

Preparing Films for Transfer in Telecine

no. 6 in a series of 10

by rodger j. ross

For many years, a common practice in television stations has been to mount 16mm. films on 1200-ft. reels, with leaders attached and cue marks in the picture frames to initiate projector starting, and multiplexer switching operations at half-hour intervals. In some stations holes were punched in the film frames near the end of each reel to serve as cue marks. Many Canadian stations adopted the practice of attaching small strips of black sticky tape near the edges of film frames to avoid permanently defacing the films.

In preparing a feature film for telecine, it was often necessary to remove entire scenes so as to fit the film's running time into a scheduled television time slot. This was done by cutting and splicing the film at appropriate points in the story. At the same time space had to be allowed for perhaps 15 or 20 commercials — usually these were spliced into the feature film to make up complete reels that could be run continuously for the entire program period.

These unsightly cuts and cue marks are not seen as often these days. A much more sophisticated film programming technology is being developed as films are transferred to videotape prior to on-air release, and electronically assembled into program packages. Sometimes computer controlled playback machines are used, minimizing operator requirements and giving the viewing public smoother program presentations. This

method has the additional, important advantage of eliminating the need to man both telecine and videotape facilities during the entire station programming periods. Some stations transfer films to videotape and make the program assemblies during night-time hours when equipment is idle. Independent film post-production companies are now springing up in increasing numbers to do this kind of work — a trend that is likely to continue expanding in the future.

Film Transfer Procedures

When film programs are being assembled on videotape many different methods may be employed, depending, to a great extent on available facilities. Television-oriented organizations would most likely take what appears to be the obvious course — transfer all of the film footage to tape, and then electronically edit the film segments into complete program packages.

During the transfer of a feature film — to use a familiar example — the producer, or a production assistant might make notes of scenes that could be eliminated, from the film pictures displayed on a picture monitor. The location of these scenes in the film, and their length, could be shown on a work sheet by noting the running times, taken from the control room clock. Alternatively, film frame counts generated by an attachment on the telecine projector might be used for scene identification. At the same time, points in the story where commercials could be inserted might be similarly identified.

In some situations it might be useful to splice a leader counting in seconds at the head end of each film reel: this would give the videotape operator the cues needed for machine switching. But in most cases only a projector threading leader would be needed, consisting of a suitable length of waste film. Each reel should be iden-

tified by program title and reel number for subsequent easy recovery on the tape. Identification should be made in such a way that the information can be easily seen when the videotape is being played back.

The easiest way to make the transfers is to run each reel of film through the telecine in a separate operation: this avoids the need for changeover and switching cues on the films. All of the film commercials could be spliced together on another reel, with short lengths of leader between each one, and then transferred to tape in a single uninterrupted run.

Program Assembly from Cue Sheets.

With all the film materials for a program on videotape, program assembly can be started. This can be done with two videotape machines, one playing back the transferred films and the other recording the selected scenes, electronically edited in the proper sequence as shown on the production cue sheet. When the scenes are identified on the cue sheet by elapsed times from a clock, the videotape operator could locate the start and end of each scene without too much difficulty. But frequently the exact points to make the electronic edits can be arrived at only by repeatedly playing back the transfer tape. Besides, approximate times for in and out edits on the cue sheet can easily create a serious problem as the assembly operation nears completion: then, it may be found to the dismay of everyone involved, that the running time is a minute or so too long, or too short for the scheduled television time slot.

If on the other hand scene identification is by film frame counts, these numbers would have to be translated into elapsed clock times on the cue sheet for the electronic editor since, in the process of making the transfers, 24 film frames in

*Long time Supervisor of Technical Film Operations at the programming centre of CBC, Mr. Ross is the author of two books, **Television Film Engineering and Color Film for Color Television**, has won the Agfa-Gevaert Gold Medal awarded by the Society of Motion Picture and Television Engineers, and is presently Chairman of the SMPTE Board of Editors.*

one second of running time are converted into 30 television frames on the videotape (actually 29.97 frames per second in color recording). One ingenious film editor, Nicholas Spies, worked out a conversion method utilizing a program-mable calculator: this method was described in a paper in the SMPTE Journal in the July 1978 issue, with the title "Two Methods for the Direct Assembly of Motion Pictures on Videotape."

Another way to get around these problems is to record the SMPTE time and control code on the videotape while the transfers from film are being made. A counter displaying elapsed time can then be utilized to identify scenes and selected points in the program with frame accuracy.

It should be noted that it is now quite common to make use of the time and control code in computer controlled program assembly. With this method, in and out editing points selected on a keyboard can be stored in a memory and used to automatically make the edits, while the program is being assembled on a master tape.

Effects such as fades and dissolves can be put into a program assembly on videotape by making up A&B videotape rolls and playing back these tapes simultaneously through a video switcher-mixer. Lettering can be superimposed over the pictures by a process of electronic keying, either from specially prepared slides, a television title camera or an electronic character generator.

Another big advantage of electronic program assembly on videotape is the relative ease with which portions of existing film prints can be copied (dubbed) and inserted into another program. Let us say that a scene wanted in a program assembly has been located in another film print, but the original negative is no longer available. Instead of sending the print to a laboratory to have a duplicate negative made of the wanted portion, a transfer to videotape can be made in telecine, and the scene can then be electronically edited into the new program assembly. This procedure is not only quicker and less expensive, but a really significant improvement in picture quality can be expected.

New Opportunities for Film Makers.

Program assembly on videotape can encompass any kind of program likely to be encountered in everyday television station operations, from lengthy feature films down to 30-second commercials, as well as in a great variety of non-broadcast video operations. Assembling programs

on videotape from original camera films offers filmmakers many new and fascinating creative opportunities.

When a program is being prepared for release on videotape, producers have a tendency to make the original recordings with television cameras. In many situations it would be preferable to utilize a film camera and color film as the recording medium. A film camera is much easier to handle in difficult conditions on location, and the quality of the pictures obtainable with film is likely to be superior compared with the results from portable television cameras and recorders.

An even more important advantage for the program producing organization is that the original camera films can either be transferred to tape or used to make film prints for direct screen projection.

Professional filmmakers are likely to shudder at the thought of their valuable camera originals being run through a film projector. Actually, the risk of damage is minimal in a properly maintained professional television projector. Even more gentle is the film handling capability of the flying spot scanner, where the film is transported continuously over smooth rollers.

The flying spot scanner is the preferred system for making transfers from original camera films, especially when the films must be cycled forwards and backwards repeatedly to select the settings of the electronic controls giving best possible picture appearance. It is now common practice to reproduce original color negatives in flying spot scanners, giving a level of picture quality unobtainable with any other transfer method.

Reproducing Original Camera Films in Telecine.

When a program is being produced on videotape from original camera films, and the assembly is to be accomplished by electronic editing, several different methods can be employed in preparing these

materials for transfer to tape. One method is simply to splice together all of the original camera footage on reels of convenient size, and transfer everything to tape in continuous uninterrupted runs. A video operator at the telecine control console could make some adjustments to compensate for color balance variations in the originals. But as there are likely to be quite large variations in some of the camera originals, best quality pictures obviously cannot be obtained in this manner. Besides, there may be up to 10,000 feet of original 16mm. camera film for a half-hour program (shooting ratio 10:1) and this would take up 9 or 10 1200-ft. reels and several large rolls of videotape. Finding a particular scene in this mass of recordings is likely to be quite difficult.

There are many different ways to reduce the amount of time needed to locate scenes in the transfer tapes and simplify the assembly process. Some of these methods will be described in the next article in this series "A&B Roll Assembly Techniques".

No. 1 Priority - Spotlessly Clean Film

The final step in the preparation of films for transfer in telecine should be a thorough cleaning operation to remove any particles of dirt adhering to the film surfaces. Many people working with film in television stations in years gone by developed a careless attitude towards the unsightly black specks in the television pictures caused by surface dirt. Now, in film post production on videotape, clients and program producers are demanding that the pictures from film should be as free of defects as the pictures from live television cameras. Thorough film cleaning is particularly important when film negatives are being reproduced in telecine, since particles of dirt are the cause of far more visible and annoying white specks in the television pictures. □

COMPLETION GUARANTEES BY A CANADIAN COMPANY

Motion Picture Guarantors Inc

**Executive Officers: Douglas Leiterman
Philip S. Hobel**

43 Britain Street, Toronto, (416) 361-1664
211 East 43rd Street, New York (212) 682-0730