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ELECTRICAL DEVICES

When Electrical Devices are the subject of Litigation
Electrical Engineer from New Jersey

Three firemen were trapped in an upstairs storeroom, calling by handheld radios to other firemen fighting the fire throughout the building. The other personnel on the scene were continually in contact with each other. But none of them responded to the repeated calls from the trapped firemen.

At the firehouse a mile away, the master tape recorder clearly recorded all the calls to and from every portable, mobile, and base radio involved, including every (unanswered) call made from radios carried by the trapped firemen. The tape bears all their push-to-talk transmissions, and even their backpacks "out-of-air" warning bells are audible in the later playback.

The firemen's bodies were found after the fire. Their partially burned portable radios were examined by the manufacturer's representative, with no conclusive results. Local and state investigators tried to attribute the communication failure to shielding, to interference, to human error, and to equipment malfunction. No satisfactory explanation was forthcoming. Then a lawyer for one of the firemen's families called Boyell. After extensive analysis he found incorrect channel-selection crystals in their portable radios.

Each hand-held radio and some mobile radios had capacity for four channels, of which only the first two were used by their department. When switched to F1 they operated on the general department frequency, and when switched to F2 they operated on the alternate frequency which was employed only by an on-scene crew for local firefighting coordination.

However, he found that the firemen's hand-held radio F2 transmit crystals had been substituted by F1 crystals. Thus the trapped firemen received all the communications from the scene but, unknowingly, were transmitting on the general channel, to which the on-scene crew was not then listening. The error had not surfaced previously because never before was every member of the department (except-the master tape recorder) locked onto F2.