RCA TK-12 monochrome television camera. The new camera uses a 4½-inch pickup tube for high quality "live" TV broadcasting and tape recording copies of uniform clarity.

Increased Picture Detail

The 4½-inch image orthicon tube used in the new RCA TK-12 is capable of producing pictures of increased resolution and better gray scale rendition, both essential in copying magnetic TV tape recordings. The better the initial pictures, the better the tape copies. Advertisers subsequently get more picture per dollar invested.

The TK-12 is a new camera in every sense of the word. For "live" programming, any station or TV tape producer equipped with this camera can be assured of the best picture in town.

Fine New Styling

Featuring distinctive "keystone-shaped" styling, the TK-12 is designed for maximum reliability and simplicity of operation. Use of only two main operating controls and the camera's inherent stability in operation means a single operator can handle easily several cameras simultaneously.

Circuit adjustments are not necessary with the TK-12 during normal operation. Built-in feed circuits compensate for changes that would occur during warmup and for most of the "drifting" which sometimes is experienced during operation. The new camera does not have to be adjusted from day to day and is ready for work within one or two minutes after being turned on.

Compact Design

The camera and viewfinder in the TK-12 have been integrated into a single streamlined unit. The video preamplifier is easily accessible in the lower left hand side of the camera case at the front. The deflection amplifier with high voltage supply and the auxiliary amplifier are on opposite sides of the case, with swing-out hinging to permit ready access to other modules.

The set-up controls for the camera chain are panel mounted at the rear. Virtually all such controls have been placed within the camera case, rather than in equipment racks. The centralization of controls means that standard cable links can be used with the new camera without substituting more complex and costly hookups.

FIG. 2. New TK-12 camera focuses on a scale model of the Tiros weather satellite successfully launched just prior to the NAB opening. The satellite contains RCA TV cameras, miniature tape recorders and TV transmitter to gather and relay TV weather pictures back to earth.

FIG. 3. View of the live studio, continuously in operation during show hours. Both monochrome and color camera sources were available for viewing and taping in the form of TK-12 monochrome and TK-41 color studio cameras.

TV Station Automation . . .

Featured in the automation display was an RCA-designed system in which a single roll of perforated paper tape controls a whole day's programming. The tape can be punched at the same time that the program schedule is typed, using a typewriter-like machine which not only turns out the tape but a complete routine sheet.

The tape is inserted in a tape "reader" in the studio control room. Contactors read the holes in the tape and relay corresponding signals to the automation system's "memory," which makes electronic note of the program sources to be switched on the air, in what sequence and when. At the proper instant, relays are actuated to bring into play cameras, film or slide projectors and other equipment.

To handle the inevitable changes in the day's routine, a bypass channel is available to take over as required and retain control until a tape signal notifies it to return the broadcasting operation to the primary channel.

A simpler type of automation handles all the switching functions encountered during a station break period. Both systems are described more completely on page 26.

FIG. 4. The automation display showed an all-day automation system in action at WKRC-TV, Cincinnati. A movie describing the operation of this system was also shown at intervals during exhibit hours.

. . . Transistor Switching and Special Effects

FIG. 5. The transistor switching and special effects display was set up so that broadcasters could actually perform switching operations and choose from the myriad of special effects patterns available in the equipment . . . wipes, split screens, picture insets, block, wedge, circular and multiple frequency patterns as well as a variety of keying effects.

An operating display of an integrated special effects and transistorized switching system attracted considerable broadcaster interest.

The transistorized switching system now installed in more than 30 TV stations throughout the country, features ultra-fast picture transistions without visible switching disturbances, the switch being completed entirely during the vertical blanking interval. Modular construction provides utmost versatility in the design and operation of switching systems. TS-40 systems are readily adapted to station requirements, providing a customer tailored system to meet individual program needs.

The Special Effects system is the ultimate in convenience for the selection and presentation of program effects. The equipment provides facility for virtually unlimited effect—a complete complement of 154 wipes, split screens, picture insets, block, wedge, circular and multiple frequency patterns as well as a variety of keying effects such as inset letters, drawings, trademarks and self-keyed insets and travelling mattes. Using a standard push-button control panel and fader-type control level, the equipment places this myriad of effects at the operator's fingertips.

New Developments in TV Tape . . . Air Bearing Headwheel and Transistorized Processing Amplifier

FIG. 6. View of one of the TV Tape areas. Two recorders were in constant operation throughout the convention, demonstrating the excellent quality of both color and monochrome pictures.

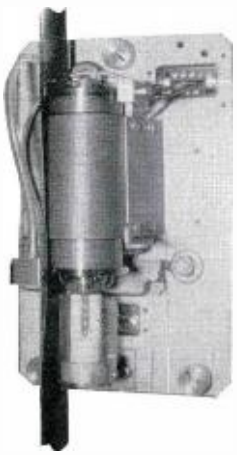


FIG. 7. The RCA air-bearing headwheel. Here a thin layer of air, under pressure, is substituted for standard ball bearings. The motor shaft literally rides on a cushion of air. Friction is reduced practically to zero, and jitter and vibration correspondingly reduced. Tape guides in the equipment are similarly air lubricated to save wear on tape.

Newest developments in TV Tape shown for the first time were a completely transistorized processing amplifier and an air bearing head wheel. These new technical advancements contribute to the increased picture quality and greater reliability in RCA TV Tape equipment.

Transistorized Processing Amplifier

RCA's first step toward transistorization of tape equipment, this new unit combines several signal processing functions in a single 5¼-inch rack mounted chassis which includes sets own d-c power supply and provision for mounting up to eight plug-in modules.

An input module amplifies and clamps the video signal and inserts blanking. An output module clips the signal to black level and provides three video outputs. Control of sync level is provided; also a separate sync output at nominal four volt level. A horizontal AFC module is used to properly time the regenerated sync and serves as the master timing reference for all pulse signals in the unit.

A vertical advance module provides a counted vertical advance for establishing precise timing of the edge of vertical blanking while a sync logic module completely regenerates horizontal sync and composite blanking.

For color an optional module provides the necessary chroma amplification with variable gain. The entire blanking interval is clamped to assure a completely noise-free interval. A second channel in this module handles the burst information by regenerating at 3.58 megacycle color subcarrier. Special control of burst gain and phase is available.

Air Bearing Headwheel

The air bearing video headwheel assembly is another of a series of developments in exploiting and using the advantages of air as a lubricant and replacing movable items which contribute to constant wear. The bearing consists of a thin film of air dispersed around the rotating part which eliminates any mechanical contact. The air required for the motor bearing is filtered and supplied under pressure from a small pump assembly.

Near perfect rotational concentricity is maintained throughout the life of the recording heads. Improved headwheel servo lock-up and reduced jitter materially improve the overall quality of performance.

FIG. 8. The transistorized processing amplifier is housed on a single 5¼-inch rack mounted chassis which includes a self-contained d-c power supply. It is completely transistorized and combines many signal processing functions in one compact unit. It is comprised of eight plug-in modules to simplify test and maintenance.

FIG. 9. Three new transmitters, shown from left to right, the BTF-1D 1-kw FM, the 10-kw BTF-10C FM, and the high efficency 5-kw AM transmitter BTA-5T. At the end of the line is the old favorite BTA-1R, 1-kw AM transmitter.

FIG. 10. Scale models of directional and traveling wave antennas are shown with typical patterns displayed on the rear wall. Universal transmission lines were shown next to these antennas. On the left a section of the BFA-series of FM antennas was displayed.

FIG. 11. Charles Brown, Chief Engineer of WCSH and WCSH-TV, Portland, Maine is shown inspecting his new 5-kw AM Transmitter with RCA salesman J. Ulasewicz.

New AM and FM Transmitters, Antennas for TV

The new 5-kw High-Efficiency AM Transmitter received very favorable acceptance at the NAB convention. The new techniques used in the BTA-5T permit operation at 90 percent efficiency which saves approximately 15,000 kw hours per year in power. The transmitter shown at the convention was purchased by WCSH, Portland, Maine (see Fig. 11).

Two new FM transmitters attracted a great deal of interest. The new 1-kw, BTF-1D was sold to WISN and the 10-kw BTF-10C went to WMFP. In addition to the 10-kw transmitter, a new 20-kw unit was announced, that diplexes the output of two 10-kw units to produce the higher power. FM seemed to be the subject of greatest interest to radio broadcasters at this years' conveniton.

New Antennas

Directional antennas were introduced at the convention: exact scale models and typical patterns were shown. The slotted-cylinder directional antennas are very similar to the popular RCA Traveling Wave Antennas which were also shown at the convention (see Fig. 10). The BFA series of FM antennas shared the high degree of interest with the FM Transmitters.

Audio Tape Recorder

An advanced professional audio tape recorder was demonstrated. The RT-21 incorporates all of the latests developments in recording, such as transistor record/play amplifiers, provisions for stereo, remote control, and many other new features.

Three transistor amplifiers were also presented; a 10-watt monitor amplifier, a preamplifier, and a program amplifier.

Velocity Microphone

A new version of an old favorite microphone was introduced at the convention. Combining all of the features of the famous 44-BX and Junior Velocity Microphones, the new BK-11A takes advantage of the latest developments in microphone design. This type of microphone, with bi-directional pattern, is ideal for radio, and its high quality makes it excellent for music pickups.

RCA OPENS TELEVISION SYSTEMS CENTER IN HOLLYWOOD

To Assist Broadcasters and Other Producers of Taped TV Programs, the Center Will Offer Systems Engineering, Tape Recorder Demonstrations, and Custom Tailored Installations

Headed by Adron Miller, formerly Southern Field Sales Manager for Broadcast and Television Equipment, RCA began operations in May at its new Film Recording and Television Systems Center, 1560 North Vine Street, Hollywood, California.

This new Center represents an expansion of RCA's engineering and equipment supply services to the motion picture and television industries on the West Coast. Furthermore, the new facility also represents the merging of film recording and television techniques, two areas in which RCA has pioneered, in order to provide a complete systems engineered package to producers of films and tapes for television.

In addition to studio systems, the Center will custom design, engineer and assemble fully-equipped mobile units, for taping of television shows and commercials on location. The mobile systems are capable of producing a television program or commercial from any remote point.

"Our Systems Concept," says Mr. Miller, "is simply the teamwork idea applied to TV Tape equipment. The members of the team—cameras, tape recorder, special effects and switching—are engineered to work together. The result is top performance."

Adron M. Miller, Manager of the new Film Recording and Television Systems Center, heads a staff of television, recording and systems engineers.

Mr. Miller's broad experience in the radio and television industry includes engineering and management of broadcast stations, as well as equipment sales.

Mr. Miller pointed out that the new Center will enable RCA to provide superior service to West Coast customers for television tape systems.

New Television Systems Center is located at 1560 North Vine Street, Hollywood. The Center includes a drafting group, engineering and systems department, model shop, TV Tape demonstration room, machine shop, assembly and test areas. The new Center provides complete design, engineering, and installation facilities for all types of integrated TV Tape systems, custom tailored to the user's requirements.

Al Raper (right), Assistant Chief Engineer, KFSD-TV, hands roll of TV Tape to Hal Jury, RCA engineer. Mr. Raper brought his tape to the RCA demonstration area in the new Center for analysis and checking. This TV Tape demonstration area is one of the features of the new Center that will be of particular interest to West Coast broadcasters.

A. F. Inglis, Manager, RCA Close Circuit Television Department, points to new development for synchronization of film and TV Tape systems. Watching from left to right are: Al Browdy, Director of Engineering, NAFI Broadcast Division and Chief Engineer KCOP-TV; Mr. Flanagan, Vice-President and General Manager; and Mr. Polen, Assistant Chief Engineer.

GRAPHIC PICTURES, COMPLETE RCA TV TAPE

Two TV Tape Recorders, Four TK-12 4½-Inch I.O. Cameras, Complete Switching and Special Effects Equipment Included in New Tape Production Studios

FIG. 1. Charles H. Colledge, Vice President and General Manager, RCA Broadcast and Television Equipment Division, and Robert H. Estes, President, Graphic Pictures, Inc., examine miniature model of RCA TV Tape Recorder at press conference announcing Graphic Pictures' purchase of complete TV Tape production equipment.

A complete RCA TV Tape Production Package including the latest and most advanced TV equipment—cameras, switching, special effects and tape recorders has been installed in the new $500,000 studios of Graphic Pictures, Inc., Chicago. The extensive new studios located atop the Daily News Building will provide modern facilities to make Chicago competitive as a center where TV programs are produced "live," recorded on TV tape and syndicated nationally.

Available to Local Producers

Graphic Pictures' President, Robert H. (Bob) Estes, has announced that he plans to make the new studio available to local TV producers, packagers and talent to experiment with new formats and possibly develop a new and original "Chicago school" of television.

"We are certain Chicago is destined to regain its once respected prominence in the television industry," he said. "As the crossroads of America, Chicago can't be matched for location. With our new TV tape recording equipment, we'll be able to offer picture quality that can't be matched by film."

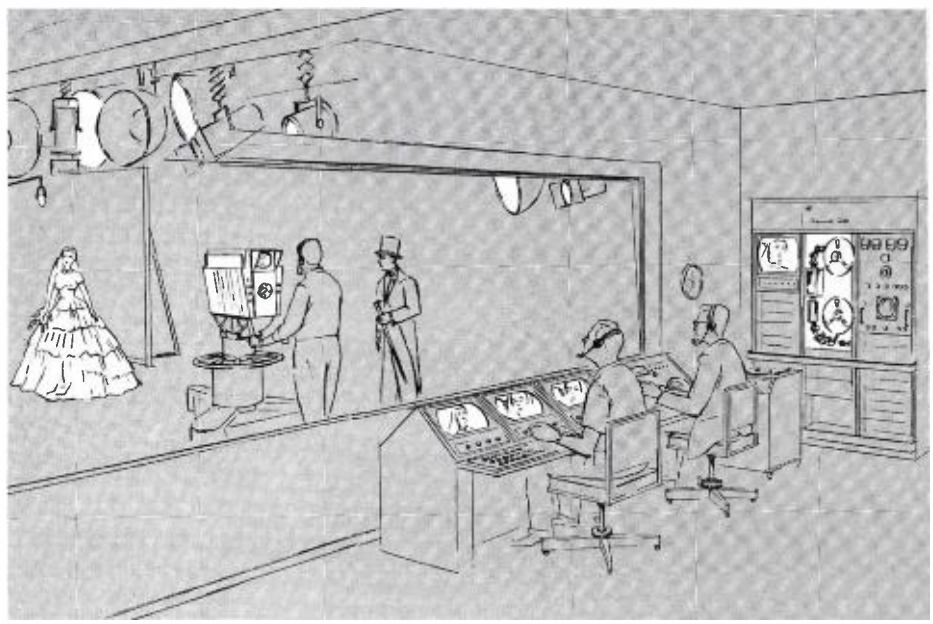
"Matched Line" of Equipment

In order to provide clients with the finest pictures available, Graphic Pictures selected a complete "matched-line" TV tape production package. Equipments have been designed to work together as a tape production team.

Initially the TK-11 will be used but will be replaced by TK-12 cameras, with a 4½-inch image orthicon to produce sharper, crisper pictures. These have the advantage of producing finer, clear product and picture details. A logical team-mate for tape, these cameras also result in the ability to make tape recording copies in greater number with greater clarity.

CHICAGO, INSTALLS PRODUCTION PACKAGE

FIG. 2. RCA TV Tape production package, soon to be installed in new studios of Graphic Pictures, includes all equipment necessary for production of TV Tapes. Included in the package are two TV Tape Recorders, four TK-12 Studio Cameras, complete switching and special effects equipment.



Switching and distribution equipment has been designed to preserve the fine initial quality, and also provide utmost facility for creative programming. Fully integrated special effects equipment place a virtually limitless range of electronic effects at the producers fingertips. Many of these have previously been available only by exhaustive film techniques.

Finally, advanced TV tape recorders complete the "matched line" system, reproducing the program pictures in all their fine detail. Built-in color handling capacity assures fine black-and-white performance and electronic quadrature adjustment offers freedom from picture discontinuities. Also included, is a newly announced development—the transistorized signal processor, that increases the high level of performance of this advanced TV tape equipment.

Implement Advertising Growth

In a press conference, dedicating the new tape center, Mr. Estes announced that Graphic Pictures, with their new facilities, will be able to provide better television service to Chicago area sponsors and advertising agencies.

"Advertising in Chicago has grown from a $200 million business to a bonanza involving $900 million," he said. "These agencies and their clients require the finest facilities and services to present the quality of television programming that speaks well for their abilities and for Chicago."

"Our entire production is geared specifically to meet these requirements."

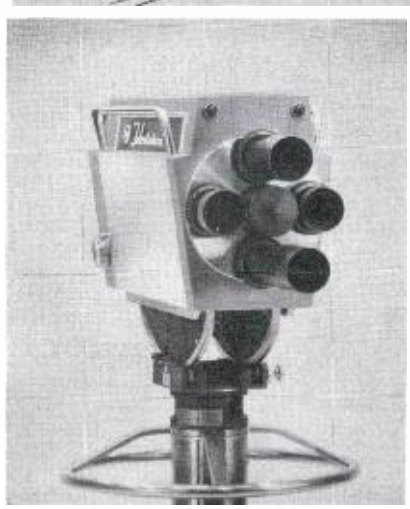


FIG. 3. New TK-12 Studio Camera is a logical teammate for tape. Featuring a 4½-inch image orthicon, it helps produce tape recording copies in greater number with greater detail.

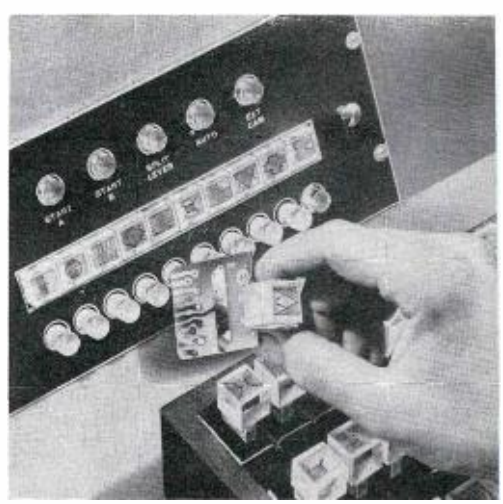
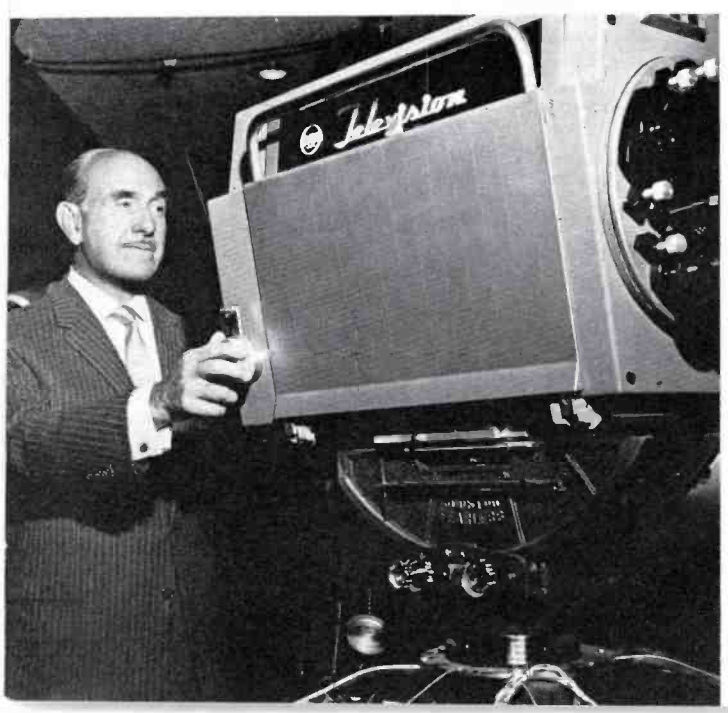


FIG. 4. Special effects equipment has been fully integrated into the system. Its use places a virtually unlimited range of effects at the producers fingertips—wipes, wedges, split screens, etc.

FIGS. 1, 2, 3. RCA exhibit of Matched Line of eq

RCA DEMONSTRATES MATCH TV TAPE SYSTEM AT SMPTE

Advanced TV Tape Recorder Together With New 4½ Inch I.O. TV Camera, Switching and Special Effects, Highlight the Convention



At the 87th Semi-Annual Convention of the Society of Motion Picture and Television Engineers, May 1-6, 1960 in the Ambassador Hotel, Los Angeles, RCA demonstrated its integrated system for production of taped TV programs.

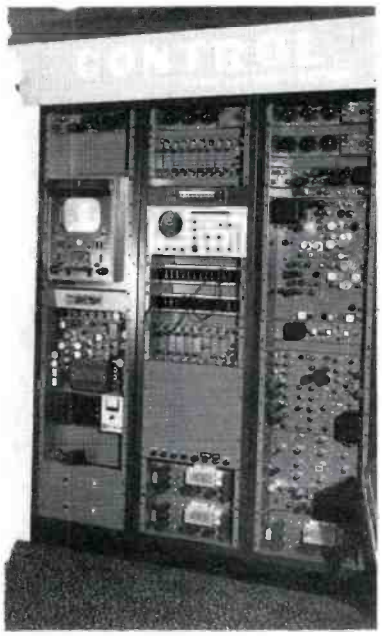
The system brought together a complete equipment package—TV cameras, tape recorder, switching and special effects. Demonstrations showed that the system-matched equipment, which is engineered by RCA as a unit, produces pictures of life-like clarity and definition, suitable for making multiple tape copies.

A live studio, with professional models and lighting equipment, was used to display the unusual picture quality of the new TK-12 4½-inch I.O. Camera. Freedom from halo and blooming was demonstrated. Also the increased resolution and better gray scale rendition.

New features of the RCA TV Tape Recorder were seen in action: A transistorized signal processor; air bearing headwheel; and FM reference burst generator.

Demonstrations included operation of the TS-40 Transistorized Switching Equipment and the new Special Effects System. Thus, it was possible for a visitor to see all the elements of a Matched TV Tape System in actual operation.

FIG. 4. Jack Warner, President of Warner Brothers Studios, operates new 4½-inch I.O. Camera at SMPTE Convention.



uipment for TV Tape System, at SMPTE Convention.

ED LINE OF EQUIPMENT FOR
MEETING IN LOS ANGELES

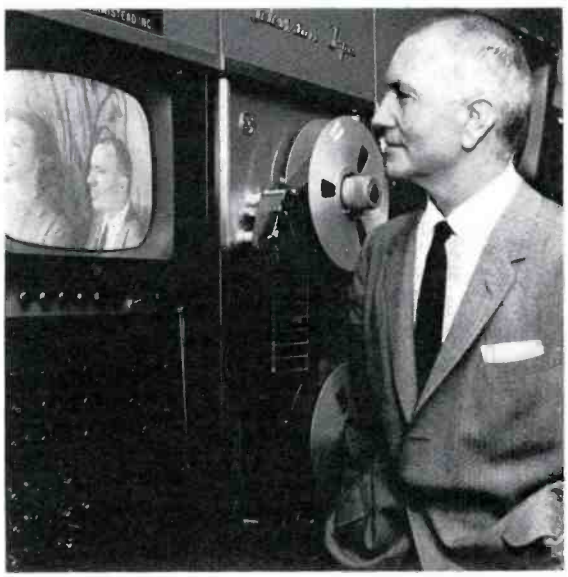


FIG. 5. William Anderson, Production Vice-President of Walt Disney Productions, watches playback on Tape Recorder of scene that was taped a few seconds earlier, in the RCA Booth at SMPTE Convention.

FIG. 6. Lester E. Hutson, President of Mobile Video Tapes, Inc., and John Allen, Vice-President and Chief Engineer, examine some of the features of the new TK-12 Camera at SMPTE Convention. Actress Norma Yost appears in background.

KSTP, KFSD, WAVY REPORT ON RCA TAPE RECORDER

Two TV Tape Recorders at KSTP Get Day-In, Day-Out Use

RCA TV Tape recorders get a daily workout at KSTP-TV, producing programs and commercials for station advertisers. Two recorders have now been installed; one black and white model and one color model.

Fine Color Fidelity

One of the first uses of the television tape recorder was to record in its entirety the Minnesota-Wisconsin football game in color. Although this recording session ran over two hours there was no difficulty experienced in the recording. This tape was recorded as a test of the machine, as well as a reference recording for Minnesota Mining and Manufacturing Company. It was not aired, however, the color fidelity was excellent throughout.

KSTP, the first television station in the upper Midwest has kept up its tradition of "firsts" by being the first to get the RCA television tape recorder.

KSTP-TV reports on the use of its TV recorder as follows:

"In one case, we used TV tape to record a show for the St. Paul Police Department of police dogs in action allowing us the use of camera and switching techniques. This tape is retained and copies are used over and over again until worn out. Then new prints are made.

Better Use of Talent and Crew

"Taping some of our spots and programs, of course, allows us to make better utilization of talent and crew without incurring overtime or booking shows back-to-back. We are doing quite a bit of interchange with the other Twin City stations of one-minute spots.

"One of the reasons for our choice of the RCA machine was the rack mounting which enabled us to install the machine in limited space.

"The tape recorder is installed in our projection room and remote controls are installed at the projectionist's position."

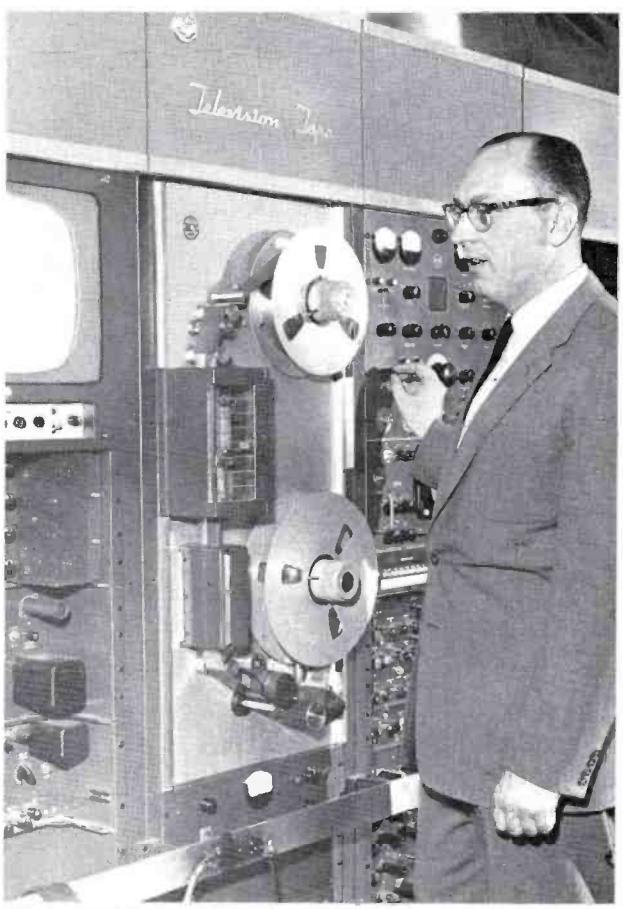


FIG. 1. Chief Engineer, Larry Larson, KSTP Television is shown operating one of the two new RCA TV Tape Recorders installed at KSTP-TV, Minneapolis/St. Paul.

FIG. 2. Richard Elliott, of the KSTP technical staff, operates new TV Tape splicer mounted on one of the recorders.

TV Tape at KFSD-TV Turns Out High Quality Commercials for Local Advertisers

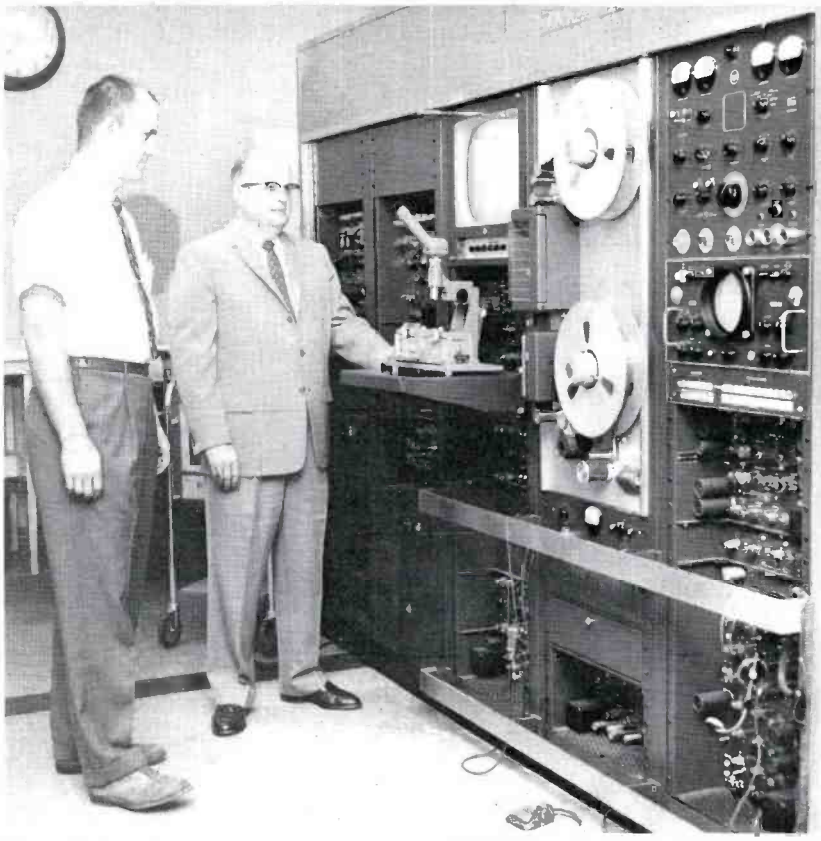


FIG. 3. Dick Bailey (left) and LeRoy Bellwood, KFSD-TV chief engineer look with pride at their newly-installed RCA TV Tape Recorder.

Installation of advanced RCA TV Tape equipment at KFSD-TV, San Diego marks the completion of the stations modern TV studios. The equipment is now being used in the production of live quality commercials for local advertisers.

Studios Designed for Tape

Experience throughout the industry has proved the necessity for good studio facilities, if a station is to use tape economically and imaginatively. KFSD-TV studios have been designed especially for television tape —taking full advantage of both indoor and outdoor studios, deep sets, rear screen projection, turntable, and special effects. A remote truck enables the staff to tape commercials on-location (via STL) for a client's store or office. Advertisers see the finished products in the stations tape viewing room just minutes after taping.

Top Picture Quality

Chief Engineer LeRoy Bellwood reports excellent performance from his RCA recorder. The facility with which recordings can be produced has pleased the entire technical staff. The precision with which magnetic heads and other tape components are manufactured particularly impressed Mr. Bellwood in a recent tour of the RCA TV Tape production facilities. He writes "the precision with which the equipment performs plus all its advanced new features makes RCA TV Tape a welcome addition to our modern new studios."

WAVY Gets More From Existing Manpower With RCA TV Tape

According to chief engineer, Andrew M. Jackson, Jr., the RCA Television Tape Recorder newly installed at WAVY, Portsmouth, has permitted the station to utilize its manpower to the fullest extent, while at the same time giving advertisers "live quality" programming at any desired time of day. The recorder has permitted the station to program shows that heretofore would have been impossible.

The station and its clients appreciate the top picture quality produced by this advanced recorder. Rack mounted design of the equipment has permitted WAVY to install the recorder in their film room to provide maximum operating facility and conserve valuable space.

WAVY has recently installed its second RCA TV Recorder. This latest equipment is a color model so that now the station is able to serve clients with top quality programs and commercials in both monochrome and color.

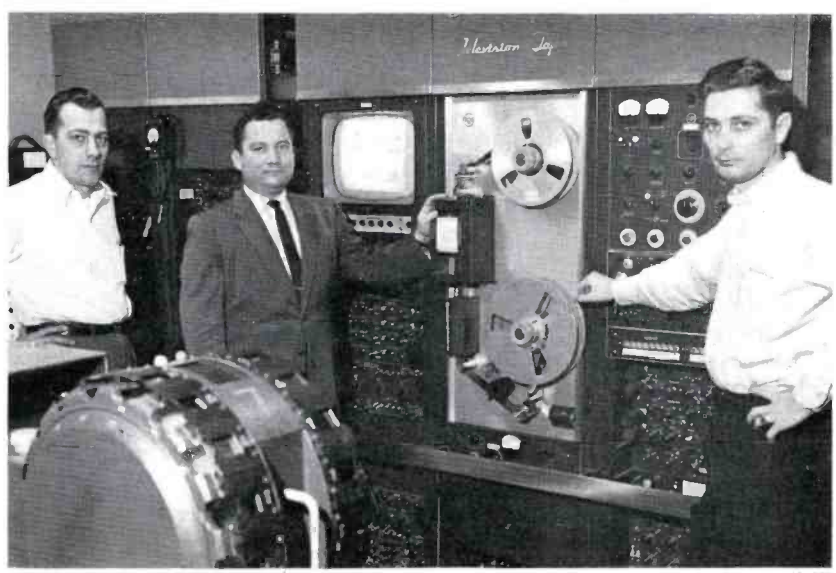
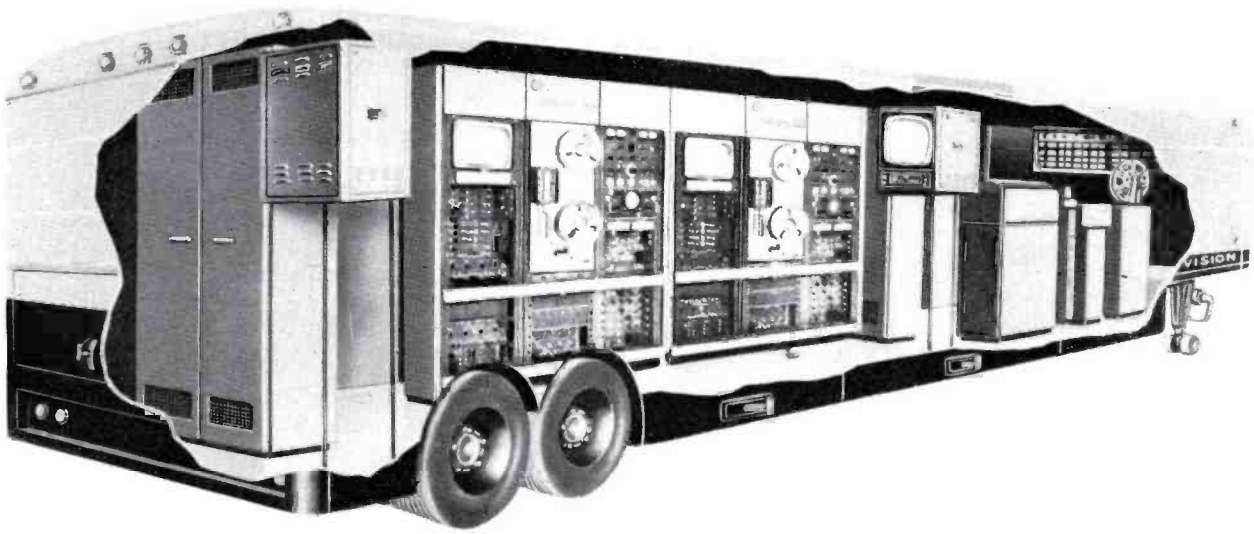


FIG. 4. Shown with the first TV Tape Recorder to be installed at WAVY are (left to right) Paul W. Hecht, Assistant Chief Engineer-TV, Andrew M. Jackson, Jr., Chief Engineer, and Waverly Foster, Tape Recorder Engineer.

FIG. 1. Glenn-Armistead TV tape unit. It contains two color TV tape recorders, color monitors, and a film system. This includes black and white and color film cameras, 16 and 35mm film projectors, and 35mm slide projector.



GLENN-ARMISTEAD PROCURES TWO

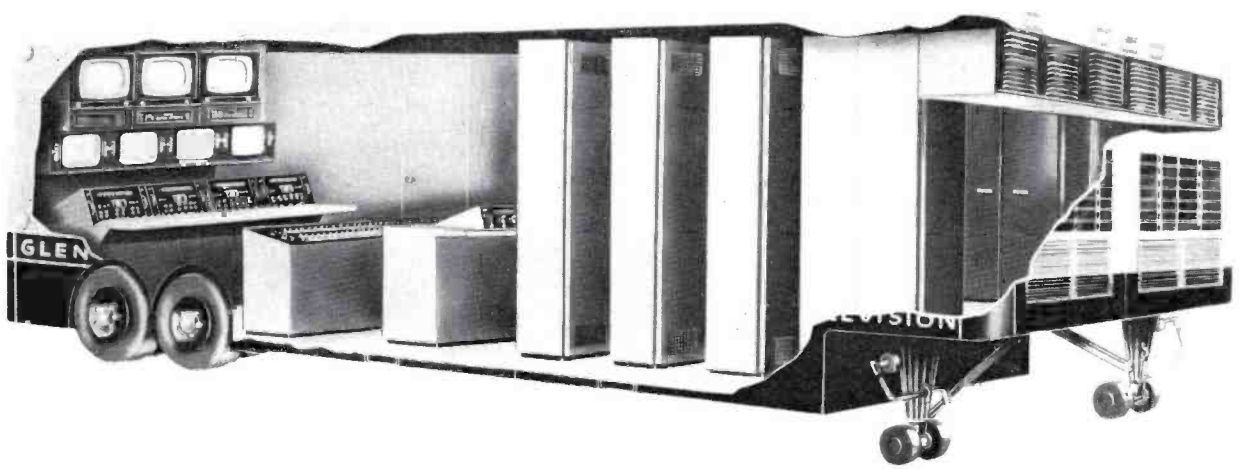


FIG. 2. Glenn-Armistead program production unit. It contains four black and white and four color cameras, with control equipment and monitors. Also a TS-40 Transistor Switching System and a 4-element special effects system. An audio control console is included.

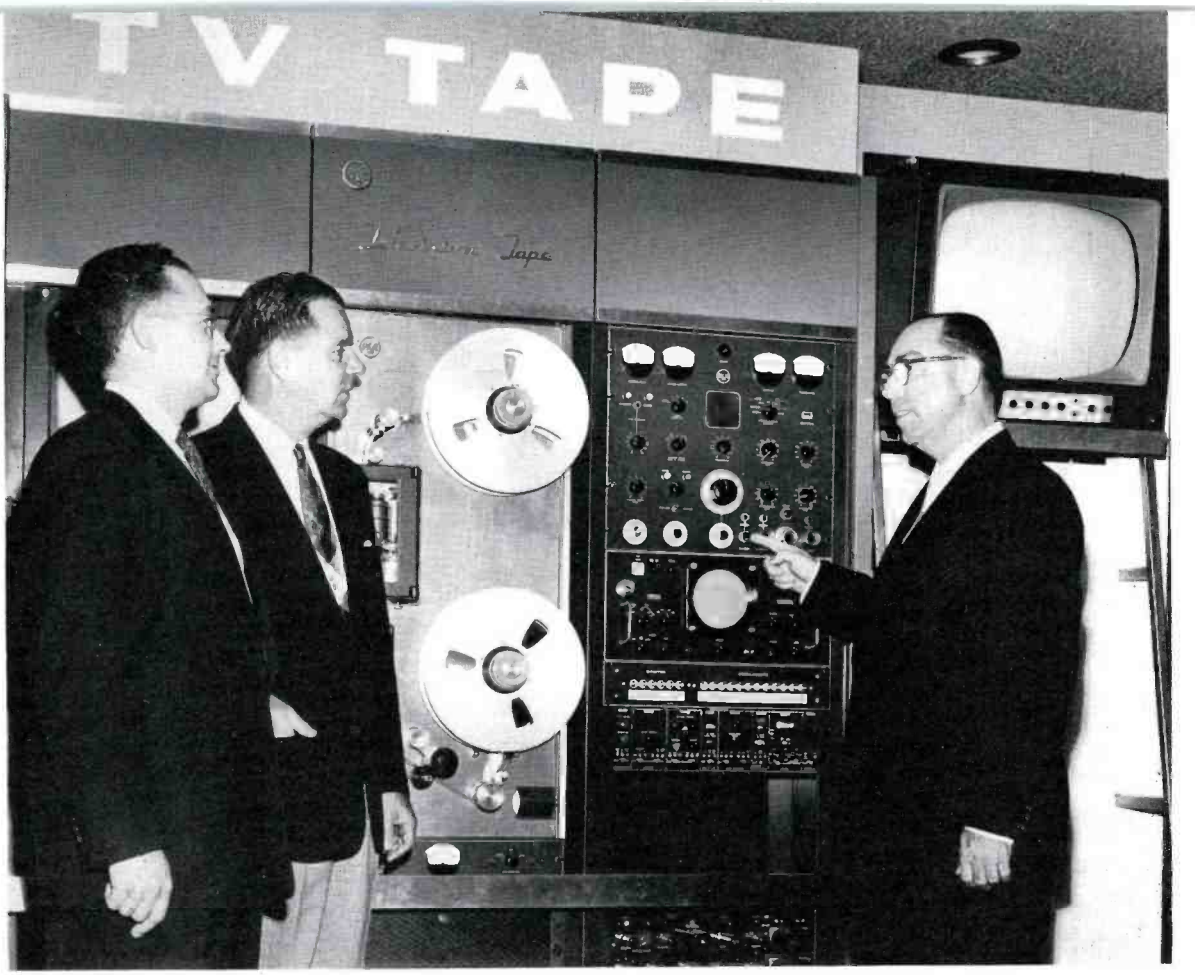


FIG. 3. Shown standing before RCA Tape Recorder is Glenn-Armistead management team: (l. to r.) Mr. J. Bluth, chief engineer; Mr. Mark Armistead, vice-president; and Mr. Glen Glenn, president.

-UNIT MOBILE SYSTEM FOR PRODUCTION OF TV TAPES

Self-Powered System With Monochrome and Color Cameras, Film Chain, and Special Effects Can be Used For Studio or Location Work

FIG. 4. External view of one Glenn-Armistead mobile unit (the two are identical externally). Each is air conditioned for efficent operations. Electric generator is mounted on tractor unit, so that system is self-powered on location.

Well known in the movie industry, Glen Glenn and Mark Armistead have joined forces and moved into production of TV Tapes by procuring a tape recorder system on wheels.

Normally, the system will be used at the studios of Glenn-Armistead in Hollywood, but the producer can move out on location at will, to turn out a program, or commercial, and return to home base with a ready-to-broadcast TV Tape.

The mobile system is equipped to do both monochrome and color TV shows. Film and slide inserts can be accommodated, since a complete film system is also included. Switching and special effects equipment enable Glenn-Armistead to accomplish the most intricate wipes, fades, and inserts for the appropriate final touches, so that a finished tape can be produced by the mobile system. The tractor mounts a 25-kw generator to supply sufficient power for both the camera and the tape trailers.

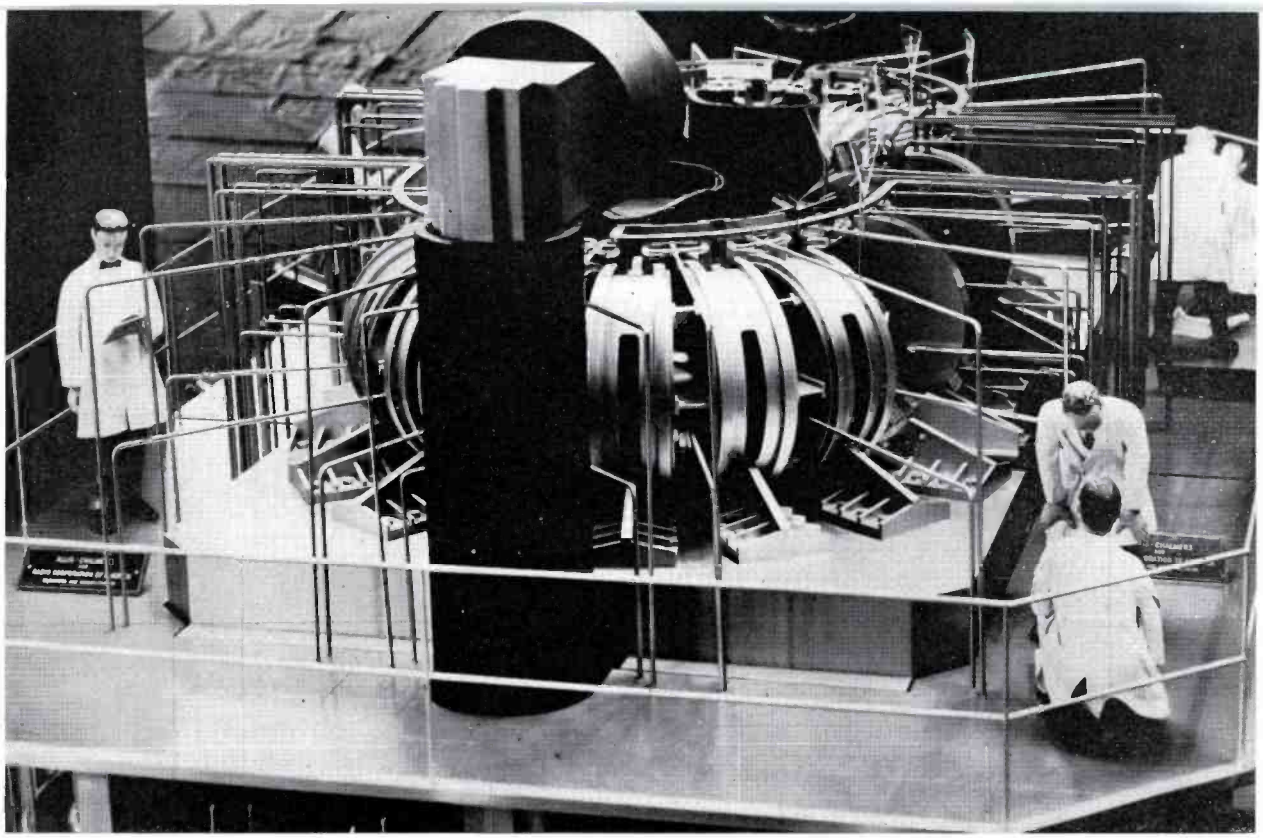


FIG. 1. This is a model of the C-Stellarator fusion power equipment. Princeton University is directing the development for the Atomic Energy Commission under the name Project Matterhorn. RCA is furnishing the high power rf equipment. Allis Chalmers Co. is also providing other equipment for this project.

TRANSMITTER GROUP DEVELOPING NEW

New Organization Created to Provide Wide Range of RF Generating Equipment for Various Applications

E. N. LUDDY

W. D. WENGER

EDWARD MILLER

J. E. YOUNG

Over a quarter century of high-power transmitter design experience at RCA is now being used to develop rf power equipment for space age applications. As a result of the many demands for this kind of equipment, the High Power Electronics and Nucleonics Department has recently been formed within the Broadcast and Television Equipment Division. The responsibilities of this new group are twofold. First and foremost it is producing broadcast transmitters for AM, FM, and Television. In addition it is developing rf generators for applications such as particle accelerators, plasma heating, scatter communication, ion propulsion and satellite tracking.

Special Projects and Equipment

The new department for example has recently supplied a 450-kw rf generator to the National Aeronautics and Space Administration. Several other projects are now under way, including Project Matterhorn for the Atomic Energy Commission.

Many requirements for special high-power equipment have been filled by converting broadcast transmitters. In fact, standard production equipment is available in a frequency range from 500 kc to 1000 mc and in powers ranging from a few watts to 100 kw. Even higher power is attained by combining units.

A New Team

The department is staffed by personnel familiar to the industry. E. N. Luddy is department manager while Wiley D. Wenger supervises product administration. J. E. Young heads up the engineering activity. Edward Miller is sales manager. All of these men have many years of background in high power broadcast equipment; in fact, they will also, in addition to these new duties, continue the development and manufacture of broadcast transmitters.

FIG. 2. Recent high power projects included building of this 250-kw Ampliphase transmitter now in operation at XERF in Mexico. This unit uses the basic Ampliphase concept at the higher power level.

EQUIPMENTS FOR BROADCAST AND NUCLEONICS

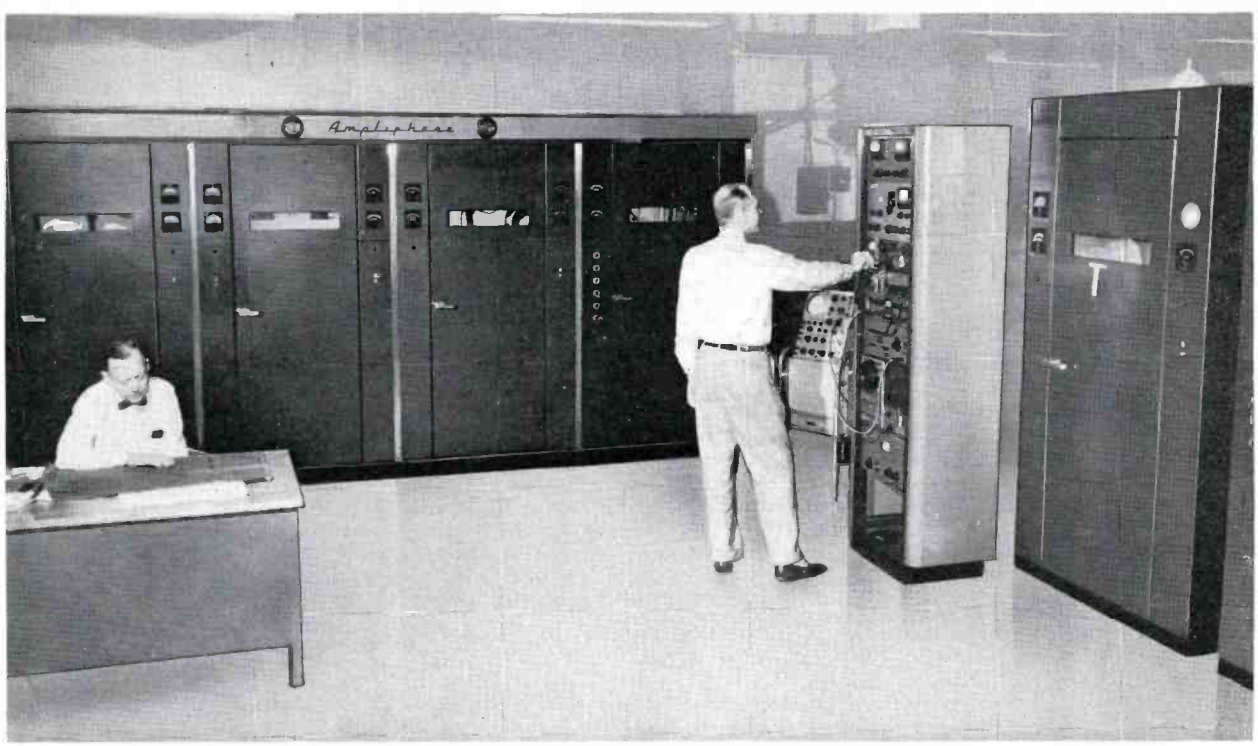


FIG. 3. Now high power transmitters can be power tested with this new test set up in the transmitter factory. This shows a BTA-50G Transmitter being tested prior to shipment to KPOP.

TV DIRECTIONAL ANTENNAS FOR TASO EXPERIMENTS

Standard Superturnstile Antenna Modified For Special Directional Field Tests May Help Provide A Solution To Allocations Problems

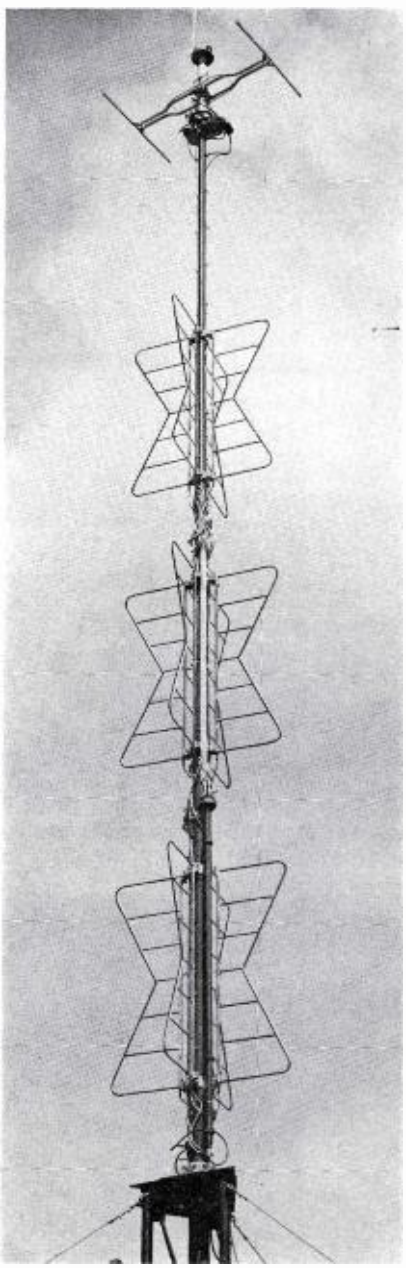


FIG. 1. This is the special antenna supplied to TASO. Above the standard TF-3EM Superturnstile two folded dipole antennas have been mounted. Each of these antennas can be rotated separately.

Recent field tests conducted at WKY, Oklahoma City, under the supervision of the Television Allocations Study Organization investigated directional radiation patterns. The results of these tests will be evaluated by TASO and submitted to the FCC for consideration.

Special Modifications

TASO selected a standard type TF-3EM Superturnstile Antenna which was modified to permit various combinations of power feed (see Fig. 1). This three-bay unit is mounted on a special base geared directly to a ½ horsepower, 230 volt motor. The antenna can be rotated over full 360 degrees. Two differential selsyns, also geared to the antenna pole, transmit antenna position information to the control indicator panel in the transmitter building.

A ring attached to the antenna pole, studded with projecting lugs, closes a microswitch every 10 degrees during rotation. This generates triggering pulses which in turn interrupt the modulation of the transmitter. Interruptions in the pattern recorded at the receiving location provide a direct relationship between the orientation of the antenna and the received signal.

T/L Coupling

Flexible 50 ohm coaxial lines are used to connect the rigid 3⅛-inch gas-filled lines on the tower to the lines that feed the junction boxes on the TF-3EM (see Fig. 3). This change from solid to flexible and back to solid transmission line was necessary to permit rotation of the antenna. An excess of flexible cable is used to take up the twist resulting from antenna rotation.

Monitoring Dipoles

Two folded dipoles, spaced 180 electrical degrees apart, in the same plane, are surmounted on the TF-3EM. The entire dipole assembly can be rotated independently through a full 360 degrees. A 1/6 h.p. motor geared to the dipole assembly does the turning, and it can be controlled from the transmitter building. Position of the dipoles is indicated on a remote control panel, similar to the one used for the superturnstile.

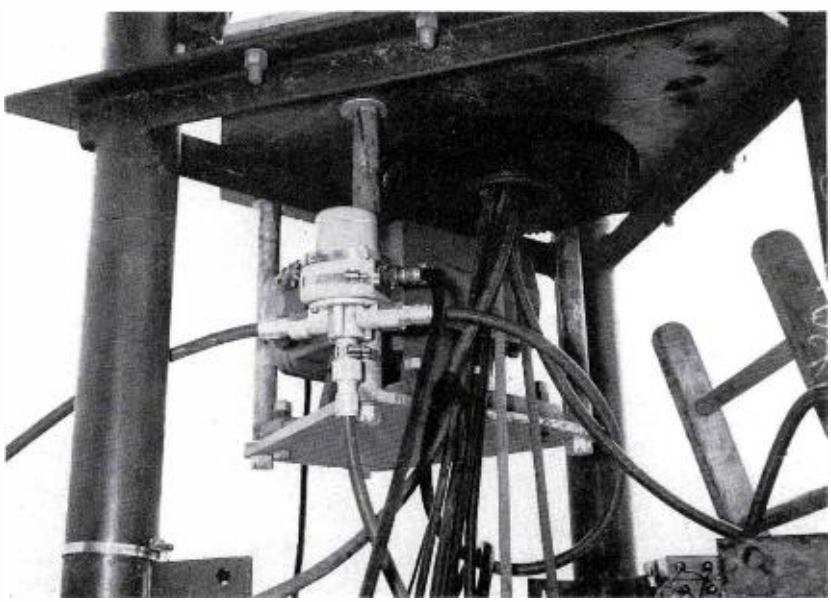


FIG. 2. This is a close-up of the rotor motor and drive gear for the TF-3EM mounted at the top of the tower. The coaxial junction box is also shown with feed lines connected.

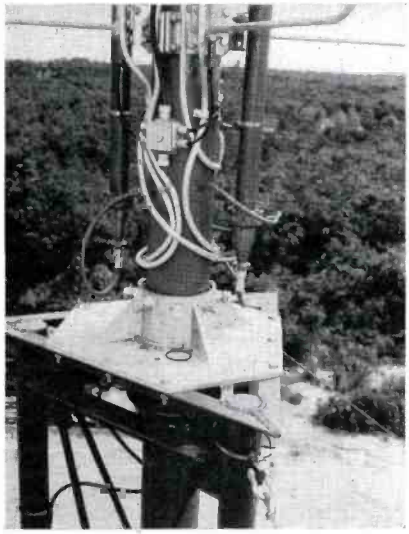


FIG. 3. The base of the Superturnstile is shown here. The change from flexible to solid lines is made just above the base.

Power Switching

A power driven coaxial switch is installed at the top of the tower to make it possible to radiate a signal from either the Superturnstile or the monitoring antenna. All switching operations are controlled from the transmitter building. Indicator lamps on a special remote control panel show which antenna is receiving power.

Power Dividing

Various divisions of power between the two planes of radiators in the Superturnstile antenna can produce different types of directional patterns. The necessary degree of directionalizing is obtained from power dividing "Tees" in the transmitter building. Coaxial transformers in the legs of the "tees" are used to establish proper impedances and power ratios.

Four power divisions are used to produce the various directional notches in the pattern. The normal 50/50 power feed produces the common clover-leaf (omni-directional) pattern. A 10/1 feed results in a 10 db notch in the pattern, while a 100/1 split produces 20 db notches. Full depth notches are, of course, produced by feeding power to only one side of the antenna.

Pattern Testing

In order to provide basic data for TASO to compare its test results with, the antennas were fully pattern tested at the RCA Antenna Test site in Gibbsboro, New Jersey. Tests of vertical and horizontal pattern were made on the Superturnstile as well as on the dipoles. Each power feed combination was checked in the same way to provide complete information for TASO.

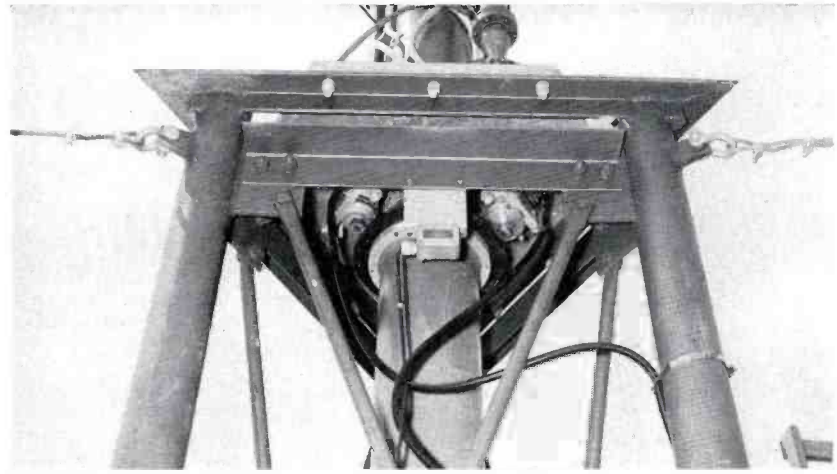


FIG. 4. Two differential selsyns are shown geared to the antenna pole gear, and they are used to transmit antenna position information to the indicator panel at the transmitter building.

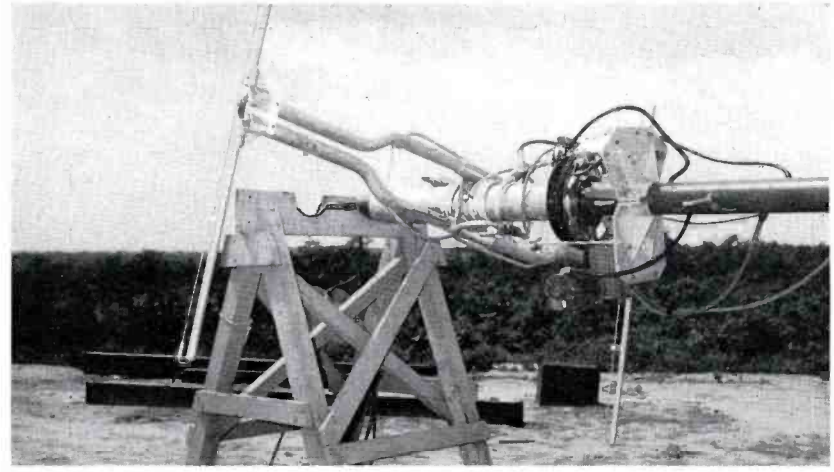


FIG. 5. Two Dipoles are surmounted on the TF-3 EM, shown here on the ground. These antennas are rotated by a 1/6-hp. motor and the rotation is controlled from the transmitter building.

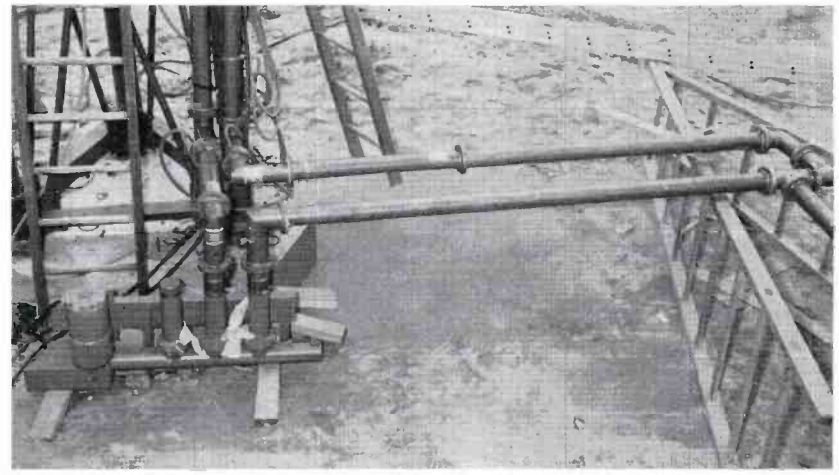


FIG. 6. Power switching for the antennas is accomplished with this coaxial switch. This permits rapid switching between the various bays and sections of the Superturnstile antenna. Its operation is also remotely controlled.

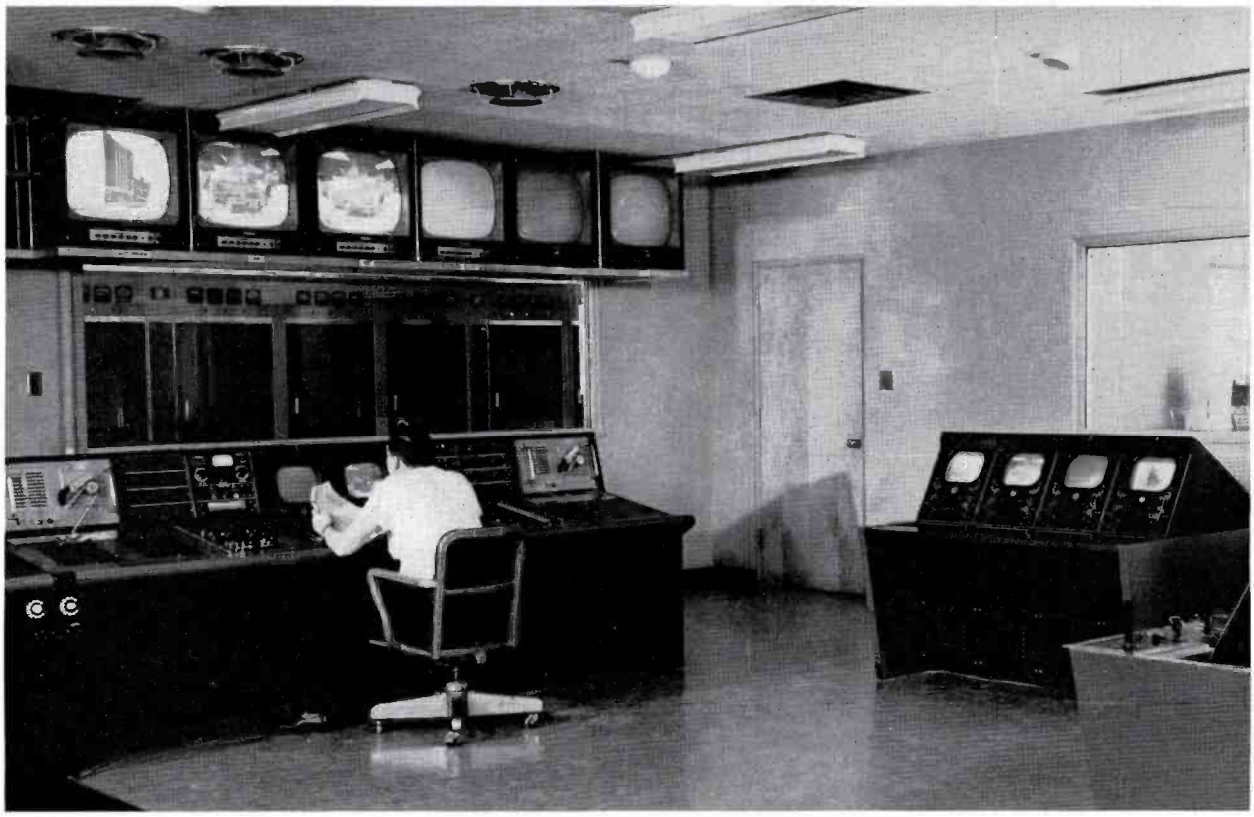


FIG. 1. Master control room at WKRC-TV, Cincinnati, where a day-long automation system has been installed.

AUTOMATIC CONTROL FOR TV STATIONS

From Station-Break to All-Day Operations, Automation Systems Adapt Advanced New Equipment to Individual Stations' Program Requirements

by F. R. McNICOL, *Manager, Broadcast Systems, Broadcast and TV Equipment Division*

Operational costs of television stations have been continually rising, and aggressive station management personnel have been looking at many parts of their operation and policies to see where they can increase efficiency.

Technical efficiency can be increased in at least two ways. One is by improving the physical layout to allow a man to satisfactorily supervise more operations, and a second is to provide facilities which will reduce his peak workload, thereby reducing the probability of operational errors.

Efficiency in Physical Layout

Since the number of functions a man can perform is determined by how well he can see and reach the required operational equipment, it appears desirable to have a closely knit operational area. If the studio-transmitter site can be one and the same, one hurdle is already overcome since the transmitter man can in part "double in brass" as a master control or camera control operator.

Assuming the transmitter-studios are at the same location, further efficiency can be realized from technical manpower if the film camera controls, live studio camera controls, projection facilities (or film), television tape recorders, transmitter control desk, and master audio and video switching facilities are all located in a closely knit operational area in visual contact with the transmitter. Obviously one man cannot handle all of the above at the same time, however this physical arrangement allows one man to handle live and film cameras under many conditions, and the transmitter operator may be able to handle projection duties. Master control switching and television tape operation will demand differing numbers of people to be determined by the programming structure of the individual station. Each manager will have his own ideas as to how many people would be required in this area for good operation.

Automatic Control Devices

The operational attention necessary in the control area can be further reduced by eliminating the necessity for continually "riding" or controlling the film camera controls and the audio level at master control. Within limits this is possible by the proper use of automatic light control (or automatic sensitivity control) on the film chains and the use of automatic gain control on the

video. Also, use of automatic gain control amplifiers on the audio minimizes the need for continuous operational control. As indicated previously, these aids allow the station to approach a "hands off" policy for some of the operation. Stabilized live studio cameras also minimize the need for technical adjustments.

Remote control from an operational position of the pan-tilt, zoom, focus and iris of cameras in the studios allows the reduction of the number of cameramen required in a studio for some types of shows.

Presetting Equipment Functions

Further efficiency can be realized from available manpower if operators are relieved of the following functions, or if they can initiate a complete event by the actuation of a single button.

1. Start-stop of all projectors (cue stop) and dousing if required
2. On-off and slide change of all slide projectors
3. Multiplexer control
4. Start-stop—all audio magnetic tape recorders (cue stop)
5. Start-stop—all audio turntables
6. Start-stop—all audio automatic turntables
7. Start-stop—all television tape recorders (cue stop)
8. Switch incoming audio sources to the transmitter line for program
9. Switch incoming audio sources to the preview bus for checking purposes
10. Switch incoming video sources to the transmitter line for program
11. Switch incoming video sources to the preview bus for checking purposes

Two approaches toward the accomplishment of the above are the use of "panic period," or more properly, "station break" equipment, and the use of "all day" programming equipment.

"Station break" equipment provides limited capacity for preset switching of a relatively small number of events in automatic sequence. Its main purpose is to avoid the confusion and likelihood of error which often occur when a number of quite short events must be switched in rapid succession, as, for example, during the "panic period" of a station break.

In contrast to such limited capacity, the "all day" type of equipment permits presetting the switching of an almost unlimited number of events. In practice, it is possible to cover the complete sequence of all events in a day's program schedule.

A more complete discussion of these two general types of automation facilities follows:

Station Break Automation Equipment

Station break equipment, see Fig. 2, allows an operator to preset the required small number of events in a storage or memory system. He can then actuate each event in a predetermined order simply by pressing a single button, or he can turn the actuation over to a clock system which will start each event on the basis of predetermined timing.[1]

[1] See "RCA Automation Equipment for TV Stations" Broadcast News, Vol. No. 103, March 1959.

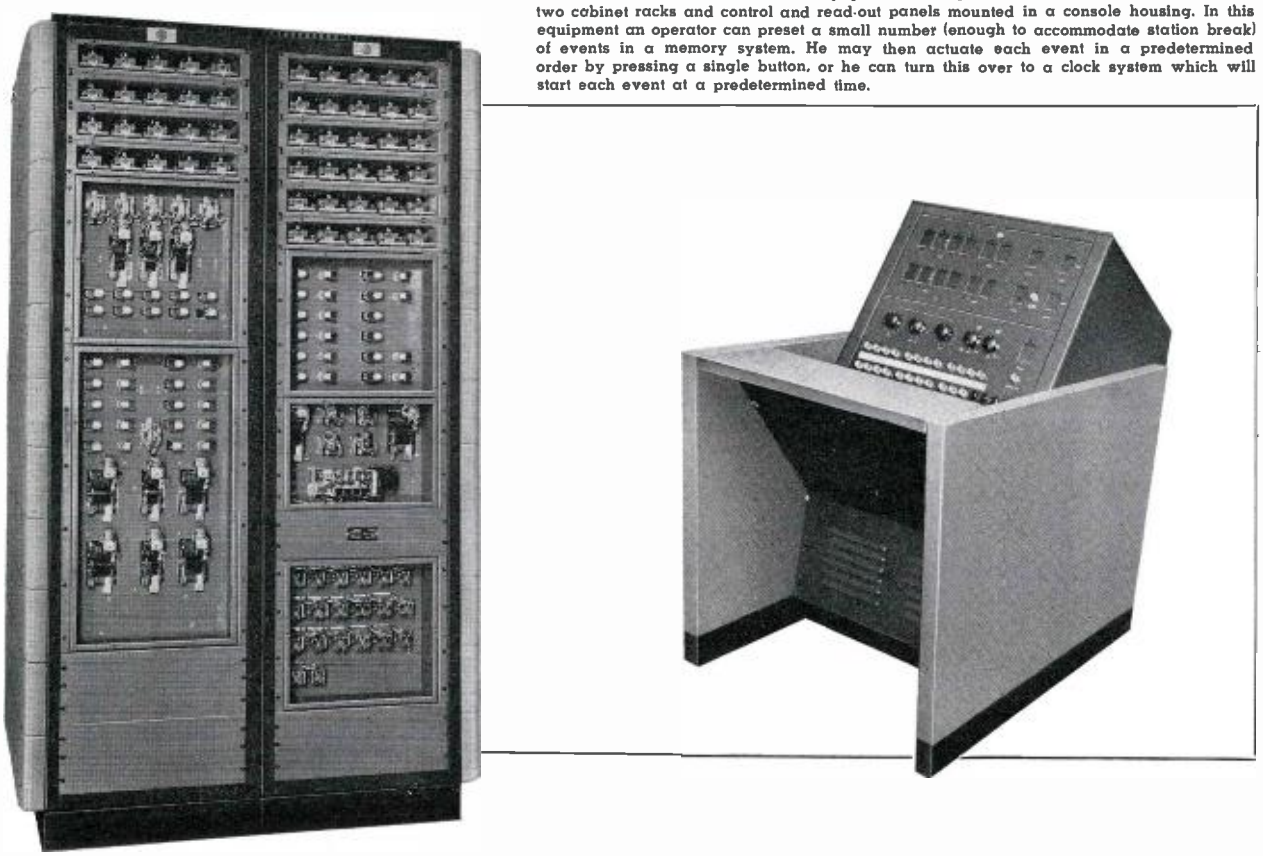


FIG. 2. Station break automation equipment is comprised of several chassis mounted in two cabinet racks and control and read-out panels mounted in a console housing. In this equipment an operator can preset a small number (enough to accommodate station break) of events in a memory system. He may then actuate each event in a predetermined order by pressing a single button, or he can turn this over to a clock system which will start each event at a predetermined time.

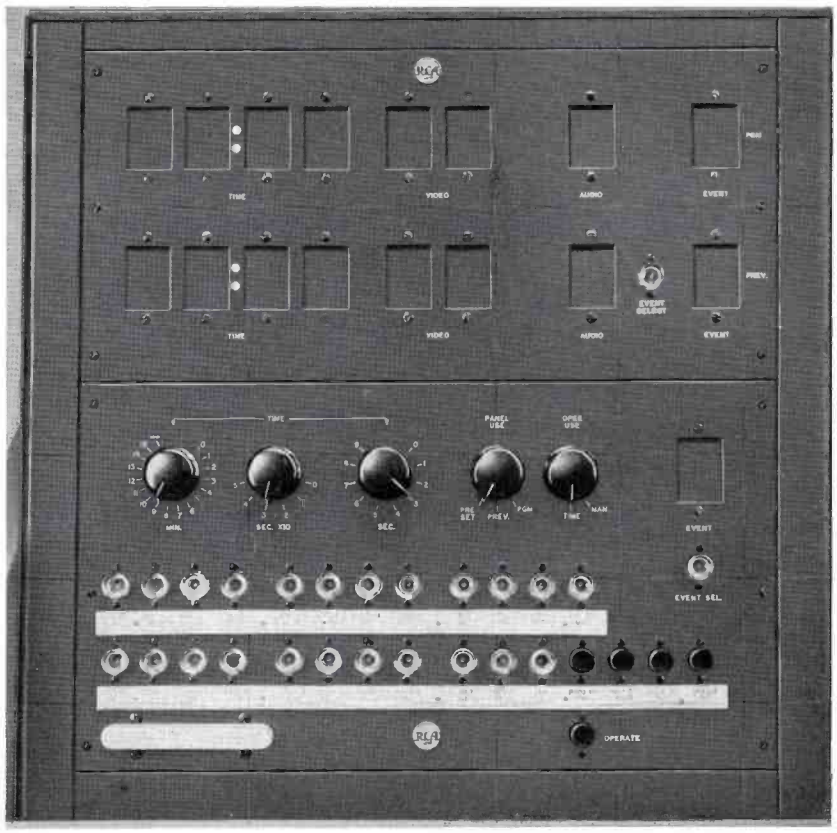


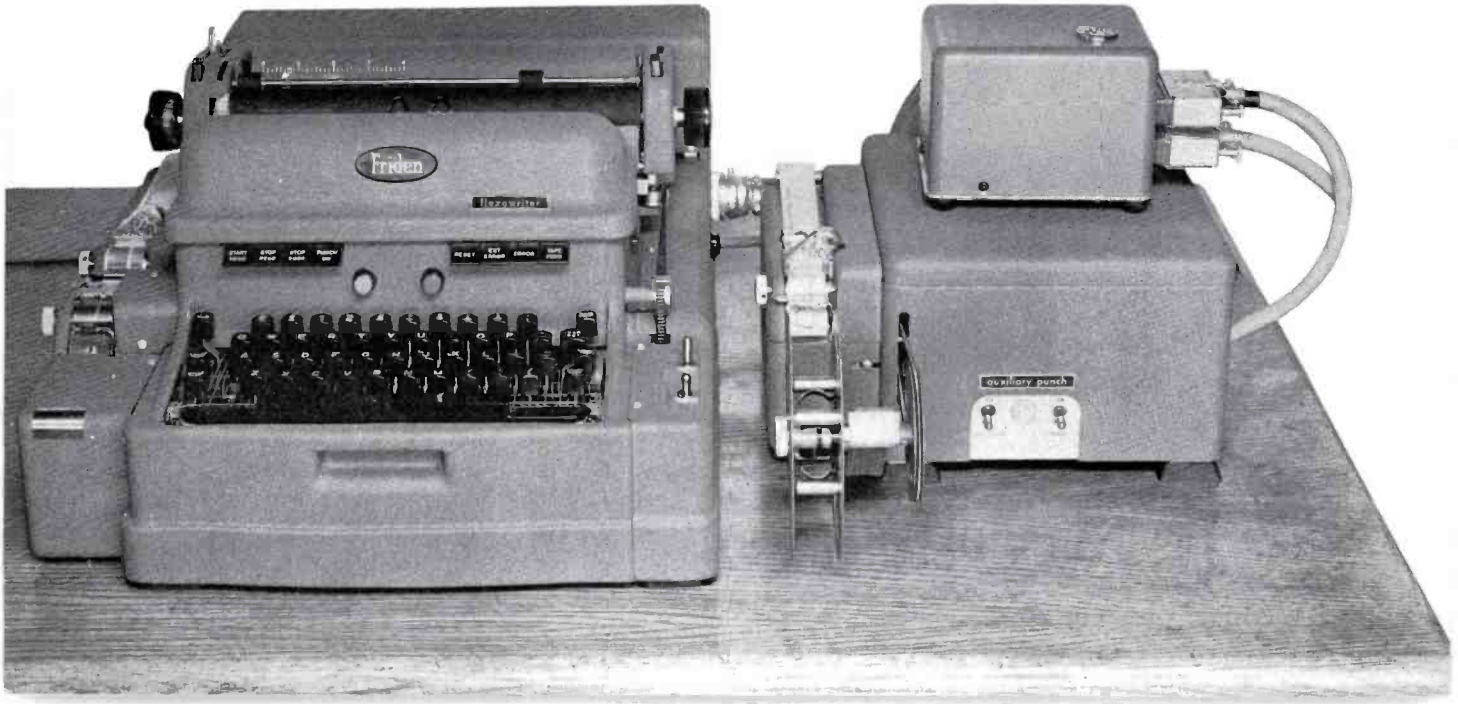
FIG. 3. "STATION BREAK" SYSTEM. Close-up of control and read-out panels in a typical station break automation system. The read-out panel (top) indicates time, video source, audio source, and event number for both the on-air event and preview of an upcoming event. In the control panel (below) 12 audio sources and 15 video sources are accommodated. These may be preset in any desired order and then activated manually by an operator or automatically by a clock or similar timing device.

The operator refers to his "routine sheet" or "program log" for the day on which is shown the audio source, the video source, and the length of each event scheduled to occur throughout the day. The information for events of the station break is preset (one event at a time) in the memory of the system. The operator depresses the pushbuttons corresponding to the audio and video sources, sets the elapsed time on the control panel then depresses the preset switch thus transferring information to storage for this event. The device automatically steps to the next event so the presetting operation can now be repeated for the second event and on through the total number of events available in this particular system—10, 15 or 20 events.

The sequence of events is started by manual operation of the "operate" pushbutton (see Fig. 3) and the events automatically occur sequentially if time has been preset, or each event will occur sequentially by the manual actuation of the "operate" pushbutton if it is desired to manually start each event. The upcoming event is in preview and the program-preview readout units, also shown in Fig. 3, show what is on the air as well as in preview. Both the audio and video switches have preview busses so it is possible to preview both if the signals appear as inputs to the switcher. It is possible to search the memories to determine what is in storage if desired, and to change the events if desired.

Time delay is provided in the system so TV tape recorders and projectors start in advance of the video and audio program switch. Each event may be up to 15 min. —59 seconds in length, and 15 audio and 15 video sources may be handled. An event can also be set on indefinite time which

FIG. 4. "ALL-DAY" SYSTEM. The routine sheet for the program day is typed on a Flexowriter (left) or similar equipment. This also produces a narrow paper tape punched according to a special code. An accessory unit (right) prepares a paper control tape. A full day's programming is controlled by this tape. The first tape is used to cause the Flexowriter to duplicate the routine sheet and the second is used to control TV programming.



means that this event continues until someone ends it by pressing the operate button.

All-Day Automation Equipment

An all-day automation system allows the station to prepare in advance the sequence of master control switching and operational events desired during any broadcast day, and by use of an information handling system, causes the events to take place with a minimum of manpower and errors.[2]

A typist prepares a routine sheet for the day from previously assembled program information. The routine sheet shows the video source, the audio source, the mode of operation (real time, approximate time, or events only) and the time or event duration. Typing of the routine sheet produces two punched paper tapes, see Fig. 4. One can be used to cause the typewriter to duplicate the routine sheet, and the second to control the actuation of events.

The control tape runs through one of two tape readers (see Fig. 5) which transfers the information from tape to storage. One reader controls the normal program channel and a second controls the emergency or correction channel. The reader feeds the information into one of two event memory units, Fig. 6, depending upon which unit is being used for air programming. As soon as the information is in temporary storage, the reader advances the tape one event group and is ready to read information into the other temporary memory when it is available.

The memory unit not controlling the event on the air provides information to cause the preview audio and video switchers to operate, thereby providing preview of the upcoming event if such information is available to the switcher inputs, and also causes information to show on the preview section of the readout units. This information consists of time (real, approximate, or events only) video source, and audio source. Pre-roll information for projectors is also provided from this unit. When an event ends, the memory unit which was furnishing preview information now becomes the unit controlling the "on-air" program function.

Any event can be controlled by real time, approximate time, or events only operation. Real time means that the event starts at a specific clock time. Approximate time means it may start at any time by manual actuation; however, the length of the event is preset, "event only" means the audio and video sources are preset but the event must be started manually.

[2] See "TV Automation at WKRC" Broadcast News, Vol. No. 107, March 1960.

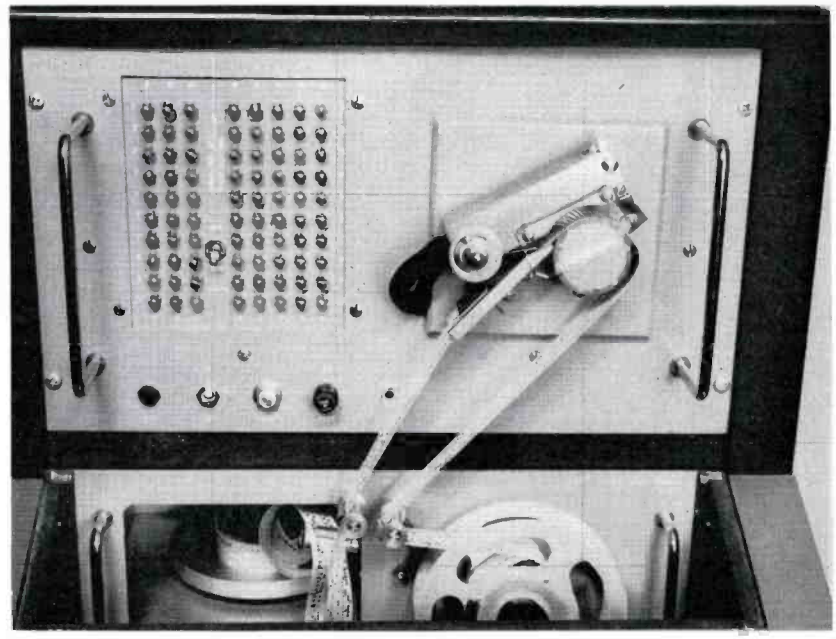


FIG. 5. The control tape runs through a tape reader which transfers the information from tape to storage. By using two readers in the system, both a normal program channel and emergency or correction channel can be accommodated.

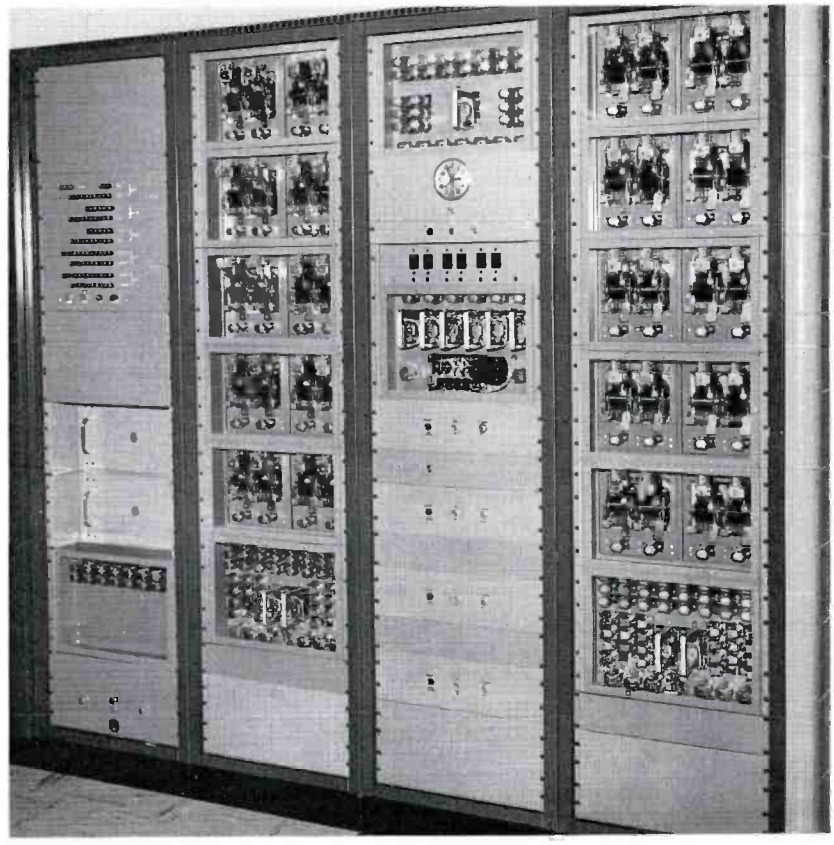


FIG. 6. Rack-mounted memory units serve as the brain of the system. Timing reference, a read-out panel, and an electronic paper tape simulator are also housed here. The simulator electronically generates the same information as contained on the tape for test and check out purposes at the rack location.

FIG. 7. Facilities for making the correction channel the regular control channel are available on this control panel. Also an event in storage may be bypassed without effecting audio or video switching. This same panel contains projector delegate controls so that any projector, film or slide, can be substituted for any of the others and automated in its stead.

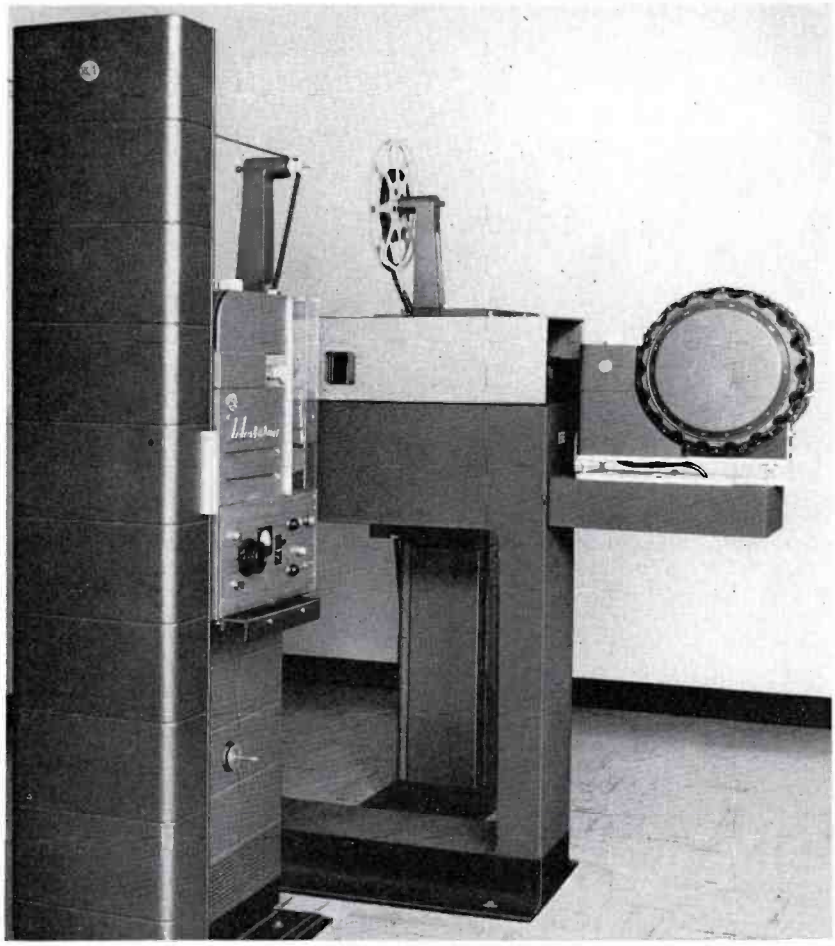


FIG. 8. Here a TP-6 projector provided with a continuous loop attachment accommodates multiple film spots. These spots can be repeated an unlimited number of times throughout the operating day without the need for rethreading or rewinding the film. The projector with the continuous loop mechanism accommodates approximately five minutes of film material.

The program section of the readout unit shows actual clock time (if on "real time" or "event only" mode), or approximate time (if on "approximate time" mode). It returns to real time upon the completion of operation in the "approximate time" mode. The program section also indicates the "on-air" audio and video sources and whether the system is in the "real time" or "approximate time" mode. The preview section of the readout unit shows the time at which the next event will begin; if this event is controlled by approximate time a designated letter will appear to the left of the time readout; if this event is controlled by "event only," clock time will appear on the preview section. The upcoming video and audio sources also appear in this section of the readout unit.

In case corrections are required, a duplicate system including reader and temporary memory is provided. The correction tape can be punched by using the same typewriter as was used to punch the original tape. The correction tape is placed in the correction channel tape reader and when instructions on this tape indicate operations are to be controlled by the correction tape, the correction channel automatically takes over and holds control until the correction tape gives the signal to return to the regular program tape.

The readout units continue to operate in the same fashion whether the operation is controlled by the regular or the correction tape. During operation on correction tape, the regular program tape advances in normal fashion if its events were to have been real time, and bypasses completely "approximate time" or "events only" intervals. Facilities for making the correction channel the regular control channel are available (see Fig. 7). A bypass switch allows an event in storage to be bypassed without causing video or audio switching to occur. Other functions than video and audio switching (such as projector roll) which would normally be required for the bypassed event will occur.

Projection facilities are such that a 16mm projector can be substituted for any of the others and automated in its stead. A slide projector can likewise be substituted for any of the others for automation operation. Any projector can be returned to manual operation using a switch on the projector.

Better Machines, Better Use of Machines

Today automation equipment is in use at several stations. Each has their own individual program structure, and correspondingly each has their own individual operational system. All report increased manpower efficiency, evened out workload and great reductions in operational errors.

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