

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: 28 August 2020
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 a Fire Control Panel Key supplied by the Fire Services. I have been asked to expand on my report dated 15 May 2020 to include the examination of exhibit SJG/01 and to produce a table of results.

Purpose:

To determine if the dimensions of the key correspond to other keys previously examined.

Examination

On 7 February 2020 I attended at the CSI offices at Deer Park, London at the request of the Metropolitan Police Service to examine the keys.

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

DER/22 15 LIFT KEYS – ON D100
SJG/01 ONE (1) FIRE BRIGADE DROP KEY PURCHASED FROM EBAY + INVOICE

The following exhibits were also present for comparison purposes. They had been previously examined and reported in my report dated 12 November 2019.

ER/1 ONE (1) EXPRESS DROP RELEASE LIFT KEY
 ER/2 ONE (1) EXPRESS FIREMANS SWITCH UN-USED
 LJH/67 LIFT KEY
 BJG/74 FIRE CONTROL PANEL UNIT, GROUND FLOOR (RECOVERED 18/7/18)

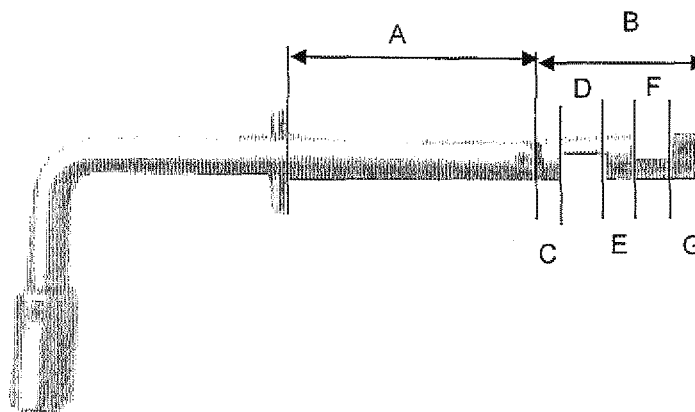
Examination and results

DER/22 15 LIFT KEYS – ON D100

This was 15 keys of different types but included one drop key of the same type that would fit the fire control panel, Item BJG/74, the subject of this investigation.

The drop key was measured to obtain the dimensions and it was visually compared to other drop keys, Items SJG/01, ER/1 and LJH/67, which were also measured.

The drop key was found to be similar in all dimensions (but not the same) to the drop keys, Items ER/1 and SJG/01. There was however a significant difference in dimension C between the other drop keys and the drop key, Item LJH/67. The drop key dimensions are provided in the table below.



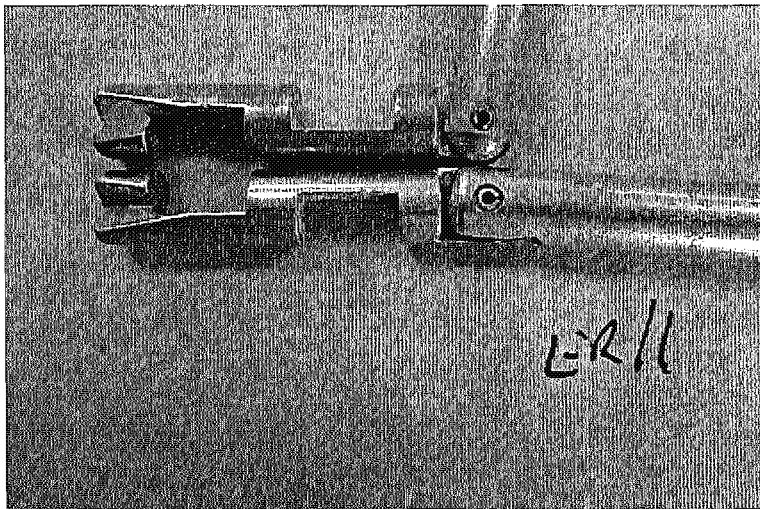
	A	B	C	D	E	F	G
DER/22	57.5	35.26	4.5	10.24	5.24	9.94	5.90
SJG/01	55.79	35.55	4.54	10.13	4.63	10.00	6.76
ER/1	58.72	35.29	4.00	10.29	5.04	10.12	6.0
LJH/67	55.15	36.41	7.69	10.06	4.28	10.08	4.53

The difference in dimension C is the dimension that results in drop key, Item LJH/67, being un-useable in fire control panels such as Items BJG/74 and ER/2.

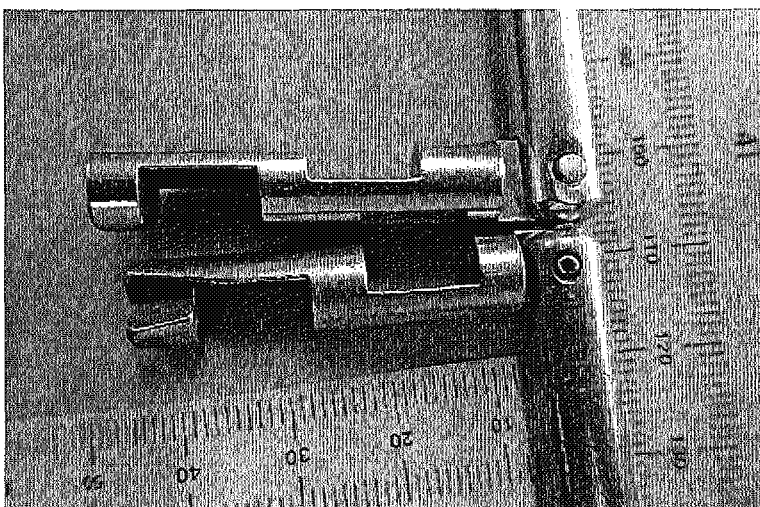
The drop key in Item DER/22, was inserted into the fire control panel, Item BJG/74, recovered from Grenfell Tower to determine the fit. The side wards of the panel had been bent as described in my report dated 12 November 2019. The key passed through the bent side ward on the "OFF" side without touching the edges of the slots. The key fouled on the bent side ward on the "ON" side, but was able to pass through with slight force. The observation that the key was fouling on the bent side ward on the "ON" side, indicates that it would also have fouled on the side wards in their original unbent state (This can be confirmed if the bent side wards were to be straightened and the key tried again). I cannot categorically state what the degree of fouling would have been and how much force would have been required to force the key through the side wards in their original unbent state in order to operate the electronic switch.

The drop key in Item DER/22 was also inserted into the exemplar fire control panel, Item ER/22, to determine the fit. The key functioned normally in the panel without fouling on the side wards.

In my opinion the key, Item DER/22, could also be considered as a slightly ill-fitting key for the Fire Control panel, Item BJG/74 (as described in my report dated 12 November 2019), and had such a key been used it could have been responsible for the damage observed on the Fire Control panel side wards of Item BJG/74.



Key DER/22 at the top and
Key ER/1 at the bottom



Key LJH/67 at the top and
Key ER/1 at the bottom

SJG/01 ONE (1) FIRE BRIGADE DROP KEY PURCHASED FROM EBAY + INVOICE

This was a commercially available drop key purchased by the Metropolitan Police Service. The drop key was measured to obtain the dimensions and it was visually compared to other drop keys, Items DER/22, ER/1 and LJH/67, which were also measured.

The drop key was found to be similar in all dimensions to the drop keys, Items ER/1 and DER/22. There was however a significant difference in dimension C between the other drop keys and the drop key, Item LJH/67. The drop key dimensions are provided in the table in the paragraph describing Item DER/22.

The drop key was inserted into the fire control panel, Item BJG/74, recovered from Grenfell Tower and the exemplar fire control panel, Item ER/2, to determine the fit. The key passed through the side wards on both sides without touching the edges of the slots of both panels.

Conclusions:

In my opinion:-

The drop key in Item DER/22 can be described as slightly ill-fitting. Had such a drop key been used it could have been responsible for the damage observed on the fire control panel side wards of Item BJG/74. If a fire control panel with the same dimensions as Item BJG/74 is encountered and a drop key such as the one in Item DER/22 is used, it may cause the same problems encountered during the response to the fire in Grenfell Tower. Because the panel BJG/74 is in a damaged state with bent side wards, I cannot categorically state what amount of force that would have been required to force it through the side wards in its undamaged state.

The drop key, Item SJG/01, functioned normally on the damaged panel BJG/74. My expectation is that it would also have functioned normally on the undamaged panel.

The drop key, Item DER/22 was similar in all dimensions to the drop keys, Item ER/1 and SJG/01. Although the dimensions of the three keys were similar, they were however not the same (as can be seen in the table with drop key dimensions in the paragraph describing Item DER/22).

There was several millimetres difference in dimension C between the drop keys, Items DER/22, ER/1 and SJG/01 and the drop key Item LJH/67.

The drop key, Item LJH/67, is not suitable for use in fire control panels such as Items ER/2 and BJG/74.

A summary of my conclusions for both panels can be found in the table below

	Control panel BJG/74 (Grenfell Tower)	Control panel ER/2 (unused control switch purchased as an example)
LJH/67	Grossly ill-fitting. If inserted into this control panel the key would not turn and would not be capable of switching the control panel on/off. Incapable of causing the side ward damage seen in this control panel.	Grossly ill-fitting. If inserted into this control panel the key would not turn and would not be capable of switching the control panel on/off.
ER/1	Slightly ill-fitting. With force * this key would be capable of being turned in this control panel and at the same time causing damage similar to that seen in this control panel side wards. In these circumstances this key could have operated the control panel electronic switch.	Functioned correctly
DER/22	Slightly ill-fitting. With force * this key would be capable of being turned in this control panel and at the same time causing damage similar to that seen in this control panel side wards. In these circumstances this key could have operated the control panel electronic switch.	Functioned normally without fouling on the side wards
SJG/01	Functioned normally without fouling on the side wards. Would not have caused any damage to the side wards and would have operated the control panel electronic switch	Functioned normally without fouling on the side wards

* Because the panel BJG/74 is in a damaged state with bent side wards, I cannot categorically state what amount of force that would have been required to force the key through the side wards in its undamaged state.

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 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

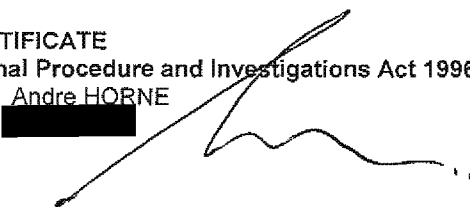
I am an expert in the subject matters discussed and I have been requested to provide a report. I confirm that I have read guidance contained in a booklet known as *Disclosure: Expert's evidence and unused material* which details my role and documents my responsibilities, in relation to revelation as 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, 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 : Grenfell Tower fire control panel.

I confirm that I have read the booklet known as *Disclosure: Experts evidence and unused material*, that has been given to me with this 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)?
2. Are there any proceedings pending against you in any criminal or civil court?
3. Are you aware of any adverse finding by a judge, magistrate or coroner about your professional competence or credibility as a witness?
4. Have you ever been the subject of any adverse findings by a professional or regulatory body?
5. Are there any proceedings, referrals or investigations pending against you that have been brought by a professional or regulatory body?
6. Are you aware of any other information that you think may adversely affect your professional competence and credibility as an expert witness?

Name of Expert Witness: Andre HORNE

Signature: