

Recording Booth Maintenance

• Many broadcast stations install a recording booth that is independent of the main control room. There are many advantages in having a separate recording booth—it soon becomes the workhorse site for all commercial and public service announcement production, as well as other program materials recorded for later play over the station's regular facilities.

Because the recorded tape product of the booth will make a large contribution to the station's air programming, the technical quality of this product should be at least equal to that produced by the regular station equipment. This fact should be borne in mind when selecting the original booth equipment. And although the booth equipment may not be the same models or even the same size as the units in the regular station equipment, the output quality should be equal. Even though during the original installation, all the booth equipment was fine-tuned to quality criteria, it will not stay that way. Any equipment that sees heavy usage will begin to wear and lose adjustment; tape machines become clogged with debris or residue from the tape. A regular maintenance program, keeping equipment in tip top condition, should be carried on as regularly as the servicing of the station's regular equipment.

Maintenance procedures should be scheduled at regular intervals. If not they become haphazard. How often the individual procedures are scheduled depends upon the usage of the booth and the station's own routines. The important thing is that they are regularly scheduled.

CLEANING

At least once a week, all the tape machines should have a thorough cleaning. Clean the heads, pressure rollers, guides and any tape contact

surface. This schedule depends upon usage and the equipment itself. Cartridge tape equipment requires more cleaning than open-reel machines because of the special lubricant on the tape. Even with a weekly cleaning schedule, announcers should check the heads and, if necessary, at least clean the heads before a long recording session.

LEVEL SETTING

Normal recording levels, and the playback levels of the master recorder should be tested on a regular basis. At the same time, the playback level of the various source machines and turntables are checked. This can be done about once a month. Use the standard level-setting tapes that were made during the initial installation of the booth. By checking standard levels on a regular basis, slow deterioration of the system can be detected. At the same time, it can also show up the fact that some knob twiddler has been active.

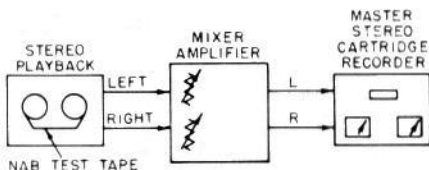
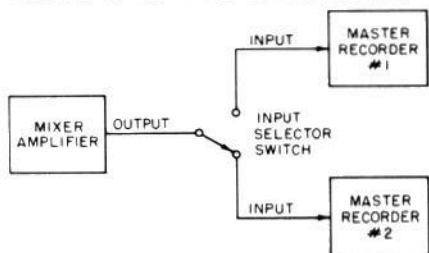


Figure 1. Run the NAB test tape on a source machine and then dub it onto a tape in the master recorder.

Figure 2. Carelessness can end up with blank tape if the input selector to the recorder is not in the correct position.



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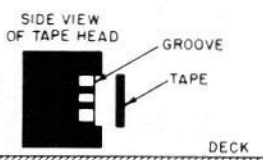


Figure 3. Much usage will wear down the head and form a groove.

At least once every six months, make a complete set of measurements on the booth equipment, including response, distortion, noise, cross-talk, turntable rumble, etc. You might call this a proof-of-performance as is done on the main station annually. These checks will show up overall deterioration of all the equipment—the tests should be run on all the equipment *as a system*, rather than on individual units on the bench.

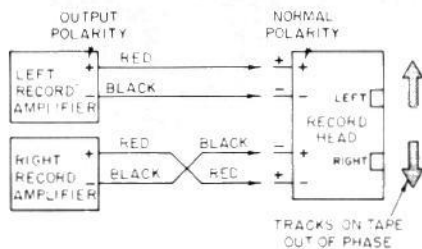
Use the NAB standard test tape on a source tape machine and your distortion analyzer on the output of the mixer amplifier. Make sure the amplifier is properly terminated in the correct impedance. For the turntables, use a standard NAB test record. Check each of the units through the mixer output and make notations of the results. Next, set up a standard test tape on the main source machine and run this through the mixer, but this time, *dub* it onto the master recorder. This is a more severe test, but it will show up the master recorder in its usual setup, for that is what is going on when tape dubs are made.

Since there are many tests to run, they can be spread out over one or two weeks if necessary. A booth that is normally busy will not have too much free time anyway.

Even with a regular maintenance program, day-to-day problems will occur as they do with the regular equipment. These generally fall into two classes: operational errors and equipment problems.

The station will receive many tapes from outside sources that are to be

Figure 4. Leads can be placed incorrectly on the recording head and cause phasing problems in stereo recorders.



dubbed in part or entirely onto station tapes. Tapes received from commercial recording studios will normally be good quality, but those from private sources are not always satisfactory. Unfortunately, many of these are from advertising accounts, such as new car dealers, who want to make the tapes themselves. They use a small, cheap recorder, and it takes a magician in the recording booth to dub these with only the barest acceptable air quality. Even then, some are much less than air quality, but the sponsor wants to use them anyway.

When the announcer must work with such a tape, he can use all the production techniques, production equalizers etc. that are available, but he *should not* twiddle the basic adjustments of the tape heads or equalizers. If he does, it will be necessary to go back and re-align those machines; otherwise the general quality will suffer.

AUTOMATION WON'T WORK

The usual problems are cartridge tapes that play with very low program levels, won't switch the automation, or the tape won't stop. All of these could be caused by problems with the particular machine or tray in the automation, but the culprit can also be a poor recording. The quickest check is to play a tape known to be good in that place in the automation, and if it plays okay, then you know the troublesome tape is bad. Check the tape out in the master recorder, but first, inspect the cartridge itself. Look for defective pressure pads, bad tape or parts out of place. In most cases, the trouble will be in the cartridge, but it could be oxide buildup on the recorder heads or guides that do not allow the cartridge to seat. This type of problem is really caused by human error, for the announcer should have inspected the cartridge before use, and then auditioned it after it was recorded.

BLANK TAPE

An operational error can happen when there is more than one master recorder and the output of the mixer must be switched to the correct recorder input. If the announcer becomes careless and doesn't make the normal checks to make sure that he is set up to record on the correct machine, the switch may be in the wrong position. He goes ahead and does the recording, and then without auditioning the tape, plugs it into the automation. A short while later it is called for on the air—. Carelessness, sure, but it does happen and often.

TAPE HEADS

When the oxide on the tape wears

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down the head, the gap opens or widens, and tape-to-head contact of the tape begins to show up in poor and erratic quality in the recordings, the heads need replacing. If the machine is the master recorder, replacement and realignment require extra care. It is not enough to have a good response curve on that particular machine—the tape will also be played on other station machines and should be compatible.

Make the head replacement with the correct heads (same model numbers that were taken off) and get them into the same physical position as the old heads. Use the gauges and other devices available to just about put the head into alignment. But use a standard NAB test tape and electronically align the playback head first. Use this as a standard to align the record head. Tones fed to the record amplifier should be at least 10 dB below program level to avoid problems with the internal equalizers.

The tape with tones recorded during the alignment process on the recorder should be played on at least one of the main station playback machines and the results noted. Ordinarily, this will be within specs. If it is

not, the head on the recorder may not be correctly aligned. This can sometimes happen when the equalizers needed much adjustment and especially if the playback equalizer was adjusted by mistake instead of the recording equalizer. If the tape is not compatible, go back and do the alignment over.

HEAD PHASING

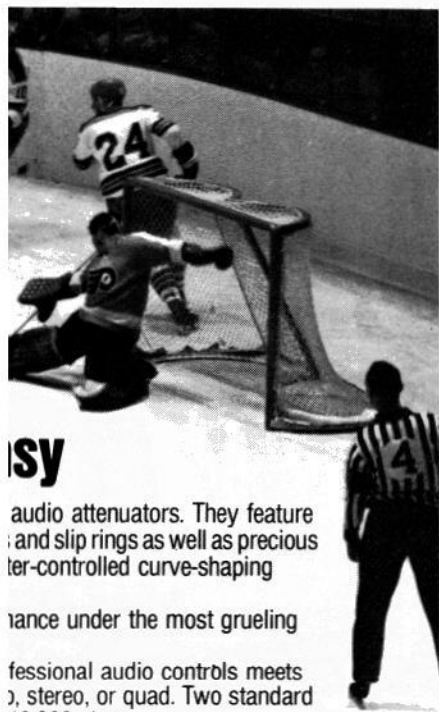
On multi-track stereo recorders, it is easy to get the head leads mixed up and put on incorrectly so that one of the tracks is reversed polarity of the other track. This creates a phasing problem. Use special care in replacing the leads, and as a final check, play a recording made on the machine into an arrangement where the two channels are paralleled together into a monaural amplifier. If the two channels are out of phase, the signal will cancel and the monaural level will drop severely. This is the same thing the matrix does in the transmitter stereo generator to provide the compatible monaural signal, and the results you will get here are the same the monaural receiver will get.

COMPRESSORS

The booth may use a compressor between the mixer and the recorder. This calls for careful setting of the various levels. Use a sine wave tone of equal amplitude on both inputs of the stereo unit (mixer) and adjust all the levels throughout to correct values on the tone. This includes the compressor and recorder. For the test, disconnect the tie connection between the left and right compressors, since you need to make the adjustments correctly to both units. But consider the tone set up as preliminary; the system can operate differently on program material. Next, use a monaural record or full track monaural tape to feed a monaural program over both channels. The monaural signal will feed both channels equally. Try to select a program number that has plenty of activity and somewhat regular peaks. Now set the adjustments against this and lock the controls. The master recorder controls should not be operational and should be locked, even if there is no compressor. Once set up, the console vu meter should be used for production level monitoring.

SUMMARY

The recording booth is an important source of program material so its product's technical quality should be equal to that coming through the regular station equipment. But it won't stay that way unless a regular maintenance program is carried on and day-to-day problems corrected as they arise. ■



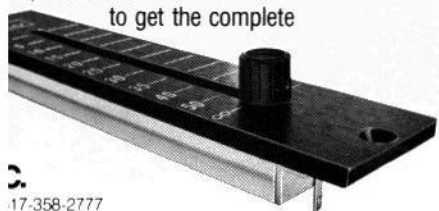
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