

LNG 242 LANGUAGE LAB METHOD AND PRACTICES

Lecture 4: MAGNETIC RECORDING Tapes, Channels, and Speeds.

Magnetic Recording.

In the form used on standard tape recorders in the language lab, magnetic recording tape is a long thin strip of flexible material (the backing). It is uniformly coated on the dull side with iron oxide particles in (the coating) in a very smooth layer of controlled thickness. These particles act like thousands of tiny magnets. Depending upon their orientation, the total magnetic field on a given inch of tape may vary from weak to strong. The sound of a voice in the microphone is converted through the electronic circuit into a magnetic field of variable strength, which causes variation in the magnetic field at the tape head. As the tape passes the head, the traveling band of tape becomes magnetized to the same variable strength; and it stays magnetized. The tape has thus become a permanent record of how intense the magnetic field was at a given moment. One hears the recording by reversing the process: the tape passes a *playback* head which reads the amount of magnetism and converts it back into the energy that operates the loudspeaker or earphones.

Tape has the advantage not only of excellent and faithful sound reproduction, but also of ease of editing. Any sound can be edited out, whether the cut involves several words or just one sound. Errors in recording can be removed and a piece of tape with the correction may be spliced in.

Tape Backing

Two kinds of tape backings are widely used for magnetic sound tapes; polyester and acetate. Only polyester is recommended for language lab masters and students tapes. Polyester has great tensile strength and is unlikely to break on properly adjusted tape decks or in the course of normal handling. It does not deteriorate with age, and it is not appreciably affected by changes in relative humidity.

Acetate is highly sensitive to changes in humidity because it is hygroscopic (it absorbs moisture). A rise in humidity causes it to stretch (over 21 feet in a 7200 foot length as compared with 2.59 feet for polyester when the relative humidity was raised 60 percent). Such physical distortion affects recorded material.

Despite its various undesirable characteristics, acetate has remained on the sound recording market only because of its lower cost. Other applications of recording (computers, instrumentation, videotape) use polyester exclusively.

Polyester protects recording against potential loss or damage that could be expensive and time consuming to recover.

Tape Thickness

Tapes are made in three standard thicknesses measured in mils (a mil is 1/1000th of an inch). The heaviest, which is recommended for the laboratory, is 11/2 mils thick. The thinner tapes (1 mil and 1/2 mil) permit a greater length of tape to be spooled on a reel thus providing a greater running time. These tapes, however, are hard to handle and the additional running time is not needed, since laboratory rarely exceed the time provided by 11/2 mil tape.

Tape Speeds

The speed refers to the rate at which tape passes the heads of the tape recorder. The user selects the correct playback or recording speed by means of a switch. The usual speeds available on most recorders are 7 1/2 i.p.s. (inches per second) and 3 3/4 i.p.s. It is recommended that operational language laboratory tapes be played back at 3 3/4 i.p.s., since this speed combines maximum economy of tape with maximum usable fidelity of sound.

Copying

Any tape can be copied using two tape recorders. One of these will be called *player* and the other the *copier*. The copying steps are as follows:

i. **Connections.** Connect the output of the player to the inputs of the copier using a patch cord. (Output and Input jacks are so labeled on the machines)

ii. **Loading the tape.** Load the master to be copied on the player, being sure that this machine is set to play back the tape. Load a reel of blank tape on the copier, setting control of this machine to record.

iii. **Set the speed selector on each machine.** If both machines are set at the *same speed* the copy will be playable at the same speed as the master.

iv. **Set the volume controls.** Set the *player* in motion to play the master. While it is playing, set the volume controls from playback to that VU meter needle approaches the red area closely at the loudest parts, but does not often run into the red. When this has been done, leave the master running and set the record volume controls on the copier in the same manner (without running the tape on the copier).

v. **Stop the master tape.** Rewind it to the beginning. With both tapes at the beginning, set the digital counter of both to zero. Double check to see that speed settings are correct. See that the player is set to playback and the copier to record. Do not alter the volume controls.

vi. ***Start the recorders.*** First start the copier (blank tape) in the second mode. Then start the player in the playback mode. The copy is now being made.

Tape Tracks.

A newly purchased tape has no “tracks” nor “speed” built in. The term track refers to the width of the magnetic trace left on the tape after it has passed the record head of the tape recorder.

Recorders are manufactured as full-track, half-track, and quarter-track machines. It is recommended that language labs employ ***half-track monaural*** machines. Such a recorder uses the top half of the ¼ inches tape as it passes over the record head.

A full recorder leaves the magnetic trace upon the full width of the tape as it passes the record head; a quarter-track (not recommended) just one-fourth of the width of the tape. ***The wider the track, the better the quality of sound reproduction.***

All tapes should run in one direction only. Great confusion result when laboratory tapes are recorded in both directions.

7. Publishers' Tapes

Most modern foreign language textbooks are provided with correlated tape for the laboratory. Before textbook is adopted a sample tape should be secured from the publisher and its quality considered along with the printed text.

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- 10 Demagnetizing
- 11 Laboratory Channels (Programs)
- 12 Mass Duplication
- 13 Tape Generations
- 14 Leaders
- 15 Cassette