Statement of Brennan Phillips, M.S.F.S.

Interim Report, US v. Brian Cole, Jr., January 5, 2026

Qualifications and Experience

I have over 30 years of combined experience in Military Explosive Ordnance Disposal (EOD) and Public Safety Bomb Disposal, including 20 years as a Senior Explosives Enforcement Officer with the Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF). My duties included the rendering safe and disassembly of bombs and other destructive devices, the forensic examination of explosive and incendiary devices, and providing device determinations and expert testimony in support of those determinations in judicial proceedings. Additionally, I was responsible for conducting post-blast investigations, explosive product testing and evaluation, disposal of deteriorated and unwanted explosives, and providing training on explosive-related issues to military and public safety agencies. I am a graduate of the U.S. Naval School Explosive Ordnance Disposal (EOD), the Federal Bureau of Investigation's Hazardous Devices School, and the Irish Defense Force Improvised Explosive Device Disposal Course. I retired from service in the US Army as a Master Explosives Ordnance Disposal Officer, in the rank of Lieutenant Colonel. I hold a master's degree in forensic science, explosives investigations, from Oklahoma State University Center for Health Sciences, School of Forensic Sciences.

Items Reviewed for Evaluation

- FBI Laboratory Report No. 2021-00019-2, dated January 12, 2021.
- FBI Laboratory Report No. 2021-00019-1, dated January 13, 2021.
- FBI Laboratory Report No. 2021-00019-16, dated January 16, 2021.
- FBI Laboratory Metallurgy Photography Log - 2021-00019.
- Photos of Sample Vials labeled: MAC002, MAC003 & MAC004.
- Government's Memorandum in Support of Pretrial Detention, filed December 28, 2025.

Items Unavailable for Evaluation

- Complete set of photos and notes detailing evidence collected from the disrupted devices.
- Detailed description of flame tests to include photos and video.
- Physical evidence from the two devices in question.
- The Government's theory of how the two devices could have caused an explosion.

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Summary of Findings:

Based on my review of the materials provided, the two suspected pipe bombs in question do not contain an explosive filler capable of causing an explosion. According to the reviewed FBI Laboratory reports, the two pipes contained the chemicals potassium nitrate (an oxidizer), charcoal (a fuel), and sulfur (a tinder/fuel). These chemicals are the three classic ingredients used to make Black Powder, the oldest explosive and propellant known. However, their mere presence does not make Black Powder. These chemicals need to be apportioned into a workable fuel-to-oxidizer ratio: 75% potassium nitrate (also known as saltpeter), 15% charcoal, and 10% sulfur is the most widely cited Black Powder ratio. The three chemicals must then be sufficiently incorporated into a homogeneous mixture capable of sustaining a deflagration (type of explosion) (Conkling, 2010). According to the Government's detention memorandum, the chemicals placed in the two pipes were mixed in a Pyrex bowl. The photos of the lab samples taken from the powders recovered from the two pipes show mostly large white particles with some flecks of dark material, which is not visually consistent with Black Powder but is consistent with inadequate mixing in a bowl.

The first FBI Forensic Chemistry Report, dated Jan 12, 2021, indicated negative flame test results of powder samples taken from the two disrupted pipes. Specifically, item 2, powder sample from device #1 (the DNC Device), and items 9 & 10-1, powder samples from device #2 (the RNC Device). An additional FBI Forensic Chemistry Report, dated Jan 16, 2021, was issued, which examined some powder associated with the steel wool sample (item 10-3) taken from device #2 (the RNC device), which did produce a flame test "with positive results." While no details are given of this positive result, it seems unlikely that this small amount of flame-reactive powder would be capable of causing the bulk of the insufficiently mixed powder to react or burst the steel pipe by itself.

Beyond the lack of a viable explosive filler for the two pipes, neither device has a functional fuzing and firing system capable of igniting a flame-sensitive explosive filler. Based on my experience and testing, a single 9-volt battery attached to a 1.5-inch square of steel wool will not generate enough heat to ignite Black Powder.

In the absence of information from the Government detailing a workable theory for how these devices could have been made to cause an explosion, it is my opinion that neither device is a bomb capable of causing an explosion.

Black Powder: As implied by the name, it is black in color, owing to the charcoal it is made from. Quality black powder, whether commercial or made by a knowledgeable hobbyist in a home setting, is granular and resembles tiny lumps of coal (Thurman, 2010). This granular black powder, made from 75% potassium nitrate, 15% charcoal, and 10% sulfur, is the result of a multi-step process that involves grinding, milling, pressing, and corning to achieve a high-quality product. The quality of Black Powder can vary widely, particularly when homemade, and powder capable of sustaining a deflagration cannot be created by lightly mixing the three precursor chemicals (Conkling, 2010). Ultimately, Black Powder requires intimate incorporation to achieve meaningful explosive potential.

A description of the "modern" commercial manufacturing of Black Powder includes mixing or blending the dampened powdered materials at approximately 130 degrees. The wetted substance is then incorporated using mill wheels weighing eight tons or more. The resulting caked material is broken into small pieces and pressed in a hydraulic press. From there, the material undergoes a corning (granulating) process, followed by glazing. The resulting granules are screened and graded by size (Tenny L. Davis, 1943).

It is possible to make quality homemade Black Powder, and there is much online information available from hobbyists interested in pyrotechnics and antique firearms. Just like commercial-made powder, incorporation is key. In the home environment, this is typically achieved by first purchasing or creating finely ground precursor chemicals. For example, a hobbyist might use a coffee grinder to grind lump charcoal into a fine powder. Once the finely ground powders of potassium nitrate, charcoal, and sulfur are acquired, they need to be combined into a homogeneous mixture. A common starting point is to mix the materials using progressively finer mesh screens. The resulting early-stage powder is sometimes called green mix and ranges from non-reactive to marginally reactive. Future incorporation is needed to make Black Powder viable. This can be done by wetting the chemicals, mixing, and drying. This wet process is sometimes called the CIA method in online forums. Many hobbyists use a rock tumbler or ball mill to incorporate the chemicals by milling for many hours, even days. The resulting powders are typically low-strength and require pressing to achieve the performance required for Black Powder firearms, or bomb making. In the home hobby environment, this is often done using a hydraulic press, the type available at local hardware stores. From there, the resulting pellets are broken into small chunks and perhaps run through a home corning process using a grinder.

Typically, the home hobbyist goes through a lengthy process of trial and error before learning to produce reliable Black Powder.

Pipe Bombs as Explosive Weapons: They are some of the most common improvised explosive devices encountered by bomb disposal personnel in the United States. Pipe bombs are generally made from steel pipe or plastic (PVC) plumbing pipes and their corresponding fittings. A pipe-bomb-type device made from a metal pipe is relatively simple to make and can be easily fashioned from a length of threaded galvanized water or gas pipe and two threaded end caps. Typically, these devices are filled with low-explosive powders that are easy to obtain and sensitive to flame initiation.

As stated in the FBI Laboratory report (2021-00019-1), low explosives deflagrating in a sealed pipe create gas pressure that overpressures the pipe walls and causes the pipe to explode. For a pipe bomb to be effective as a weapon, the explosive filler needs to be powerful enough to overcome the strength of the pipe, break the pipe into fragments, and project those fragments of the torn-apart pipe body with sufficient force to do damage.

Today, the most common fillers in the U.S. are smokeless powders, black powder substitutes (such as Pyrodex), flash powders, and pyrotechnic powders harvested from fireworks. Black Powder has become less common because it is less available in the marketplace and can be expensive. Even less common is homemade Black Powder because it is time-consuming to make and only marginally effective. In contrast, homemade chlorate and perchlorate explosives mixtures are far more commonly encountered by bomb squad personnel. In fact, even when commercially produced, Black Powder does not perform well in metal pipe bombs. This is because of the relative strength of metal plumbing pipes. When explosives of lower strength, like Black Powder, are used, the end caps tend to fail first due to the relatively slow buildup of pressure and vent the pipe bomb, ultimately producing minimal fragmentation. This is noted in the Characterizing the Performance of Pipe Bombs study, University of Rhode Island, 2017 (Jimmie C. Oxley, et al., 2017). It should be noted that the face of an end cap fitting driven by Black Powder has the potential to cause serious injury to a person or damage to objects in its path.

Pipe Bomb Initiation: It is common for pipe bombs filled with flame-sensitive low-explosive powders to be fused with some type of burning or heat-producing means of initiation, such as a

length of burning pyrotechnic cannon fuse. An improvised bridge wire made from steel wool is a common arrangement in electrically initiated devices; however, reliability can be an issue if not properly constructed. In my experience, having made numerous such improvised initiation systems for training and demonstration purposes, a single 9-volt battery wired to too much steel wool will not work. A much smaller section of steel wool is needed to make a bridge wire for a reliable initiator capable of glowing red hot and lighting Black Powder.

Some Basic Concepts and Definitions:

Black Powder: A deflagrating intimate physical mixture of sulfur, charcoal, and an alkali nitrate, usually potassium, but sometimes sodium nitrate (Committee on Smokeless and Black Powder, Board on Chemical Sciences and Technology, 1998).

Smokeless Powder: A granular, free-flowing, solid propellant of various morphologies, using nitrocellulose as an active ingredient. It is classified as single-base (with nitrocellulose as the only active ingredient), double-base (with nitrocellulose and nitroglycerin), or triple-base (with nitrocellulose, nitroglycerin, and nitroguanidine). Smokeless powder is commonly used in small-arms ammunition (Committee on Smokeless and Black Powder, Board on Chemical Sciences and Technology, 1998).

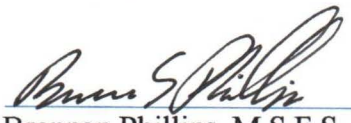
IED (improvised explosive device): IED is a commonly used term in the bomb disposal community and in the Military; however, it is not well-defined and can be misleading depending on the context. The terms used in Federal Law and Regulations are destructive device, explosive bomb, and explosive device.

Explosives vs an Explosive Weapon: While all explosive weapons (such as bombs, grenades, missiles, mines, etc.) contain explosives, many explosives have legitimate purposes and are not designed or used as weapons.

Detonation: The description of detonation found in The Chemistry of Explosives, reads "Explosive substances which, on initiation, decompose via the passage of a shockwave rather than a thermal mechanism are called detonation explosives (Akhavan, 2011)."

Deflagration: Importantly, Black Powder is a deflagrating explosive, not a detonating explosive. Introduction to the Technology of Explosives describes deflagration as a "burning, or deflagration, the oxidation takes place relatively slowly. The burn front propagates through the burning material at less than the velocity of sound" (Cooper & Kurowski, 1996)."

Low-Explosives and High-Explosives: Low-explosives are explosives that function by deflagration, in contrast to high-explosives, which function by shockwave-driven detonation process (Committee on Smokeless and Black Powder, Board on Chemical Sciences and Technology, 1998).



5 Jan 26

Brennan Phillips, M.S.F.S Dated

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FBI Laboratory

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Quantico, Virginia 22135

4940 Fowler Road
Huntsville, Alabama 35898

LABORATORY REPORT

To: Washington Field Office

Date: January 13, 2021

Case ID No.: WF-3366725

Lab No.: 2021-00019-1

Communication(s): January 7, 2021

Agency Reference(s):

Subject(s):

Victim(s):

Discipline(s): Explosives Device

FBI Laboratory Evidence Designator(s):

Item 1	Battery, wires, electronic components (1B1)
Item 1-1	White colored powder (1B1)
Item 1-2	Swab of Item 1 (1B1)
Item 1-3	Steel wool, debris, plastic from Item 1 (1B1)
Item 2	Powder sample (1B5)
Item 3	Metal pipe (1B3)
Item 3-1	Swab of Item 3
Item 4	Metal end cap (1B4)
Item 5	Fabric (1B2)
Item 6	Blank control swab (1B8)
Item 7	Control swab of collector (1B6)
Item 8	Swab of north curb at Ivy and Canal Street SE (1B7)
Item 9	Powder sample (1B12)
Item 10	Metal pipe, two metal end caps, wires, plastic, metal clips (1B15)
Item 10-1	Powder from pipe (1B15)
Item 10-2	Swab of Item 10

Item 10-3	Steel wool and powder from Item 10 (1B15)
Item 11	Pieces of electronic components (1B14)
Item 11-1	Swab of Item 11
Item 11-2	Wires, plastic and debris (1B14)
Item 12	Pieces of plastic and metal (1B13)
Item 12-1	Pieces of fuzing system (1B13)

This report contains the results of the Explosives and Hazardous Device Examinations performed in the Explosives Unit.

ADMINISTRATIVE:

Figure 1, Device 1, located near the DNC 400 Canal St, SE Washington, D.C

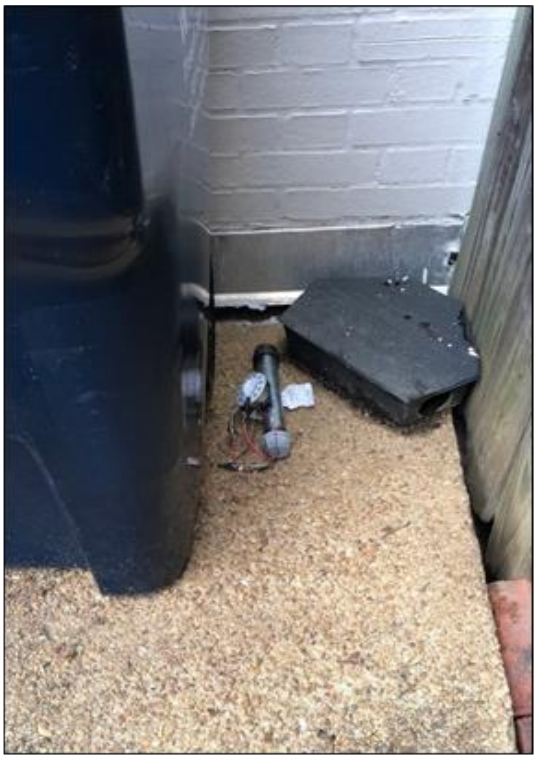

Figure 2, Device 2 located near the RNC 300 Block of 1st, SE Washington, D.C.

According to your incoming communication, on 01/06/21, two (2) pipe bombs, (Figures 1 and 2) were discovered in Washington D.C. by an Unknown Subject (UNSUB). One pipe bomb was discovered at the 400 Block of Canal Street Southeast Washington D.C. A second pipe bomb was discovered at the 300 Block of 1st Street Southeast Washington D.C. near the U.S. Capitol building. MPDC Bomb Squad and FBI Special Agent Bomb Technicians (SABTs) responded to the scene.

Your office further advised that the bomb squad performed a render safe procedure (RSP) on the suspected IEDs. An RSP is a disassembly procedure that utilizes tools to remotely separate suspected live devices thereby making it safe to approach and collect the evidence. The items were collected and submitted to the FBI.

This report will be broken down into three (3) Sections. Section 1 will cover the conclusion, Section 2 will cover an overview of the functioning of the pipe bombs and the results of the examinations for each device, and Section 3 will cover similarities between the two devices.

SECTION 1

CONCLUSION:

Present in the submitted specimens, Device 1 (Figure 1) consisting of Item 1, Item 1-3, Item 2, Item 3, Item 4, and Device 2 (Figure 2) consisting of Item 9, Item 10, Item 10-1, Item 10-3, Item 11, Item 11-2 and Item 12-1 are the dissembled remains of two (2) Improvised Explosive Devices (IED's), also known as homemade bombs. The general components of an IED are a main explosive charge, a fuzing system and a container.

Device 1 contained the chemical oxidizer and fuels that when mixed in the proper proportions can form the low explosive black powder. Device 2 contained the low explosive black powder. For detailed information of the chemical analyses conducted on the powders, see the FBI Laboratory Reports of Jason V. Miller dated January 12, 2021, Report number 2021-00019-2 and dated January 16, 2021, Report number 2021-00019-16. (JVM)

The powders from both devices were contained within a metal pipe and utilized an electric fuzing system. When made properly and ignited by a suitable source of heat, low explosives are designed to deflagrate and generate gases. Within a confinement container, such as a pipe, these gases create large amounts of pressure on the container walls and cause an explosion of the container. This explosion would result in fragments of the container being propelled outwards at high velocities into the surrounding environment.

When properly assembled and initiated an IED of this sort can cause property damage, bodily injury, or death. A detailed description of the components that comprised these IEDs is provided hereafter.

DESTRUCTIVE DEVICE:

It is also the opinion of this Explosives and Hazardous Devices Examiner that the submitted items consisted of two (2) disrupted Destructive Devices. The use of a hard metal container (metal pipe nipples and end caps) shows that weapon characteristics are present.

SECTION 2

RESULTS OF EXAMINATIONS:

Overview:

Both IED's were constructed using similar components. A logical construction technique to produce an IED similar to those submitted is described below and shown in Figure 3:

- Obtain one (1) pipe nipple and two (2) end caps (main charge container), a low explosive (main charge), wires, clock, battery, and steel wool.
- Screw one end cap to one end of the pipe nipple.
- From the other end, fill the pipe with low explosive materials.
- Drill a priming hole in one of the end caps. (A priming hole is used in an IED utilizing pipe nipple and end caps to allow a fuse to be inserted to initiate an energetic material such as low explosives).
- Attach two wires to steel wool. Run the wires through the priming hole and insert the steel wool into the end cap.
- Screw the second end cap onto the pipe nipple ensuring the steel wool is in contact with the main charge material.
- Modify the timer using metal contacts to produce a switch that closes when the timer counts down.
- To deploy the IED one would set the timer, opening the switch, then connect the battery and the leads from the steel wool into a circuit that functions when the timer switch closes.
- As current passes through the steel wool, the steel wool would heat up and burn with enough heat to ignited low explosive materials.
- The gases generated from the deflagrating low explosives would put pressure on the container walls and cause an explosion of the container.
- The explosion of the container would result in fragments of pipe and end caps being propelled outwards into the surrounding environment, which could cause property damage, personal injury and death.

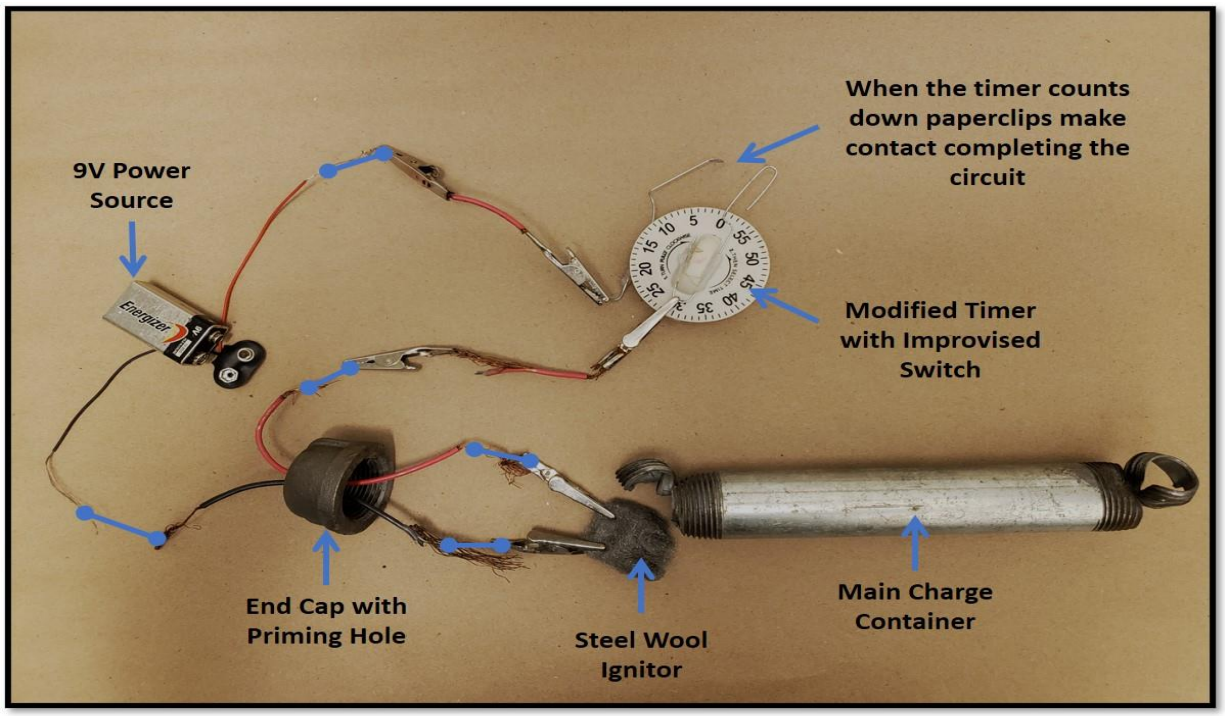

Figure 3 Logical construction diagram.

DEVICE 1

Explosive Main Charge (Device 1):

Powder from Device 1, Item 2 contained the oxidizer potassium nitrate, the fuel sulfur, and a fuel consistent with charcoal. The powder was tested for thermal susceptibility (flame test) with negative results. In the proper proportions, these chemicals can form the low explosive black powder.

For detailed information of the chemicals analyses conducted on the powder, see the FBI Laboratory Report of Jason V. Miller dated January 12, 2021, Report number 2021-00019-2. (JVM)

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

Main Charge Container (Device 1):

Figure 4 Item 3 pipe nipple.

Figure 5 Item 4 One (1) end cap with priming hole.

Item 3 (Figure 4) and Item 4 (Figure 5) consisted of one (1) silver colored metal pipe nipple with one (1) dark gray colored metal end cap. The pipe nipple was threaded on both ends. These items together were utilized as a main charge container.

Present in the end cap (Item 4) is a hole measuring approximately 0.22 inch in diameter. This hole, commonly referred to as a priming hole, is a modification made to the pipe to allow for the insertion of the fuzing system into the container.

Device 1 only had one end cap submitted, Item 4. However, the picture from the scene shows that the device had two (2) end caps prior to the RSP conducted by the bomb squad.

The pipe nipple in Device 1 had an approximate length of 8.0 inches with an inner diameter of approximately 1.0 inch. The following manufacturer information etched into the pipe nipple; “M” and below that CHINA” which is visually consistent with Mueller Industries product labeling.

The end cap associated with the pipe nipple, Item 4 measured approximately 1.18 inches in height and an approximate inner diameter of 1.13 inches. The following manufacturer information etched into the pipe nipple; “M”, “FM”, “CHINA”, and “1” which is visually consistent with Mueller Industries product labeling.

Fuzing System (Device 1):

Present in Device 1 (Figure 6 and Figure 7) are the disassembled components of an electrical fuzing system. An electrically activated fuzing system consists of a power source, conductors, switch(es), and load (ignitor). All of these items are present in Device 1.

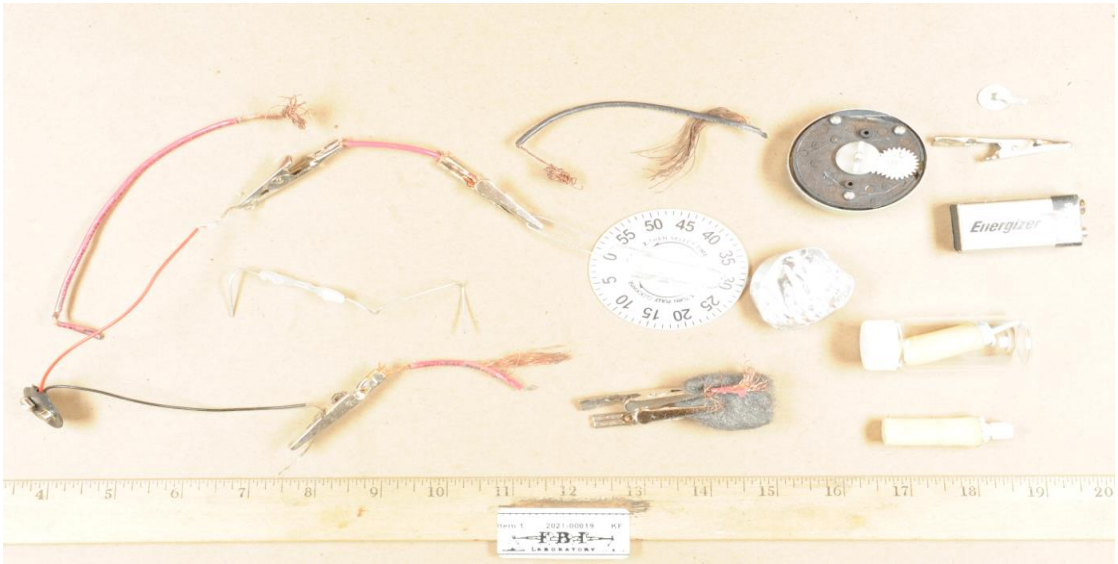

Figure 6, Item 1, Pieces of the fuzing system.

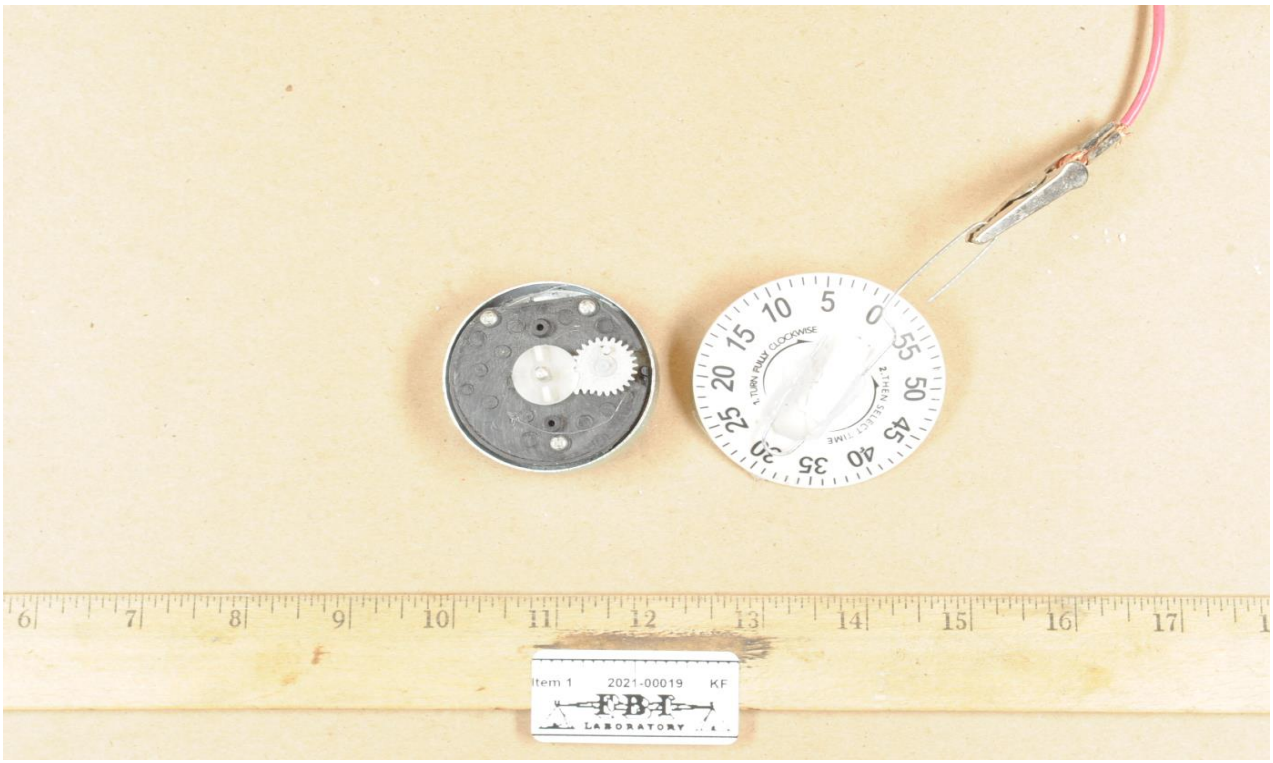

Figure 7, Item 1 Kitchen timer, paper clip, alligator clip and wire.

Power Source: (Device 1)

Present in Item 1 is one (1) Energizer 9 volt battery (Figure 8) with a measured voltage of approximately 8.10 volts.

Figure 8, Item 1, 9 volt battery

Manufacturer information on the battery is as follows: “12-2023””ALKALINE BATTERY”, ”Made in Malaysia for Energizer Brands, LLC, St. Louis, MO 63141”, “SNI 04-2051.2-2004”, “9V SIZE FORMAT-522 6LF22-6AM6-9V” and on the bottom of the battery was “0818”. The battery measures approximately 1.76 inches in length with a width of 1.04 inches.

Conductors (Device 1)

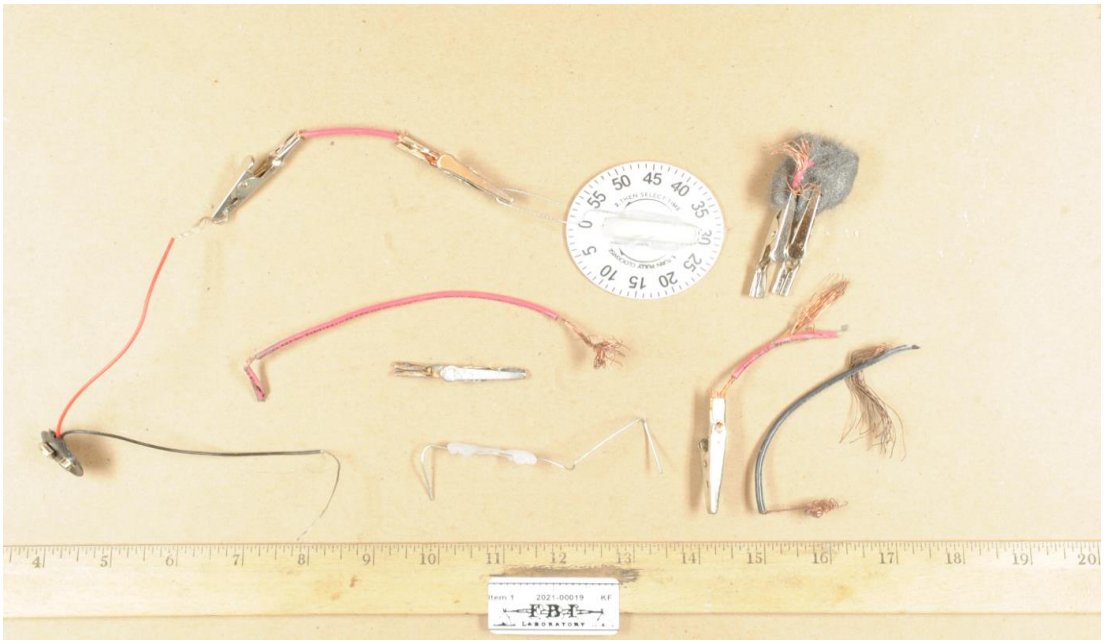

Figure 9, Item 1 Conductors (Wire, Alligator clips, 9 volt snap connector, and steel wool)

Present in Device 1 (Figure 9), Item 1 are the below listed conductor components.

Three (3) lengths of red insulated multi-strand wire, one (1) length of black insulated multi-strand wire, 9 volt snap connector, two (2) paper clips and six (6) alligator clips. Three of the alligator clips were still attached to the red insulated wire, while the other three appear to have been separated from the wire.

The red insulated multi-strand copper colored wire varies in length from 1.5 inches to 5.0 inches with an approximately AWG of 14. Information printed on the red insulation is as follows: “…SOLINE AND OIL RESISTANT 11 OR AWM 600V VW-1 – c(UL) T90 NYLON OR TWN 75 600V FT1..-AN….”, “SOUTHWIRE E51583 F(UL) AWG 1……”, “T1,,-ANCE 90C---RoHS”.

The single black insulated multi-strand copper colored wire is approximately 7.5 inches in length with an approximate AWG of 14. Information printed on the black insulation is as follows: “…RESISTANT 11 OR AWM 600V VW-1--- c(UL) T90 NYLON OR TWN 75 600V FT1…”

The 9 volt snap connector consisted of a black vinyl material covering two (2) metal terminals. Connected to the two (2) terminals was two (2) insulated multi strand silver colored wires, (one black in color insulated wire and one red in color insulated wire). Both wires has an approximate length of 6.0 inches with an approximate AWG of 24. The following manufacturer information was on the black insulated wire: “AWM E214382 1007 24 AWG VW-1 80 C 300V KA1 TAT” and the following manufacturer information was on the red insulated wire: “AWM I A 80 C 300V 24 AWG FT1”.

The six (6) silver colored alligator clips in Item 1 were all similar in dimensions with an overall approximate length of 2.03 inches and an approximate width of 0.29 inch.

Item 1 also contained two (2) silver colored paper clips. Paper clips can be used as conductors in conjunction with the timer to produce a switch. One of the paper clips was attached to the clock face as seen in Figure 2 and has a diameter of approximately 0.03 inch.

If similar evidence items are recovered some components of Item 1 are suitable for comparison.

Switch (Device 1):

Figure 10, Item 1, Kitchen timer face

Figure 11, Kitchen timer face rear.

Submitted in Item 1 (Figure 10 and Figure 11) were pieces of one (1) kitchen timer. On the face of the kitchen timer is one (1) paper clip that is hot glued in place secured at the zero mark and the thirty mark. Attached to one end of the paper clip is an alligator clip with a red insulated wire attached to it. The wire runs from the zero side of the timer to the positive side of the 9 volt snap connector.

The face of the timer is white with black colored numbering from “0 to 59” in a counter clock wise direction. The face has tick marks for each minute and actual numbers every 5th tick mark. There are instructions on the timer face: “1. Turn fully clock wise”, “2. Then select time”. The face of the timer has an approximate diameter of 2.41 inches and a thickness of .04 inch. The

base of the timer (Figure 7) is silver metal with mechanical components above and below a black casing held in place by three Philips head screws.

Modified timers as describe above can be used as a switch in an IED.

If similar evidence items are recovered some components of Item 1 are suitable for comparison.

Ignitor (Device 1):

Submitted in Item 1 was one piece of steel wool that still had two alligator clips attached to it (Figure 9). Steel wool is a conductor of electrical energy and is suitable to be used as an ignitor in an IED. When electrical current is applied to the steel wool, it can glow and begin to burn. If the steel wool is in contact with a low explosive material it can provide enough heat to cause a low explosive material to ignite and burn.

A sample of the steel wool was separated from Item 1 and tested. The steel wool glowed and burned when hooked up to a new 9V battery.

DEVICE 2

Explosive Main Charge (Device 2):

Powder from Device 2, Item 10-3 contained the low explosive black powder. It consisted of the oxidizer potassium nitrate, the fuel sulfur, and a fuel consistent with charcoal. Other minor components were also detected but not further identified. The powder was tested for thermal susceptibility (Flame test) with positive results.

For detailed information of the chemicals analyses conducted on the powder, see the FBI Laboratory Report of Jason V. Miller dated January 16, 2021, Report number 2021-00019-16. (JVM)

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

Main Charge Container (Device 2):

Figure 12 Item 10, Pipe nipple with solid end cap

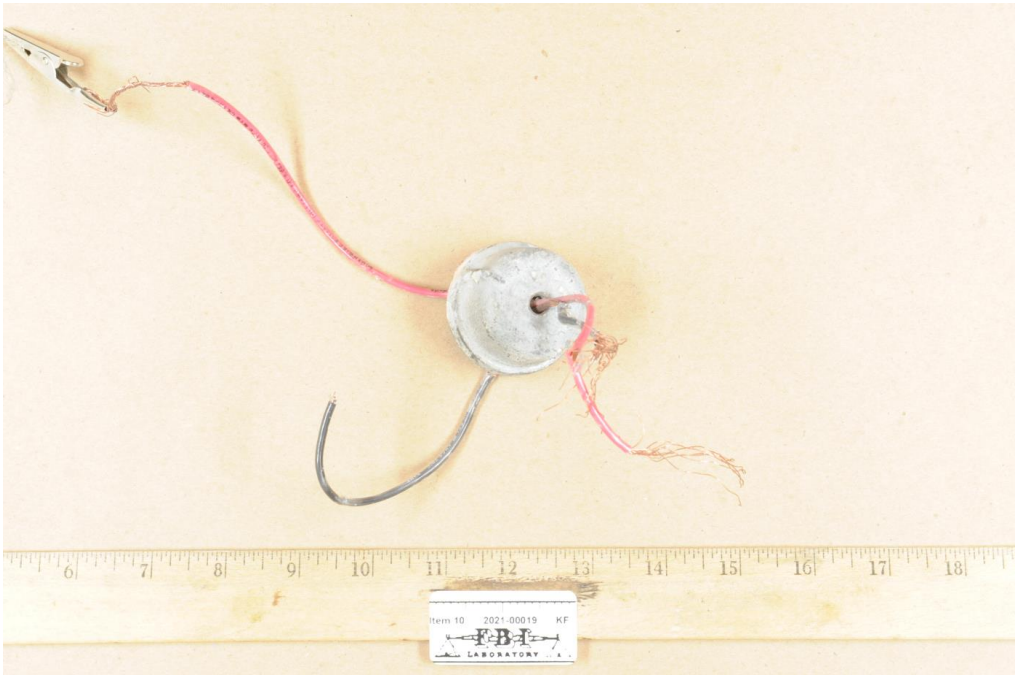

Figure 13, Item 11, End cap with priming hole.

Item 10 (Figure 12 and Figure 13) consisted of one (1) silver colored metal pipe nipple with two (2) dark gray colored end caps. These items together were utilized as a main charge container. The pipe nipple was threaded on both ends.

Present in one of the end caps (Item 10) is a hole measuring approximately 0.22 inch in diameter. This hole, commonly referred to as a priming hole, is a modification made to the end cap to allow for the insertion of the fuzing system into the container.

The pipe nipple in Device 2 had an approximate length of 8.0 inches with an inner diameter of approximately 1.0 inch. The following manufacturer information etched into the pipe nipple; “M” and below that CHINA” which is visually consistent with Mueller Industries product labeling. The Device 2 pipe nipple (Item 10) is visually consistent with the pipe nipple in Device 1 (Item 3).

The end caps associated with the pipe nipple measured approximately 1.18 inches in height and an approximate inner diameter of 1.13 inches. Each cap had some or all of the following manufacturer information etched into it; “M”, “FM”, “CHINA”, and “1” which is visually consistent with Mueller Industries product labeling.

The three (3) end caps associated with the pipe nipples, Item 4 (Device 1) (One (1) end cap) and Item 10 (Device 2) (Two (2) end caps) are consistent with each other measuring approximately 1.18 inches in height and an approximate inner diameter of 1.13 inches. All of the end caps have all or some of the identical manufacture information etched into the top of the cap; “M”, “FM”, “CHINA”, and “1”. This information is visually consistent with Mueller Industries product labeling. If similar evidence items are recovered some components of Item 10 are suitable for comparison.

Fuzing System (Device 2):

Present in Device 2 (Figure 14, Figure 15 and Figure 16) are the disassembled components of an electrical fuzing system. An electrically activated fuzing system consists of a power source, conductors, switch(es), and load. All of these items are present in Device 2.

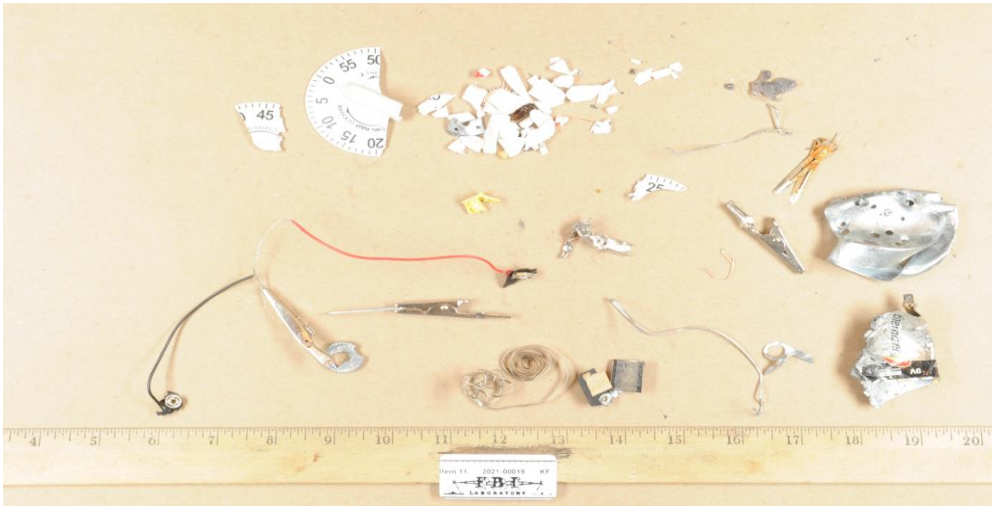

Figure 14, Item 10, Pieces of the fuzing system.

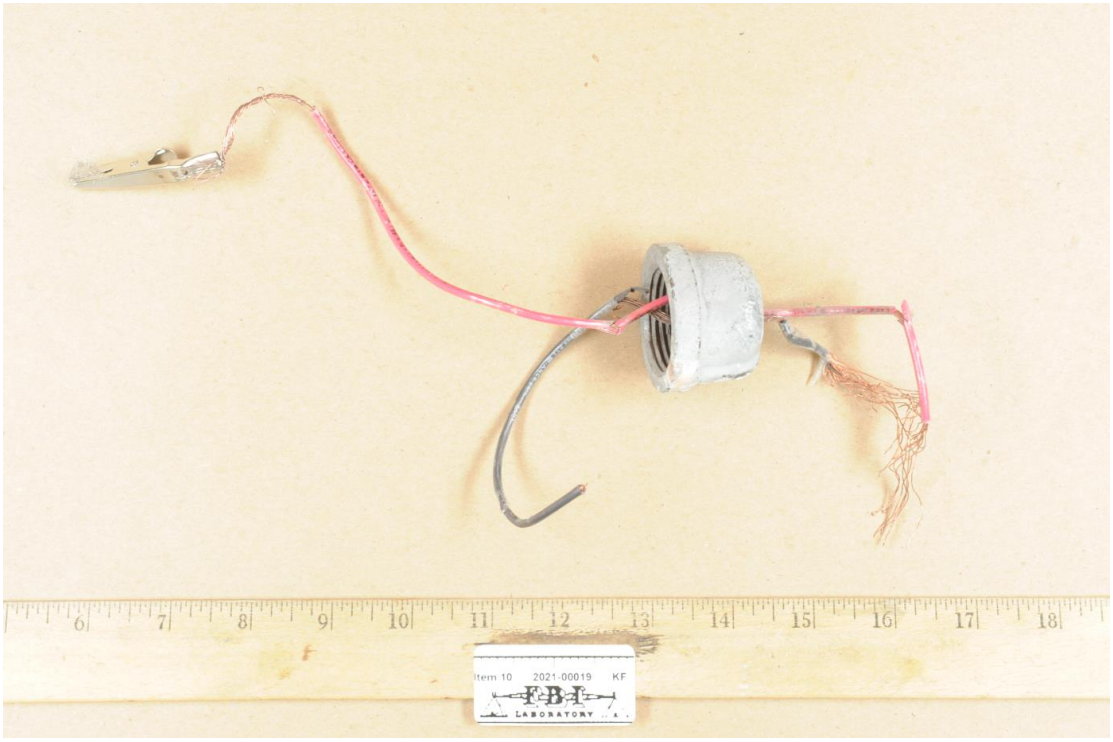

Figure 15, Item 10, Pieces of the fuzing system.

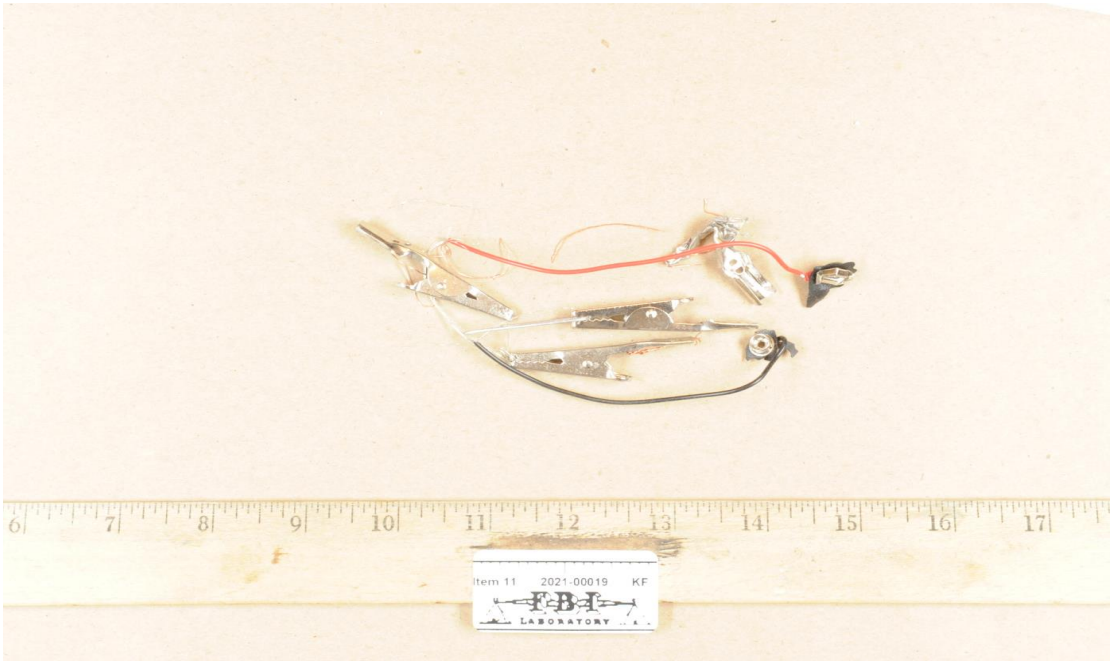

Figure 16, Item 11, Pieces of the fuzing system.

Power Source (Device 2):

Present in Item 11 (Figure 17 and Figure 18) is one (1) fragmented Energizer 9 volt battery no measured voltage was able to be obtained due to the fragmented nature of the item.

Figure 17, Item 11, 9 volt battery.

Figure 18 Item 11, 9 volt battery.

Manufacturer information on the battery is as follows: “ENERGIZER”, “9V”, “12-2023”, “ALKALINE BATTERY”, “9V SIZE – FORMAT – 522 OU22 – 6AM6 -9V”. Item 11 is visually consistent with the battery seen in Item 1. If similar evidence items are recovered some components of Item 11 are suitable for comparison.

Conductors (Device 2)

Present in Device 2, Item 10 and Item 11 (Figure 14, Figure 15 and Figure 16) are conductor components listed below.

Two (2) lengths of insulated multi-strand wire, one (1) length of black insulated multi-strand wire and one (1) length of red insulated multi-strand wire. The two (2) wires as submitted were running through the priming hole of the end cap (Figure 15).

Both wires are stripped at the ends consisting of multi-stranded copper colored wire. The red insulated wire is approximately 14.5 inches in length and the black insulated wire is approximately 10 inches in length. The red wire still has an alligator clip partially attached to one end of it.

The red insulated multi-strand copper colored wire has the following manufacturer information printed on the insulation is as follows: "…INE AND OIL RESISTAN……. AWM 600V VW-1 ---…… NYLON OR TWN … 600V FT1…AN…C ---RoHS" and "SOUTHWIRE E51583 F(UL) (AWG 14) 2,082m…C4 TYPE MTW OR THWN OR…..".

The single black insulated multi-strand copper colored wire is approximately 7.5 inches in length with an approximate AWG of 14. Information printed on the black insulation is as follows: "…RESISTANT……AWM 6…OLTS……ON OR TWN…..00V FT1 NoM-ANCE 80C---RoHS SOUTHWIRE E51583.E (UL) (AWG 14) 2".

Present in Item 11 (Figure 16) are the disassembled remains of a 9 volt snap connector consisting of a black vinyl material covering two (2) metal terminals. Connected to the two (2) terminals was two (2) insulated multi-strand silver colored wires, (one black in color insulated wire and one red in color insulated wire). Both wires have an approximate length of 6.0 inches with an approximate AWG of 24. The following manufacturer information was on the black insulated wire: "A... 80 C 300V" and the following manufacturer information was on the red insulated wire: "AWM…E…22..14382..".

Also present in Item 10 are two (2) silver color alligator clips and in Item 11 are three (3) silver in color alligator clips, all similar in dimensions with an overall approximate length of 2.03 inches and an approximate width of 0.29 inch. One (1) of the alligator clips in Item 11 was still attached to the red insulated wire and the other three appeared to of been separated from the wires.

Item 11-2 contained two (2) silver colored paper clips. Paper clips can be used as conductors in conjunction with the timer to produce a switch.

The red insulated wire, the black insulated wire, the 9V battery snap connector, the alligator clips, and the paper clips associated with Devices 2 are visually consistent with the corresponding items found in Device 1.

If similar evidence items are recovered some components of Item 10 and Item 11 are suitable for comparison.

Switch (Device 2):

Figure 19, Item 11 Face of Kitchen timer.

Submitted in Item 11 and Item 12-1 (Figure 14 and Figure 19) were fragmented pieces of one (1) kitchen timer. The face of the timer is white with black colored numbering from "0 to 59" in a counter clock wise direction. The face has tick marks for each minute and actual numbers every 5th tick mark. There are instructions on the timer face: "1. Turn fully clock wise", "2. Then select time". The face of the timer has an approximate diameter of 2.41 inches and a thickness of .04 inch. This timer face is visually consistent with the timer used in Device 1.

Modified timers as describe above can be used as a switch in an IED. If similar evidence items are recovered Item 11 and Item 12-1 are suitable for comparison.

Ignitor (Device 2):

Item 10-3 was one piece of steel wool that was in one of the end caps. Steel wool is a conductor of electric energy and is suitable to be used as an ignitor in an IED. When electrical current is applied to the steel wool, it can glow and begin to burn. If the steel wool is in contact with a low explosives material it can provide enough heat to cause the low explosive material to ignite and burn.

A sample of the steel wool was separated from Item 10-3 and tested. The steel wool glowed and burned when hooked up to a new 9V battery.

Miscellaneous:

The following were located near Device 1 and were not part of the device.

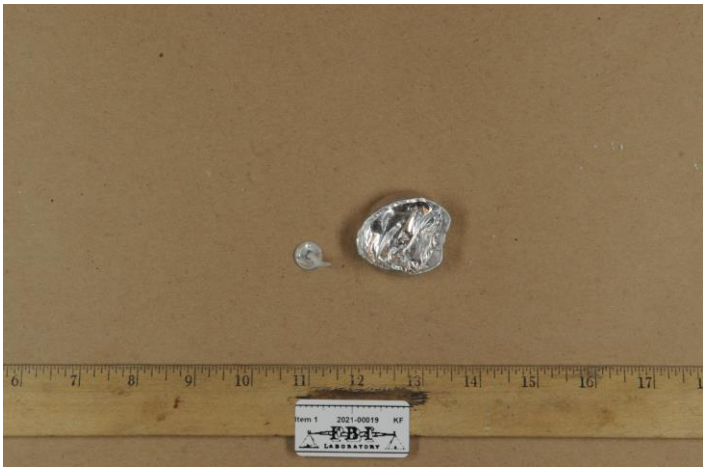

Figure 20, Item 1-1 small circular tin.

Item 1-1 (Figure 20), consisted of a small circular tin, similar to a small candle, with a diameter of approximately 1.5 inches and a height of .40 inch. It contained a white waxy powder material.

Powder from Item 1-1 was tested for the presence of explosives with negative results.
For detailed information of the chemicals analyses conducted on the powder, see the FBI Laboratory Report of Jason V. Miller dated January 12, 2021, Report number 2021-00019-2. (JVM)

Figure 21, Item 1-3 Rubber tube.

Item 1-3 (Figure 21) was a rubber tube, with a blue and white plastic ends. The outer diameter of the rubber was approximately 0.56 inch. The inner tube had a small plastic.

Figure 22, Item 5 Piece of fabric.

Present in Item 5 (Figure 22) was one piece of fabric material.

The following items were located near Device 2 and were not part of the device.

Item 12 multiple pieces of black plastic and metal components. Black plastic pieces were part of black container (Mouse trap) that was near the device.

Any remaining items listed in this report were not analyzed for the hazardous devices examinations and were either determined to have no forensic value or were examined by Forensic Examiners of other disciplines commensurate with their area of expertise.

SECTION 3

A kitchen timer was purchased by the FBI Explosives unit as an exemplar. This kitchen timer was purchased at Walmart and has a similar appearance. Based on this Device Examiner's opinion, it appears that kitchen timers used in Device 1 and Device 2 were removed from their housing unit and modified to produce a timed improvised switch. The exemplar face of the kitchen timer and internal working components are visually and dimensionally similar to the kitchen timers from Device 1 and Device 2. The kitchen timer was a 'MAINSTAYS TIMER" and has the same directions printed on the face of the dial; "1. TURN FULLY CLOCKWISE", "2. THEN SELECT TIME" and has timer increments from 0 to 59 minutes. Below are three photos of the exemplar timer. Figure 23 is the original packaging, housing unit, clock face and inner working of the kitchen timer. Figure 24 and Figure 25 are the front and back of the packaging for the "MAINSTAYS TIMER".

The items from Device 1, recovered at the DNC and Device 2, recovered at the RNC are visually and dimensionally similar to each other. The devices have similar construction, components and main charge powders. Below is a comparison chart (Figure 26) of the items from each device.

Exemplar Images:

Figure 23 Kitchen timer

Figure 24 Packaging

Figure 25 Packaging back

Comparison Chart:

	Device 1 DNC	Device 2 RNC
Main Charge Powder	Item 2	Item 9, 10-1, 10-3
Pipe Nipple (Container)	Item 3 	Item 10 
Pipe End Caps (priming hole)	Item 4 	Item 10 
9 Volt snap connector	Item 1 	Item 11 
Red wire	Item 1 	Item 10 
Black wire	Item 1 	Item 10 
Alligator clips	Item 1 	Item 11 
Steel Wool (Initiator)	Item 1 	Item 10-3 
Paper Clips	Item 1 	Item 11 
Battery 9 Volt Energizer	Item 1 	Item 11 
Timer	Item 1  	Item 11  
Timer Exemplar  	Item 1  	Item 11  

Figure 26 Comparison Chart.

METHODS:

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

- visual examinations of observable, physical characteristics;
- visual comparison examinations of observable, physical characteristics;
- microscopical examinations of observable, physical characteristics;
- microscopical comparison examinations of observable, physical characteristics;
- measurements of physical characteristics;
- measurement comparison examinations of physical characteristics;
- visual examinations of photographs;
- visual examinations of x-ray images, and
- reviews of references.

GENERAL LIMITATIONS:

- 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.

SPECIFIC INTERPRETATIONS AND LIMITATIONS:

Due to the absence or alterations of specific manufacturer or other unique markings on items of evidence, conclusive identification of the source of an item may not always be effected in every case. 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.

Remarks:

For questions about the content of this report, please contact Forensic Examiner Kevin D. Finnerty at 703-632-7022 or kdfinnerty@fbi.gov.

For questions about the status of your submission, including any remaining forensic examinations, please contact SSA Kevin D Finnerty at 703-632-7022.

The evidence will be returned under separate cover.

This report contains the opinions and interpretations of the issuing examiner(s) and is supported by records retained in the FBI Laboratory files. 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 received in less time.

The work described in this report was conducted at the Quantico Laboratory.

Kevin D. Finnerty
Explosives Unit

FBI Laboratory

2501 Investigation Parkway
Quantico, Virginia 22135

4940 Fowler Road
Huntsville, Alabama 35898

LABORATORY REPORT

To: Washington Field Office
Justin Winecoff

Date: January 12, 2021

Case ID No.: WF-3366725

Lab No.: 2021-00019-2

Communication(s): January 7, 2021

Agency Reference(s):

Subject(s):

Victim(s):

Discipline(s): Explosives Chemistry

FBI Laboratory Evidence Designator(s):

Item 1-1	White colored powder (1B1)
Item 2	Powder sample (1B5)
Item 9	Powder sample (1B12)
Item 10-1	Powder from pipe (1B15)
Item 43	Explosives Unit Chemistry Secondary Evidence (1 plastic case with 4 SEM stubs)

This report contains the results of the chemistry examinations performed by the Explosives unit.

Results of Examination:

Item 1-1 was tested for the presence of explosives with negative results.

Item 2, Item 9, and Item 10-1 contained the oxidizer potassium nitrate, the fuel sulfur, and a fuel consistent with charcoal. Particles that appeared to be metallic and other minor components were also detected but not further identified. The powders were tested for thermal susceptibility (flame test) with negative results. However, in the proper proportions, potassium nitrate, sulfur, and charcoal form the low explosive black powder.

The terminology “consistent with” does not imply an identification of a specific chemical or product. A substance is termed “consistent with” a material when the analytical data does not support an identification of a specific chemical or product, but does provide reliable

information to include the substance within a class of materials. The phrase "consistent with" is also used when an appropriate reference standard could not be obtained.

The following techniques were used during the examination of the items listed above: visual and microscopic inspection, Fourier transform infrared spectroscopy, mass measurements, Raman spectroscopy, scanning electron microscopy with energy dispersive X-ray spectroscopy, thermal susceptibility testing, and X-ray diffractometry.

Remarks:

For questions about the content of this report, please contact Forensic Examiner Jason V. Miller at 703-632-7634 or jvmiller@fbi.gov.

For questions about the status of your submission, including any remaining forensic examinations and disposition of the evidence (to include Secondary Evidence Item 43), please contact Kevin D. Finnerty at 703-632-7022.

This report contains the opinions and interpretations of the issuing examiner(s) and is supported by records retained in the FBI Laboratory files. 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 received in less time.

The work described in this report was conducted at the Quantico Laboratory.

Jason V. Miller
Explosives Unit

FBI Laboratory

2501 Investigation Parkway
Quantico, Virginia 22135

4940 Fowler Road
Huntsville, Alabama 35898

LABORATORY REPORT

To: Washington Field Office
Justin Winecoff

Date: January 16, 2021

Case ID No.: WF-3366725

Lab No.: 2021-00019-16

Communication(s): January 7, 2021

Agency Reference(s):

Subject(s):

Victim(s):

Discipline(s): Explosives Chemistry

FBI Laboratory Evidence Designator(s):

Item 10-3 Steel wool and powder from Item 10 (1B15)

This report contains the results of the chemistry examinations performed by the Explosives unit.

Results of Examination:

Item 10-3 contained the low explosive black powder. It consisted of the oxidizer potassium nitrate, the fuel sulfur, and a fuel consistent with charcoal. Other minor components were also detected but not further identified. The powder was tested for thermal susceptibility (flame test) with positive results.

Comparison of Powders:

Item 2 originated from submission #1 from suspected device #1. Item 9, Item 10-1, and Item 10-3 originated from submission #2 from suspected device #2. The results from the analysis of Item 2, Item 9, and Item 10-1 were previously reported in Laboratory Report 2021-00019-2, dated January 12, 2021, authored by Forensic Examiner Jason V. Miller.

The powders submitted from each suspected device were compared and the main components (potassium nitrate, sulfur, and charcoal) are visually and chemically consistent with each other; however, this does not indicate the items originated from the same source to the absolute exclusion of all other sources. The powder in Item 10-3 appeared darker in color than the others and produced a positive thermal susceptibility test result. The powder in Item 2, Item 9, and Item 10-1 were lighter in color and produced a negative thermal susceptibility test result,

however when the components are in the proper proportions, these chemicals can form the low explosive black powder.

The terminology “consistent with” does not imply an identification of a specific chemical or product. A substance is termed “consistent with” a material when the analytical data does not support an identification of a specific chemical or product, but does provide reliable information to include the substance within a class of materials. The phrase “consistent with” is also used when an appropriate reference standard could not be obtained.

The following techniques were used during the examination of the items listed above: visual and microscopic inspection, Fourier transform infrared spectroscopy, Raman spectroscopy, scanning electron microscopy with energy dispersive X-ray spectroscopy, thermal susceptibility testing, and X-ray diffractometry.

Remarks:

For questions about the content of this report, please contact Forensic Examiner Jason V. Miller at 703-632-7634 or jvmiller@fbi.gov.

For questions about the status of your submission, including any remaining forensic examinations and disposition of the evidenc, please contact Kevin D. Finnerty at 703-632-7022.

This report contains the opinions and interpretations of the issuing examiner(s) and is supported by records retained in the FBI Laboratory files. 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 received in less time.

The work described in this report was conducted at the Quantico Laboratory.

Jason V. Miller
Explosives Unit