

US V. ALFRED TRENKLER

FORENSIC ANALYSIS OF PHYSICAL EVIDENCE

REPORT OF

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## US. V. ALFRED TRENKLER

This document sets forth the results of analysis of forensic evidence specifically related to the bombing incident in captioned case. This analysis includes personal examination of items recovered at the scene of the bombing and materials recovered incidental to the follow up investigation by Bureau of Alcohol and Firearms (BATF); review of (BATF) Laboratory reports; BATF Explosives Technology Branch report; Commonwealth of Massachusetts, Department of Public Safety report regarding a 1986 bombing incident in Quincy, Massachusetts; statements made by explosives enforcement expert, Larry McCune, for the second affidavit of Jeffrey S. Kerr, Special Agent, dated March 2, 1992, and investigative reports from BATF and Boston Police Department (BPD).

### GENERAL COMMENTS:

On October 28, 1991 at approximately 11:55 AM, Boston Police Bomb Squad responded to 39 East Bourne Street, Roslindale, Massachusetts in reference to a complaint from Thomas Shay Sr. regarding a suspicious box with magnets and protruding wires, which had fallen off the undercarriage of his car.

Police Officers Frank Foley and Gerry Hurley of the Boston Police Bomb squad were in the process of examining the suspect box when it exploded. Officer Hurley was killed and Officer Foley was seriously injured.

The BATF Northeast Regional Response Team and the Boston Police Department jointly conducted the initial on-site post blast investigation, and subsequent search and seizure investigations. Physical evidence collected incidental to this investigation was submitted to and examined by the BATF National laboratory in Rockville, Maryland.

This investigation resulted in the indictment and subsequent arrest of Thomas A. Shay, Jr. and Alfred W. Trenkler.

On September 1, 1986 a bomb exploded at 295 Willard Street, Quincy, Massachusetts. Alfred W. Trenkler was identified and admitted constructing the bomb. The remains of that bomb were collected and analyzed by the Commonwealth of Massachusetts, Department of Public Safety Crime Laboratory. This device was inter compared with the 1991 Roslindale bomb by BATF and conclusions regarding the similarity of the two bombs were instrumental in the indictment issued against Trenkler.

The following sets forth a summary of results of examinations offered by BATF and my comments:

## IMPROVISED EXPLOSIVE DEVICE

### BATF:

(From BATF Laboratory Report of Cynthia L. Wallace, Forensic Chemist, dated June 9, 1992)

The IED consisted of a wooden box, magnets, radio control components, a switch, two detonators, dynamite, tape and paint.

(From BATF Report of Thomas H. Waskom, Explosives Enforcement Officer dated January 15, 1993)

The improvised explosive device (IED) was constructed using a quantity of dynamite, two electric detonators, a fuzing system and a firing system. The fuzing system was a "Futaba" remote control set, and the firing system was a toggle switch, 9 volt batteries, and two detonators connected together by electrical conductor. This entire assemblage was concealed in a plywood box, with magnets glued to the outside of the plywood box.

The IED was designed to be placed on a metal surface by the magnets. The IED would function after the radio receiver unit was turned on, and when the intended victim was in the proper location, sending the radio signal from the transmitter to the receiver causing the fuzing system and the firing system to function. This action initiates the explosive material, causing the device to explode.

### DLK:

The items recovered and identified by BATF are consistent with a radio control improvised explosive device. Their conclusions regarding the fuzing and firing systems are logical. It is noted that Waskom (BATF) concludes the toggle switch was part of the firing system, i.e., "trigger", and not an arming switch. This will be significant when comparing the '86 Quincy IED with the '91 Roslindale IED, furnished later in this report.

Waskom states the IED would function when the radio signal was sent by the transmitter to the receiver. Absent from all of the items recovered by BATF and BPD searches is a transmitter or compatible radio signal sending unit.

Explosive residue was detected on the magazine page covered with tape. This suggests the explosive charge may have been concealed/wrapped with the magazine page and secured with the layers of tape.

No opinion has been formally issued regarding how or why the IED exploded. It is known, based on autopsy reports, that Officer Hurley was holding the device when it detonated. It is not known if the IED functioned as designed; by the transmission of a radio signal, or originating from stray electrical current, or as a result of a failed render safe procedure.

**Individual components of the IED are described in detail hereafter:**

*EXPLOSIVE MAIN CHARGE*

**BATF:**

Material recovered from the scene of the explosion was analyzed and identified as ammonia dynamite. However, the hand printed laboratory notes state the brand and type is unknown. These notes also state the IED used 2 or 3 sticks.

BATF investigative report submitted by Jeff S. Kerr states the IED contained 3-4 sticks of dynamite.

Instructions for the search advise that components of dynamite leave a characteristic residue which is easily recovered from any surface where the dynamite has been handled or stored. The residue can remain for months and can be detected at extremely low concentrations.

**DLK:**

The sensitizer in all commercial dynamite is nitroglycerine(NG) or ethylene glycol dinitrate (EGDN). One of these two sensitizers must be present in the residue for the Laboratory to identify the main charge as dynamite. The presence of NG or EGDN is not mentioned in the BATF Laboratory report, although it is probable it was instrumentally detected, but simply omitted. The omission of complete instrumental analysis findings for field reports is not an unusual BATF laboratory procedure.

Following the explosion, hands of Thomas Shay Sr. were swabbed and later examined for the presence of explosive residues with negative results. These results do not indicate that Shay Sr. did not make the bomb. First, the outside of the IED container may not have been contaminated, and secondly, he could have washed his hands and removed any possible explosive residue

EGDN and NG are highly volatile and readily evaporate in an open environment. The statement regarding "dynamite easily recovered from any surface" and "residue can remain for months and detected at extremely low concentrations" is questionable. Dynamite is more easily detectable than some other explosives due to the emitting vapors of NG and EGDN, but they rapidly evaporate unless confined.

Dynamite is easily detectable and as such can be transferred upon contact or in the open with other surfaces. A significant consideration in the identification of dynamite by BATF is the possibility of contamination. Bomb technicians frequently come in contact with explosives during the course of their job and training. If the clothes and the tools of the bomb technician are exposed to explosives, especially dynamite, they will become contaminated. It is therefore possible, if Hurlers clothes, and/or tools were analyzed for the presence of explosives, a positive identification could have resulted from contamination.

All of Trenkler's habitats were searched for the presence of explosives, especially dynamite, with negative results. This includes his place of residence; his parent's residence; the detached garage at his parent's residence, a storage and workshop location; his place of business; and his personal automobile.

Reference is made to the number of "sticks of dynamite" used in the IED, from 2 to 4. The basis for this estimate has not been stated in the available documents. One can only assume the BATF estimate was based on the size of the container and the resulting explosive damage. It is noted that a standard cartridge (stick) of dynamite measures 8"L X 1 1/4"OD. However, dynamite is manufactured in lengths from 4" inches to 6' feet and diameters from 7/8" to 1 1/4". The strengths of different types of dynamite also varies from as low as 3,700 ft/per/sec to 19,600 ft/per/sec detonation velocities. Based on the aforementioned variables, it is not possible to positively state the number of "sticks" of dynamite used in the construction of the bomb.

It is also noted that estimation of the amount of explosive through observation of the explosive damage is speculative at best. Several factors, including placement of the explosive, strength of the container, distances, detonation velocity, and density of the explosive material, will have an effect on the damage produced by an explosion. None of these factors are identified in the BATF documentation regarding conclusions about the number of "sticks" of dynamite.

On January 31, 1992, the detached garage of Trenkler's parents, 7 Whitelawn Ave., Milton, Mass. was searched by John Hobbs, Ph.D., analytical chemist, who took air samples and processed these samples for explosive residue with negative results.

On October 28, 1991, swabbings were taken from the hands of Thomas L. Shay Sr., and analyzed for explosive residue. These examinations were conducted with negative results. Shay Sr. advises that he handled the bomb, the day of the bombing. If Shay Sr. handled the IED with gloves, or the outside of the box was not contaminated with explosives, or if contaminated when the IED was constructed, but left to "air out", no explosive residue would reliably be detected.

On October 31, 1991, a BPD Bomb Dog searched Shay Sr.'s 1983 Buick, for the presence of explosives with negative results. This was the vehicle on which Shay Sr. stated the IED was attached.

The type of instrument(s) used for the detection of explosive residues during the searches is not identified. This information would be of value in evaluating the credibility of instrumental detection of explosives.

It is known that BATF is not using the most sophisticated and up-to-date analytical techniques for explosives detection, and occasionally request the FBI Laboratory to confirm their analysis through reexamination.

Review of the investigative reports does not indicate that instrumental detection equipment was used in an attempt to detect for the presence of explosives at appropriate locations other than the detached garage at 7 Whitelawn, Milton, Mass, and Trenklers 1970 Toyota:

On-site inspection for the presence of explosives should have included:

- the 1990 Mazda Shay Sr. was repairing and seen driving the day of the explosion
- Shay Sr.'s brothers repair shop
- Rolling Wrench Garage where Shay Sr. was working on the Rotman car
- The Rotman car, which Shay Sr. had from October 21 - 25, 1991
- Dedham Service Center
- personal habitats of Giammarco and Berry, who are being sued by Shay Sr.
- The personal car of Shay, Jr. and his known habitats.

## *ELECTRIC DETONATORS*

### **BATF:**

Fragments of two Austin Rock\*Star millisecond delay electric detonators were recovered. The base of the shell from one detonator indicates it was a 6 delay period. The detonator had an aluminum shell with red and yellow 23 gage copper leg wires.

### **DLK:**

The identification of the detonators is accurate.

Personal examination of the detonator remains revealed an unusual amount of each detonator intact. This is evidence that the detonators were not completely inserted (primed) into the main charge.

The presence of the base of one of the detonators, which allowed for identification of the delay period is also highly unusual, and suggests one of the detonators low ordered or was sympathetically detonated by explosion of the main charge, or even the complete detonation of the second detonator.

Present among the exploded remains were two yellow leg wires, twist connected and secured with white plastic tape. This suggests the detonators were wired in a simple series circuit.

The method of using two detonators to prime the main charge is not unique. In fact, the US. Military Field Manual FM 5-25 discusses the use of two detonators (dual priming). On page 79, Section IV Dual Firing Systems, 72.b., states, "The failure of firing circuits is most frequently the cause of demolition misfires. Thus a dual firing system should be used whenever time and materials are available.....The systems must be entirely dependent of each other and capable of firing the same charge."

The use of two detonators strongly suggests the bomb maker had military experience and/or training, had access to military training manuals, or other sources recommending dual priming.

It is noted that no red and yellow leg wire remnants, shunt, delay tag. or wire bundle wrap from Austin Rock\*Star detonators were recovered during the searches of Trenkler's habitats.

## FUZING SYSTEM

### BATF:

Futaba radio control components were recovered and identified as part of the IED fuzing system. These components include the receiver, servo, servo horn, battery pack, and slide switch. A partial FCC ID code was recovered and indicates the receiver operated in the 72 MHz, a frequency range reserved for radio control aircraft only.

The Futaba receiver and slide switch have been identified as being obsolete.

Two switch contacts were recovered and identified as having originated from a Radio Shack Single-Pole-Single-Throw toggle switch, Catalogue No. 275-602.

Reconstruction of the wood box container and the radio control components places the servo motor and servo horn adjacent to the toggle switch. This suggests that movement of the servo horn will trip the toggle switch which allows electrical current to initiate the detonators and cause the IED to explode.

### DLK:

The identifications, reconstruction, and conclusions regarding the fuzing system is logical. Further, IED's that employ radio control fuzing systems, like the Futaba components, are usually arranged like the IED in this case.

In order to fire the IED in this case, the maker must have a transmitter, which operates on the same 72 MHz range frequency. It is noted that individual frequency chips may be purchased and radio control systems can be altered, simply by changing the chips in the transmitter and the receiver components.

In the absence of identifiable radio frequency chips it is not possible to positively state at what frequency the radio control IED was operating.

No transmitter was located at any of Trenkler's habitats, nor were any documents i.e., instructional material, catalogues, or spare parts that suggests that Trenkler ever had possession of a Futaba radio control system.

The identification of the obsolete receiver and slide switch suggests the Futaba system was an older system, was originally purchased for legitimate reasons, and recently converted for use in the IED.



It should be noted that John D. Amore, Futaba Divisional Services Manager, advised BATF that "paging systems often have very powerful signals that receivers can respond to."

The two contacts recovered by BATF and identified as originating from a Radio Shack toggle switch were one piece with two leads. On March 15, 1993, I purchased from Radio Shack two single-pole-single-throw toggle switches, Catalogue No. 275-602. I disassembled one of the toggle switches and found that the two contact leads were two separate pieces. Therefore, it can be concluded Radio Shack 275-602 toggle switch that I purchased was not identical to the item BATF identified as originating from the same Radio Shack toggle switch model. This suggests that the construction of the Radio Shack toggle switch Catalogue No. has changed or BATF erred in their identification. A reexamination of Submission 4 - exhibit 6 is requested to resolve this preliminary conclusion.

#### *WIRE*

##### **BATF:**

Identifies 4 types of wire that are associated with the IED electrical circuitry, excluding the red and yellow detonator leg wires.

One wire, red insulation, larger gage, multistrand, could not be associated with the Futaba components. The three remaining types of wire are like wire used with battery snap connectors, Futaba components and a white wire antenna, also consistent with the Futaba system.

The lengths of wire (Submission 1 and 4) were examined microscopically for the presence of comparable Toolmarks and compared to tools (Submission 6) with negative results.

##### **DLK:**

No Toolmarks of value for comparison were identified on the wires recovered from the IED.

Tools were examined for wire and wire insulation residue with negative results.

BATF recovered numerous wires from Trenkler's habitats, but none of those wires were identical to the wires recovered from the IED.

During examination of the evidence at Boston, I observed the presence of white and purple wires in Submission 4, Exhibit 28. It was not clear if these wires were from the IED or taken from Shay Sr.

### *BATTERIES*

#### **BATF:**

Fragments of at least five(5) Duracell 9 volt batteries were recovered. Four of the battery fragments revealed the freshness code, "JUL 94." The snap connectors from the 9 volt batteries were found attached to the remains of battery snap connectors. Also recovered were the remains of four(4) Duracell AA size batteries, three bearing the freshness code , "JUL 94."

An adhesive substance was present on the sides of the 9 volt batteries and suggests they were either glued together or affixed to the side of the IED wood container.

Four AA size batteries were recovered from Trenklers habitats. Two from the garage at 7 Whitelawn, which bear freshness code, "Jan 96" and two from the apartment at 133 Atlantic Street, which bear freshness code, "Jan 96" and "Jan 93".

#### **DLK:**

The presence of five 9 volt batteries is not common to previously encountered radio control IED's. Only one 9 volt is required to initiate the two detonators, if wired in a single series circuit. Hypothetically, the use of multiple batteries suggests the probability of a dual firing system.

It is noted the Futaba battery holder is a sealed unit which contains four AA size batteries. However, these batteries are usually assembled together at the factory and do not bear the manufacturer's brand on the outside cover. It is probable that the Futaba battery pack was dead, and the bomber disassembled the unit, replacing the dead batteries with 4 fresh AA size Duracell batteries.

None of the batteries recovered from the Trenkler searches bear the same freshness code "Jul 94", which was recovered from the IED.

None of the battery contacts exhibit the presence of solder. In fact, those battery fragments recovered from the bombing scene by BATF reveal the presence of battery snap connectors still attached to some of the batteries. This indicates that snap connectors were used to hook up the power source to the electrical circuits.

#### *Solder*

**BATF:**

The Laboratory report makes no mention of solder being used in the construction of the exploded IED.

**DLK:**

During examination of the physical evidence at Boston, solder was observed on the metal fragment identified by BATF as the metal contacts from a Radio Shack Toggle switch. This solder could be suitable for comparison with a known source.

No solder was collected during the subsequent searches, therefore no comparison examinations were conducted.

No solder was present on any of the free ends of wire examined in the Boston BATF office. This suggests the wire connections were made by twisting the wires together.

#### *CONTAINER (WOOD, NAILS, ADHESIVES)*

**BATF:**

The IED was contained in a plywood box. The plywood was constructed with three layers, all of which were hardwood, and two veneers were consistent with oak. The plywood was 1/4" thick. There was a larger box with a smaller box on side. The larger box was originally approximately 1 3/4" thick and at least 6 1/2" long. The width of the larger box was not mentioned. The smaller box measured 2 5/8" X 2 5/8" X 1 1/4".

Shay, Sr. described the box as the size of a "1 pound Stovers candy box".

The plywood was 1/4" thick constructed with three layers of hardwood. Two veneers were consistent with oak.

The plywood box was assembled with two (2) penny nails and cyanoacrylate (super glue) adhesive.

No wood fragments recovered during BATF and BPD searches were like the wood used to construct the IED. This includes wood recovered from Trenkler's habitats.

Nails submitted (Submissions 3 and 4) have manufacturing marks of possible value to identify them to nails manufactured on the same machine.

#### **DLK**

Recovered in Trenkler's possession during the BATF searches was "Super Glue" and "Crazy Glue", which are both cyanoacrylate type adhesives. This type of adhesive is class type evidence and cannot be identified as having originated from a specific source. Additionally, "Super Glue" and "Crazy Glue" are common to every household, and should not be considered unique for identification purposes.

No two (2) penny nails were recovered from the habitats of Trenkler. In fact, there is no BATF documentation that two penny nails were recovered at any of the search locations.

#### *PAINT*

#### **BATF**

Black acrylic paint covered the outside of the IED wooden box container.

Smears of acrylic based black paint were present on clothes recovered from Thomas Shay, Sr.

A piece of plywood recovered from Thomas Shay, Sr. exhibits a black paint over a gray paint.

All of the black paint recovered by BATF during their searches was instrumentally compared with the paint from the bomb container and no matching identification was made.

**DLK**

The piece of plywood board with the black over gray paint taken from Shay, Sr. exhibited an area void of paint. This unpainted area suggests something was placed on the plywood when spray painted. This area represents the same approximate size and shape of the IED container. This may be merely a coincidence for which Shay, Sr. has an explanation.

This also represents the possibility that BATF did not conduct a paint comparison, that the black over gray paint changed the true identification of the black paint, or that the BATF inter comparison was in error.

Consideration should be given to reexamination and comparison of the painted wood container fragments (Submission 4 - Items:2,9,14,16,25,28,29,33,36) and the plywood board from Shay, Sr. (Submission 9 - Item 65 and Submission 12 - 1 #66)

Examination of photographs taken during the search at Thomas Shay, Sr.'s residence revealed the presence of a wooden paint stir stick. Adhering to this paint stirring stick is a black paint. This item was not present among the evidence examined at the Boston BATF office. This item should be recovered and examined for type and inter comparison with the paint from the bomb container.

*INK*

**BATF**

Blue ink lines appear on some of the edges of wood from the container, which appear to be from the template drawn before the wood was cut.

**DLK**

Eleven blue ink pens were recovered from the Trenkler apartment in Quincy, Mass.

No comment is made in the BATF Laboratory reports regarding the a comparison between the ink on the wood container with any of the eleven blue ink pens taken from Trenkler. Either a comparison was not done or the results were negative.

It is noted that ink examinations can identify the type of ink, but remains class type evidence and is not possible to associate the sample as having originating from a specific source.

## **MAGNETS**

### **BATF**

Two types of magnets were attached to the outside of the bomb container with an adhesive. These magnets were identified as button magnets and ring magnets.

Fragments of 12 button magnets were recovered. Ten were painted red and two were painted blue, and can be ordered in these colors from the manufacturer. Button magnets are used with inclinometers, common to automotive body repair work.

Fragments from at least one strontium-ferrite ceramic ring type magnet was also recovered. This magnet measured 3.65" outside diameter, 0.79" inside ring, 0.60" thick. This type of magnet is used in antennas, speakers, and small motors.

Material removed from scratches on the undercarriage of the Black Buick Century, owned by Thomas Shay Sr. was identified as consistent with the appearance and composition from the button magnets and ring magnet found among the explosive debris.

Recovered from the Trenkler apartment at 133 Atlantic Street, Quincy, Mass. was a miniature speaker containing magnet and wires. The magnet and wires were not like the magnet and wires used in the construction of the IED.

### **DLK**

Scratches observed on the undercarriage of the Shay Sr. Buick and material removed from those scratches identifiable with the bomb magnets suggest that the IED was at one time attached to the bottom of the car and forcibly removed. Review of crime scene photographs also reveal scratch marks on the concrete driveway, where Shay advised the IED was knocked from the car. However, no BATF documentation indicates no samples or materials were taken from the driveway and analyzed for the presence of magnet particles or wood and paint residue.

BATF recovered a J & L Industrial Catalogue from Trenkler, which advertises button magnets, like those used in the IED. However, there is no indication that Trenkler made any mail order purchases from this catalogue.

## TAPE

### **BATF**

Silver duct tape and black electrical tape were recovered from the exploded IED. The silver duct tape was adhering to fragments of paper and covered with at least 6 layers of the black electrical tape.

The silver duct exhibits an original width of at least 1 9/16".

The black electrical tape has a nominal width of 3/4", and is consistent in physical characteristics and composition with Scotch brand tapes.

White plastic tape, at least 0.67" in width, was adhering to the twist connection of the detonator leg wires.

Exhibit 6-50 contains a Tuck brand silver duct tape, 3" wide", and was consistent in construction and composition to the duct tape recovered from the IED. A 15' 3" length of this tape has been torn lengthwise at a width of approximately 1 7/8" and removed from the roll. This duct tape was recovered from the Trenkler garage , 7 Whitelawn, Milton, Mass.

Exhibit 7-60B contains a roll of 3M black electrical tape and dispenser, having a nominal width of 3/4". The tape dispenser had an angled cutting edge which was different from the intact edges on some of the tape fragments from the device. The backing and adhesive of this tape was analyzed and found to have the same composition as the tape from the device. The tape from 60B and the device appear to be the same manufacturer's product type, but could not be more closely associated.

Exhibit 7-60A contains an unknown brand of black electrical tape which was different from the tape used in the device.

Exhibit 10-64 contained four pieces of black electrical tape from Trenkler's job site at the First Christian Science Building. Two of the four black tape pieces were 3M brand with backing and adhesive of the same composition as the black electrical tape from the device, but the tapes could not be more closely associated.

## **DLK**

Tape examinations should include and instrumental analysis of the plastic backing and adhesive, the microscopic examination of surface impressions imparted on the tape during the calendering process, and matching of the fractured/torn edges of tape from the device and tape recovered from known sources.

Instrumental analysis of the tape backing and adhesive is class evidence, and can only provide that a tape is similar, possibly originating from the same manufacturer. Scotch 3M brand black electrical tape is most common and found in most households.

Microscopic analysis of plastic tape surface impressions can provide that the tape was processed on the same machine during the same time period, which strengthens the conclusion that two separate tapes may have originated from the same source.

Fracture match of the cut/torn free ends of tape positively identify the tape as originating from the same source.

Based on BATF Laboratory reports and notes, it appears that instrumental analysis comparisons were conducted, and fracture match was conducted for the dispenser cuts. However, it does not appear that microscopic analysis for surface identification similarities was done, or additional cut/torn fracture matches were effected. These additional examinations could have provided a positive identification of tapes, or eliminated the conclusions that some tapes were similar.

Recovered from Trenkler's habitats were 8 specimens of black electrical tape and two specimens of duct tape. Only three of the black electrical tapes and one of the silver duct tape specimens are similar. However, the silver duct tape identified as consistent with the same manufacturer has a different width, and could not be like that used in the IED.

## *FINGERPRINTS*

### **BATF/BPD**

The Black Buick, Massachusetts registration 125-LLO, owned by Thomas Shay, Sr. was examined for latent fingerprints using the cyanoacrylate fuming method. A total of 17 fingerprint lifts were taken.



**DLK**

There is no documentation which identifies the source of those fingerprints, especially no fingerprints have been identified as being those of Alfred Trenkler.

No reference is made to any of the items recovered from the device as being examined for latent fingerprints.

Examination of the six layers of black electrical tape at the Boston BATF office revealed this specimen has not been processed for latent prints. These layers of tape have not even been separated, which should have been done so that the adhesive surfaces of tape could be visually examined for the presence of latent fingerprints.

*MISCELLANEOUS*

**BATF**

Fragments from a magazine were recovered. The source of this was identified as page 25/26 from the July, 1991 issue of Muscle Mag International.

No copies of Muscle Mag International were recovered from any of Trenkler's habitats.

Exhibit 70 and 72 are vacuum sweepings from Trenkler's business and apartment.

No trace evidence identifiable with the IED materials was identified from those vacuum sweepings.

## COMPARISON OF '86 AND 91 DEVICES

### BATF

Contained in the Second Affidavit of Jeffrey S. Kerr, M.B.D. 92-10218 is information provided by BATF Agent Larry McCune concerning the comparison of the physical components, characteristics and circumstances of the 1986 bombing incident involving Trenkler, and the incident which occurred on October 28, 1991 in Roslindale.

McCune is described as an explosives expert with BATF who has over 17 years experience in the investigation of explosions and explosive devices. McCune has been involved in over 3000 investigations of this type. McCune participated in the forensic analysis of the explosive device which killed Officer Hurley, and has reviewed various materials and reports concerning Alfred Trenkler's 1986 device.

McCune states that more likely than not the maker of the explosive device that killed Officer Hurley was Alfred Trenkler. Mr. McCune reaches this conclusion without considering other circumstantial evidence, such as the known relationship with Shay Jr., the observations made by ATF agents of a loose speaker magnet at Trenkler's apartment, and other factors.

McCune's conclusions are based on the following factors:

A) According to BATF only three remote control explosive devices have been encountered in New England. One of those was the 1986 device made by Trenkler. The use of remote control explosive devices has been rare, not only in New England, but in the United States over the past ten years.

B) There are several similarities between the components of the '86 device and the '91 device. These similarities include the use of speaker magnets, an internal toggle switch, the presence of a power source and receiver, soldered wires to batteries, soldered wire connections which were covered with tape, and the use of miscellaneous types of wire and tape.

C) The internal configuration of a hypothetical explosive device which was described and diagrammed by Trenkler during an interview on November 6, 1991 contains a strong similarity to the actual device which detonated on October 28, 1991. Trenkler's drawing of multiple blasting caps inserted into separate sticks of dynamite is a highly unusual, unique and distinctive configuration for an explosive device. The device which exploded and killed Officer Hurley was found to contain more than one blasting cap in combination with dynamite, strongly suggesting that Trenkler was the maker of the subject device.

D) The circumstances surrounding the 1986 explosion and the recent explosion also contain certain unmistakable parallels such as: i) both devices were designed to be remote control, ii) both devices were , or had been, affixed to vehicles, iii) both devices used speaker magnets to attach the devices to the vehicles.

#### **DLK**

A review of the information presented in the aforementioned affidavit regarding Trenkler as the bomb maker, in my opinion, misrepresents the facts concerning the physical evidence, and articulates rather strong conclusions through the use of information that is generic and nonspecific.

My opinions are based on the following:

- In establishing the credibility of McCune, it is stated he has 17 years of experience and has been involved in over 3,000 investigations of this type. That averages out to a bomb investigation every two days. A verification of this statistic should be documented.
- The affidavit states that McCune reaches his conclusions without considering other circumstantial evidence.. including observations by ATF Agents of a loose speaker magnet at Trenkler's apartment. A speaker was located at Trenklers apartment, but not a loose magnet. The speaker contained a magnet, but that magnet was not like those used in the explosive device.
- A) McCune states that only three "remote control" devices have been detected in New England since 1980. Further he states the use of remote control devices are rare, not only in New England, but throughout the United States. According to the 1991 BATF Explosives Incidents Report, during the past five years forty (40) remote control devices were employed in just pipe bombs alone. What is considered rare? I have personally been involved in the investigation of radio controlled bomb devices, which used Futaba components, toggle switches, and were placed on the undercarriages of an automobile with speaker magnets.
- B) McCune states there are similarities between the components of the '86 device and '91 device. Some of his stated similarities are inaccurate and include:
  - i) soldered wires to batteries, ii) soldered wire connections which were taped with tape, and iii) the use of miscellaneous types of wire and tape. These three bomb construction features are not present in the '91 device.

- C) The internal configuration of a hypothetical device described and diagrammed by Trenkler during an interview on November 6, 1991, which contains such a strong similarity to the '91 device was not present in the BATF documentation. It either has been withheld, misplaced, or never existed.
- McCune states that Trenkler draws multiple blasting caps inserted into separate sticks of dynamite, and this is a highly unusual, unique and distinctive configuration for an explosive device. Reference is made to the US. Military Field Manual FM 5-25, which discusses the use of multiple detonators and quoted in the text of this report. Simply stated, the use of multiple detonators is not unique, but recommended.
- D) Statements regarding the unmistakable parallels between the '86 device and the '91 device are in fact accurate. However, they are general in nature and not sufficient, in the absence of other identifiable comparisons, to make the conclusion that Trenkler made the '91 device.

A comparison of the '86 Trenkler device and the '91 Shay device has been prepared by Trenkler. This comparison is accurate and describes the components, as well as the unique techniques for assembling the components. This comparison, ironically establishes the unique signatures of the two bombs, from which a bomb specialist could conclude that the two devices were in fact constructed by two different people.

## SUMMARY

The recovery of physical evidence from a post blast investigation is critical to the reconstruction of the exploded bomb, the identification of bomb components, and individual methods used by the bomb maker in assembling the bomb. The analysis of this physical evidence provides investigative leads that help to establish the identity of the bomb maker.

An evaluation of the physical evidence recovered from the exploded bomb in this case and items collected from Trenkler for inter comparisons conducted by BATF revealed the following:

- No explosives were found in the possession of Trenkler, nor was there any indication Trenkler ever had any explosives. This includes dynamite, identified by BATF as the main charge, and which they state, "can be easily recovered from any surface where dynamite was handled or stored. The residue can remain for months and can be detected at extremely low concentrations.
- No plywood like that used to construct the bomb container
- No black paint like that used to paint the bomb container
- No similar two penny nails which were used to assemble the bomb container
- No tools were identified as having cut the wires or used to assemble the bomb
- No wires like those used in the bomb's electrical circuit
- No solder identification
- No Muscle Mag International copies, or one with a page missing
- No transmitter or compatible sending unit with which to initiate the bomb
- No instructions on how to assemble the bomb or explosives literature
- No remains from detonators, which would include, cut leg wires, delay tags, or shunts
- No literature that would suggest the purchase or ownership of Futaba components

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- No identification of blue ink with marks on the plywood from the bomb container
- No 9V or AA batteries that have the same "date freshness code" as those used in the bomb
- No magnets, except the loose speaker that contained a magnet different than those used with the bomb
- No positive identification of the silver duct tape and black electrical tape
- No white plastic tape
- No positive identification of adhesive
- No electrical components like those recovered from the bomb, even though Trenkler is in the electronics business.
- No Fingerprints identifiable with Trenkler

The comparison between Trenkler's '86 device and the '91 Roslindale device reveal the following similarities:

- Electrical fuzing systems which employed remote controls
- The presence of a toggle switch
- The use of magnets to attach the device to the target
- Placement was on the undercarriage of a vehicle

The following reveals the dissimilarities:

- The main charge
- The means of initiation
- Wire connections
- Battery to wire connections
- Use of the toggle switch
- Number of batteries
- Container vs. no container
- Electronic components and receiver
- Knowledge of explosives