

COUNTDOWN TIMERS

BY BRUCE KOFFLER

A variation in the workings of common kitchen timers may have huge implications for bomb technicians.

A presentation was given during the IABTI Region VII training conference (Kingston, Ontario, Canada September 23-25, 2008) concerning a situation in which a terrorist bombing was preceded by a telephone call, warning of the time of detonation. Following the presentation a comment was made that the detonation time given was rather short, and even so, the IED detonated prior to the time stated in the message.

It was a comment primarily indicating the callousness of the person who phoned in the bomb call.

I thought about it for a few moments, and then told the group about a finding of my company's employees regarding certain countdown "kitchen" timers we had recently tested. These timers have the brand names THERMOR and TODAY, were made in China.

The TODAY model is a Count-Up/Down digital timer. It has a LCD display screen in the middle, with the letters H and M above the screen. There are three buttons below the screen, marked beneath them are the words HOUR, MIN and START/STOP.

Above the HOUR and MIN buttons it says, "PRESS BOTH TO RESET."



There is a photo of this timer shown in Figure 1. The case is white plastic but is available in several other colors. The housing is square in shape.

The THERMOR model has rectangular plastic housing. The LCD display screen is set off to the upper left of the housing. There are three black buttons on the right, marked in white directly on them are the words HOUR, MIN and START/STOP. Within a bracket at the right edge of the case, bracketing the HOUR and MIN buttons, it says CLEAR in vertical letters. See the photo in Figure 2.

A few weeks ago, my employees were charging some digital camera batteries which had a warning to not charge them beyond a certain time limit. They put the batteries in the charger and set one of the two types of timers for the allowable maximum time and pressed the START/STOP button. The colon (:) started flashing once per second.

At that time, my employees looked at their watches to determine what the time would be when the timer would reach 0:00 and start beeping. They were surprised to hear the timer beep twice prior to the expected full countdown. Checking their watches they saw there were still ten minutes left.

The beeping stopped and the colon continued to flash. At five minutes remaining the timer beeped again, once, then stopped



and the colon continued to flash as the timer kept counting back toward 0:00. When fully counted down, the timer beeped for about thirty seconds and stopped.

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the ten minute mark, the LED inside each detonator flashed twice, then stopped, but the countdown continued. At the five minute mark, the LEDs in the detonators flashed once, then the timers continued counting back to zero hours and minutes.

The THERMOR timer is set the same way. When the START/STOP button is pressed, there is no flashing colon. Instead, there is a small flashing H on the screen above and to the right of the hour digit(s), and a small flashing M on the screen above and to the right of the minute(s) digits. Both letters flash on and off in unison, once per second, as the timer counts back to 0:00.

On this timer, they noted the same phenomenon, a pulse from the timer to the mini piezo whistle at the ten minute mark, and another pulse to the whistle at the five minute mark. When it reached zero hours and minutes on the screen, it gave a series of beeps for about thirty seconds, then stopped.

This was the first time, working with these and many other countdown timers, that we have observed this phenomenon.

The output pulse would normally go to the mini piezo whistle inside the timer. We modified the timers and connected them to an SCR (Silicon Controlled Rectifier) on a small auxiliary circuit board, and used this to draw power from external battery, which was wired to an LED inside an inert electric detonator shell with a hole drilled through its sidewall near the shell tip, allowing us to observe the LED.

Then we set the timers to settings above ten minutes, and started the countdown sequence. When they reached

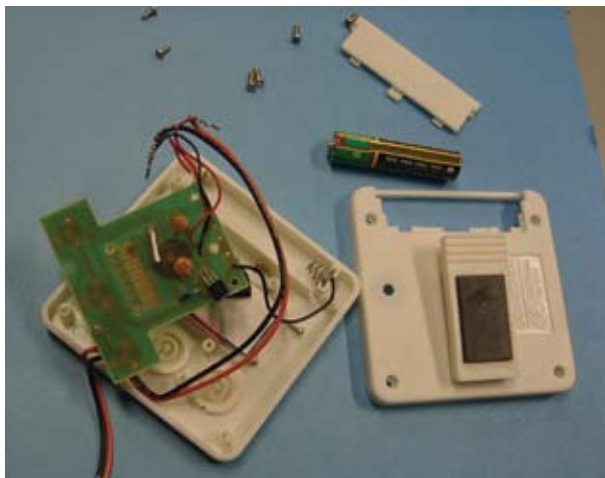
Had these timers been wired into a real IED with live electric detonators, they would have initiated ten minutes prior to the full countdown to zero.

We tested all of the other timers of these two models in our inventory, and they all worked the same way; they sent a pulse at ten minutes and at five minutes prior to full countdown to zero. That is a warning to a cook using them, that the food is almost ready to be removed from the stove or oven. But if these timers are used in IEDs, they will initiate the charge ten minutes prior to anticipated detonation!

It is likely the builders of IEDs are not aware of this. Some might even kill themselves setting the time to just above ten minutes and pressing start, only to have their IED detonate at the ten minute mark. On a phoned in threat giving a detonation time, this timer will trigger the IED ten minutes before the time given by the caller.

This is something to remember when watching the flashing indicator on a countdown timer, thinking you have more time than you actually do!

Both timers were purchased from a commercial instrument and kitchen wares importer/ distributor in Toronto, Ontario, Canada. Their products are mainly imported from China, and are widely distributed.



TODAY timer with back cover plate unscrewed (4 corner screws) and lifted off, exposing the front and back surfaces of the circuit board and hookup wiring. The circuit board was also screwed down to the inside front display screen section of the housing, by 6 small screws.

Bruce Koffler has been a Region VII associate member since 1985. He is President of Securesearch, Inc. Over the years, he has contributed a number of technical articles to the DETONATOR, and to other law enforcement and security journals, on a variety of subjects. These include variations in German WWII gas mine time-delay mechanical fuzes; X-ray Initiated IEDS; electrically-primed ammunition; criminal evidence in letter and parcel IEDs; prohibited ammunition; forensic evidence of homemade firearms; and a simple method for remotely unscrewing the end caps of pipe IEDs. His e-mail address is bkoffler@securesearchinc.com

