

Video Tape Reports From Miami Beach Convention

New Horizons for Television Tape

By ROSS H. SNYDER

The initial applications of television tape to network delay and commercial inserts suggested to a number of producers that eventually magnetic tape combined with electronic techniques would supplement and perhaps replace somewhat the photographic film used in production and for TV release. Prospects for such an eventuality depend upon technical and economic considerations. Television tape has demonstrated capabilities and limitations and there are suggested future possibilities, including some non-television applications.

Magnetic-tape recording has been in commercial use for almost three years. Regularly scheduled use of magnetic TV tape was inaugurated in November 1956, when the CBS TV network rebroadcast to its Pacific Coast network the program *Douglas Edwards With the News*. By April 1957, the three major networks were using magnetic tape for regular local clock-time delay and in December 1957, the first production Videotape* Recorder was de-

Condensed from the paper presented on May 8, 1959, at the Society's Convention at Miami Beach by Ross H. Snyder, Ampex Corp., 934 Charter St., Redwood City, Calif.

*Trademark of Ampex Corp.

livered to KING-TV in Seattle. In April 1958, a demonstration of color recording was given before the national convention of the NAB.

Soon, with production Videotape Recorders in operation, tapes were being exchanged among stations and being replayed interchangeably. By midsummer of 1958, TV tape recorders were installed by three non-broadcasting firms for production of programs or commercials. In the fall of 1958, TV tape's ability to be spliced was exploited when CBS produced "The Old Man" for *Playhouse 90* by making 112 takes on separate shots and splicing 55 of them into a successful 90-minute dramatic program. Besides the usual television arts, the new facilities of the magnetic tape process were employed.

Adaptation of certain film techniques and effects to fit the needs of television programmers has been successfully accomplished. For example, NBC synchronized several sound tracks on separate magnetic sound playback machines with a tape-recorded TV picture for the *Bob Hope Show*.

Lap Dissolves

Another film effect which has been adapted to TV cameras and tape is the time-sequence lap dissolve. A cosmetic commercial employing this effect was demonstrated in January 1959, by Videotape Productions of New York. Appearing as if

on live television, the girl in the commercial appeared before, during and after using the sponsor's product, lap-dissolving from sequence to sequence.

This lap-dissolve sequence did not involve the use of new or special tape-synchronizing devices. The model was first recorded in the opening sequence as she applied the cosmetic, and a portion of black picture was recorded following the sequence. When the model was ready for the final sequence, a portion of black was recorded on the tape before the camera was opened to record the model as she appeared after application of the cosmetic. The sections of black after the first sequence and before the third sequence were spliced together so that the amount of black which intervened between the first and the third sequence was of exactly the length desired for the middle sequence, in which the model would be shown applying the cosmetic. The tape was then set for playback on one machine while the model stood by with the live camera in the studio. The tape was then run and a copy made on a second machine. Toward the end of the first sequence, with the camera locked to sync from the tape recorder, the feed to the second recorder was lap-dissolved by means of a conventional studio mixer from tape-playback to live camera. The carefully timed middle sequence was recorded on the second recorder from the live camera. Toward the end of this sequence, a second lap-dissolve was executed from live camera to tape. The whole sequence was thus recorded on the second recorder. The sequence with the model before she applied the cosmetic lap-dissolved to the sequence showing her applying the cosmetic, which lap-dissolved into the "after using" sequence.

Copies of the tape were then made for distribution. In the copies which were released the first and third sequences were copies of copies and the second was a copy from an original tape.

The Cue Track

Three new facilities have recently been made available for attachment to earlier Videotape Recorders. The first is a cue track. Recorded on a 20-mil longitudinal track, located between the control-track and the lateral television tracks, this track is used for voice instructions recorded at the time of the original taping, or, later, for directing the editing and other processing of the recording, or for automatic code signals. Tones originally recorded at frequencies in the 400-cycle region can easily be reproduced, even at rewind or fast-forward tape speeds, therefore series of tone bursts can be recorded on this track, for later control of the recorder. For example, four bursts might indicate rewind, three bursts fast-forward, and two stop, so as to provide an automatic rewind and cue sequence. The cue-track has its own erase head, located in the audio erase stack, and its own record/reproduce head, on the audio record/playback stack. Information recorded on the cue-track cannot be accidentally mixed with the recorded high-quality audio.

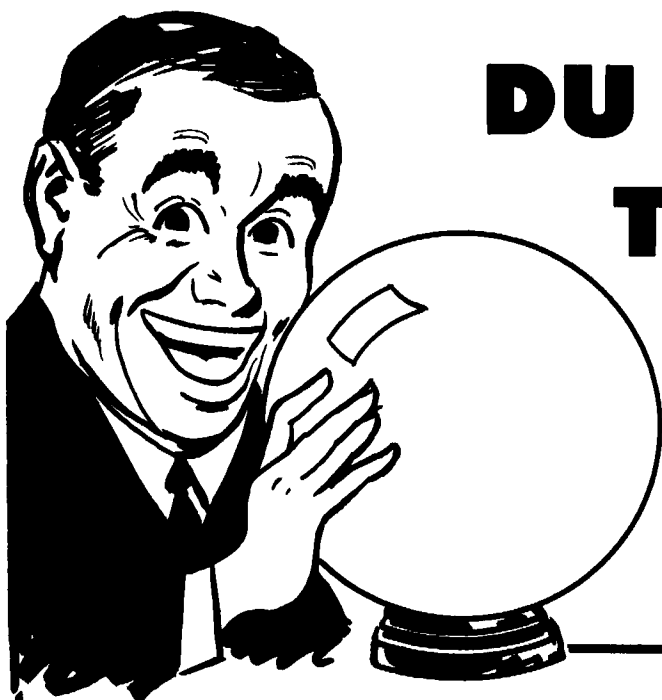
The second of these new facilities is the automatic two-inch erase head, which is placed in operation whenever the video recording circuitry is engaged, thus insuring

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against accidental failure to erase a whole reel of tape before recording, and against the possibility of recording over a previous recording, thus losing both recordings. In production with tape there is no need to preserve bad "takes," which are usually immediately reviewed on the set for the benefit of the performers. The tape machine may be rewound to a point before the beginning of the rejected take, and the sequence started over again, erasing the old "take" as the new one is recorded. Thus, a reel of recorded tape can be collected, which contains only acceptable takes.

The third of these new facilities is the tape timer. Located to the right of the video heads on the recorder transport mechanism, this device reads directly in hours, minutes and seconds. It is accurate to five seconds in a full hour of recorded tape, giving the director continuous information concerning the cumulative time of his recording. It serves also as a device for locating quickly the exact point, inside a recorded tape, where a given sequence, logged in advance, is to be found.

Magnetic tape has given memory to live television, without imposing any limitation on the facilities live television already had. The special facilities possessed by live television are, of course, shared by live television on tape. One of these is the extraordinary effective "emulsion speed" of the image-orthicon camera. When a magnetic tape recorder is attached to a TV camera, we have in effect a faithful live-TV memory with an ASA speed of 2500 or more. This, by itself, gives the director the opportunity to shoot pictures under lighting conditions which would not be acceptable for photography, and gives him also the familiar advantages of high-speed emulsions in control over depth-of-focus.

Special Effects

The bag of tricks which is familiar to the live television producer is now open wide for the use of the syndicated TV program producer. A TV special-effects generator, like the one recently shown by Telechrome, is not only capable of a wide variety of montage and split-screen effects, wipes and fades and lap-dissolves, but is also capable of instantaneous electronic matting and superimposition, both moving and still. The special effects generator can distinguish, either on the basis of brightness or, in special applications, on the basis of color, between sections of picture. Thus, a brightly-lighted actor on one set can be electronically matted into a completely different background; titles of any degree of movement or complexity can be electronically matted into previously-shot sequences; puppets or other moving models can be superimposed into live scenes, without laborious artwork. And, through the use of a magnetic TV tape recorder, all these effects can be performed in a series of steps, separated by any time-period which may be desired. New electronic skills are being developed, which extend the capabilities of live television.

There are applications outside TV entertainment for which the magnetic TV tape recorder opens new horizons. Yonkers Raceway in New York is using TV cameras and a tape recorder to monitor every event

during its horse-racing schedule. Questions over happenings during any race may be officially decided immediately after the race by review of the tape, and official decisions released immediately. Through this facility Yonkers has been able to add one more event daily to its operating schedule.

In scientific and military research it is often desirable to observe, and also to preserve a visual record of, events which cannot be survived by human observers or film cameras. Events inside highly radioactive areas are commonly watched by TV cameras, whose output may conveniently be recorded on a tape recorder.

Color Programming

Color tape is of great importance in the future, in non-television broadcasting. The color television camera is the most accurate color-measuring instrument yet devised, and by suitable auxiliary instrumentation may be used with a color TV tape recorder to preserve indefinitely a precision record of events where brightness, hue and chroma are of special scientific or military importance. It has been shown that the NTSC color system not only possesses greater accuracy in color metering, but also possesses a greater range of hue and chroma representation than does any photographic color process.

It may safely be predicted that the use of magnetic TV tape will increase in the months and years ahead, supplementing photography, and to some extent supplanting it in entertainment television and in scientific, military and industrial uses. Nowhere is this more evident than in the prospect of the wider use of color. The color TV tape recorder uses exactly the same tape as its monochrome counterpart—no special color tape is used. Color tape is also replayable almost immediately—as soon as it can be rewound. It is capable of interchange, splicing and duplication. Color TV uses the same electronic special effects devices and electronic editing techniques as monochrome TV. Insofar as color is in the future of television, it may be predicted that color tape will be the popular medium, because of superior broadcast quality and also because of economic consideration.

The Ampex Videotape* Recorder and Its Performance on Foreign TV Standards

By KURT R. MACHEIN

The problem of adapting the Ampex Videotape Recorder to foreign television standards is discussed and the solution outlined. This recorder is adaptable to all television standards, while vital mechanical components such as video head, capstan, tape, etc., remain standard parts.

Following the introduction of the Videotape Recorder in the United States it became apparent that the possibility of its adaptation to other than the U. S. Federal Com-

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munications Commission television standards should be seriously examined.

With three other television standards in current use, modification to other than FCC standards involved a variety of problems. Any conversion requiring deviation of components construction would place the burden upon multiple engineering and manufacturing efforts, and would certainly result in considerable increase in price and in service requirements; therefore, the question of maintaining standard parts on modified Videotape Recorders became of vital importance. In regard to tape speed and video-head speed, however, we were by no means restricted to any specifications and we felt that we could therefore deviate within reasonable limits to meet some of the new requirements.

By analyzing the problems of the modification, for instance from FCC standards to British standards, it was found that the following deviation in specifications represented the major factors:

Deviation in power line frequency from 60- to 50-cycle, in frame rate from 30 to 25 frames/sec, in horizontal resolution from 525 to 405 lines, plus the differences in specifications of the composite video signal itself, such as horizontal sync width, horizontal and vertical blanking, equalizing pulses, etc.

Since the reproduction of the television signal from tape requires a very high stability of the rotating video head in respect to station synchronizing pulses, the head motor is normally locked electronically to incoming station sync by means of a servo system, which also controls the speed of the tape in longitudinal direction to maintain accurate tracking of the video head during playback operation. For practical reasons, then, the video head speed is chosen to be an even multiple of the vertical sync frequency, while the capstan speed is controlled by a frequency which is an even fraction of the head speed. Since on the British TV standard this reference frequency for the servo system is 50-cycle compared to 60-cycle on FCC standards, we had the option of using either 200 rps or 250 rps as video head speed compared to 240 rps on FCC standards. In regard to actual speed between video head and tape and its importance in respect to high-frequency recording, the 250 rps was obviously more suitable. To maintain the standard spacing between video tracks on the tape, it was essential to increase the longitudinal tape speed from 15 in./sec to 15.6 in./sec. The increase in video head speed necessitated also a change of control frequencies used in the correction network for the rotating video head based on a phase comparison principle. This frequency was changed from 60- to 250-cycle, which resulted in an increase in correction of video head speed and positioning by approximately a factor of four.

In this particular case, the modification of the Videotape Recorder seemed to improve slightly the overall performance of the unit compared with its standard version; at least the modification certainly did not result in a deterioration of the performance.

Other electronics connected in operation with the composite video signal or its direct derivatives consequently required alteration, but not beyond simple components changes.

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Fig. 1. Demonstration setup for interswitch operation on two television standards

The modification from FCC to CCIR standards was in some respects more critical, especially in regard to the necessary increase in bandwidth from 4 mc to 5 mc.

To record the frequency-modulated 5-mc video signal, it was mandatory to increase the standard carrier frequency of 4.75 mc to at least beyond 5 mc, in consideration of an effective separation between carrier and video information. To avoid interference pattern on the playback picture, the carrier frequency was increased from 4.75 to 5.5 mc.

The standard Videotape Recorder is capable of reproducing 4-mc video com-

ponents approximately down 10 db in relation to the 100-kc level, which represents a nominal 4-mc bandwidth and is adequate for FCC and British standard operation. CCIR standards, however, require a 5-mc bandwidth if noticeable deterioration of the picture quality, especially in terms of vertical resolution, is to be avoided. To increase the overall frequency response of the Videotape Recorder, it was necessary to improve the rise time of the multivibrator in the modulator unit considerably, which in essence results in an improved frequency response of better than ± 3 db from 15 kc to 4 mc and down not more than 10 db at

5.5 mc, as compared to standard specifications of ± 3 db from 15 kc to 2.5 mc and down no more than 10 db at 4 mc.

The signal-to-noise ratio of better than 30 db pp signal to rms noise had also to be maintained if not improved. The increase in carrier frequency as well as the increase in deviation of the carrier, now up to more than 8 mc, consequently had to be accompanied by simultaneous improvements on the video head performance.

The first VR-1000 modified to operate on CCIR standards incorporating the change to 5-mc bandwidth was delivered to ATN-TV in Sydney, Australia, and performs very well within CCIR specifications with a signal-to-noise ratio of better than 33 db.

A conversion of the Videotape Recorder to operate satisfactorily on the French television standard was, at first, considered impractical because of its bandwidth and its horizontal resolution of 819 lines. The recent improvements in the bandwidth and the proven adaptability of the Videotape Recorder to foreign standards, however, initiated a new approach to this problem with a result that, after termination of laboratory tests in Redwood City, the first modified Videotape Recorder is performing satisfactorily even on French television standards. Overall frequency response even beyond the 5-mc range required a further increase in speed of the rotating video head to 300 rps; but it is still intended to maintain the longitudinal tape speed of 15 in./sec, which in essence preserves the recorder's ability to accommodate a one-hour program on a standard size reel.

With Videotape Recorders operating on all four standards all over the world, the exchange of live TV recordings between countries operating on different standards will be the next logical step. To make this exchange possible, Ampex has developed the "inter-switch" modification.

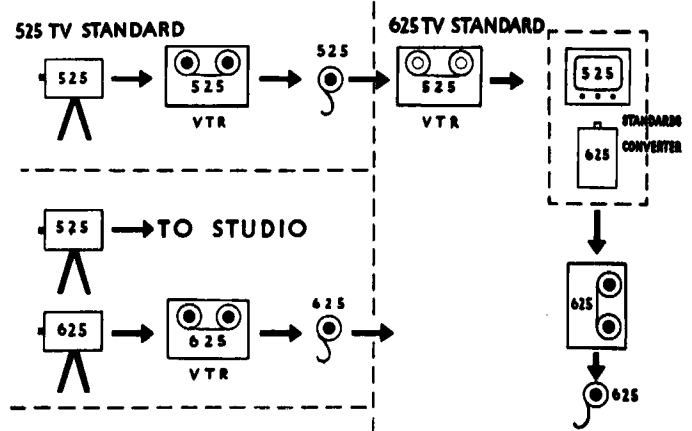


Fig. 2. Interswitch modification used in program exchange. Either one of two methods may be used.

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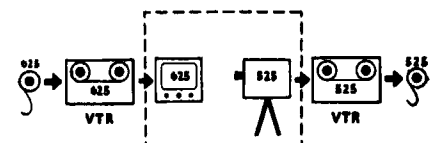


Fig. 3. Interswitch video tape recorder used for standard conversion.

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An otherwise standard Videotape Recorder with a prototype inter-switch modification was demonstrated to CCIR delegates at Los Angeles at the Ninth Plenary Assembly of the International Radio Consultative Committee (CCIR), recording to either the 525-line, 60-field TV standard used in the United States, Canada, Japan, Mexico and some South American countries; or the 625-line, 50-field standard used in most of Europe, in Australia and elsewhere. Changeover between standards on the prototype inter-switch Videotape Recorder was accomplished by throwing a single switch mounted on one of the recorder's two electronics racks.

During the demonstration, recordings to both the 525-line and 625-line standards were made, using a Marconi Mark III camera chain with 4½-in. image-orthicon tube, also switchable between the two standards, and both Rank Cintel and Marconi 625-line monitors as well as Conrac 525-line monitors. Recordings made on 625-lines on the demonstration VR-1000 could be played back on any other Videotape Recorder built to the 625-line, 50-field standard, while the 525-line recordings are fully compatible with every Ampex Videotape Recorder in the Western Hemisphere and Japan.

An Advertising Agency's Experience With Video Tape

By ALEXANDER CANTWELL

The experience of a large advertising agency in the use of video tape is outlined and examples given. Beginning in the fall of 1958, the firm of Batten, Barton, Durstine & Osborn, Inc., has been using video-tape recording in various ways for most of its major TV accounts, with many resulting advantages and some disadvantages.

In September 1958, the advertising firm of Batten, Barton, Durstine & Osborn, Inc. (BBDO) was using tape for many of its commercials and had plans for replacing virtually all its live commercials with tape. By May 1959, the use of the live commercial for a network show had been virtually abandoned except for "personality" shows where the commercial is based upon identification with a prominent personality.

It is a little early to answer with a firm "yes" or "no" the question, "Will tape ever replace film?" — but certain trends can be observed and some predictions made. During the month of April 1959, a significant number of BBDO's clients changed from film to tape for commercials. A typical case is that of Armstrong Cork Co. which, on March 31, taped three commercials for the Armstrong Circle Theater. This firm formerly used live commercials almost exclusively but early in 1958 the firm decided to make a substantial number of filmed commercials. Before the film project was completed it became possible to repeat taped commercials and the firm switched the balance of the year's scheduled commercials to tape. At present it has no plans for

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using film. Another firm that has turned to tape is General Electric and a number of similar cases could be cited.

On April 13, BBDO for the first time used a film company for a taped commercial. Five commercials for Du Pont Fibers were produced at Elliot, Unger & Elliot, a subsidiary of Columbia Pictures. In the opinion of the author, the trend to tape is obvious, but when or if tape will completely replace film in the production of commercials can hardly be predicted.

Program Use of Video Tape

The most frequent program use of video tape is for dramatic inserts. Without the use of tape, a costume change or an abrupt scene change had to be taken into consideration in planning the script so that the actor would have time to change his costume or to move from one studio location to another. Dramatic scenes involving quick changes can now be prerecorded and the taped scene dropped into an otherwise live television program. Also, the scene can be taped the day of the broadcast and used later that same day. Similarly, in a live program, location exteriors can be made on tape and dropped into a studio-originated program, without noticeable loss of quality. Difficult scenes involving special effects can be pretaped for assurance that the special effects will work on the air. On many of our specials the program itself has been taped in advance for a variety of reasons.

A Du Pont show of the month, a 90-minute version of *Hamlet*, is a good example of the use of editing techniques now possible with tape. This show was shot out-of-sequence, and assembled later from 75 pieces of tape. With the present editing equipment and under controlled conditions it is now possible to edit from picture to picture. It should be noted that great improvements are being made in editing equipment. *Hamlet* utilized the best of both film and live techniques and it was an historic program in the development of video tape.

Tape for Commercials

The most significant use of video tape from an agency's standpoint is for commercials. It is particularly useful for commercials in "specials." In a spectacular show the commercial must be spectacular too. The type of production used for Shaeffer Pen, Westclox, Philco and Rexall, for example, would be prohibitive in cost for one-time use on film and a live production of some special commercials can be risky.

Non-Network Uses

The surface has scarcely been scratched in the use of tape on local stations. There are now some 90 stations equipped with video-tape recorders. When this number increases significantly there is no reason why video tape cannot be shipped to local stations for spot use just as film is today. But even more interesting to us than sending canned spots to local stations is the possibility of stations making spots and sending them to us for approval. We shall then be able to buy locally with some guarantee that what we buy is put on the air. A local station equipped with a TV tape recorder can send back to New York either a prerecording or a postrecording of the commercials as they actually will be or were

broadcast. In some cases the advertisers may insist that the station prerecord the live commercials, send them to New York for checking and then have them returned to the station for broadcast. Such a facility never existed before, but it is now already being used by several clients.

Changes for the Producer

We have learned a few things about production techniques in the last few months. For example, a few months ago I was firmly convinced that the only way to use tape was in continuous action or live technique. But in light of recent experience, I now feel that live technique should be used as much as possible, since it is here that tape's economic advantage can be best realized. But sometimes it is more economical to plan the shooting to take advantage of the ability to edit tape. In a difficult 2-minute commercial, for example, the chance of a technical or artistic error is twice as great as it is in a one-minute commercial. Rather than make 10 or 12 takes of the complete two-minute commercial trying for perfection, wouldn't it be better to break the 2-minute commercial down to three 40-second sections or two 1-minute sections, whichever seems appropriate, and then splice the sections together? Our experience answers yes. But most important in this kind of planning is to make the sequence in continuous order as the actors play so that the talent retains as much of the spontaneity of live as possible, and most importantly so that the director and producer can judge the pacing, timing and acting as they can in a live show or commercial. I do not recommend shooting tape as film is usually shot, out-of-sequence. On the few occasions where I have seen it done I have been disappointed in the results. I think it's because tape directors do not yet have enough experience to maintain performances out-of-sequence as do film directors. As they get more experience perhaps this will no longer be true.

Shooting out-of-sequence also eliminates one of the big advantages a director has in live television, that is, the ability to judge the whole program or commercial as he sees it unfold before him. But there are even better economic reasons to use multiple camera, live techniques as much as possible. In our experience, out-of-sequence has been more expensive. Shooting scene by scene in tape is almost as expensive as it is in film and for the same reasons. It takes longer to set up and shoot each scene individually because someone always wants to fix just one more light or move a chair an inch or put on another dab of make-up.

The business of retaining spontaneity of live television may get to be a big problem unless we are careful. The advantage of being able to do it over again in tape may prove to be a disadvantage unless good judgment is used as to what constitutes an unsatisfactory "take." I have seen takes rejected for minor technical reasons while they were artistically perfect—and substituted for them takes that were technically perfect, but artistically inadequate. We must keep stressing to those in authority that the commercial or show must be viewed in terms of its total effect on the home viewers, not for its effect on the technical or production people that are watching.

Video tape has created some interesting manpower problems. If a live show was on

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Professor Reginald Upjohn

(Somewhere west of the Thames)



"By Jove, anything for a laugh. Those nuclear lab chaps said they'd give me a jolly gift for my birthday, and here it is. Claimed I'd receive a bloody big bang out of it. Glad they're still not angry with me for tossing that fire-cracker into the blockhouse test chamber during the last countdown. Ho, ho, did they jump. The tag on this whatsit says, MINIA-TURE DO-IT-YOURSELF DEMO-LITION KIT. What a bully joke. I'll press this tiny button and count to three, like the instructions read. Wonder what humorous little thing will pop up. One ... Two ... Thr...."



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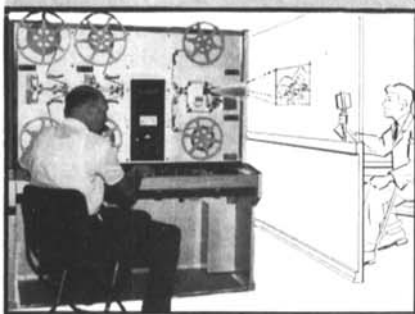
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Thursday night you knew it would be produced Thursday and perhaps you'd spend Wednesday and Thursday at the studio at a carefully pre-arranged time. But now that it is possible to tape shows and commercials in advance, you may find yourself taping a Thursday night broadcast on Saturday or Sunday at 10 A.M., or some other ridiculous hour. This situation makes it difficult to schedule a producer for a week's activity because he could be taping a show or commercial on any day of the week. As a matter of fact, the so-called convenience of tape has proven to be convenient to everyone but producers. We have worked more nights and weekends than we ever did in good old fashioned live television, but it's a small price to pay in return for the excitement of opening new frontiers in broadcasting.

Mixed Blessings of Video-Tape Recorders

By S. V. STADIG

The Videotape Recorder acquired by Station KYW-TV has brought with it new problems and opportunities. It has provided advantages but has some disadvantages.*

A Videotape Recorder was acquired by station KYW-TV in March 1958; it has been used intermittently from sign-on to sign-off—every day. Tube failures and adjustment problems have been minimized by turning the machine on at sign-on and not removing power until sign-off. This accumulates an average of 600 hours of filament and plate power per month.

The station has been averaging 60 to 80 hours per month of time when the heads were operating. Over 200 hours have been accumulated on a few heads. One head had a mechanical failure and another developed severe noise after only 40 hours of use.

One of the major problems encountered with tape from other stations is an RF beat pattern, erratic control track or audio hum, most of which can be attributed to improper degaussing. Having only one machine, it has been necessary to splice commercials and, on occasion, programs, back to back. This has been done with excellent results.

As we got into a heavier schedule of recording, it became apparent that, in order to keep some semblance of order in cataloging TV tapes and to be able to play tapes within minutes of each other without necessarily tying them together, the flexibility of small reels would solve many of our problems.

In addition, on frequent occasions, several takes would be made of a commercial and the client would choose any one of these several takes to be used on the air. This meant that an erasehead on the machine would not have helped in these instances. Therefore, it is necessary to extract the desired takes from a large reel and put them on small reels.

This means we now have a number of

Condensed from a paper presented on May 8, 1959, at the Society's Convention at Miami Beach by S. V. Stadig, Westinghouse Broadcasting Co., Cleveland, Ohio.

*Trademark of Ampex Corp.

reels with a number of splices in them. After they have been run through the machine many times, dropouts become excessive immediately after these splices. It is possible to salvage these tapes by cutting out 6 or 8 inches of tape on either side of the original splice and making a new splice. The tape is now free of dropouts and we are able to obtain an additional number of replays before noise develops again. In one year we purchased 36 2400-ft (half-hour) reels.

Due to the number of retakes or playbacks necessary during each recording session, we have found it necessary to man the recorder during 90% of our recording sessions. It has been possible to accomplish 99% of our playback with the projectionist loading the tape machine and the Technical Director starting the tape machine by remote control.

As with any piece of electronic equipment, time has been spent incorporating modifications in our recorder. Modifications, necessary maintenance time and training of additional personnel have averaged 15 hours a week.

Maintenance: A thorough preventative maintenance program is required. A schedule of daily, weekly and monthly checks has been faithfully adhered to and we have had no major breakdown.

Identification Records: After several attempts, a bookkeeping system was evolved that seems to satisfy station needs for itemizing expenses, identification of tapes for stations and agency use, and tape history.

The history of each reel is kept by assigning it a number and on its record sheet noting each item or recording session, tabulated sequentially. There is a provision for Subject Matter, VIR Number, the Program Time and Remarks. This Reel History Log is stored with each reel.

The recording order number is entered on a Master Log and each take is assigned a Video-Tape Recorder Number. If retakes are involved the retake is identified by a take suffix number added to the basic number. Only usable takes are recorded on the Master Log. The reel number and date of each usable take is also entered. The Master Log also notes Subject Title and Talent, Sort Time, Total Engineering Time, Editing Time and Head Number. A space is provided on this form for Remarks. The Master Log serves as a cross index between the recording number and various take numbers. If a video-tape recording is transferred from one reel to another, it is noted both on the Master Log and on the Reel History Log of each tape. A tape number with a prefix "X" indicates a 6½-in. reel. Twelve-inch reels are assigned tape numbers without prefix.

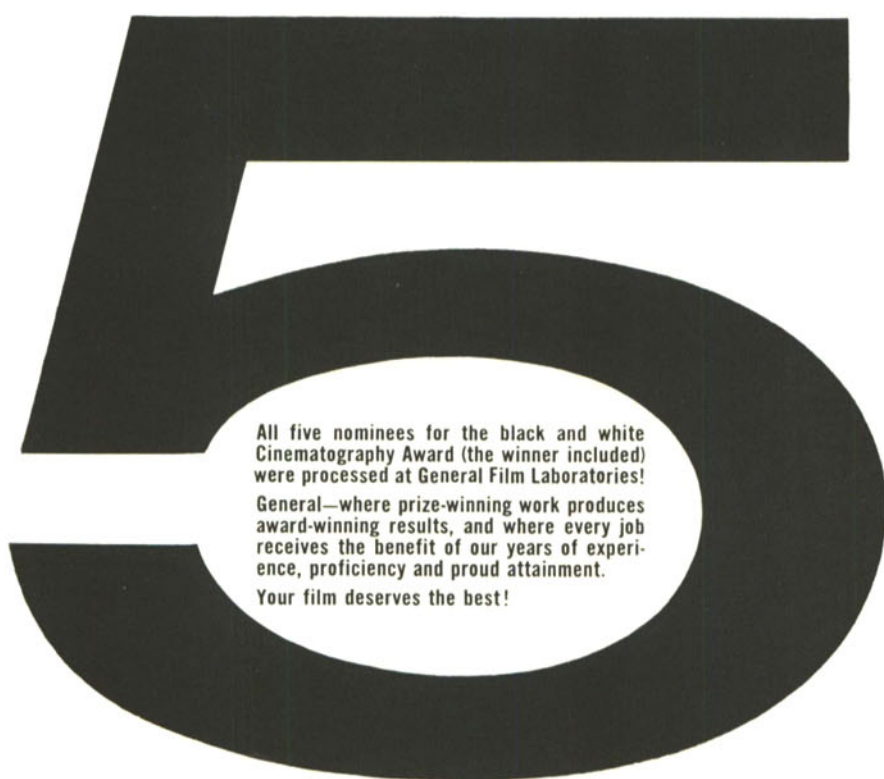
We have not attempted to keep track of the number of plays on each tape but have ascertained that it is possible to get at least 100 plays on a tape without excessive dropouts, particularly if there are no splices involved. On some shorter reels with a number of splices, 75 plays has been the maximum.

The Video-Tape Recording Order is prepared by the Program Department which assigns an Order Number, Date, Program Title, Agency, Length, Date of Record, Dry Run Time, Camera Rehearsal Time and Record Time. Also on the form



DANIEL L. FAPP / Desire Under the Elms
CHARLES LANG, JR. / Separate Tables
LIONEL LINDON / I Want To Live!
JOE MAC DONALD / Young Lions
SAM LEAVITT  The Defiant Ones

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are: the Playback Date, Time and Length (this information is necessary to be incorporated in the daily traffic schedule), the studio in which the recording is to be made, the Associate Director, the Director and Supervisory Authorization, and a notation to indicate where the accumulated costs are to be charged. This form has space for notation of Facilities Charges, and the Breakdown of Time and Facilities. The Facilities Charges are similar to those on our published rate card, showing rates for Tape Machine Usage, Live Studio and Camera Rehearsal, Dry Run, Playback and Library Charges.

The Accounting Department figures the charges under each of these categories, and prepares billing after work copies of the completed forms have been received from the various groups involved in the session. These groups log their respective man-hours under Breakdown of Time and Facilities at the conclusion of each taping.

Rehearsal Time: Producing local live television presents a number of contrasts to the production of a program or commercial on film. Usually, insofar as local independent telecasting is concerned, the practice is to set up the scenery, light the respective areas, check out shots, and conduct one, two or possibly three rehearsals. The last of these constitutes a dress rehearsal prior to the live presentation. This technique may vary depending on the simplicity or complexity of a program or commercial.

It is only fair to point out at this time that in producing a commercial or a program on tape it is as difficult for the telecaster as it is for a film producer to adapt his ways from film to television. If it were simply a matter of playing to a recorder as if it were an "on the air" show, that would be a real boon to the industry; however, it does not work that way. When the first attempt at this approach is played back, everyone, including the dolly pusher, is unhappy with what he sees. It is the same show or commercial that would have gone on the air had it been live, but now everyone has become even more acutely aware of undesirable shadows, improper inflection of the talent's voice, a video switch in the middle of a word, erratic camera dollying, etc. As a consequence, the spot has to be done over, not only once or twice, but often several times. Adding setup, rehearsal and tape time, it is not uncommon for a one-minute video-tape spot, which is now comparable to a Studio One production, to consume 3 to 4 hours.

Production Techniques: On a fast-moving commercial with many visual aids, tape time is cut down considerably if the audio is prerecorded by the talent and they lip-sync to it. This not only aids in making a more effective commercial, it also confines a complex one-minute spot to 60 seconds, whereas previously it would run anywhere from 60 to 80 seconds.

On simple commercial sets, picture composition, lighting, audio, switching transitions, visual background, timing, all become key factors. Psychologically, any minor irregularities seem to be magnified each time the tape is played back.

Typical Tape Activity: In the month of February, a total of 82 hours of head time was accumulated for recording and playback activity. This encompassed 54 recording orders with an assignment of 82 tape-recording numbers. The recording activity during this period was: commercial spot recording sessions — 1 hr 24 min; programs taped in advance — 4 hr 19 min; and incidental tape activities — 1 hr 23 min.

Thirty-seven hours of studio crew time was required to produce 7 hours of usable tape material. Fifty-three percent of the engineering time was spent on the commercial activity of 1 hr 24 min, and 47% on 5 hr 42 min of other tape activity. However, on the Program Department side, the Directors and stagehands devoted more than twice as much time to the commercials as they did to other tape activity. Unfortunately, these comparisons are difficult to evaluate on a program vs. engineering departmental basis that would have any industry-wide merit because of the different classifications of personnel in each TV station. Eighty percent of the total hours required for these sessions were available from the "slack time" of operating personnel. Total man hours were used in the following tabulation.

An expenditure of \$5,196 was incurred for all of the video-tape activity listed above. The charges accumulated were as follows:

Engineering labor.....	\$1,523
Maintenance (labor only)...	385
Depreciation (declining bal.)	1,671
Head wear	
(\$3.00/hr — 82 hr).....	246
Tape wear	413
Directors	490
Associate Directors	125
Stagehands	343
	<u>\$ 5,196</u>

We started out with a commercial video-tape rate that, to say the least, was very nominal. It was our feeling that it was only fair to ourselves and our clients to base charges on actual circumstances that develop as opposed to establishing an arbitrary rate that would put it out of reach of our local clients.

Out-of-pocket expenses attributed to taping for station use are not recoverable. It is the considered opinion of management that this expense is offset by the flexibility that is added to the program schedule and being able to obtain a greater number of local program hours without the necessity of adding additional crews or studio space.

The disadvantages of video-tape recording in our experience are the length of rehearsal and tape time, and the filing system of identification. Advantages include greater program flexibility and increased productivity of operating crews.

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