



**Terrorist Explosive Device Analytical Center**  
**Boston Marathon Bombing**  
24 April 2013

**(U//FOUO) Devices Used in Boston Marathon Bombing and Subsequent Car Chase Exhibit Similarities to Instructions Provided in Inspire Magazine**

(U//FOUO) Various issues of al-Qai'da in the Arabian Peninsula's (AQAP) *Inspire* magazine include Open Source Jihad articles which provide step-by-step instructions for the construction of improvised explosive devices (IEDs) and IED components, as well as the synthesis of improvised explosives. Based upon preliminary analysis of recovered evidence, it appears the IEDs used in the 15 April 2013 Boston Marathon bombings and subsequent 19 April 2013 car chase used similar components to those described in several issues of *Inspire* magazine. The subjects likely could have garnered sufficient information from these publications to construct each device, with the exception of the electrical fuzing system incorporating components from an RC toy car, which was not specifically covered in *Inspire*.

*(U) Main Charge*

- (U//FOUO) In the article "Make a Bomb in the Kitchen of Your Mom" of the first issue, instructions were provided for the construction of pipe bombs, as well as larger devices using pressure cookers. The article indicates that a mixture of ground match heads could be used as a main charge, and further stated that if building a larger device, one could substitute gunpowder or the powder from fireworks.
- (U//FOUO) Based upon chemical analysis of residues recovered from the Boston Marathon devices as well as subsequent devices from the car chase, TEDAC assesses the main charge was likely a low explosive blend containing nitrate and perchlorate-based oxidizers. This is consistent with the potential use of a low explosive powder extracted from commercial fireworks, although a particular manufacturer has not yet been identified.

*(U) Initiator*

- (U//FOUO) The first issue details the construction of an improvised initiator using a modified light bulb filament filled with a ground match head mixture. Further, one sentence indicates that a pipe can be filled with gunpowder "with a small opening enough only for a fuse" in order to make a pipe bomb.
- (U//FOUO) At this time, it is unknown what type of initiator was used in the two Boston Marathon pressure cookers. TEDAC assesses, however, that a similar improvised initiator may have been used based on the recovery of a set of Christmas tree lights from the deceased subject's residence.
- (U//FOUO) Although not specifically mentioned in *Inspire*, it is possible the subjects interpreted "fuse" to mean "hobby fuse," which is readily available in the United States. Based on recovered evidence, TEDAC assesses hobby fuse was likely used in the Boston Marathon devices as a secondary initiation system in case the first failed. Further, each of the devices from the car chase—including a pressure cooker and several pipe bombs—appear to have used hobby fuse as the primary initiator.

(U) *Switch/Trigger*

- (U//FOUO) The eighth issue of *Inspire* magazine detailed the production of a radio-controlled (RC) trigger using a motorcycle alarm. The instructions are specific to a motorcycle or vehicle car alarm, indicating which wires should be cut and how each component of the electrical fuzing system is connected.
- (U//FOUO) The pressure cooker devices employed at the marathon incorporated an electrical fuzing system as well; however, the components from an RC toy car were used instead. While the RC concept is similar, TEDAC assesses *Inspire* would not provide an individual with the appropriate details to translate these instructions for use with RC toy car components. Such construction would likely require previous knowledge of, or additional research into, RC toy car circuitry.
- (U//FOUO) The first and fourth issues of *Inspire* also discuss the use of a modified alarm clock as a triggering mechanism. A screw or nail is inserted into the face of the clock, while an exposed wire is attached to one of the clock arms. When the two pieces of metal touch after the given time delay, the circuit is complete and power would be supplied to the improvised initiator.
- (U//FOUO) The subsequent devices from the car chase most likely used hobby fuse lit by the subject(s). While a modified alarm clock was not used, the time delay concept is similar. Hobby fuse burns down its length and would have initiated each device at a given time commensurate with the type and length of fuse utilized.

(U) *Power Source*

- (U//FOUO) Several issues of *Inspire* (1, 4, 8, and 9) advocate the use of 9-volt batteries as the power source.
- (U//FOUO) The Boston Marathon pressure cooker devices utilized 'Sub-C' battery packs, one of which was identified as a 7.2-volt Tenenergy battery pack. Due to the use of hobby fuse in the subsequent devices, a power source was not necessary.

(U) *Fragmentation*

- (U//FOUO) The first issue details the use of fragmentation in an IED, and specifies that one should use spherical shrapnel, such as steel pellets and small nails. The article indicates that the fragmentation should be affixed to the wall of the device using glue. One section indicates the fragmentation is glued to the inside wall, whereas another suggest wrapping a mold of shrapnel around the container.
- (U//FOUO) Preliminary analysis of the two Boston Marathon pressure cooker devices indicates small metal BBs and nails were added as fragmentation, and possibly affixed to cardboard with some sort of epoxy. Preliminary analysis of the subsequent devices from the 19 April car chase also indicates BBs were used as fragmentation, and may have been adhered to the interior surfaces of each device.

(U) *Container*

- (U//FOUO) The first issue of *Inspire* discusses the use of elbow pipes to construct the pipe bombs. The elbow pipes have a hole drilled into the bend of the pipe with the fuzing system entering through the hole, and black tape on the outside. The use of elbow pipes specifically is unique, and rare in other extremist and anarchist literature.
- (U//FOUO) Based upon preliminary examination of the pipe bombs recovered from the car chase, at least one utilized an elbow pipe. The exact location of the hole is unknown

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at this time, but black tape was wrapped around the outside in a similar fashion. Once the tape is removed, TEDAC can determine if the hole was similarly placed on the bend.

- (U//FOUO) The same article indicates for larger devices, a pressure cooker is the most effective method. It indicates the fuzing system is inserted into a hole in the pressure cooker lid, then the hole is sealed with tape.
- (U//FOUO) Three of the devices utilized pressure cookers as containers, although the exact configuration of fuzing system (i.e. internal or external through a hole in the lid) is unknown at this time. There was a portion of black tape over a small hole in the lid, most likely to seal the hole, although it is unknown if the fuzing system entered that hole, or whether it was simply a piece of hobby fuse.



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# Boston Marathon Bombing

## Inspire Magazine Similarities



Device	Main Charge	Initiator	Switch/Trigger	Power Source	Fragmentation	Container
<b>Pressure Cookers (x2)</b> 15 April 2013	Likely Fireworks Low explosive blend	Primary: Unknown (Possibly Christmas Tree Light) Secondary: Hobby Fuse	Command (Radio Controlled) Toy Car	Sub C Battery Pack 	-Spherical Shrapnel (BBs) -Small Nails (Only in One) -Glued 	Pressure Cooker 
<b>Inspire Magazine</b>	-Fireworks -Match Heads -Gunpowder 	Christmas Tree Light with Match Head Powder 	Command (Radio Controlled) Motorcycle Alarm 	9 Volt Battery 	-Spherical Shrapnel (Steel Pellets) -Small Nails -Glued 	Pressure Cooker 
<b>Pipe Bombs</b> 19 April 2013	Likely Fireworks Low explosive blend	Hobby Fuse	Time Delay Hobby Fuse	N/A	-Spherical Shrapnel (BBs) -Glued 	Elbow Pipe 
<b>Inspire Magazine</b>	-Fireworks -Match Heads -Gunpowder 	Christmas Tree Light with Match Head Powder	Time Delay (Mechanical) Modified Clock with Nail/Screw and Wire 	9 Volt Battery 	-Spherical Shrapnel (Steel Pellets) -Small Nails -Glued 	Elbow Pipe 

\*\*All results based on preliminary analysis of approximately 80% of collected items. Exact configuration of the devices is based on best approximations and is subject to change

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Note: Similarities in bold.