

The collapse of WTC 2 caused the cellular phone system in Lower Manhattan to fail. However, there were still landlines working in the city blocks adjacent to the WTC site, and calls were still emanating from inside WTC 1.

All of the radio systems analyzed were working well just before the attack on the WTC. However, PAPD, FDNY, and NYPD were aware that radio communications had not fared well in high-rise buildings, including WTC 1 following the 1993 bombing. The vast amount of metal and steel-reinforced concrete in high-rise buildings was known to attenuate and block radio signals, especially the low output power emergency responder handie-talkies. This was again a problem on September 11, 2001, when all three agencies encountered difficulties with their hand-held units.

Thus, there was a heavy burden placed on the FDNY repeater to boost the weak signals to a discernable level. The repeater was functional during operations at the WTC; apparently the antenna was not damaged by debris from the aircraft impacts. However, within WTC 1, the system did not function correctly. The cause of this malfunction could not be determined since the unit was destroyed in the collapse of WTC 1. Repeater recording communications suggest that it was used within WTC 2. The radio recordings showed that communications readability using the repeater channel was generally good to excellent. Where readability levels were poor, it was generally caused by multiple people attempting to communicate over the radio at one time. The heavy traffic continued until the repeater failed with the collapse of WTC 2.

Had communications using the repeater been adequate in WTC 1, there would have been opposing effects on the quality of operations and life safety. On the positive side, the emergency personnel in the tower would have been in at least some contact with the Command Posts. However, two serious counterpoints would have occurred. First, if the responders in both towers were using the same repeater at the same time, the traffic would have been heavier, and more of the calls would have been indecipherable. Second, a firefighter in either tower would have had difficulty discerning which communications related to operations in his tower. Given the inadequate markings within the towers and the unfamiliarity of some emergency responders with the site, there was already a high degree of confusion as to which tower a responder was in.

The poor radio communications at the WTC had a serious impact on the FDNY Command Post's attempts to maintain command and control in general. All emergency responders struggled with the high volume and low quality of radio communications traffic at the WTC, described as "radio gridlock." NIST estimates that one-third to one-half of the emergency responder radio communications were undecipherable or incomplete.

The poor communications had a critical effect on the conveyance of evacuation instructions. As early as 8:48, there was an order to WTC personnel to clear WTC 1. At 8:59 a.m., a senior PAPD officer called for the evacuation of the two towers. At 9:01 a.m., this was extended to the entire complex. This was before the second aircraft struck. At 9:04 a.m., WTC Operations told people to evacuate an unidentified building. At 10:06 a.m., an NYPD aviation unit reported that it wouldn't be much longer before WTC 1 would come down. Some survivors reported not having received any of these messages. It is not known how many others did not, nor whether their locations were such that they could have made it out of the buildings in time.