

Timer Examinations

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Timer Examinations

1 INTRODUCTION

Various electrical and mechanical timing devices can be used in the fabrication of improvised explosive devices (IEDs) and improvised incendiary devices (IIDs), hereafter referred to as devices. In an electrical initiating (i.e., fuzing) system, an electrical or mechanical timer can be used as a switch to complete a circuit to function an initiator that initiates the main charge. Mechanical clocks can also be used in non-electrical initiating systems. For example, strings can be attached to winding stems that are attached to other components. Upon alarm activation, the winding stem tightens the string, causing another device component to function the device. Timing devices can also be used as arming mechanisms that enable the initiating system to operate, causing the device to function. Through an examination of a timing device, or its fragmented remains, its functionality within the device and manufacturing information can sometimes be determined. This information can assist the investigator in identifying the subject(s) responsible for constructing the device.

2 SCOPE

These procedures describe the process for timer examinations and apply to explosives and hazardous devices personnel who examine timers and their post-blast remains to determine identifying and functionality information.

3 EQUIPMENT

Below is a list of items that can be used to examine timers and their post-blast remains. Explosives and hazardous devices personnel should choose the most appropriate items based on the nature of the evidence.

- Personal Protective Equipment (e.g., lab coat, eye protection, gloves)
- Hand tools (e.g., tweezers, pliers, utility knife)
- Cleaning materials and disinfectants (e.g., cloths, bleach, rubbing alcohol)
- Stereomicroscope (various magnifications)
- Ruler (e.g., standard 12-inch length)
- Micrometer
- Caliper
- Multimeter
- X-ray machine
- FBI Laboratory Explosives Reference Tool (EXPeRT) Database
- Reference texts, manuals, manufacturers' literature, and known materials are maintained in the explosives library. Additional reference information can be obtained from direct contact with manufacturers and distributors.

4 PROCEDURE

These procedures are implemented as part of the overall examination process outlined in the Explosives and Hazardous Devices Examinations Technical Procedure (TP). Refer to the Safety section of this TP before starting any examinations.

Explosives and hazardous devices personnel will:

- A. Before any examinations are conducted, ensure that the items, as well as their containers and packaging, have been appropriately marked in accordance with the [FBI Laboratory Operations Manual \(LOM\)](#) (i.e., item number, initials, and Laboratory Number, when practicable).
- B. Take precautions to not obliterate any identifying marks on the timer or obliterate any microscopic marks of value. Record the presence of such marks through notes and sketches.
- C. Take photographs of the timer to preserve any markings.
- D. Visually examine the timer for evidence such as fingerprints, hairs, fibers, blood, paint, or other particles.
 1. If the evidence is to be examined or preserved, contact the appropriate unit and determine if the material should be removed. Record the presence of the material by means of notes, sketches, or photographs before it is removed.
- E. Note the physical characteristics of the timer through visual/microscopic examination. Physical measurements should be taken to aid in determining as many of the following attributes as possible:
 - o Construction characteristics
 - o Manufacturer
 - o Country of manufacture
 - o Brand
 - o Type
 - o Special Properties (e.g., physical condition, functionality, modifications)
- F. If possible, determine the manufacturer, brand, and type by searching the EXPeRT data base, unit reference materials, manufacturers' literature, or other reference materials. Identifications or associations are made by comparison of observable and measurable physical characteristics with those provided in the above reference materials.

5 LIMITATIONS

Refer to the Limitations section in the Explosives and Hazardous Devices Examinations TP and Appendix A of the Explosives and Hazardous Devices Report Writing Guidelines.

6 SAFETY

Safety protocols, contained within the [FBI Laboratory Safety Manual](#), will be always observed.

- A. Protective gloves (e.g., latex, nitrile) should be worn when handling evidence.
- B. Fragmented metal components have sharp edges. Therefore, puncture resistant gloves should be worn when handling these items.
- C. Items containing blood or other body fluids can be cleaned with a bleach-based solution or other suitable disinfectant following discussions with personnel that may conduct other examinations of the items.

7 REVISION HISTORY

Revision	Issued	Changes
02	08/15/2022	Updated to new document template and updates made throughout for clarity.