Arthur Makosinski is an associate producer with Capital Films Inc. in Fredericton.

The SMPTE time-code: an update

Once the tape is made, it is given to a sound house, where the audio, the code, and if necessary the pilot sync, are separated during the transfer. The SMPTE standard allows for recording the code information on 8, 16, and 35mm film. In each case it specifies that 112 binary bits be recorded opposite each frame, in total no longer than 90% of the frame height.

This applies to all film formats, and for optically or magnetically encoded information. The standard does not specify the exact recording technique. In 35mm equipment the data is recorded as optical bars between the sprockets and the very edge of the film. This presents no problem to the soundtrack which would be on the opposite side of the sprockets, next to the image.

However, the same format cannot be used for 16mm, where there simply is not enough room on the sprocket side of the film for a reliable audio track. One manufacturer has therefore decided to use the optical track area of the 16mm film. While this permits a simple and reliable optical, or magnetic data track, it robs the user of possible super-16 capability.

Another idea, demonstrated by Anton at the last SMPTE conference, uses the area in-between the 16mm sprocket holes to optically encode a 7 x 13 square checkerboard pattern which holds the code data.

The idea has advantages including that in actuality a much greater area is dedicated to each digital bit of information than with the bar code. Its 300 x 250 microns per square, versus a 30 micron width with the bar. Also the sound track area is retained for Super 16.

The readout is done with a photodiode array and translated with a microprocessor into alphanumeric and decimal display information.

No doubt the time code is here to stay, and it is already greatly improving and sophisticating the synchronisation between film, audio, and video production equipment.