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FBI Laboratory

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LABORATORY REPORT

To: Aaron Kellerman
Relief Supervisor
Richmond

Date: July 21, 2021

Case ID No.: RH-3459979

Lab No.: 2021-01407-2

Communication(s): July 9, 2021

Agency Reference(s): WF-3366759

Subject(s):

Victim(s):

Discipline(s): Explosives Device

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FBI Laboratory Evidence Designator(s):

THE ITEMS WERE RECEIVED INTO THE FBI LABORATORY ON JULY 14, 2021, UNDER COVER OF COMMUNICATION DATED JULY 9, 2021, ASSIGNED LABORATORY NUMBER 2021-01407 #1, AND EXAMINED IN THE EXPLOSIVES UNIT:

Item 1	Powder sample (1B11)
Item 2	Metal pipe and two metal end caps (1B5)
Item 2-1	Fuse (external from Item 1) (1B5)
Item 2-1-1	Piece of fuse (internal from Item 1)

Administrative:

Per FBI Laboratory Evidence Request file number RH-3459979 Serial 10, Richmond submitted evidence to the FBI Laboratory for examination. The request is based upon a search warrant that was conducted at a residence, 1765 Otter Drive, Ferrum, Virginia on June 29, 2021 related to the online purchase of firearms. During the search, a pipe with end caps and a fuse affixed to one end was located in subject's garage, Item 1B5. The device was inside of an ammunition can labeled "ALERRT kit, props and booby trap sims." The ammunition box was located adjacent to

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a work bench and garage shelving that contained approximately 50 cans of black or smokeless powder, including a 16 ounce can of FFG Goex Black Rifle Powder that was seized as a representative sample, Item 1B11. A derivative sample of 1B11 is being submitted to the Laboratory. The FBI Laboratory is requested to provide an analysis and opinion on the explosive device and conduct latent fingerprint and DNA analysis on the device. This report contains the results of the Explosives and Hazardous Device examinations conducted in the Explosives Unit.

Conclusion:

It is the opinion of this Explosives and Hazardous Devices Examiner that contained in the submitted items of evidence are components that could be used to readily assemble one (1) improvised explosive device (IED).

IEDs are also commonly referred to as homemade bombs. The general components of an IED are an explosive main charge, a fuzing system, and sometimes a main charge container and/or a concealment container. Present in this submission are low explosives, a non-electric fuzing system, and a main charge container. Based on the configuration of the fuzing system, it is designed to function the IED by time. The resulting explosion from an IED of this type could cause property damage, personal injury and/or death.

Destructive Device:

A destructive device is an improvised explosive device (IED) that has the functional characteristics and/or design elements of a weapon. The design of the device incorporated an element that has been utilized by bomb builders to increase an IED's potential to inflict property damage, personal injury, or death. This element includes the use of a metal main charge container. Due to this design element, it is the opinion of this examiner that the IED components present meet the two technical elements of a destructive device. Properly assembled and initiated, the resulting explosion of this destructive device could cause property damage, personal injury, or death. The two elements of a destructive device are purely technical, not legal, and are not meant to infer the intent of the individual(s) who constructed the device. A detailed description of the components that comprise this device is provided hereafter.”

Results of Examination:**Explosive Main Charge:**

Item 1 and was identified as a low explosive black powder. For detailed information on the chemical analyses conducted, see FBI Laboratory Report by Robert W. Gillette, Explosives Unit, 2021-01407-3 dated July 20, 2021. (RWG)

When properly ignited by a suitable source of heat, low explosives are designed to deflagrate and generate gases. Properly confined in a container, the gases generate pressure on the container walls and can cause an explosion of the container.

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Non-Electric Fuzing System:

Present in Item 2-1 is a length of red colored time fuse also known as hobby fuse. The length of the hobby fuse measures approximately 4.5 inches in length and 0.93 inch in diameter. A photograph of the hobby fuse is depicted below in figure #1:

Hobby fuse is a fiber, impregnated with a pyrotechnic mixture and surrounded by a weatherproof coating. The purpose of hobby fuse is to initiate an explosive charge by transmitting a flame down the fuse length to a low explosive powder. The hobby fuse would provide a safe-separation time from the time the IED was initiated and until it would explode. Based on the submitted length of hobby fuse, the safe separation time may have been approximately 5.6 seconds – 9.3 seconds based on an average burn rate of 15 – 25 seconds per foot.

A sample of the fuse was taken and deemed Item 2-2-1. The core material removed from the Item 2-1-1 fuse was identified as a low explosive black powder. For detailed information on the chemical analyses conducted, see FBI Laboratory Report by Robert W. Gillette, Explosives Unit, 2021-01407-3 dated July 20, 2021. (RWG)

Main Charge Container:

Present in Item 2 is the main charge container. A photograph of Item 2 is depicted below in Figure #1:



Figure #1: Item 2 – Main Charge Container and Hobby Fuse - Non-Electric Fuzing System

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Item 2 consists of one (1) silver colored metal pipe nipple measuring approximately 4.5 inches in length, an outer diameter of approximately 1.25 inches, an inner diameter of approximately 1.062 inches, and with a thread pitch of approximately 11.5 threads per inch (TPI). There are no manufacturer markings present on the pipe nipple.

Also present in Item 2 are two (2) metal endcaps. One is a silver colored metal endcap that bear markings consistent with those from the Smith Cooper International (SCI) brand. The endcap is attached to the pipe nipple. The endcap measures approximately 1.75 inches in outer-diameter and 1.25 inches tall. Manufacturer information on the endcap is as follows:

Logo: "SCI"
"CHINA"
"1"

An open source search for "SCI" revealed the following information:

"Smith Cooper International
Corporate Office 2867 Vail Avenue, Commerce, CA 90040
Phone 800-766-0076"

The other endcap is a rust-colored metal endcap that bear markings consistent with those from the Mueller brand. The endcap is not attached to the pipe nipple. The endcap measures approximately 1.75 inches in outer-diameter and 1.37 inches inner-diameter. A priming hole is drilled into this endcap measuring approximately 0.125 inch in diameter. The priming hole is designed to allow the hobby fuse to pass through it. Manufacturer information on the endcap is as follows:

Logo: "M"
"CHINA"
"1"

An open source search for "M" revealed the following information:

"Mueller Industries Headquarters
15 Schilling Blvd., Suite 100, Collierville, TN 38017
Phone 901-753-3200"

Device Functioning:

The functioning of this IED would occur when the non-electric fuse (Hobby Fuse) would be ignited. The flame would travel the length of the hobby fuse into the main charge container (Metal Pipe Nipple and Endcaps) through the priming hole. The main explosive charge (low explosive material) present inside the main charge container would be ignited by the flame and begin to burn. The rapid burning of the powder would generate gasses and high pressure within the confinement of the main charge container causing it to fracture and fail. The failure of the

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container and continued rapid expansion of gasses is then an explosion. The fragmented remains of the metal pipe main charge container would be projected outwards at a high velocity.

General Limitations:

- Conclusive identifications of the source of an item may not be realized in every case due to the absence or alterations of specific manufacturer or other unique markings on items of evidence.
- Item source identifications that refer to a specific distributor or manufacturer have not been confirmed with that distributor or manufacturer unless otherwise stated in this report.
- The physical characteristics, such as, but not limited to, material type, shape, and color of all evidentiary items described in the Results of Examination section of this report are based on visual and/or microscopical observations, unless otherwise noted. Other parameters such as, but not limited to, distances, angles, and voltages associated with individual evidentiary items described in the Results of Examination section of this report are based on physical measurements and are approximate, unless otherwise noted. Should a more complete characterization of these items be required, additional examinations can be requested of the appropriate forensic discipline. Diagrams such as, but not limited to, drawings and schematics are not to scale, unless otherwise noted.

Methods:

The methods utilized during the analysis of the evidentiary items included the following:

- visual examinations of observable, physical characteristics;
- measurements of physical characteristics;
- visual examinations of photographs;
- reviews of references: and
- reviews of relevant case documentation.

Interpretations and Limitations:

The two elements that must be met to make an affirmative destructive device determination are that the device or device components constitute an explosive or incendiary device and that the device or device components possess the functional characteristics and/or design elements of a weapon. These two elements are purely technical, not legal, and are not meant to infer the intent of the individual(s) who constructed the device.

Conclusive determinations of the exact design and functioning of a rendered safe or disassembled improvised explosive device may not be effected in every case due to the condition of the components.

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Remarks:

This is the final report of analysis of the Explosives Unit. Examinations are continuing in the DNA and Latent Print Operations Units. Evidence will remain at the FBI Laboratory until conclusion of those examinations. For questions about the content of this report, the status of your submission, or the status of examinations conducted by other FBI disciplines, please contact Case Manager Christopher Rigopoulos at (703) 632-7648. The completed results of examinations conducted by other FBI Laboratory disciplines are the subject of separate reports:

UNIT	Examiner	Report Number	Date of Report
Explosives Unit Chemistry	Robert Gillette	2021-01407-3	July 20, 2021
DNA	TBD	2021-01407-4	TBD
LPOU	TBD	2021-01407-5	TBD

Please allow a minimum of thirty days from the date of a discovery request for the FBI Laboratory to provide the related materials. The FBI cannot ensure timely delivery of discovery requests in less time. This report contains the opinions and interpretations of the issuing examiner(s) and is supported by records retained in the FBI files. The work described in this report was conducted at the Quantico Laboratory.

Christopher Rigopoulos
Explosives Unit

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