

Other Document

URN D26735
Priority: Low Class: L96 CONSTRUCTION - EXPERT REPORTS
AND TESTING
Title: FORENSIC REPORT - EXAMINATION OF THE FIRE CONTROL PANEL AND
DROP KEYS

**FORENSIC REPORT BY SCIENTIST ANDRE HORNE (EUROFINS FORENSICS)
CONCERNING THE EXAMINATIONS OF THE FIRE CONTROL PANEL AND
DROP KEYS FROM GRENFELL TOWER**

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Official Sensitive

Forensic Report

This report provides only a summary of the scientific findings, interpretation and conclusions in this case. It is not intended for court use and therefore does not comply with the Criminal Procedure Rules parts 16 and 19. If the information in this report is required for court purposes then a Full Statement must be requested in advance of any court date.

Date of Report: 12 November 2019
Customer References: Operation Northleigh
LGC Forensics Reference: LGC-17132109
Police Force: Metropolitan Police Service
Officer in the case: Sarah WILD
Offence: Investigation into the fire at Grenfell Tower
Date of offence: NA
Suspects: NA
Victim/Complainant: NA
Offence Location: Grenfell Tower

Request:

To examine the Fire Control Panel, Item BJG/74, recovered from the ground floor of Grenfell Tower following the fire on 14 June 2017.

Purpose:

To determine if the mechanism of the Fire Control Panel, Item BJG/74, was in working order and if it had been damaged, tampered with or vandalised.

Examination

On 15 February 2019 I attended at BRE Watford at the request of the Metropolitan Police Service to examine the fireman's lock recovered from Grenfell Towers following the fire on 14 June 2017.

Other experts and members of the MPS were also present.

We were presented with the following exhibits to examine in the presence of officers from the Metropolitan Police Service:

BJG/74 Fire control panel unit, ground floor (recovered 18/7/18)

ER/1 One (1) Exprox Drop release lift key

ER/2 One (1) Exprox firemans switch

Examination and results

ER/2 One (1) Exprox Firemans Switch

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This was a fire control panel, usually mounted in the wall adjacent to a lift, with a switch to take control of a lift and summon it to the location of the panel. The control panel consists of a wall mounted plate with a circular aperture through which to insert a specialized fireman's drop key. When the key is inserted into the circular aperture, it is pushed along a tube, at the end of which the lower part of the key hinges and drops down (as a result of gravity) and dangles freely from the key shaft. The free dangling part of the key is shaped to fit and pass through slots in the metal side wards in order to press against and move a metal switch frame arm attached to an electronic toggle switch. If the key is turned one way, the contacts on the electronic switch are closed and if it is turned the other way, the contacts are opened.

The panel was marked Fire Control on the outside in red with arrows pointing to the number 1 (On) and 0 (Off). The arrows indicated the direction to turn the key to achieve the On or Off condition. On the panel (ER/2) the key had to be turned clockwise for the On condition and it had to be turned counter-clockwise for the Off condition. Directly under the key aperture was a colour indicator for a visual indication of the condition of the panel. The indicator can be red or green. On this panel, when it was in the Off condition, the red indicator was visible and the electronic switch circuit was found to be closed when tested with a multi-meter. When it was in the On condition, the green indicator was visible.

(Please see original document for image)

(Please see original document for image)
Rear of panel

(Please see original document for image)

ER/1 One (1) Exprox Drop Release Lift Key

This was a fireman's drop key with no brand markings or other identifying markings. There was slight corrosion and damage on the key from normal use. The key is cylindrical, bent at a right angle at the rear and hinged at the front. The hinged front part of the key is cut to fit the slots in the side wards of fire control panels. The key has a stop bar in approximately the middle to prevent it from being inserted too far into the tube of the panel. The key was tried on the fire control panel, Item ER/2, and it functions correctly.

(Please see original document for image)
Key

(Please see original document for image)
Key inserted into panel

BJG/74 Fire Control Panel Unit, Ground Floor (Recovered 18/7/18)

This was a fire control panel marked Fire Control on the outside in red with arrows pointing to the words On and Off. The arrows indicated the direction to turn the key to achieve the On or Off condition. On this panel (BJG/74), to achieve the On condition, the key had to be turned clockwise and it had to be turned counter-clockwise for the Off condition. Directly under the key hole was a colour indicator for a visual indication of the condition of the panel. The indicator can be red or green. The metal frame and switch arms were ferrous and coated with a corrosion resistant material.

The aperture and tube was inspected to determine if it had been damaged by vandalism or attempts to operate it with something other than a fireman's key. No damage was observed to the aperture or the tube to indicate vandalism or misuse.

There was some surface corrosion visible on the metal parts of the switch. The corrosion was not sufficient to affect the operation of the switch.

The panel was received in the Off condition and the visual indicator was on green. The electronic switch circuit was tested with a multi meter and found to be open.

[REDACTED]

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When an attempt was made to toggle the switch to the On condition, the switch frame arms were found to be jammed. They did not move freely. Inspection as to the cause revealed that there was some debris evident on the frame which appeared to be dirt/mortar/sand possibly from the construction of the building. It could not be determined if some of this debris had become dislodged during the removal, transportation and storage of the panel to cause the jam or if it had been jammed prior to removal from the building. After some gentle manipulation by hand it moved freely. In our opinion, forceful manipulation of a fitting key would have moved the switch frame arms.

The side wards with the slots for the key to pass through were damaged and bulged outwards. It was evident that some force had been applied to the inside of the side wards on either side. There were marks on the metal where something had pressed against the side wards.

The switch frame arm on the off side was also bent, apparently from excessive force applied to it. The fireman's drop key of Jeff TURNER (attending Forensic locksmith) was inserted into the lock and turned. The key fitted the slots correctly and was able to pass through the slots and engage the switch frame arms. The key Item ER/1 supplied as an exemplar key was subsequently tried on the lock. The key however fouled on the interior of the side ward on the On side and did not pass through the slot to engage the switch frame arm. The side ward on the Off side was found to be bent more and the key passed through the slot to engage with the switch frame arm.

The two keys were compared side by side and it was evident that there was a slight difference in dimensions. The difference in dimensions was sufficient for the exemplar key to foul on the side wards. If sufficient force was applied, the side wards would bend and the key would be able to be forced through the slots.

My conclusion at this stage was that the side wards and switch frame arm on the Off side were bent due to the use of an ill-fitting key and the use of excessive force. The bent side wards and switch frame arm did not cause the jam experienced at the start of the examination. I was able to turn a key with the correct dimensions in either direction to turn the electronic switch On or Off. At this stage the examination was suspended in order to source the fireman's drop key alleged to have been used on the night of the fire.

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Keys in On and Off positions to show the difference in colour indicators

On 29 July 2019 I attended at BRE Watford at the request of the Metropolitan Police Service to examine the recovered fireman's drop key alleged to have been used on 14 June 2017. Other experts and members of the MPS were also present.

The items examined on 15 February 2019 were present in addition to the following exhibit
LJH/67 Lift Key

This was a fireman's drop key, similar to the other keys examined on 15 February 2019. It appeared new and there was no apparent damage from normal use. It did not have any brand markings or other identifying markings.

It was visually compared to the ill-fitting key, Item ER/1, examined on 15 February. The differences in key dimensions were immediately apparent. The hinged part of the key, Item LJH/67 that had to pass through the slots in the side wards, was longer by several millimeters and the slots in the key were several millimetres displaced compared to the key, ER/1.

[REDACTED]

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The key was tried on the fire control panel, Item BJG/74 and the dimensions were found to be so grossly different that the key was un-useable on the fire control panel (in its current as well as undamaged condition). It was capable of being inserted in the aperture but could not be turned. It fouled completely on the side wards and even if excessive force had been applied, it would not be able to bend the side wards sufficiently to pass through the slots to engage with the switch frame arm and toggle the electronic switch. Due to misalignment, we concluded that the key could not have caused the damage observed on the side wards and on the switch frame arm on the fire control panel, Item BJG/74.

The key was also tried on the exemplar panel, Item ER/2, with the same results.

(Please see original document for image) Key LJH/67 at the top and KEY ER/1 at the bottom

(Please see original document for image) Key ER/1 at the top and Key LJH/67 at the bottom

(Please see original document for image) LJH/67 fouling completely on the side ward of panel PJG/74

Conclusions:

In my opinion:

No vandalism or tampering with the fire panel, Item BJG/74 was observed. The metal side wards and the switch frame arm on the Off side were bent out of shape and there were visible scuff marks on the side wards where a drop key had been forced against them. The damage we observed on the lock mechanism was caused by someone forcing a slightly ill-fitting key in both directions, to such an extent that the side wards were bent. The side ward on the Off side appears to have been bent sufficiently for the key to pass through the slot and engage with metal switch frame arm which was bent from apparently forcefully trying to get the switch to work. I am unable to determine when this took place. It may have been before, during or after the fire. If this had happened prior to the fire incident, the fire fighter would have been able to turn a fitting key in the damaged lock in either direction. One direction would have had more movement than the other.

When I first examined the fire control panel, the switch frame arm was jammed by apparent building debris caught between the arm and the frame. Gentle manipulation by hand freed it. I am unable to determine when this occurred. In my opinion, forceful manipulation of a fitting key would have moved the mechanism.

Observations which may affect public safety

I observed differences in the labelling and visual colour indicators on the fire control panels I examined. On one panel, green indicated Off and on the other panel red indicated Off. On one panel the electronic switch circuit was open in the Off position and on the other panel it was closed in the Off position. On one panel the terms On and Off were used and on the other panel the letters 0 and 1 were used.

There are drop keys available for purchase on the internet which do not fit the fire control panels installed in buildings. This can have serious implications for firefighting operations during a fire.

Report provided by: Andre HORNE BMedSci

Signature:

Address Royal Armouries, Armouries Drive, Leeds, LS10 1LT

Telephone number: [REDACTED]

Declaration

All the information I have given in the following certificate is true to the best of my knowledge and belief. I will notify those instructing me of any change in this information. I am aware that

[REDACTED]

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any false or misleading information I have given in this document, or any deliberate omission of relevant information may lead to disciplinary or criminal proceedings.

Expert Witness Declaration Form

I am an expert in the subject matters discussed and I have been requested to provide a report. I confirm that I have read guidance contained in a booklet known as Disclosure: Expert's evidence and unused material which details my role and documents my responsibilities, in relation to revelation as an expert witness. I have followed the guidance and recognise the continuing nature of my responsibilities of revelation. In accordance with my duties of revelation, as documented in the guidance booklet, I

(a) confirm that I have complied with my duties to record, retain and reveal material in accordance with the Criminal Procedure and Investigations Act 1996, as amended.

(b) have compiled an Index of all material. I will ensure that the Index is updated in the event I am provided with or generate additional material;

(c) that in the event my opinion changes on any material issue, I will inform the investigating officer, as soon as reasonably practicable and give reasons.

Expert Witnesses Self-Certificate

Revelation of information (Criminal Procedure and Investigations Act 1996)

Name of Expert Witness: Andre HORNE

Date of birth: [REDACTED]

Signature:

Defendant Name(s):

Address: Royal Armouries Drive, Leeds, LS10 1LT

I have been instructed to provide expert evidence in relation to the prosecution of the above-named, or an investigation into the following criminal offence: Simple supply (up to 3 items)

I confirm that I have read the booklet known as Disclosure: Experts evidence and unused material, that has been given to me with the form, and that I am aware of my responsibilities as an expert witness to reveal to the Prosecution Team any information that might undermine my evidence.

Personal Information

1. Have you ever been convicted of, cautioned for, or received a penalty notice for, any criminal offence (other than minor traffic offences)? [REDACTED]
2. Are there any proceedings pending against you in any criminal or civil court? [REDACTED]
3. Are you aware of any adverse finding by a judge, magistrate or coroner about your professional competence or credibility as a witness? [REDACTED]
4. Have you ever been the subject of any adverse findings by a professional or regulatory body? [REDACTED]
5. Are there any proceedings, referrals or investigations pending against you that have been brought by a professional or regulatory body? [REDACTED]
6. Are you aware of any other information that you think may adversely affect your professional competence and credibility as an expert witness? [REDACTED]

Name of Expert Witness: Andre HORNE

Signature:

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