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CONTROL ROOMS AND THE MONITORING ENVIRONMENT

14.1 GENERAL REQUIREMENTS

The modern recording studio control room must provide space for recording equipment, operators, producers, musicians, and occasional visiting VIPs. It must provide good sight lines into the studio, and acoustical leakage from the studio or any associated isolation booths into the control room must be acceptably low. Air handling in the control room must be efficient and quiet. In addition to these requirements, the space must satisfy its own special acoustical requirements in terms of sound absorption and reflection.

Modern trends in decor have reversed earlier notions of the control room as a confined “recording booth,” and today we commonly see designs which are esthetically pleasing as well as efficient in the utilization of limited space.

For many applications, the space just described may not be absolutely necessary, and for remote recording the engineer is indeed fortunate if a typical living room environment can be found, or simulated.

Before describing in detail the variety of monitoring rooms used throughout the industry, this chapter will study a few basics having to do with loudspeaker boundary relationships in rooms and the acoustical treatments that are often used in monitoring spaces.

14.2 LOUDSPEAKERS AND BOUNDARY RELATIONSHIPS

Figure 14-1 shows the basic nature of a reflected acoustical image at a rigid surface. The reflection acts as an additional sound source, and its effect at the listener will be modified by the off-axis relationships between the primary radiator and the reflecting surface. At low frequencies, the reflected image will be strong because those frequencies are relatively nondirectional. At high frequencies, the reflection will be less, because those frequencies are not directed at the wall by the primary radiator.
Figure 14-1. Relation between a sound source, a primary reflection, and the listener.

Figure 14-2 shows in section view the rather complex case of a loudspeaker suspended above the control room window. This method of mounting loudspeakers was typical in the industry up to the early 1970s, and as can be seen there are two primary images and one secondary image. The secondary image is significant only at low frequencies, but the primary images may be significant at mid frequencies. The images are all spaced apart,