



May 20, 2004

MEMORANDUM

FOR: Selected Bomb Countermeasure Experts
FROM: Patrick M. Hughes, Lieutenant General, USA, Ret.
Assistant Secretary for Information Analysis
IAIP/DHS
SUBJECT: IED Trigger Recognition Guide

Overview:

This *IED Trigger Recognition Guide* has been prepared to assist with the field identification of electronic triggers used with improvised explosive devices. More detailed technical information, including additional photography and schematic diagrams, is available for each device.

As new IED Triggers are recovered, updated versions of *The Guide* will be published.

The Department of Homeland Security (DHS) believes that bombings by terrorists may be preempted if the public safety bomb technician is informed of certain device types used by terrorists overseas.

Details:

DHS has no specific information to indicate that bombings of any kind are currently being planned in the United States or that these triggers will be used. This document is only intended to provide general IED trigger recognition features that have been used by terrorists overseas.

Concluding Paragraphs:

The Guide is unclassified, but **For Official Use Only**, to facilitate the distribution to the field. This information, however, should be considered sensitive and protected accordingly.

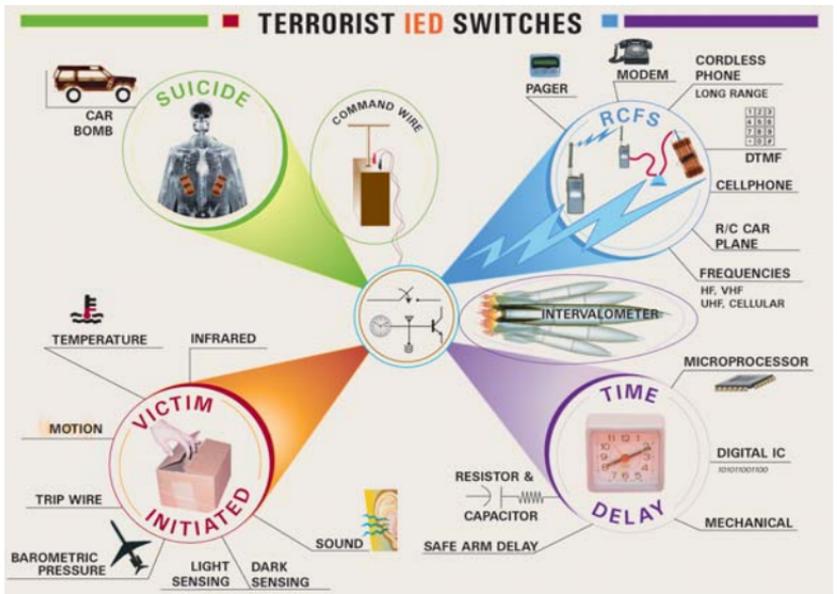
Comments and questions can be addressed to the Information Analysis Requirements Division via e-mail at DHS.IAIP@HQ.DHS.GOV.

S / Patrick M. Hughes
Patrick M. Hughes
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Assistant Secretary for Information Analysis
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IED

Trigger Recognition Guide



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Happy hunting!

For additional copies or information, please contact:

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Washington, DC 20505**



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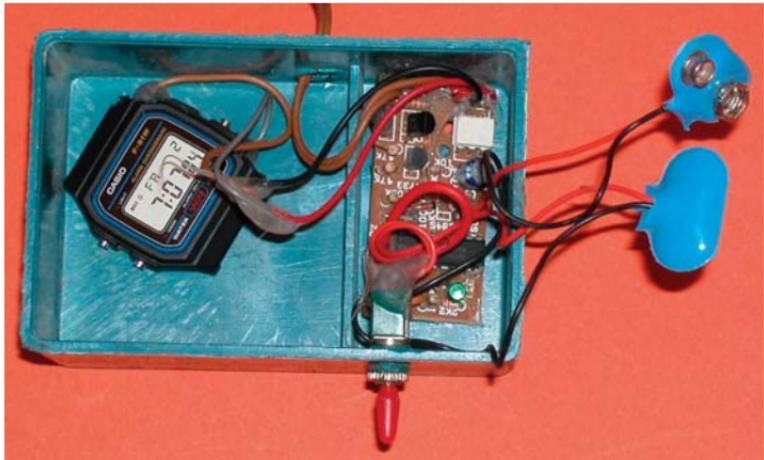
Iraqi Devices

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Al Qa'ida Casio Watch Timer with Opto-Isolator

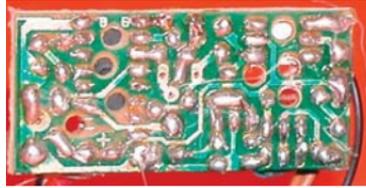
Recovered since mid-2002 in Afghanistan and Pakistan, this device uses an opto-isolator to interface with the Casio digital watch alarm and a safe-arm delay timer. This is a much safer circuit to use than other versions of the Casio Watch Timer (Sheets 05706 & 84071).



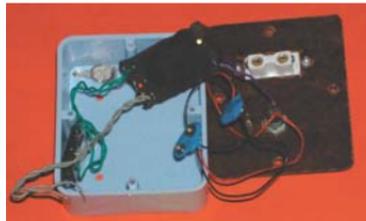
- **Time Delay:** User programmable up to 23 hours, 59 minutes in one minute increments.
- **Power Source:** Two standard 9-Volt batteries in parallel (9 Vdc) with no isolation.
- **Anti-Tamper Features:** None.
- **Watch Type:** Casio F-91W, but other digital alarm watches could be utilized.

03340 Al Qa'ida Casio Timer with Opto-Isolator

03340 Al Qa'ida Casio Timer with Opto-Isolator



- **Size:** The blue plastic case measures 101 mm x 67 mm x 39 mm (4.0" x 2.6" x 1.5"). The circuit board measures 52 mm x 26 mm x 1.6 mm thick (2.0" x 1.0" x 0.063" thick).
- **Circuit Base:** Type 4060 Oscillator/Divider IC for the safe arm delay timer; Type 4N25 opto-isolator for the watch interface.
- **Circuit Board Substrate:** Brown single-sided with silk screen legends.
- **Variations:** Concealed in electrical outlet boxes with toggle or key switch.



Al Qa'ida Interrupted IR Trigger

This circuit, recovered in Afghanistan in early 2002 requires modulated Infra-red (IR) to hold the output off. When the IR is interrupted, the output triggers. Construction is similar to the Al Qa'ida Light/Breakwire Trigger (Sheet 27155).



package measures 67 mm x 20 mm x 21 mm thick (2.64" x 0.79" x 0.83" thick).

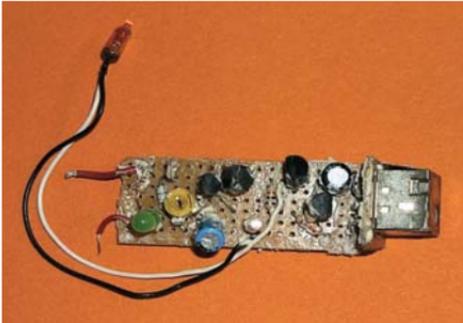
- **Trigger:** Loss of an infra-red (IR) beam with digital modulation in the 40-60 kHz range.
- **Safe-Arm Delay:** Variable, but with a maximum of only about ten seconds.
- **Power Source:** No power source was recovered. A standard 9-volt battery would be suitable to operate the circuit for about one day.
- **Size:** The overall

Al Qa'ida Interrupted IR Trigger

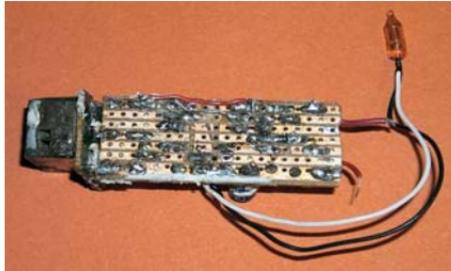
05250

Al Qa'ida Interrupted IR Trigger

05250



thick epoxy-fiber-glass experimenter board with parallel strips of copper conductors over holes on 2.5 mm (0.100") centers.



- **Anti-Tamper features:** None.
- **Concealment:** None.
- **PC Board Substrate:** The trigger circuit is assembled on 1.6 mm (0.063")



- **Circuit Base:** Sony IR receiver module, model SBX1610-52.

Note: This circuit could be easily configured to trigger on the presence of an IR signal, rather than the loss of signal.

Al Qa'ida Casio Watch Timer

Timers built using a Casio watch were first seen in early 2000. The device detects the watch alarm output to trigger the device. Several varieties of alarm detector circuitry have been seen (Sheets 03340 & 84071) with this being the simplest. Time delays up to 23:59 can be achieved.



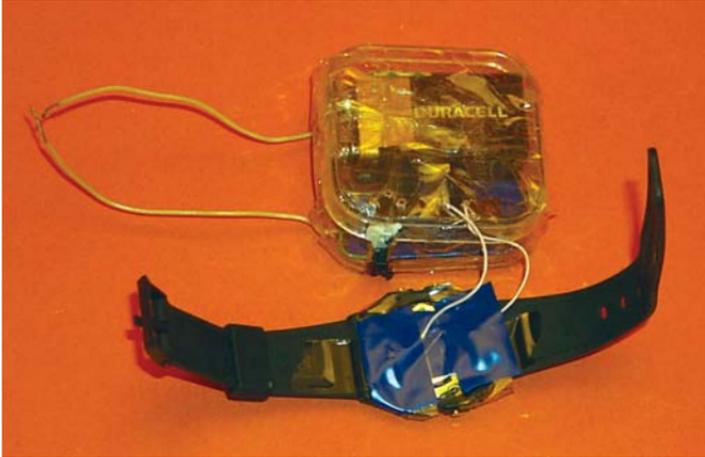
- **Time Delay:** User programmable up to 23 hours, 59 minutes in one minute increments.
- **Power Source:** Standard 9-Volt battery, connected through a slide switch on the side of the case, is used to power the detector circuit and detonator. The watch operates on its internal battery.
- **Anti-Tamper Features:** None.

Al Qa'ida Casio Watch Timer

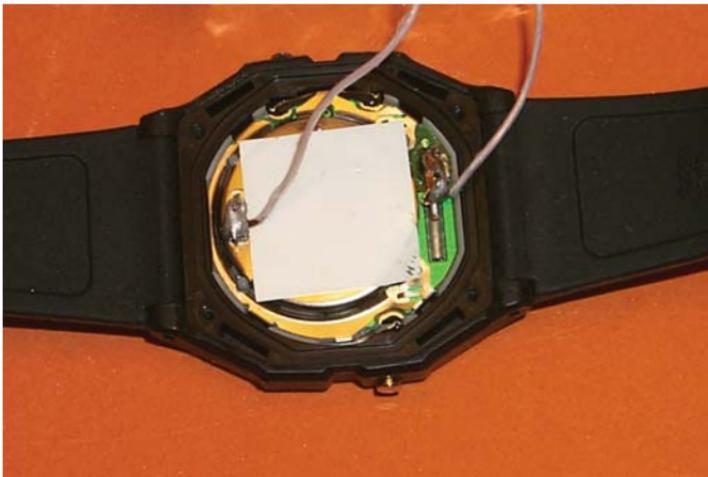
05706

Al Qa'ida Casio Watch Timer

05706



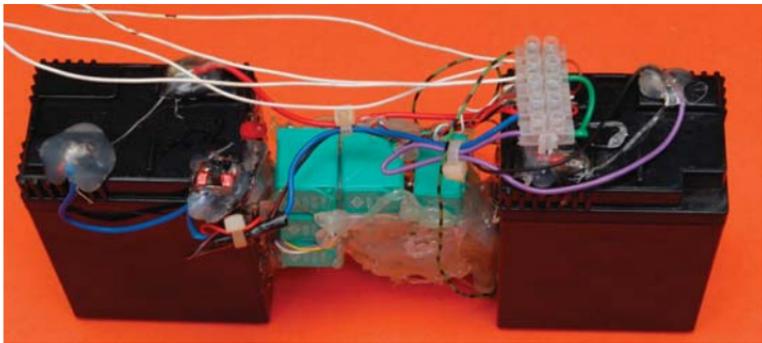
- **Watch Type:** This device used a Casio F-91W, but other digital alarm watches could be utilized.
- **Size:** The plastic case containing the battery and detector components measures 57 mm square x 16 mm thick (2.25" square x 0.63" thick).



Iraqi Car Alarm R/CFS

Iraqi Car Alarm R/CFS

This modified commercial system consists of three board in the receiver circuit and one in the key fob actuation transmitter. The system operates at about 434 MHz over very a short range.

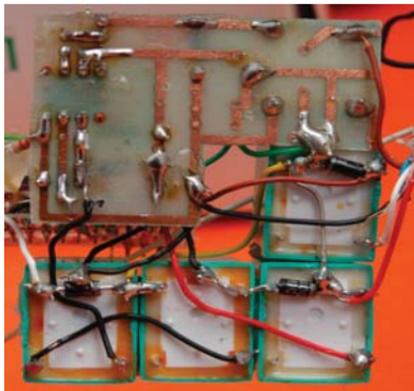


- **Concealment:** Purse concealment was used.
- **Safe Arm Delay:** None.
- **RF Frequency:** 433.5 to 434.2 MHz.
- **Control Code:** Digital on/off keyed.
- **Operating Range:** 10 meters.
- **Anti-Tamper Features:** None.
- **Power Source:** 12 Vdc.



06920

Iraqi Car Alarm R/CFS



- **Battery Life:** The batteries shown will operate the receiver for about 14 days.
- **Size:** RF receiver circuit board is 50 mm x 18 mm x 1.6 mm (2.0" x 0.70" x 0.063"); address decoder board is 45 mm x 41 mm x 0.5 mm (1.8" x 1.6" x 0.020"); ell-shaped relay board is 60 mm x 50 mm x 0.6 mm overall (2.4" x 2.0" x 0.024")



06920

Iraqi R/CFS Receiver with Ten Addressable Outputs

Recovered in Iraq in mid-2003, This system consists of two assemblies, a model RX46 receiver and a model M461 sequencer. It uses a modified commercial pager as the RF receiver with additional circuits to decode the received non-standard DTMF codes. The unit is capable of independent control of ten outputs. All markings on both assemblies are in English.

- **Safe-Arm Delay:** None.
- **RF Frequency:** 156.500 MHz with narrowband FM modulation.
- **Operating Range:** No transmitter was recovered with the receiver system.



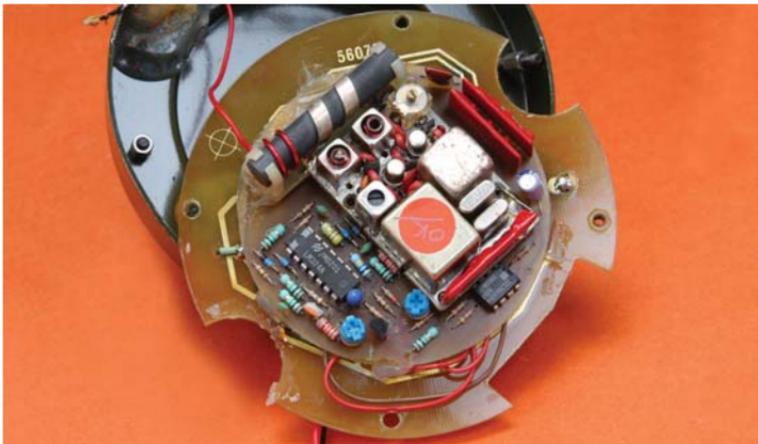
Iraqi R/CFS Receiver with Ten Outputs

07863

Iraqi R/CFS Receiver with Ten Outputs

07863

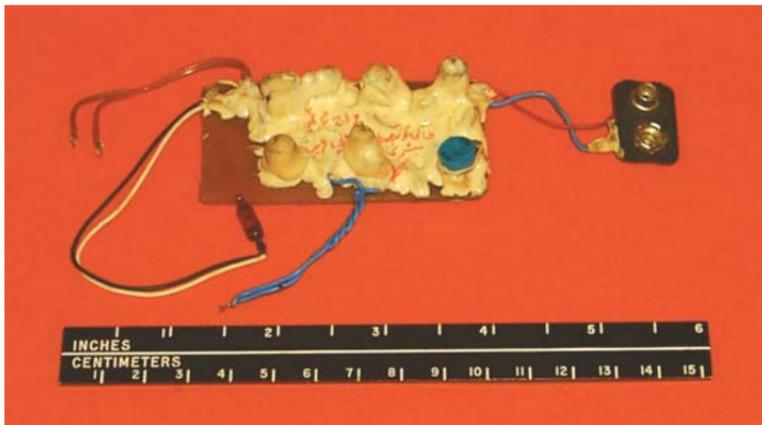
- **Command Signal:** Single non-standard DTMF tone pair for each of the ten outputs. Ten of sixteen possible codes are used. The battery saver cycle in the receiver assembly requires the DTMF code to be received for at least two seconds.
- **Anti-Tamper Features:** None.
- **Size:** Each of the two cylindrical assemblies is about 11 cm diameter by 6 cm thick (4.3" diameter x 2.4" thick). The system weighs about 900 grams (2 pounds.).
- **Power Source:** The receiver is powered at 6.0 Vdc by an internal pack of four AA cells. The sequencer is powered at 18.0 Vdc by two 9-Vdc batteries wired in series. The 0.8-meter (31") cable must be connected between the two assemblies for the system to operate.
- **Battery Life:** The system will operate for about 500 hours, limited by the four AA cells in the receiver assembly.



Al Qa'ida Digital Watch and Breakwire Trigger

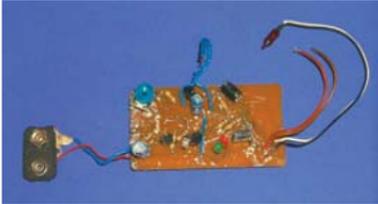
This device was recovered in Afghanistan in 2002. It will trigger when the digital watch alarm functions or when the breakwire is opened. Construction techniques of this device are similar to a number of other Al Qa'ida devices.

- **Trigger:** Alarm from a digital watch (red leads), or immediately upon opening the breakwire (twisted blue leads).
- **Concealment:** None. Both sides of the circuit are covered with hot-melt glue.
- **Safe-Arm Delay:** Variable, two minutes maximum.



10013 Al Qa'ida Digital Watch/Breakwire Trigger

- **Anti-Tamper Features:** The breakwire trigger mechanism could be utilized with a lift switch.
- **Power Source:** Standard 9-Volt battery assumed to power the circuit. The watch is powered by its internal SR-41 silver oxide button cell.
- **Size:** The PC board measures 70 mm x 39 mm (2.8" x 1.5").
- **PC Board Substrate:** Brown phenolic, 1.5 mm (0.060") thick, with circuit traces on one side. There are no markings on the board.



- **Digital Watch:** The digital wrist watch provided with the circuit is marked *Asahi Sport Alarm Chrono*, model number M-686. The watch measures 39 mm x 37 mm x 11 mm thick (1.54" x 1.46" x 0.43" thick).

