

# Audio monitoring in the control room

BY DAN ROACH

Ahh, monitoring. Much has been written, but broadcast practice seems to differ in some respects from what the textbooks have to say. Of all the different areas of a radio station's technical plant, the monitoring system must be among the most controversial, the least backed-up by science and the most able to keep operating staff comfortable during the day, or not.

Loudspeakers come in a bewildering array of sizes and shapes. For our purposes, let's stick to two-channel stereo (and save surround for another day), and fairly "normal" low-impedance electromagnetic speakers. There are certain words that we could classify as jargon that usually, but not always, have a certain meaning. "Bookshelf speaker" is an example. This usually means a speaker that is intended to be placed inside a bookshelf cabinet for proper bass response, and may be a bit weak on the bottom end if it's placed out in the open. But sometimes it just refers to a speaker's case style.

Buyer beware!

Watch out for speakers with bass relief ports in the back—they should have at least 25cm clear space behind them, so make sure that you don't back them up against anything. A surprising volume of air can pump in and out of those ports (drive one and put your hand back there to see for yourself), so make sure they can breathe.

Speaker placement is often determined

near the end of control room construction. There are many ways to mount a speaker but I personally prefer hanging'em from the ceiling. This provides lots of options for location and also, when done properly, it cuts down on inadvertent transmission to cabinets, walls, and other surfaces.

Traditionally speakers are mounted in front of the operator at approximately head height and forming a horizontal equilateral triangle with the operator's head. If there's a chance anyone's going to walk into them, I pull'em high enough that folks won't get brained. You'll get better results if you have a minimum of objects between the speakers and the operator. The less you have to deal with reflections and inadvertent transmission media, the happier you will be.

One of the funnier episodes I've been through with monitor speakers was many years ago with a monitor we'll call Brand X. These were originally very modest close-field monitors (priced at a little over \$100 per speaker) for the consumer market, certainly not intended for professional use. But word got out that super-producer Quincy Jones had used these particular monitors for his mixdown of Michael Jackson's *Thriller* record album.

Lemming-like recording studio mixmasters just had to have these wonderful speakers for themselves. The only problem was that they just weren't very well-suited for high-end use. No worries: There



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were numerous further articles in the industry press, detailing secret modifications that would improve performance. First of these was to remove the speaker grilles. Unfortunately, this gave the speakers an overly bright sound. The next brilliant idea was to tape a piece of toilet tissue over the ribbon tweeter to attenuate it a bit. The main problem with that was that it caused standing waves to be set up inside between the tweeter diaphragm and the toilet tissue, producing a comb filter, or flanging effect. Next came printed comments on the relative merits of various brands of toilet tissue, with the burning issue being whether to go with two- or three-ply.

I'm not kidding.

This presented Brand X with a unique problem. While they sold a ton of these speakers to the gullible, they risked being laughed out of the business by the few folks actually listening to the results. In fairly short order, they came up with a "Pro" version, still carrying the same model number (at a much higher price point). The new version actually bore no resemblance to the original. It came without a cloth speaker grille, since by now it was known that the studio guys would just remove it anyway. Instead, it had an expanded metal grille, which some suggested was to stop exploding speaker cone parts from impaling hapless operators. It was a far more suitable speaker and went on to be used in many studios. And the studio operators were happy, thinking (incorrectly) that they had something in common with the great Quincy Jones.

