

The Development of *The Incendiary Device Database (IDD)*: A Forensic Fire Investigation Tool

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INTRODUCTION

Databases are used in almost every aspect of forensic science to record specific intelligence. The manipulation of gathered data is focused toward the development of intelligence based actions to prevent future incidents occurring. An Australian example of a state and territory fed database is the National Automated Fingerprint Identification System (NAFIS).

Presently, information such as the specific details of an incendiary device remain part of an individual fire investigator's report and is not easily accessible to be used for intelligence-led fire investigation (FI), whether by the internal organisation or other stakeholders.

It was proposed that the development of a repository for information pertaining to incendiary devices would be beneficial for forensic FI. This initiated the data gathering process required for the set up and population of the fields proposed for the database.

Subsequently the Australian Institute of Forensic Fire Investigation (AIFFI) is developing such a tool, the *Incendiary Device Database (IDD)*, and this poster outlines the progress of the database to date.

DATA COLLECTION

A survey was developed by AIFFI to aid in the capture of information pertaining to the detection and investigation of incendiary devices. A copy of the current survey can be viewed by scanning the QR code in Figure 1 below, or by visiting www.aiffi.com.

The surveys have been, and continue to be, distributed to Australian and International FI agencies. Fire investigators were (and continue to be) invited to provide information pertaining to incendiary devices they have encountered.

Within NSW, private investigators and Fire and Rescue NSW (FRNSW) have started the process of collecting information for inclusion into the IDD. In the coming months, private investigators and emergency services in the remaining Australian states and territories will be invited to contribute data to the IDD. Information from international sources, such as private fire investigators and government agencies, will also be sought in the coming months.

The survey aims to collect data regarding the geographical location of the site, the components of the device, the location of the device at the site, the extent of damage to the device, the ease of manufacture of the device from commercially available materials and a comparison to other cases involving the same or similar devices. In addition, the survey seeks the supply of images and any additional information that the investigator may feel is pertinent.



Figure 1: QR Code Link to AIFFI IDD Survey 2014.

DATABASE INTERFACE

Security has been the major consideration during the developmental stages of this project. At this stage the database can only be accessed by AIFFI employees and is stored securely. An example of the IDD interface has been provided in Figure 2.

ID #	Incident Job #	Area of Origin	Incendiary Device Location	Incendiary Device Details	Additional Information	Images Provided
0001001	RB30878	Bedroom	On floor east side of bed adjacent to bedside table. See attached diagram attached.	Cigarette in multi-book used as time delay. Device sitting on rim of rubbish bin filled with paper.	Device fell outside bin, not inside therefore bin not ignited. Most of device remained and occupant was able to self aggress.	Y
0001002	2010597	Kitchen	On gas stove top	Gas was turned on, toaster located with significant amounts of paper (some remaining unburnt on the bench) near the stove.	Smoke alarm disabled. Owners in financial distress.	Y
0001003	MSS2009-00380	Under house	In crawl space below linen press	A crate containing a metal tray, which held a mosquito coil, paper, sparklers and matches.	The device was located under the linen press near a hallway full of ignitable items. Smoke alarm disabled. Significant items removed from house.	Y
0001004	MSS2013-00023	Bedroom	In corner of room in rubbish bin	Ignitable liquid in rubbish bin filled with ignitable materials.	None were found in bedroom.	Y
0001005	590788	Workshop	In a bin located under a bench along southern wall	A metal container found at the bottom of a bin used to store old rags which were used to clean up coolant.	Workshop Manager pointed out that the metal container was not a usual part of the bin contents. Suspected solid chemical residue on metal container.	Y
0001006	20140038	Office	In document storage cabinet near office door	Molotov cocktail - glass bottle containing ignitable liquid. Laboratory analysis attached.	Door to office was forced open. Office was used to store confidential documentation. Office owner confirms existence of disgruntled client.	Y

Figure 2: IDD Interface Example.

The information pertaining to the highlighted boxes in Figure 2 has been presented below.

- The data gathered from the surveys are entered into fields that directly correspond to the questions. The fields serve as the method of filtration to mine data specific to requests for information regarding incendiary devices.
- When viewing the data from a specific investigation images have been linked to the file and can be viewed at the same time as the data.
- The data fields and the images can be scrolled or toggled through, respectively. Figure 3 provides examples of additional images that are linked to ID# 0001003.
- Depending on the resolution of the images provided to the IDD each image can be enlarged.



Figure 3: a) during the excavation a crate housing the incendiary device is uncovered, b) sparklers and the remains of matches in molten remains, c) an exemplar mosquito coil holder (from the site) next to the one found in situ.

An individual investigator, or investigative group, will always have access to the data they provide. However, requests for information involving the data housed in the IDD will be reserved for stakeholders with a genuine requirement to use this investigative tool.

DATA MINING OUTPUT

Each request for information will dictate how the IDD Report will be presented. The report has the capacity to be tailored to specific requirements based on the factors (that are available for filtration) requested by the stakeholder. The filtration factors are based on the questions asked in the survey and include, but are certainly not limited to, site/geographical location, type of device and area of origin. A report can also include, subject to availability, images for each case the filtration process identifies.

An example of an IDD Report with a specific location, area of origin and a broad category of incendiary device is shown below in Figure 4.

AUSTRALIAN INSTITUTE OF FORENSIC FIRE INVESTIGATION
IDD REPORT

ID Number: XXXXX

Request for Information

Name of Investigator: Joe Bloggs
 Agency (if applicable): Private Fire Investigator
 Date of Request: 08 April 2014
 Details of Request: All cases located within bedrooms in the Inner West suburbs of Sydney, New South Wales, Australia, that involved incendiary devices of an electrical nature.

Prepared By: Jane Doe
 Date Prepared: 10 April 2014

Map Showing Relevant Cases

Image Log

Image File Name	Description of Image

Figure 4: An example of an IDD Report provided once a formal request for information.

Due to the sensitive nature of the information contained in the IDD, access is controlled by AIFFI. Requests for information are restricted to stakeholders with a genuine requirement for the information, such as fire investigators in private industry or those employed in emergency services or relevant government agencies. To reiterate, investigators who have contributed data to the IDD are given unrestricted access to the information they have provided. Stakeholders that request reports that extend to all information for a particular data point of interest will be required to prepare a formal request for information to AIFFI. The requests are assessed by AIFFI, case by case, based on the legitimate need of the requesting stakeholder.

CONCLUSION

The collation of information collected and produced by individual fire investigators into a database has the potential to improve future intelligence-led fire investigations, both in quality and efficiency. The IDD is a novel concept that has the potential to achieve such an improvement. The IDD is still in its infancy, however, interest in the IDD has been substantial and is expected to be at a reportable stage in the next six to twelve months.

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