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Ubiquitous cellphones carry potential for setting off remote blasts

By Ken Belson and Victoria Shannon

Whether or not cellphones had any role in exploding the bombs in London last week, technology experts warn that the simple and ubiquitous mobile handset carries vast and increasing potential for inflicting damage remotely.

Cellphones also have a critical place in calming fears, summoning help and coordinating emergency services in a disaster, as communications networks showed in London on Thursday.

But the easy availability, low price and potent electronics of wireless devices make them readily co-opted by terrorists, who can manipulate anything in a phone from the ringtone or the alarm clock function to the chemicals in the battery.

"It's not advanced physics," said Ron Angner, leader of the wireless practice at Management Network Group in Overland Park, Kansas.

"You just need to know your way around a particular handset so that when you take it apart you understand the pieces in it," he said. "There are repair manuals out there. It's not like the circuitry is secret."

As of Sunday, the British authorities were not linking any of the explosions, which took the lives of dozens of people, to mobile phone technology, even after saying over the weekend that the three subway bombs all went off within one minute. Cellphone carrier officials have also said that the most of the London Underground is not outfitted with mobile phone service, unlike some subway systems elsewhere.

Still, the use of portable phones in the Madrid bombings last year and in other remote detonations make them suspect..

"It's so simple that it's scary," said Michael Sloan, vice president at Cell-Antenna, a Coral Springs, Florida, company that sells cellphone jamming devices to government agencies.

Most cellphones can be set to emit a special ringtone or vibration when a call comes in from a specific phone number. The ringing of that tone could be the trigger that sets off an electrical charge.

"The battery has sufficient power to provide detonation," Sloan said. "The tower just reads it as a call going from one phone to another."

The bombings in Madrid last March, which killed 191 people, used explosive devices that were detonated within a three-minute period on four commuter trains. All of the 10 Madrid bombs were detonated by the use of the alarm function on cellphones. Similarly, a cellphone was used to detonate two bombs at a nightclub in Bali in October 2002 that killed 202 people.

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A detonation can also be done via radio frequencies of the kind used by remote-controlled model airplanes. The clocks in mobile phones allow synchronization. Even a lithium cobalt ion battery, Sloan said, "is very unstable and could be used as a bomb itself."

Given the ease of abusing the airwaves, there appears to be no simple way of blocking misuse without disrupting the entire system. Cellphone jammers — devices that radiate signals to interfere with the radio waves — may work well enough to stop phones from ringing in a theater, but the technology reaches only about 100 meters, or 330 feet, in different directions.

Without the benefit of jammers, police authorities would have to ask mobile phone carriers to shut down their network towers close to the emergency area, said Philip Solis Sr., wireless analyst for ABI Research North America. But that would deprive everyone in the area of phone service.

For Solis, the pros of having the network available outweigh the cons. "People can communicate that they are O.K., call for help, give specifics to emergency groups," he said. "People with connections underground could even do work there."

Yet the growing universe of wireless devices — laptop computers with Wi-Fi, hand-held organizers with Bluetooth and mobile phones linked to ever higher-speed networks — make the fight against the subversion of technology demanding at best, some analysts say.

"Our feeling is it will only get worse because the communication is so easy to use," Sloan said. Mobile phones are "the No. 1 communication device in the world."

As evidence of that, about three times more text messages were sent by mobile phone to and from Britain on Thursday after the bombings than on a normal day, according to statistics from Mobile 365, a messaging interconnection company based in Chantilly, Virginia.

The short-messaging system, or SMS, was designed as a tool for telecommunications engineers when GSM cell networks were first introduced more than a decade ago.

A so-called short message — less than 160 characters — sent by phone moves on the network wherever and whenever there is spare capacity, while a voice call requires a separate frequency and takes up more bandwidth.

Thus, while many mobile phone connections failed to get through because of the crush of calls on Thursday morning, text messages often made contact, telecommunications and law enforcement authorities said.

From 8 a.m. to 9 a.m., the hour of the bombings, international text traffic into and out of Britain rose 2.75 times over the like hour the previous day, Mobile 365 said. In the 9 a.m. hour, there were 5.6 times as many, and in the hour after 10 a.m., there were four times as many.

Text traffic stayed at least three times as high through 2 p.m., compared with the previous day, and stayed at least twice as high through 6 p.m., the company said.

"Almost any technology can be used in negative ways," Solis said. "In an open society, you can't be monitoring everyone. The only way to prevent these things is for everyone in the streets to keep their eyes open."

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Ken Belson reported from New York and Victoria Shannon from Paris.