School of Forensic and Investigative Sciences

Assessment Coversheet

Module Code: FV 4901
Module Tutor:  

Student's name: Ian Tonner
Student ID Number: 20576716/CE
Course/Subject: MSc Fire Scene Investigation

Assignment Title: Have changes to UK Fire Investigation process affected Fire Services? What effect (if any) has the closure of the Forensic Science Service had to Fire Investigation across the UK?

'I confirm that this piece of work which I have submitted is all my own work and that all references and quotations from both primary and secondary sources have been fully identified and properly acknowledged in footnotes and bibliography.'

Signature: [Signature]
Date: January 2015
Submission: 29/01/2015

Work submitted should be presented in the following format:
- Double line-spaced, on A4 paper
- In Arial or Times New Roman font in black ink

Learning Outcomes

1. Define the objectives of an investigation with the use of appropriate evidence and other supporting information
2. Plan a research strategy, including where appropriate experimental and computational studies
3. Demonstrate mastery of the subject area.
4. Independently plan and execute research
5. Carrying out risk assessments and maintain safety records as appropriate
6. Synthesise results and conclusions of the study with reference to the limitations and generalisations
7. Disseminate research outcomes and communicate arguments logically, clearly and critically as an extended formal presentation
8. Demonstrate self-evaluation and improve practice through reflection

General comments:

Strengths: 

Areas for Improvement:

If there is something you do not understand or some aspect on which you want further information, and you have not yet had the opportunity, you must make an appointment with your tutor to discuss this assessment and the feedback given. You may be asked to use this feedback to reflect upon your personal development (PDP). Upon receipt of the feedback from your module tutor, please complete below your reflections on this assessment for your future action.

1st Marker Signature: 
Date:

2nd Marker Signature: 
Date:

External Examiner Initials: 
Date:
Confirmation of my own work

I confirm that this report is all my own work and that all references and quotations from both primary and secondary sources, have been fully identified and properly acknowledged in footnotes.

Signature

Date: January 2015
Acknowledgements

I acknowledge the help and assistance of staff at the University of Central Lancashire (UCLAN), who have provided me with the advice and support to conduct this research. In particular, lead lecturer Simon Cable, who has provided guidance and advice throughout my education at UCLAN.

I must thank those later mentioned in the supplementary section whose knowledge in, and insight into Fire Investigation have helped shape the conclusions. Dr Pete Mansi, Dr Nick Carey, Mick Gardiner, Penny Harper, Deputy Chief Fire Officer Chris Blacksell and all those who undertook the survey from across the United Kingdom Fire Investigation sector.

I would like to thank my employer, Warwickshire Fire and Rescue Service, for their time allocation during the MSc programme and for granting permission to conduct this research project.

Dedication

I would like to dedicate this study to my wife Kate Tonner who, although diagnosed with terminal cancer in the same month that I started the MSc, has at no point asked me to stop, or complained at the time required away from home. She is an inspiration to me and our daughter Grace.
## Contents

<table>
<thead>
<tr>
<th>Direction</th>
<th>Assessment Cover Sheet</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Confirmation of own work</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Acknowledgements</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Dedication</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Contents</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Table Contents</td>
<td></td>
</tr>
<tr>
<td>Chapter 1</td>
<td>Introduction</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>1.0 Introduction</td>
<td>6</td>
</tr>
<tr>
<td>Chapter 2</td>
<td>Brief History of Fires and Fire Investigation</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>2.1 Post War</td>
<td>10 - 18</td>
</tr>
<tr>
<td>Chapter 3</td>
<td>3.0 Reasons for Investigating Fires</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>3.1 What is the Current Process at Fire Scenes</td>
<td>22</td>
</tr>
<tr>
<td>Chapter 4</td>
<td>4.1 UK Fire Investigation Teams</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>4.2 Arson Task Force</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>4.3 Conviction Through Fire Investigation</td>
<td>28</td>
</tr>
<tr>
<td>Chapter 5</td>
<td>Survey Development</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>5.0 Survey Development Phase</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td>5.1 Survey Introduction</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>5.2 About You</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>5.3 Qualifications &amp; Accreditation</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>5.4 Continuous Professional Development</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td>5.5 FSS Closure Impact Assessment</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td>5.6 Would you Support</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td>5.7 National Documentation</td>
<td>34</td>
</tr>
<tr>
<td>Chapter 6</td>
<td>6.0 Table contents</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>6.1 Survey Results</td>
<td>36 - 49</td>
</tr>
<tr>
<td></td>
<td>6.2 Overarching Findings</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>6.3 Suggested Reason for Differences 2011/15</td>
<td>52</td>
</tr>
<tr>
<td>Chapter 7</td>
<td>Supplementary Question of Industry Experts</td>
<td>54</td>
</tr>
<tr>
<td></td>
<td>7.1 Question 1</td>
<td>55</td>
</tr>
<tr>
<td></td>
<td>7.2 Question 2</td>
<td>56</td>
</tr>
<tr>
<td></td>
<td>7.3 Question 3</td>
<td>57</td>
</tr>
<tr>
<td></td>
<td>7.4 Question 4</td>
<td>58</td>
</tr>
<tr>
<td></td>
<td>7.5 Question 5</td>
<td>59</td>
</tr>
<tr>
<td></td>
<td>7.6 Summary of results</td>
<td>59</td>
</tr>
<tr>
<td>Chapter 8</td>
<td>Conclusion</td>
<td>62</td>
</tr>
<tr>
<td></td>
<td>8.1 Future Developments</td>
<td>63</td>
</tr>
<tr>
<td>References</td>
<td>Reference page</td>
<td>65 - 67</td>
</tr>
<tr>
<td>Appendices</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ap1</td>
<td>Dissertation Proposal</td>
<td>68 - 70</td>
</tr>
<tr>
<td>Ap2</td>
<td>Emails History</td>
<td>71 - 76</td>
</tr>
<tr>
<td>Ap3 &amp; 3a</td>
<td>Expert Profiles and Interview notes,</td>
<td>77 - 85</td>
</tr>
<tr>
<td>Ap4</td>
<td>Copy of Survey</td>
<td>85 - 96</td>
</tr>
<tr>
<td>Ap5</td>
<td>Copy of COP (Protocol)</td>
<td>97 - End</td>
</tr>
</tbody>
</table>
CHAPTER 1
INTRODUCTION
1.0 Introduction

**Fire Investigation:** *The process of determining the origin, cause, and development of a fire or explosion*\(^1\)

Fire Investigation is a key function of the modern Fire and Rescue Service, this dissertation sets out to show how changes to funding, structure and the forensic set-up across the United Kingdom is shaping fire investigation. The loss of life and property due to fire has been on a steady decline since the turn of the century, this can be attributed to many factors from; better building design, better knowledge of fire development, enhanced community fire safety delivery within the United Kingdom Fire and Rescue Service and an excellent standard of forensic fire investigation across all levels.

The United Kingdom’s fire investigation conclusions support fire safety by assisting in the knowledge and understanding of the origin and cause of fires. It is this information that informs the introduction of new building codes, community education programmes and highlights faults within product design. If all these factors are assessed and reported correctly through the National data base known as the Incident Recording System (IRS) then, any fire trends and patterns will assist industry and others to develop better, more robust practices and reduce accidental fires year on year.

The ability of a fire investigator to determine that a fire is not accidental but deliberate, then establishes that the fire scene becomes a crime scene. Thereafter a joint approach to the evidence gathering and conviction becomes routine.

\(^1\) NFPA 921 2011 Edition / Copyright© P14 – 3.3.62 [definitions]
This dissertation sets out to show what impact, if any, the closure of the national Forensic Science Service (FSS) has had on both Police and Fire and Rescue Services across England and Wales regarding the criminal justice system. This dissertation looks for evidence that the closure of the forensic science service has reduced the quality and skill sets of forensic scientists within the fire sector across the United Kingdom. The Survey at the heart of this research is designed to establish a ground truth on the position of practitioners, both public and private sector, and the views from senior Police and Fire Investigators following the introduction of the skills for Justice level five certificate. It has also considered potential impacts if the draft code of practice² for investigators of fires and explosions from the Scientific Regulator becomes a live document.

The survey results have provided data to examine, as shown later in the results section, for the author to develop a position statement on the current feeling and considerations of those involved at this point in time. The future development section (8.1), will establish where the author sees the future of fire investigation going next, and is designed to inform senior sector advisors on a way forward for Fire Investigation following the evidence provided by the survey results.

² Draft Code Of Practice for Investigators of Fire & Explosions for the CJS Draft 6 06-07-14
CHAPTER 2

Brief History of Fire, and Fire Investigation
2.0 Brief History of Fire, and Fire Investigation

Many historical books, documents and web links highlight the start of what we call a Fire Brigade\(^3\) in the early 1700’s, following the great fire of London in 1666. The first insurance company was named Phoenix, after the Greek mythological bird that rose from the ashes, and was established by Nicolas Barbon and the insurance companies setting up their own provision for their properties if they caught fire, these were denoted by a “Fire mark” or “Fire Insurance Plaques” on the building. In 1721, Richard Newsham patented a 'new water engine for the quenching and extinguishing of fires'. This basic pump provided a jet of water with pressure, something that had not been done before\(^4\).

In 1828 to help people escape from burning buildings the Royal Society for the Protection of Life from Fire (RSPLF) was formed and provided escape ladders. The ladders were kept in churchyards during the day and placed on street corners at night. Known as wheeled escapes they could reach up to 60 feet.

In 1833, 10 independent fire insurance companies united to form the London Fire Engine Establishment (LFEE) to provide the public with a more robust and effective fire service, headed by James Braidwood an experienced Fire fighter from Edinburgh. At the same time there was the establishment of other Municipal brigades created in Manchester and Edinburgh. This was followed by the

\(^{3}\) From [www.fireservice.co.uk/history](http://www.fireservice.co.uk/history) History of the UK Fire & Rescue Service [accessed 30/12/14]

Metropolitan Fire Brigade in 1865, which for the first time put the emphasis on the Local Authority.\(^5\)

**2.1 Post World War II**

The beginning of organised fire investigation started in the late 1940’s; fire investigators had used fire burn patterns as a basis for determining the fire’s origin (Rethoret, 1945).\(^6\) Fire (burn) patterns are still defined as the “visible or measurable physical changes, or identifiable shapes, formed by a fire effect or group of fire effects.”\(^7\) (NFPA 921 2011 Edition P14). The burn pattern which is a directional stain of either smoke or flame assists the investigator to highlight an area within a fire compartment, and through their knowledge of the differing patterns and causes, can direct their investigation to a potential point of origin. In the absence of a testimony from an eyewitness to the fire at its starting point, the investigator is required to determine the origin by surveillance and expert understanding of the physical evidence of burn patterns in an attempt to recreate the fire. As early as 1945 Rethoret (p 36) in his text “Fire Investigations” explained: “In which direction is the wood carbonized? Study closely the depth of carbonization at various places. Bear in mind that superheated gases spread upwards. This again will assist you in getting back to the point of origin.”

In 1947, following the Second World War the Fire Services Act 1947\(^8\) was established, which for the first time set out in the Provision of Fire Services

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\(^6\) Rethoret H, Fire Investigation, Recording & Statistical Corporation, Ltd., Montreal, P.Q. (1945)

\(^7\) NFPA 921 2011 Edition P14 3.3.64

(1)(e)“efficient arrangements for ensuring that reasonable steps are taken to prevent or mitigate damage to property resulting from measures taken in dealing with fires in the area of the fire authority” This enabled the Fire Services to establish Fire Safety and inspection teams.

A Fire Investigation case in the United Kingdom from 1977, highlights where self-confessed arsonist, Bruce George Peter Lee, had one of his many arson convictions quashed at appeal. The self-confessed arsonist had highlighted his involvement in a number of fires in the Humberside area, following being questioned by Police in 1979. Lee confessed to setting fire to 12 Selby Street, the home of the Hastie family killing three young men. During his confession he admitted to a number of other fires that claimed the lives of 26 people. One of the cases that Lee had confessed to resulted in the deaths of 11 people at Wensley Lodge, West Hill in Humberside on the 5th January 1977. This fire had been closed and recorded as accidental; the report stated it was started by a plumber’s blowtorch accidently setting fire to the ceiling boards. After Lee’s confession where he stated using paraffin at the scene to start the fire, the case was reopened, but during the appeal the Judge, Lord Justice Ackner said, “the convictions were not safe because of the unsatisfactory nature of the forensic evidence”. His defence experts said “the facts of the fire did not fit Lee’s story” which he subsequently denied telling the police. The ability for a court to overturn a case on the grounds of the fire scene evidence and the story not concurring started to forge a path for any future forensic fire evidence within the United Kingdom.

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In June 1987, a Home Office paper was produced by the Scientific Research and Development Branch, which in summary incorporated a review of the procedures and techniques that were current for fire investigation. This followed concerns about the number of fires being classified as of doubtful origin. This paper suggested that “Many of these fires may be the result of arson and that improved post fire investigation could act as a deterrent, leading to a reduction of arson”\textsuperscript{10}. When analysing this paper the survey used, although basic, was attempting to gather similar information as within this dissertation. It was a helpful insight, which underpins this work, with a 27 year gap in the analysis of the results.

In 1988, the Home Office Working Group published a report, “The Prevention of Arson”, which was superseded by the 1999 Safer Communities: Towards Effective Arson Control\textsuperscript{11}. The 1988 Home Office Report of the Working Group on the Prevention of Arson, led to the establishment of the Arson Prevention Bureau (APB) and stressed that, “while arson was not as common as other crimes, the consequences were unduly severe”\textsuperscript{12}. The 1999 report was produced to provide Ministers with a “snapshot” of the then, current arson problems and highlight failings in arrangements at that time. The report goes into much depth around how the links between agencies were poor, and that a better and more focused approach was needed. The twenty two recommendations set out to improve these links and develop on best practice. Recommendation eleven stated “There is a requirement for national standards for fire investigation and training. Current plans for standardised fire investigation qualifications (such as the NVQ Forensic Science Level 4) need to

\textsuperscript{10} J A Milward Publication No.36/87 Scientific Research and Development Branch HO “state of art review of the procedures and techniques used in fire investigation.  
\textsuperscript{11} Home Office “The report of the Arson Scoping Study” 1999 P5 Chapter 11  
be built upon”. It is only recently in 2013/14 that the Skills for Justice Level 5 certificate has been established, 15 years later. At that time there was also the introduction of the Crime and Disorder Act 1998\(^{13}\), which originally did not refer to the role of the Fire Service but did later when amended, which enabled better links at a local level through Crime and Disorder partnerships to develop local strategies and enable Memorandums of Understanding between the Police and Fire service for joint Fire Investigation.

In 2001 The Arson Control Forum\(^{14}\) was established to give strategic guidance for arson reduction, with the remit to reduce the number of deliberate fires and prevent injuries, deaths and property damage all relating to arson. They set a marker of a 10% reduction by 2010, which we now know has been met. The government led initiative became one of the biggest drivers for arson reduction and Fire Investigation in the modern Fire Service.

Despite the focus on arson reduction and Fire Investigation in 2001; the 2002 “Bain Report” did not mention Fire Investigation. This was a government led report by Professor Sir George Bain on “The Future of the Fire Service, Reducing Risk, Saving Life”\(^{15}\) The report did highlight recommendations around moving from a reactive to proactive, prevention led service with the introduction of terrorism, flooding and more powers for Road Traffic Collisions but no focus or emphasis on Fire Investigation which may have set the tone for the following years?

\(^{14}\) The Arson Control Forum = Government led, National body representing stakeholders from the Police, Fire Service, Insurance sector and Justice.
\(^{15}\) Sir G. Bain 2006 Dept for Communities and Local Govt, The Future of the Fire Service, Reducing Risk Saving Life” (accessed 08 /12/ 2014)
Also in 2001, the Council for the Registration of Forensic Practitioners (CRFP) was created. This came to fruition as there was a lack of clear guidelines in forensic science. Whilst registration was not compulsory, Scene of Crime Officers (SOCO) and all forensic professionals were encouraged to register. Case studies were submitted to the regulator to be assessed by their peers then marked against best practise. The CRFP aimed to raise the standard of practise and credibility. At its height as many as 3000 forensic professionals were registered.

In 2000, the Fire Service Circular (FSC) 21/2000\textsuperscript{16} and Home Office Circular (HOC) 44/2000 both state that “The fire investigation officer should make contemporaneous notes of the time the police were informed, or their fire safety inspector, and the name and rank of the officer it was handed to”. These circulars went on to say that there can be no objection, to fire investigation officers taking statement or other evidence from persons when there is no suspicion.

In 2004 the Fire Services Act was introduced which highlighted a number of changes to the modern Fire and Rescue Service. The parts and sections that refer to Fire Investigation improved the powers of entry; Part 6 Supplementary Section “Powers of Entry” (45) \textit{Obtaining information and investigating fires: (1) b – if there has been a fire in the premises, for the purpose of investigating what caused the fire or why it progressed as it did.} \textsuperscript{17} This clearly introduced legislation behind the requirement to investigate the origin and cause.

Not until the 2006 Fire Service Circular FSC No.1/2006\textsuperscript{18} did fire investigation become the focus again; it set out to highlight the roles and responsibilities of Fire, Police and other agencies involved in Fire Investigation, the paper set out for the first

\textsuperscript{16} FSC 21/2000 The Investigation of Fires Where the Supposed Cause is not Accidental
\textsuperscript{17} Legislation.go.uk \url{http://www.legislation.gov.uk/ukpga/2004/21/section/45} [accessed 11.12.14]
\textsuperscript{18} ODPM 1/2006 “The investigation of fires where the supposed cause is not accidental. 18-01-2006
time levels of investigation based on the size of the fire, and not as some Services think levels of qualification of the investigator, this is not correct. The Circular clearly attributes the levels to the complexity of the fire and assigns a statement “The Investigation framework proposed has distinct and intertwining levels from Crew Manager Investigator to specialist investigator at major and unusual fire scenes.”

- **Level One:** Basic fire and arson investigations.
- **Level Two:** Intermediate fire and explosion (non-terrorist) investigations
- **Level Three:** Advanced fire and explosion (non-terrorist) investigations.

These levels have been adopted and utilised by both private and public sector as a baseline to establish scene investigation and training levels.

In 2007 a publication “On the level” in the Fire Prevention Fire Engineers Journal written by Mick Gardiner discussed the United Kingdom standards and response levels using FSC No. 1/2006 document as a guide to future training for the United Kingdom. The same author then later penned further details in January 2012 when he highlighted in a paper “Under Scrutiny” that “Fire and Arson investigation has come a long way in the UK but he sees a Service now under threat and called for policy makers to act” A paragraph within his paper sets a question for this paper’s survey as it states “Three years ago, more than 20 scientists from the Forensic Science Service (FSS) were available to attend fire scenes in England and Wales, at the request of a police senior investigating officer. A handful of forensic scientists were also available from the private sector. Since 1 October 2011, when FSS scientists stopped taking on new casework, the provision of this level of support has fallen solely to private sector providers currently on the police National Framework.

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19 ODPM 1/2006 “The investigation of fires where the supposed cause is not accidental. 18-01-2006
20 On the Level 2007 Fire Prevention Fire Engineers Journal
This has created a potential crisis situation, albeit temporary”. Mick Gardiner who is the CEO of one of the United Kingdom’s Fire Investigation training facilities works in both the private and public sector and later in this dissertation in a one to one interview gives more depth to his thought process and evidence behind his 2012 publication.

In 2009, the previously highlighted best practice CRFP (Council for the Registration of Forensic Practitioners)\(^{22}\) was closed down. The Forensic Science Regulator argued that the CRFP was surplus to requirements. Following the closure of the CRFP many articles and reports made comment around its collapse. One publication stated “Forensic fiasco”\(^{23}\). This publication picked up on a report by Andrew Miller from the Science Select Committee, whose damming report highlighted the state of forensics within the United Kingdom. This paper emphasised issues around how the government at the time had attempted to privatise the Forensic Science Service with no success and went on to state that the minister responsible for forensics “appeared to have so little understanding of the subject” In the same year the Guardian’s home affairs editor wrote a piece that had the title “Forensic Science Skills threatened by funding withdrawal”\(^{24}\). This article although balanced again highlighted that the closure and removal of funding was undertaken prior to a sound solution or replacement being established. Professor Sue Black from the University of Dundee said in the article that “the CRFP had played a role in sifting rogue scientists” and later went on to say that “The United Kingdom was at serious risk

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\(^{23}\) This Week Volume 500/ 01.08.2013 Nature ©2013 Macmillan Publication Ltd. [accessed 11/12/14]

\(^{24}\) [http://www.theguardian.com/science/2009/apr/05/forensic-science-government-funding](http://www.theguardian.com/science/2009/apr/05/forensic-science-government-funding) [accessed 26/12/14]
from “Forensic cowboys” following the removal of the register which confirmed accreditation”.

In the House of Commons Science and Technology Committee report 2013-14 Volume 1, it emphasised throughout its concerns about the shrinking forensic market and how by closing the Forensic Science Service (FSS) in March 2012 they had been short sighted. They conducted a survey including former staff from the FSS and asked relevant question on their thought on the closure. In short the overall response was concern, uncertainty and anxiety. It must be borne in mind that this covers the whole industry of forensics and not just Fire Investigation, but as a specialism within a specialist role it only added to the concerns for future.

In 2012 John J Lentini, wrote in “The evolution of Fire Investigation”\(^{25}\) that the National Fire Protection Association (NFPA) 921\(^{26}\) document which acts as a reference book for all credible fire Investigators that “it is easier to distinguish between credible investigative results and those based on hunches and feelings or discredited mythology, but demands that conclusions be justified with data, sound science, and clear reasoning.”

The comments by John J Lentini about NFPA 921 and others reference books such as Kirks Fire Investigation by John Dehaan\(^{27}\) as credible methods for fire investigation, are used to ensure that the United Kingdom Fire Investigators have good quality reference books to assist with training and court preparation. These documents are for reference only and need the reader to have a good knowledge of

\(^{26}\) NFPA 921 2011 Edition, Quincy, Massachusetts 02169
\(^{27}\) John D Dehaan, David J. Icove 2011 “Kirks Fire Investigation” edition seven Pearsons PLC.
fire development and Investigation to establish credibility in the use of the books as a reference tool.

In the last 12 months the introduction of the Skills for Justice (SFJ), Level 5 certificate has, as mentioned, finally come to the fore following years of development and changes in its name. Originally discussed in 1999 as NVQ Forensic Science Level 4 based on National Occupational Standards, the SFJ Level 5 certificate now sets out a standard for Fire Investigators within the United Kingdom to attain as an ongoing competence level.

Finally for this section, the Draft Code OF Practice (COP) for Investigators of Fire and Explosions\textsuperscript{28} which was forwarded for consultation in the summer of 2014 is the final document that brings Fire Investigation up to date, this as you will see throughout the dissertation is an essential catalyst to moving forward and although finishes this history section is a good starting point for the future direction of Fire Investigation within the United Kingdom.

\textsuperscript{28} Draft Code OF Practice for Investigators of Fire & Explosions for the CJS Draft 6 06-07-14
CHAPTER 3

REASONS FOR INVESTIGATING FIRES
3.0 REASONS FOR INVESTIGATING FIRES

At every fire, including secondary fires, the Incident Commander must investigate the circumstances leading to its discovery to determine the most probable origin and cause and to evaluate the behaviour of the fire. On those occasions where persons are involved it is also essential that a record is made of their involvement i.e. if and how they escaped, how they were rescued, type and degree of injury / fatalities, etc. The emphasis for all fire and rescue services has shifted from intervention to prevention; only from thorough and methodical fire investigation can the origin and cause of a fire be reliably identified and this information used to support our prevention strategy.²⁹

Accurate fire origin and cause determination is fundamental to focusing Community Fire Safety resources on appropriate preventative measures, and campaigns for Services undertaking the correct Fire Investigation processes. The majority of fires in the United Kingdom are investigated solely by Incident Commanders, through level 1 fire investigations, supported by colleagues as part of the fire crew.

The national system used to collate the data on fire causes is known as the Incident Reporting System (IRS). One of the key questions that the system asks the incident command is “What was the cause of the fire?”

It is not necessary to be certain that the fire was due to the cause given, only that the cause was the one that could be reasonably supposed, given the evidence available.

²⁹ Warwickshire FRS Fire Investigation Policy V0.2 May 2014 (Tonner, Hodson) P5
Investigating Officers should strive for a high degree of accuracy and must be prepared to qualify and justify their findings (IRS Help and Guidance - Version 2)\(^{30}\).

The information collected from each IRS is collated by central Government and published in an annual statistical bulletin that highlights trends. However, the gathering of such information does not simply form part of a statistical exercise, but is compiled for specific purposes i.e. to monitor the cause and effects of fire and to identify and monitor trends where future action may reduce the human and financial cost of fire. The information also assists in the development of operational and community safety strategies.

Whatever the level of experience and ability, each Investigating Officer needs to be in a position to make a positive contribution towards the common aim of reducing or preventing fires.

We know that the primary role of the Incident Commander is to save life and to ensure the fire is extinguished, but in doing so should at the earliest opportunity, make every effort to preserve the scene and gather evidence.

The insurance industry regularly uses fire investigators to satisfy itself of the validity of claims; most companies have a fixed figure of loss which, when exceeded, results in automatic independent fire investigation. There are occasions when a Fire Service could be called to court, to defend the findings published in an IRS report; hence they need to be accurate and robust.

With developments in forensic science, criminals are repeatedly turning to fire as a means of destroying criminal evidence. However in most cases, evidence will still be

\(^{30}\) IRS Help & Guidance document V2 definition of origin and cause for Incident Commanders
in the scene on arrival, and can be protected by effective scene preservation, which will greatly assist the Police and Fire Service investigations.

3.1 What is the current process at Fire Scenes?

The first question when entering a fire scene will always be; is this, a safe environment to work? Once this has been established then there is a quick assessment around what type of scene is it. Is it just a fire scene or is it a crime scene? If it is established that the scene is one where a crime may have been committed then it becomes one of the most difficult to investigate as more often than not the scene has been destroyed by fire. This therefore limits and reduces the amount of information and evidence that can be gained due to the fire damage.31

Depending on the levels of training in fire investigation within individual Fire Services may depend on the quality of scene preservation. Good well practised fire fighters will be able to spot and limit any damage to the scene in the early stages; this knowledge and understanding of a crime scene by fire fighters is an area that has improved in recent times. The development of level one training packages as stated in Fire Service Circular 1/2006 enables those first on scene to potentially set the standard for ongoing investigations. Many Services use internal experienced Officers or external training suppliers to ensure that first on the scene fire fighters are aware of the things to look for, and as soon as reasonably practical cease fire fighting tactics until a senior more experience fire investigator or Police representative is in attendance to assess the scene.

As a general rule if the attending fire service suspect that the fire is of a suspicious nature or shows evidence that a crime has taken place then they have a duty to inform the Police and as soon as possible to allow access for the Police to confirm or reject their suspicions. The fire service must also inform the Police if the fire has involved any serious life threatening injury or fatalities, in these cases the Police have a legal duty to lead the investigation using the fire service representatives as needed to fulfil their enquiries.

The framework for investigating the fire scene as stated in the FSC 1/2006 mentions that the first person on scene is likely to be level one basic fire and arson investigator it is their duty to acknowledge that the fire is of a suspicious nature. This therefore highlights the need to train all fire fighters in basic fire investigation.

The Police like the fire service have a stepped level of attendance to the scene; the first attending representative from the Police will more than likely be a Scenes of Crime Officer (SOCO) or local Police Officer with limited forensic skills. They will initially liaise with the Fire Service, Fire Investigator and initial Incident Commander to ascertain what has happened and then depending on the requirements of the scene, decides on what level of forensic support is needed. They may gather evidence themselves or in more serious cases they may require the support of a Forensic Scientist. Following the closure of the Forensic Science Service, the decision to call a scientist now sits with the Police Senior Investigating Officer (SIO). Unfortunately the use of scientists can sometimes be dependent on funding; the SIO may limit the attendance of scientists to reduce their forensic cost. It also puts a greater weight on the evidence of cause and origin presented by the on scene Fire

32 ODPM 1/2006 “The investigation of fires where the supposed cause is not accidental. 18-01-2006
Investigator. The ethos behind this dissertation is to see if the reduction in funding and potential lack of scientific support is affecting the quality of evidence being gathered to present in court. (See Survey results).

Even though the Fire Service is generally the first on the scene and routinely undertakes the majority of the initial investigation with assistance from the SOCO and other partners. It must be borne in mind that the Fire Service investigator at any level does not have any statutory duty or obligation to examine a fire scene to ascertain the origin or cause. They will however assist the Police investigation by providing items such as statements from the first on scene fire officers, detailed logs of their firefighting actions; provide any photographs and/or in some Services providing copies of the Close Circuit Television (CCTV) pictures, from the attending fire appliances. The level two incident investigators who, by experience, will be officers that have the external qualifications for example “Skills for Justice Certificate level 5” would support the Police with as much information as they require that has been obtained by the Fire Service operations as mentioned earlier in this paragraph. The extra knowledge that the Police would require from the attending Fire Investigator is specifics on fire development which would be completed and added to the bundle of information to assist the Police investigation.
CHAPTER 4

FIRE INVESTIGATION TEAMS
4.0 United Kingdom Fire Investigation Team Types

The complexity of a level two incident means that there is a need for the investigator to have more than the basic fire and arson skill sets. In England there are now only four full time fire investigation teams London, Greater Manchester, West Midlands and West Yorkshire. This is not because only these Counties have level two or above incidents but the quantity and demographic in these areas has historically meant that there are enough incidents to warrant the cost of a full time team. This by no way means that those other 42 Fire Services do not have the same standard of fire investigator but it does suggest that they may not have the quantity of incidents to justify establishing a team on a full time basis.

In the UK the majority of Fire Service fire investigators (FI's) have the FI role as a specialism as and add on to their normal day to day work. Most of these Services have a robust fire investigation Officer cadre on a 24/7 basis that when required will be called to attend level two or above investigations to assist their local Police in ascertaining the origin and cause of fires. Although the teams are not full time, they will have gained the same qualifications and training that those within the full time teams have. Their only potential reduction in credibility comes if they fail to keep up their skills and experience through regular competence training and accreditation to fill those areas that the full time teams would get through more regular fire scene attendances. (See Survey Results on CPD Q8 P40)

4.1 Arson Task Forces: A Joint Approach to Fire Investigation

A provision that enhances the quality of fire investigation teams (FIT) is to link the FIT to an arson task force. The development in the early 2000 era of Arson Task
Forces (ATF’s) highlighted that working together on crime and disorder and linking criminal damage, anti-social behaviour and arson could reduce all three crimes. Although this was not standard practice in all Fire and Rescue Services it has become the framework for most fifteen years on. Unfortunately recent reductions in funding and the fact that prevention work is not a statutory duty has seen the closure or reduction in Arson Tasks Forces in recent years. But some Services have seen fantastic results by working closer with the Police and partners.

In the West Midlands region there were two systems that worked, West Midland Fire and Rescue Service seconded a Police Officer to work with their Arson Reduction Manager, that role was to get a firm link between the two emergency Services and develop stronger links in the areas where deliberate fires were becoming an issue.

In Warwickshire where the numbers of deliberate fires were not as high, the role was reversed, they moved their Arson Reduction Team to work out of the local Police station where they assisted in developing preventative work to keep the deliberate fires low. In both cases the numbers of deliberate fires reduced considerably, Warwickshire reducing deliberate fires by more than -40%. The joint approach to prevention and investigation has seen strong links across the emergency Services. These links become apparent when a serious injury or fatal fire occurs, and those previously developed links enable the investigations to quickly establish a direction for those involved. In Warwickshire a robust Memorandum of Understanding\textsuperscript{33} (MOU) was signed between the Chief Officers of both the Police and Fire Service, which ensured that the roles at any fire scene are known, tried and tested prior to attendance. The knowledge of the content of the MOU, by the practitioners who work

\textsuperscript{33} Warwickshire FRS & Warwickshire Police MOU Fire Scene Investigation V4 2009
together establishes responsibilities early and a scene where a fire / crime has occurred. The two Services allocate roles to ensure, who does what, why and together define the origin and cause whilst working towards a conviction of an offender without confusion.

4.2 Conviction from Arson through Fire Investigation

In the Arson Control Forums annual report in 2006\textsuperscript{34} it stated that only 9% of arson cases result in an offender being charged with convictions being even lower. It was highlighted later in the report that with the closure of the Forensic Science Service and a reduction in Government funding will have an influence on the prosecution rate of arson cases. The report in 2006 also stated that the quality of evidence and independent scientific delivery in court could reduce the low number of convictions even lower still.

In the 6\textsuperscript{th} Edition of Kirks Fire Investigation, John DeHaan highlights his thoughts on this issue when making the statement in “The success of cases will often depend on how well the fire investigator performs under the duress of the intensive cross examination”\textsuperscript{35} This statement highlights that it is not only the evidence that is presented that is under the microscope but the investigator, therefore as within the arson control forums paper the actual case depends on the quality and experience of the investigation as a whole therefore the closure of the FSS and lack of experience of those left, potentially will see the number of cases going through conviction continue to be low.

\textsuperscript{34} Department for Communities and Local Government, Arson Control Forum, Annual Report 2006 ©Crown Copyright
\textsuperscript{35} John D Dehaan, David j. Icove 2007 “Kirks Fire Investigation” edition six Pearson PLC.
A fear with no independent scientific experts is; that the Police will collect the evidence, analyse the evidence (potentially in their own laboratories) and then produce the results for court that could in some experts eyes be bias towards a conviction. The use of an independent view eliminates this as a concern, but the funding to bring in an independent scientist is being reduced and therefore we may see this bias more often.

An email was forwarded to David Carmichael from the Criminal Justice Service to gauge the current rate of arson against conviction but unfortunately the latest results will not be published until after the submission date February 2015. (Email in Appendices 2)
CHAPTER 5

SURVEY DEVELOPMENT
5.0 Survey Development Phase

The survey within this dissertation takes the views from local, regional and national aspects on Fire Investigation. During its development early questions proposed tried to ensure that both public and private sector fire investigators could answer. Early feedback on versions one and two from some investigation peers suggested that the survey was weighted towards the Fire Service and more public sector workers, therefore the final version removed these questions to ensure that those from all sectors could feedback as required to ensure the balance was correct.

The survey was set over a variety of pages, this section looks to give the rationale behind each area and allow the reader to see prior to the feedback section what the survey set out to achieve. The development was solely undertaken by the author, but peers were used for reference to ensure that the questions enabled good results and data to be developed from the resulting answers.

Whilst in development a former survey undertaken by UCLAN Student Jose Antonio Spinola was highlighted as a favourable starting point\(^{36}\). The Spinola dissertation focussed on “What ifs”; in Fire Investigation, asking if the United Kingdom was going in the right direction. The survey within this dissertation takes this question another step further following the then (2011) proposed changes. So we can now benchmark where we were, and where we are; following the changes and subsequent closure of the FSS and reduction in funding that we now see. Questions 12 and 13 from the Spinola Survey was replicated in this survey as Questions 20 and 21, these

\(^{36}\) MSc J A Spinola Survey and dissertation 02-09-11 P34 - 43
questions will be a good comparison to see if the direction highlighted by Spinola has been achieved.

5.1 Survey Introduction:

It was essential that the practitioner receiving the survey was able to see the benefits of their feedback and what the survey set out to achieve prior to them undertaking the time to complete it. Therefore the introduction was essential to the success of the survey. The original email copy that set out the request for responses is attached as Appendices 2.

5.2 About you, Section:

The survey set out to gain the information about the survey candidate, Q1 – 4 looked at employer, experience, number of reports and court appearances. The section is short but enables, with some quick analysis to see who was undertaking the survey from the fire Investigation sector. A simple percentage was taken to see what number of responses came from the selected variety of practitioners engaged with.

5.3 Qualification and Accreditation, section:

The qualification and accreditation section looked at what those undertaking the survey think about some recent changes whilst asking some questions to assess the standard of training and continuous personal development (CPD). The idea within this section was to highlight a percentage of investigators who have a qualification and how many see it as essential criteria or not? The potential adoption of the Code of Practice (Protocol) for Fire and explosive investigation, clearly favours experience
and qualifications across the United Kingdom enhancing the need for practitioners to gain accredited academic qualifications.

5.4 Continuous Professional Development (CPD) Section:

This section of the survey was designed to gauge whether the candidate was undertaking CPD, and at what frequency, this enables the results to show hours as an average across the sector. There were some supplementary questions that asked about where training was held and if there were any limiting factors to training. There were questions that referred to workload and whether they saw an increase or decrease following changes in the Fire Investigation environment over recent years.

5.5 Forensic Science Service (FSS) Closure Impact Section:

The two questions in this section asked if the candidate would agree or disagree on the closure of the FSS and asked about, did they think that the quality of laboratory analysis had declined, as the ethos around the dissertation is to find out if the changes to Fire Investigation in the past years have had an impact, these questions were key to peoples thoughts on the major decision by the government to close the FSS. There is a direct link to the Spinola dissertation\(^\text{37}\) (2011) which enables comparisons to be drawn as the two questions link. The only difference to the questions was this survey removed the option for “Don’t Know”. The removal of this option has made the candidates decide either way and not sit in the middle.

\(^{37}\) MSc J A Spinola Survey and dissertation 02-09-11 P34 - 43
5.6 Would You Support? Section

The survey was an opportunity to ask practitioners their thoughts on the potential area around having a national register for fire investigation. And if they agreed with it where should it sit? This has been an industry discussion that has been around for many years so the question was to gauge thoughts on the issue.

5.7 National Documentation Section:

The publication of a draft Code of Practice (COP) within the Fire and Explosive investigation by the Forensic regulator was a topical issue at the time of the surveys development. The issues voiced seemed to be around, how it came out. Would the COP link to the National Occupational Standards (NOS) and was there sufficient time for practitioners to feedback as it was released across the summer months of 2014. The idea behind this question was to see who had seen the COP and if so had they had the opportunity to feedback.
CHAPTER 6

SURVEY RESULTS

6.0 Table Contents

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 1</td>
<td>What is your role?</td>
<td>36</td>
</tr>
<tr>
<td>Table 2</td>
<td>What is your experience?</td>
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<tr>
<td>Table 3</td>
<td>How often do you attend court?</td>
<td>38</td>
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<tr>
<td>Table 4</td>
<td>Training limitations</td>
<td>39</td>
</tr>
<tr>
<td>Table 5</td>
<td>Factors that limit training</td>
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</tr>
<tr>
<td>Table 6</td>
<td>FSS closure impact 2011 &amp; 2015</td>
<td>48</td>
</tr>
<tr>
<td>Table 7</td>
<td>FSS closure impact on Laboratories 2011 &amp; 2015</td>
<td>49</td>
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</table>
6.1 Survey Results:

The results from the survey are collated and in order within this section, the overarching finding section (6.2) later is a more in-depth analysis with more comments added by candidates completing the free text boxes, the details facts and figures within this section are lifted direct from the survey monkey tool assisting in collection from each section to present for analysis.

**CHANGES TO FIRE PROVISION IN THE UK IN THE PAST YEARS**

**Question 1** – This question asked who was undertaking the survey. As you can clearly see in Table 1, there were 71% fire Officers and only 1% Senior Police Investigator with an average spread across the others surveyed. This information is essential to the outcomes and views later as the balance is much higher on the Fire Service side compared to the Police and forensic specialists.

Table 1; what is your Role

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<thead>
<tr>
<th>Answer Options</th>
<th>Yes</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire Service Fire Investigation Officer</td>
<td>76</td>
<td>76</td>
</tr>
<tr>
<td>Police Senior Investigating Officer (SIO)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Police Scene Of Crime Officer (SOCO)</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Forensic Scientist</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Insurance Fire Investigator</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Freelance Fire Investigator</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

answered question 108
skipped question 0
Question 2 How many years’ experience do you have carrying out level 2 / 3 scene investigations? There was a good spread of experience in the answers (table 2), and the decision to highlight the Fire Service Circular 1/2006 definition of level of investigation on the question page enabled the answerers to be clear on what the question set out to achieve. The answer shows that over 60.18% have more than 5 years’ experience which adds weight to the questions about changes in Fire Investigation as those with less than 5 years may not be aware of any difference in approach that is later discussed.

<table>
<thead>
<tr>
<th>Experience</th>
<th>Number of Responses</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 5 Years</td>
<td>43</td>
<td>39.82%</td>
</tr>
<tr>
<td>5 to 10 Years</td>
<td>34</td>
<td>31.48%</td>
</tr>
<tr>
<td>10 + Years</td>
<td>31</td>
<td>28.70%</td>
</tr>
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</table>

Table 2: what is your experience?

Question 3 - On average how many Fire investigation do you carry out each year?

In Graph 1 you can see that of those surveyed 80.55% undertake above 6 investigations each year: this is a good percentage as the later questions will benefit from experienced investigators undertaking the survey.
Question 4 - Court Testimony, in either capacity how many times have you been requested to attend court in the last 3 years? In Table 3 you can see that 31 of the Fire Investigators surveyed have not given evidence in court. Out of the remaining 75 they totalled 469 court appearances, an average of 6 each, the highest attendance being coroner's court. We can draw an average court attendance for an Fire Investigator completing the survey of 2 per year as the question asked for the last 3 years data.

<table>
<thead>
<tr>
<th>Fire Investigation Court Testimony. In either capacity how many times have you been requested to attend court in the last 3 years?</th>
<th>Response Average</th>
<th>Response Total</th>
<th>Response Count</th>
</tr>
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<tr>
<td>As a Fire investigation expert witness in Crown Court</td>
<td>1.97</td>
<td>175</td>
<td>89</td>
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<tr>
<td>Evidence of fact only in Crown Court</td>
<td>.81</td>
<td>57</td>
<td>70</td>
</tr>
<tr>
<td>To give information to a Coroners Court</td>
<td>2.63</td>
<td>237</td>
<td>90</td>
</tr>
<tr>
<td>If you have not given evidence in court please Mark 0</td>
<td>.00</td>
<td></td>
<td>31</td>
</tr>
</tbody>
</table>

Table 3: how often do you attend court?

Question 5 – Have you gained any formal Fire Investigation qualifications? A reassuring 75.24% as shown in graph 2, of the 105 who answered this question have or are working towards a formal qualification in Fire Investigation.
Question 6 - *Do you believe that a qualification is necessary for undertaking fire scene investigations?* 104 answered this question and 84.68% agree or strongly agreed on the necessity for a qualification, leaving 12.50% disagreeing and 2.82% strongly disagreeing. Therefore the link between Q5 and 6 shows that roughly 10% who do not have a qualification still agree it is a necessity.

Question 7 - *If you have no recognised qualifications, what (if any) has been the main barrier to this?* Out of the 70 who answered 35, (50.0%) ticked that they do have a qualification, therefore the other 35 (50.0%) answered with varied responses the highest coming from having no organisational finance or study time. Is this a sign that the funding reductions across the sector is starting to have an effect on training and qualifications? Comments from the survey included

- “*My employer does not provide a documented pathway to evidence my (Or my professional colleagues) acquired skills (Metropolitan Police, London)*”

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limited Personal Finance</td>
<td>5.7%</td>
<td>4</td>
</tr>
<tr>
<td>Limited Organisational Finance</td>
<td>21.4%</td>
<td>15</td>
</tr>
<tr>
<td>No Personal time to study</td>
<td>8.6%</td>
<td>6</td>
</tr>
<tr>
<td>No Organisational time to study</td>
<td>18.6%</td>
<td>13</td>
</tr>
<tr>
<td>No known Occupational gain</td>
<td>14.3%</td>
<td>10</td>
</tr>
<tr>
<td>No Interest</td>
<td>0.0%</td>
<td>0</td>
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<tr>
<td>Employer unable to support</td>
<td>14.3%</td>
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</tr>
<tr>
<td>Other</td>
<td>8.6%</td>
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</tr>
<tr>
<td>I have a qualification</td>
<td>50.0%</td>
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<tr>
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</tr>
<tr>
<td><strong>answered question</strong></td>
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<td><strong>70</strong></td>
</tr>
<tr>
<td><strong>skipped question</strong></td>
<td></td>
<td><strong>38</strong></td>
</tr>
</tbody>
</table>
Question 8 - Since working in the field of fire scene investigation, how many Continuous Professional Development (CPD) hours training on average per year do you undertake? (Taking 1 full week at 37hrs) The results from this show 54.94% doing more than 20 hours per year but only 6.59% doing more than two weeks with an average across those surveyed around one full week (37 hours) per year.

Question 9 – Links to Q8 and states that of the 89 who answers 67.42% think that they are undertaking sufficient CPD to 32.58% who say they need more? There were some interesting comments within this section:

- Frequency with which the opportunity arises is poor thus resulting in significant skills fade and onset of reluctance to attend. Additionally the time involved competes for other 'main job' demands resulting in potential for less than 100% professionalism. ie the role is a 'bolt on' to One's main role.
- Spend a lot of time studying for teaching along with working with students on various research projects which don't count towards CPD so actually do a lot more than stated.
- Requirements for Fire Investigation in Jersey are limited. We work fairly closely with the local Fire Service and if further expertise is required, we will bring in UK experts (this has only occurred on one occasion in the past 8 years following a fire in a disused hotel).
- I believe that all of our FI officers would like to devote more time and effort to CPD but this doesn’t appear to be supported by Senior Management
Question 10 - *In the past 3 years - Have you seen a / an …… in fire investigator?*

As seen in Graph 3, 88 answered this question and 37.50% feel that their workload has increased in the last three years but a combined 62.50% say they have seen no change or a decrease in their workload. Is this evidence that the closure of the Forensic Science Service has made a minimal increase to workloads? One concerning comment said:

- **A current local arrangement is for the Fire Service to charge Police for the services of FI. This has resulted in Police refusing FI at jobs we would have normally investigated. This situation however is set to change as all parties agree that this cannot continue in its current form.**

<table>
<thead>
<tr>
<th>Answer Options</th>
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<tbody>
<tr>
<td>Limited Personal Finance</td>
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</tr>
<tr>
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</tr>
<tr>
<td>No interest</td>
<td>0.0%</td>
<td>0</td>
</tr>
<tr>
<td>Employer unable to support</td>
<td>14.3%</td>
<td>10</td>
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<tr>
<td>No significant change</td>
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<td>I have a qualification</td>
<td>50.0%</td>
<td>35</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td>-</td>
<td>12</td>
</tr>
</tbody>
</table>

**Answered: 88  Skipped: 20**

Question 11 - *In respect of serious and fatal fires, in your opinion, has there been a change to the frequency of forensic scientist attending fire scene investigations in the past 3 years?* This answer clearly shows that there has been a decrease in the attendance of forensic scientists at scenes with 44.70% seeing a decrease or no attendance and 45.88% seeing no change leaving only 9.41% with an increase. Comments from the surveys stated:
• Directorate of Forensic Services, Metropolitan Police is trying to reduce costs/save money gets me to go at "no cost" on his budget first. Only if I can justify requesting the costly assistance of a fire scientist to further the investigation would it be done

Question 12 - In your opinion, has any change to the frequency of Forensic scientists attending, caused your own level of involvement at fire scene investigations to: Increase, decrease or stay the same? 24.42% of the 86 answering this question have seen an increase in their workload, but this therefore shows that there is minimal, if any, change for the 75.58% who state they have seen a decrease or stayed the same. Answers seem to highlight increase for FRS staff:

• as the police and scenes of crime officers have become more reliant on the fire investigator so has the need for the fire service to raise its game including the production of expert evidence reports and testimony (increase)

• I do mostly defence work. The initial scene work is being done more by fire department investigators and in some cases the work done was poor and this has led to more work for the defence. I believe the reduction in forensic scientists specifically trained in fire investigation attending scenes or forensic analysis/support not being used are factors in this.

• It’s my opinion that Police tend to way heavier on the expertise of FRS Officers for attendance at Court as they are likely to incur charges for forensic scientists to attend

Question 13 - In your opinion has any change in the frequency of forensic scientists attending scenes made any difference to your confidence at these investigations? This answer states that 13.79% of those answering see a difference in their
confidence and 17.24% unsure but the remaining 68.97% see no change. The comments here are interesting over 26 made comments all along the line of:

- *It is always comforting to have your findings confirmed by a specialist who has the time and resources to dig deeper and test hypothesis*

- *We are very reliant on the Fire service expertise which is one of many things for them to consider. SOCOs in our force who have attended Fire Investigation course are expected to work with a Fire service Investigator and determine cause. We do not attend enough arson scenes each to have any level of expertise and would not be considered experts in court.*

- *Combined approach and talking through incidents increases experience*

**Question 14** - *In your opinion, has the attendance or nonattendance by a forensic scientist made any difference to the outcomes of these investigations / cases?* In graph 4 it is clear that 58.62% have seen no change to the cases they investigate and another 22.99% unsure with only 18.39% stating that it has changed the outcome. A supplementary question from this answer would have been to see; of the 18.39% who say that the cases have changed was it a positive or negative outcome? I would suggest negative if it links to question 13 in reference to confidence. There was one lengthy comment that highlights the potential risk if this is lost which needed to be shared:

- *I have worked on a number of cases where the investigators were not up to speed on latest thinking, did not understand the science or had done a very poor job. This includes cases where notes were not taken, issues of post-flashover ventilation effects were highlighted as separate fire origins, laws of physics were not understood (leading to a wrong arrest), control bags were*
not submitted in fire debris samples, fire debris was not collected yet the investigator still said an ignitable liquid was present because the "sniffer" device said so (despite being in a post-flashover room that was still hot)... and many more. There is a wider issue beyond scene attendance regarding forensic scientists not being sent samples for analysis to save on cost particularly debris analysis

**Question 15** - Since the closure of the Forensic Science Service; if the need for a forensic scientist is necessary to attend a Fire Scenes in your region where do they come from? Graph 5 shows that a high percentage of the forensic support comes from the private sector 50.56% which you would think would be the case following the closure of the FSS? The interesting thing from the results is the amount of forensic support from the Police 46.05% nearly half. Is this to save on a private sector cost or because the Police have these skills in house?
- The private sector (insurance co) investigators such as Burgoyne’s and Hawkins are very competent.
- There are so many contracts it's often difficult to estimate which provider will be used.

**Graph 5**

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
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<tr>
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<td>21.4%</td>
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</tr>
<tr>
<td>No Personal time to study</td>
<td>8.6%</td>
<td>6</td>
</tr>
<tr>
<td>No Organisational time to study</td>
<td>18.6%</td>
<td>13</td>
</tr>
<tr>
<td>No known Occupational gain</td>
<td>14.3%</td>
<td>10</td>
</tr>
<tr>
<td>No Interest</td>
<td>0.0%</td>
<td>0</td>
</tr>
<tr>
<td>Employer unable to support</td>
<td>14.3%</td>
<td>10</td>
</tr>
<tr>
<td>Other</td>
<td>8.6%</td>
<td>6</td>
</tr>
<tr>
<td>I have a qualification</td>
<td>50.0%</td>
<td>35</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>I don't know</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Question 16** - Where do you obtain your initial (level 2) Fire Investigation training?

Of the 86 who answered this, there was 112 answers as some will attend more than one place, the 112 answers shows 37.70% use a private training company 29.37% use the Fire Service College 22.25% train in-house with only 10.68% using Universities?

**Question 17** - Where do you obtain your Fire Investigation CPD training? Answers to this question highlighted that there are many differing ways that you can undertake CPD, some of the comments highlighting the IAAI members or UK-AFI can use the online CFI web based training which seems to be popular but from the answers available on the sheet the splits was 52.46% do there CPD in-house,
34.40% use an external training provider, 9.46% use a university with only 3.44% use the Fire Service College.

**Question 18** - *Where do you obtain your Specialist Fire Investigation Training?* 80 answered this question with 28 skipping over it? You can see from graph 6 that the private supplier has the highest margin on this, with in-house a close second, again as in the previous question there is a low percentage of Fire Investigation training being undertaken at the FSC only 14.94%?

![Graph 6](image)

**Question 19** - *In your experience have you found that any of the factors listed below limit your training?* Some good comments from the survey highlight the issues of training such as

- “I work shifts that are not just for fire purposes but cover all crime categories as a Met police "SOCO". This does not lend itself to fire investigation training also because of my role I have staffing issues, management duties + HR role to cover such that Fire investigation is a minor part of my yearly duties”
73 completed the question but as you can see in table 5 there were 185 areas covered which equates to 2.53 reasons given by each who completed the survey question. The highest reason was “not enough organisational time” with 28.65% and both “Limited funding” and “Not seen as a priority” with 23.78% each.

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity (not enough personal time)</td>
<td>35.6%</td>
<td>26</td>
</tr>
<tr>
<td>Capacity (not enough organisational time)</td>
<td>72.6%</td>
<td>53</td>
</tr>
<tr>
<td>Cost to send delegates (limited funding)</td>
<td>60.3%</td>
<td>44</td>
</tr>
<tr>
<td>Other work pressures (Not seen as a priority)</td>
<td>60.3%</td>
<td>44</td>
</tr>
<tr>
<td>Local facilities (limited venues)</td>
<td>8.2%</td>
<td>6</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 5: Factors that limit training

**Question 20 -** The closure of the Forensic Science Service, has had a negative impact on quality Fire Scene Investigations in England and Wales? This question has been lifted from the 2011 MSc Survey by Jose Spinola\(^{38}\), the idea was to temperature check against the results found 4 years earlier. Of the 118 who answered the question in 2011, 42 (35.60%) strongly agreed 37 (31.40%) agreed 18 (15.30%) didn't know and 17 (14.40%) disagreed with only 4 (3.40%) strongly disagreeing. In 2015, 83 answered with 13 (15.66%) strongly agreed 39 (46.99%) agreed “didn’t know” was removed so this left disagreed 29 (34.94%) and 2 (2.41%) strongly disagreeing. The evidence that is highlighted in table 6 shows a big swing from agreeing that the FSS closure would have a negative impact to 34.94% of people now saying that they disagree. From the 2015 survey results there is a definite switch to be less concerned around the FSS being closed which links to Dr

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\(^{38}\) MSc J A Spinola Survey and dissertation 02-09-11 P34 - 43
Nick Carey comments\textsuperscript{39} in his interview later where he says that the closure is now nearly 3 years ago and it has become the norm to continue as we are.

- “Some of the Scientists sent have had limited experience out in the field and have appeared time served only in the Lab. They have been good at testing samples but not necessarily understood the dynamics of the fire scene”\textsuperscript{40}

<table>
<thead>
<tr>
<th>Spinola 2011</th>
<th>Responses 118</th>
<th>Tonner 2015</th>
<th>Responses 83</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
<td>42 (35.60%)</td>
<td>Strongly Agree</td>
<td>13 (15.66%)</td>
</tr>
<tr>
<td>Agree</td>
<td>37 (31.40%)</td>
<td>Agree</td>
<td>39 (46.99%)</td>
</tr>
<tr>
<td>Don’t Know</td>
<td>18 (15.50%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disagree</td>
<td>17 (14.40%)</td>
<td>Disagree</td>
<td>29 (34.94%)</td>
</tr>
<tr>
<td>Strongly Disagree</td>
<td>4 (3.40%)</td>
<td>Strongly Disagree</td>
<td>2 (2.41%)</td>
</tr>
</tbody>
</table>

**Question 21** - *The closure of the Forensic Science Service, has had a negative impact on laboratory analysis for Fire Investigation in England and Wales?* Also a direct lift from the Spinola 2011\textsuperscript{41} survey; again we can analyse the two against each other. Similar responses to Q20 where in 2011 there was more concern about the quality comments from the 2015 survey such as

- “I agree with this but do not consider laboratory analysis (of the type carried out by FSS) to be a significant portion of fire investigation as a whole.”

\textsuperscript{39} Industry Expert Interview Comments Appendices 3 P76
\textsuperscript{40} Survey Response January 2015
\textsuperscript{41} MSc J A Spinola Survey and dissertation 02-09-11 P34 - 43
I have seen a trend where samples either were not collected, or collected but not sent away, yet opinions were drawn on the evidence. This never used to happen. In the USA you can get analysis done for $75 a sample, or free at your State lab, and a lot of debris is tested. In the UK there are very limited providers with high prices. Paying privately, it was cheaper to fly to the USA with the samples rather than have them done at LGC. Also, I never see other testing/reporting done from the likes of x-rays, SEM, electrical engineers etc.

There has been a reduction in the availability of these facilities and the security of evidence provided by remaining facilities.

I can see that some of the responses have a concern but as an overall the concern seems to have reduced in the past 4 years.

<table>
<thead>
<tr>
<th>Spinola 2011</th>
<th>Responses 115</th>
<th>Tonner 2015</th>
<th>Responses 78</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
<td>45 (38.10%)</td>
<td>Strongly Agree</td>
<td>15 (19.23%)</td>
</tr>
<tr>
<td>Agree</td>
<td>42 (35.60%)</td>
<td>Agree</td>
<td>36 (46.15%)</td>
</tr>
<tr>
<td>Don’t Know</td>
<td>18 (15.30%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disagree</td>
<td>9 (7.60%)</td>
<td>Disagree</td>
<td>25 (32.05%)</td>
</tr>
<tr>
<td>Strongly Disagree</td>
<td>4 (3.40%)</td>
<td>Strongly Disagree</td>
<td>2 (2.56%)</td>
</tr>
</tbody>
</table>

Question 22 - Do you believe there is a need for a register of qualified Fire Investigators (Public & Private) in the United Kingdom? This was a simple but quick question with 65.17% of those replying agreeing that a register is needed, and only 22.47% saying no with the remaining 12.36% who don’t know.

Question 23 - If you answered "YES" to Q22 where the register should sit? Only 62 answered this with the most looking at the UK – AFI, these figures could be slightly
bias as one of the main outlets for the survey was an email through the UK- AFI?
That does not detract from the 65.17% that agree that there should be a register.

6.2 What were the overarching findings of the Survey?

It is clear that the past years have been turbulent for practitioners the 108 people who undertook the survey came from a variety of Police, Fire, and Private Fire Investigation sections. Their experience and number of investigations and subsequent court appearances show that this was targeted at a good cross section of the FI sector. There are some concerns of the lack of Senior Police Investigators who engaged, this could either be due to delivery of the survey to the correct person or a time or relevance issue? That said there were still some good comments that can be seen from the Police staff who answered.

The key area to take from the survey was shown with the change in concern in the closure of the FSS. In table 6 & 7 you can see a definite swing in the level of concern with more than 20% moving to be less concerned. Comments in the next section by Industry experts highlight some interesting thoughts and mirror those from practitioners.

The introduction of the National Occupational Standards (NOS) for FI linked to a credible certificate has given practitioners something to achieve and show competence against. The observation has been that there is uncertainty of how the “Code of Practice” fits in with the NOS. These areas are discussed further in the next section (7.0).
There is a big imbalance in what standard of Fire Investigators are out there, the qualifications questions gave an opportunity to discuss this further as you can see some were highly skilled as others were unsure what they needed to stay competent.

“It has never been required so the organisation has never insisted that the qualification should be gained. If necessary then I would study as required.”

“Not necessary as Police SIO” “Not really thought about it!”

Compare this to the following answers:

“I have completed MSc in forensics where I majored in FI and lab work for fatal fires. I had an Academic Attachment to Wilts FRS FI team, 18 months. Now conducting PhD research, and feel time is right to undertake qualifications.”

There will always be both ends of the scale but the introduction of the Skills for Justice Certificate will enable some clarity on the standard to achieve.

The two questions within the dissertation proposal seem to have been answered but not as was expected, prior to the development of the dissertation it was thought by the author and peers that there would be a massive impact to the closure of the FFS and the potential increased workload, but as a whole this seems to be incorrect as the comments are more about the experience of the Fire Investigator than their skill set. “I work alongside FI’s who have many years of experience. I have found the Scientists to be none committal in their opinion. Similarly, it is evident that Forensic

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42 Survey Response January 2015
43 Survey Response January 2015
44 Survey Response January 2015
Scientists do not attend many fire scenes and do not have the same experience as fire service investigators\(^\text{45}\)

“I have seen both positive and negative results however generally the investigations have progressed better without the scientist attending the scene\(^\text{46}\)

There was a general agreement that reducing funding and an increase in the requirement to gain a qualification could erode the public side of the sector, there were also concerns about the lack of time allocated to keep competence which links to the reduction in funding.

Generally those completing the survey were positive with one eye on what will change next?

6.3 Suggested reasoning behind survey differences 2011 to 2015

It must be noted that those surveyed had less concern in Q20 and 21 compared to the same questions in the 2011 Spinola\(^\text{47}\) survey. Therefore further analysis was required to establish why this could have been the case.

Prior to the closure of the Forensic Science Service the concern was how the industry would cope, and if the private sector had the skills and competence to undertake the workload that the closure would bring. Three years later, this survey highlights that those concerns have not come to fruition. The workload as seen within the survey comments has not increased as first believed; the skill sets of the

\(^{45}\) Survey Response January 2015  
\(^{46}\) Survey Response January 2015  
\(^{47}\) MSc J A Spinola Survey and dissertation 02-09-11 P34 - 43
practitioners within the industry has stayed high and the use of laboratories for forensic analysis have continued without issue.

Therefore the results within the survey confirm these judgments:

“It would be easy to say yes. I think the negative impact has been lessened somewhat by the increase in trained FRS FIs. Whilst not as skilled, we do commit to doing the best job we can.”

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48 Survey Response January 2015
CHAPTER 7

INDUSTRY EXPERT QUESTIONS
7.0 Supplementary Question from Industry Experts.

The survey was targeted consciously at practitioners, but during the research phase of this dissertation it was decided that a more strategic view on the direction of travel for Fire Investigation would supplement the results. The dissertation in this chapter has highlighted a number of professionals that are involved in the development, direction and quality assurance of United Kingdom Fire Investigation. Selections of emails, (Appendices 2) were forwarded to those who the author highlighted as essential contacts in the future direction of Fire Investigation. Some forwarded their comments via email, while others contacted the author direct to discuss the issues over the phone or in one to one meetings.

Those contacted were Chief Fire Officer Association (CFOA) lead for Fire Investigation Deputy Chief Fire Officer Chris Blacksell from Humberside FRS. Dr Pete Mansi former London Fire Investigator who is now the current president of the Institute of Arson Association Investigators (IAAI) and CEO of Fire Investigation UK. Dr Nick Carey, former London Fire Investigator, and now an associate at Hawkins. Mick Gardiner CEO for GA Fire investigation, and former London Fire Investigator. Penny Harper (Oxon), solicitor and director of Legal Experience Ltd (survey only). Dr Andrew Moncrieff, Managing director of Hawkins (Survey Only). Dave Scaysbrook, Consultant Forensic Scientist S&T Forensics (Survey Only). The following quotes are taken from these individuals and all those contacted have agreed to be cited in this chapter. For clarity the same questions were asked of all, to ensure a reasonable consistency across the responses. The full answers for each have been recorded in appendices 3 with Appendices 3a showing their profiles.
7.1 Question 1

Have you undertaken the Survey and are there any Questions that you would like to discuss?

"As a private Investigator now I highlighted in the comments box that there are some questions that are slightly fire centric and I was unable to answer."™

"I have undertaken the Survey and am very happy that the questions are being asked at this time. It will be interesting to see the views of the respondents Good Luck."™

7.2 Question 2

In a short paragraph could you explain your vision and the direction of FI in the next few years?

"In the public sector, I think that there may be a lot of pressures on fire and police services to maintain an adequate response from competent professionals due to financial restrictions. The services may look to outsource fire investigation. This would / may have a detrimental effect on response times and the number of fires that are investigated beyond an appliance commander. In the Private sector, my view is that insurers will still need fires and explosions investigating."™

It's impossible to describe my vision in a paragraph but from my regular inter-action with experienced practitioners on the front line it appears problems for which we had...
once found solutions are again mounting. As one who believes passionately in the inter-agency ‘team approach’ my hope is that that the golden era will return and we will see a fully functional public-sector and private sector working in harmony to learn the lessons which motivate the design and delivery of effective fire safety and arson reduction strategies.\(^{52}\)

“I am aiming to be in a position where FRS Fire Investigators are all carrying out investigations in a consistent manner, to national guidance, and are able to maintain their competence within a defined competency framework. I would also like to see much better information sharing, between FRS as well as between FRS and partner agencies such as Trading Standards. I would also like to try and ensure that all stakeholders recognise the benefits that Fire Investigation has to wider firefighter and community safety, and therefore why it is a vital component of the delivery of a modern Fire and Rescue Service.”\(^{53}\)

7.3 Question 3

Where does the Code of practice fit in against the NOS?

“The code of practice is now called the Fire Investigation Protocol. The Forensic Regulator requested (but did not fund) the consultation process. The Protocol does now not attempt to repeat the NOS but refers to them. Therefore, to be a competent fire investigator you need to demonstrate that you work to the requirements of the NOS. In my view, the Protocol and NOS complement each other.”\(^{54}\)
“The Code of Practice (which actually is likely to be a Protocol which will effectively be an addendum to the overarching Forensic Science Code of Practice) refers to the NOS consistently throughout the document (in the finished version following on from consultation responses) and does not replace the NOS in any way.”

7.4 Question 4

Are there any FI problems that you foresee in the future?

“I think we need clear focus on what it is we do and need as a discipline, we need to ensure that we link our practices across both public and private, meaning standards terminology and the system of work, what goes on in London should link to what is going on in a smaller more rural Service.”

“I can see that if FRS do not see the wider benefits of FI it could be possible that some may decide to stop FI altogether as a cost saving measure, due to the fact that there is no statutory duty to carry it out (although there is a power) We have already seen some FRS start charging the Police for carrying out criminal investigations and again there is the potential that could cause the Police to call on the FRS less and less to save money, which could impact on the volume and quality of prosecutions.”

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55 Industry Expert Interview Comments Appendices 3 P74
56 Industry Expert Interview Comments Appendices 3 P73
57 Industry Expert Interview Comments Appendices 3 P74
7.5 Question 5

In the next five years do you feel we can iron out these issues etc.? “I hope that over the next few years that the SFJ NOS and protocols from the Forensic regulator can all work together and ensure that whoever and wherever the FI comes from that the standard and quality of work is the same.”

“So much has happened in the last year or two let alone five years I will reserve judgement. The fact that the fire investigation UK National Occupational Standard has at long last been translated into an award process whereby public and private sector practitioner’s knowledge and understanding can be tested along with their level of competency is a significant step forward. Let’s hope that there is a will amongst policy makers to re-strengthen proven inter-agency initiatives.”

“I feel we may be in a better place regarding consistency and information sharing, both of which are more efficient, however overall we need to see what other financially driven changes happen which may impact negatively.”

7.6 Summary of the supplementary questions?

The decision to ask supplementary questions assisted in the development of the conclusion later, the knowledge of those within this section shows a strategic view compared to many of the practitioners. The key issue and timing of the question in January 2015 (Mick Gardiner Dec 2014) is the change from a Code of Practice (COP) to a Protocol within the Forensic Regulators draft.

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58 Industry Expert Interview Comments Appendices 3 P73
59 Industry Expert Interview Comments Appendices 3 P75/6
60 Industry Expert Interview Comments Appendices 3 P74
61 Draft Code OF Practice for Investigators of Fire & Explosions for the CJS Draft 6 06-07-14
All questioned in this section show confidence in what the future brings but also an air of concern in reference to funding, it is good to see that former Fire Investigators from the public sector, who now work in the potentially lucrative private sector, still discuss the need for Fire Service FI’s. Within the full questions and answer session with Mick Gardiner he views his concerns around the COP and the closed nature of the board used to decide its direction. Mick Gardiner talks about the similar system with a board being used to develop the NOS but how that was more transparent and visible. This is a concern that when discussed on a legal training event hosted by Penny Harper, practitioners from the public sector voiced that the COP draft looked to be designed for a private market not that of a public service FI. Officers from North Yorkshire, Nottingham, Staffordshire, Warwickshire and West Sussex had a good discussion around this with positive agreement if the COP changed to be a protocol.

These overall points were shared by the group:

- National Standards and qualifications for all
- Clear guidance on what is expected
- NOS & COP (Protocol) need to work together
- Future funding concerns is an issue for the FI sector
- All want it to succeed as both a public and private entity
CHAPTER 8

CONCLUSION
8.0 Conclusion

This dissertation set out to examine where we were and where we are going in reference to Fire Investigation. A simple conclusion would be to say that Fire Investigation in the United Kingdom is strong and moving in the right direction, but what direction are we heading in?

The majority of analysis says we are moving more and more towards a private sector lead financially driven specialism but it is agreed that we need to keep the experience and insight of those who work in the firefighting public sector.

In the 2011 Spinola survey\(^{62}\) 82.5% had concerns or were not sure about the closure of the Forensic Science Service (FSS). But this dissertation four years on and nearly three years since its closure sees a change in concern to only 62.65%. From the 89% who stated in 2011 that they had concerns about the negative impact on laboratory analysis has reduced to only 65.38% with a concern now. In both questions the concern has reduced by -20% and -24% respectively which is a good comparison. The changes to funding and the closure of the Forensic Science Service according to those surveyed has made little impact to the quality of investigation or cases for court, which was one of the questions at the outset of this dissertation.

It must be highlighted that comments within the survey did speak about “the lack of funding for training”, “the lack of forensic support due to funding”, but there were positive comments, “when support is needed it was always available.” \(^{63}\)

\(^{62}\) MSc J A Spinola Survey and dissertation 02-09-11 P34 - 43
\(^{63}\) Survey Response January 2015
In summary although there is a reduction in funding and limited time to train, at no point has the industry stopped or been unable to cope, that is not to say this may be the case as we move forward as there are creeks in some areas. The comments by two professionals below are essential to understand how we move in the right direction.

“I hope that over the next few years that the SFJ NOS and protocols from the Forensic regulator can all work together and ensure that whoever and wherever the FI comes from that the standard and quality of work is the same.”

“We may be in a better place regarding consistency and information sharing, both of which are more efficient, however overall we need to see what other financially driven changes happen which may impact negatively.”

We must remember that Fire Investigation is not only about cause and origin but can assist with the development of community strategies on staying safe from fire. The knowledge and understanding of fire development by competent Fire Investigators can only assist in the prevention of fires in buildings, fire deaths and serious injury.

### 8.1 Future Developments -

The survey result has provided data which has been examined and helped to produce the below position statement on the current feeling and considerations.

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64 Industry Expert Interview Comments Appendices 3 P73
65 Industry Expert Interview Comments Appendices 3 P74
Fire Investigation UK - “Position Statement”

Fire Investigation in the UK is moving forward, the speed at which it is moving is restricted by the slow bureaucracy at Government level. The finalisation of the Protocol for Investigators of Fire & Explosions from the Forensic Regulator and the introduction of the skills for Justice Certificate five, in Fire Investigation will assist in the competence and quality measure for the industry. The mandatory “Code of Practice” would have limited the ability of Public Sector Fire Investigators to stay competent. The protocol which will sit as guidance now fits with the National Occupational Standards and will lift the cloud that has sat over the industry since the discussions began.

The future of Fire Investigation is looking OK; but competence, experience and qualifications still vary considerably. This dissertations finding would support a Fire Investigation National Steering Group (FINSG) that invites both Public and Private Industry experts together with a role to update the Fire Service Circular 1/200666. The levels of Fire Investigation that were defined in this paper now need to be aligned to Experience, Qualifications and Standards of Continuous Professional Development (CPD). The FINSG should also debate the need for a National recognised register for FI that highlights those with the experience and competence in all aspects of FI, from on-scene excavation through to Crown Court expert witnesses.67

66 ODPM 1/2006 “The investigation of fires where the supposed cause is not accidental. 18-01-2006
67 Group Commander Ian Tonner Dissertation comments January 2015.
References

- NFPA 921 2011 Edition / Copyright© P14 – 3.3.62
- Draft Code OF Practice for Investigators of Fire & Explosions for the CJS
  Draft 6 06-07-14
- History of the UK Fire & Rescue Service - www.fireservice.co.uk/history
- NFPA 921 2011 Edition P14 3.3.64
- J A Milward Publication No.36/87 Scientific Research and Development Branch HO “state of art review of the procedures and techniques used in fire investigation”
- Home Office “The report of the Arson Scoping Study” 1999 P5 Chapter 11
- Crime & Disorder Act 1998
- Home Office Fire Service Circular No. 21/2000 “The Investigation of Fires Where the Supposed Cause is not Accidental “
- Office Deputy Prime Minister No. 1/2006 “The Investigation of fires where the supposed cause is not accidental”. 18-01-2006
- SOCO information en.wikipedia.org/wiki/Scenes_of_Crime_Officer#Training
- This Week Volume 500/01.08.2013 “Forensic Fiasco” Nature © 2013 Macmillan Publication Ltd.
- www.theguardian.com/science/2009/apr/05/forensic-science-government-funding
- Warwickshire FRS Fire Investigation Policy V0.2/2014 (Tonner, Hodson) P5
• IRS Help & Guidance document V2 definition of origin and cause for Incident Commanders.

• Hobson Charles (1992) Fire Investigation a New Concept, Charles C Thomas Publisher, P36

• Warwickshire FRS & Warwickshire Police MOU Fire Scene Investigation V4 2009

• Department for Communities and Local Government, Arson Control Forum, Annual Report 2006 ©Crown Copyright

• MSc J A Spinola Survey and dissertation 02-09-11 P34 – 43

• House Of Commons Science and Technology Committee “Forensic Science on Train” 7th Report session 16 March 2005

• Forensic Science Regulator Draft Guidance: “Cognitive bias effects relevant to forensic science examinations” August 2014

• Andrew Rennison -Forensic Science Regulator “Forensic Science Quality Standards” PP Presentation.

• Office Deputy Prime Minister -“The Economic Cost of Fire Estimates for 2004” April 2004 © Crown Copyright

• Forensic Science Regulator Draft Guidance “Code of Practise and Conduct” V1 Dec 2011 © Crown Copyright

• Skills for Justice “Fit for Purpose: Research into the provision of forensic Science degree programmes in the UK HEIs” Aug 2009 © SFJ

• House Of Commons Science and Technology Committee “Forensic Science”

Appendices 1 – Proposal Document

University of Central Lancashire
School of Forensic and Investigative Sciences

Proposal for Fire Science (MSc) Dissertation
(FV4900/FV4901)

Proposed Research Title:
Have changes to UK Fire Investigation process affected Fire Services?

What effect (if any) has the closure of the Forensic Science Service had to Fire Investigation across the UK?

<table>
<thead>
<tr>
<th>Name</th>
<th>Ian Tonner</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Number</td>
<td>20576716/CE</td>
</tr>
<tr>
<td>Email Address</td>
<td><a href="mailto:lantonner@warwickshire.gov.uk">lantonner@warwickshire.gov.uk</a></td>
</tr>
<tr>
<td>Submission Date</td>
<td>February 2015</td>
</tr>
</tbody>
</table>
BACKGROUND

In the summer of 2014, the Forensic Scientific Regulator published their draft consultation on: “Code of Practice for Investigators of fires and explosion for criminal Justice systems in the UK”. The scope of the paper was directed specifically at fire investigation (FI) practitioners who undertake casework within the UK criminal Justice systems. This follows Skills for Justice finally agreeing an award in line with the National Occupational Standards “Level 5 Certificate in Fire Investigation”. We have also seen a reduction in Government funding for Fire and Rescue Services and the closure of the Forensic Science Service (FSS). In a short timeframe we have seen a dramatic change in the way that Fire Investigation within the UK is undertaken.

All local FRS have a duty of “Obtaining Information and Investigating fires” under the 2004 Fire Service’s Act section 45. This legislation gives guidance but does not highlight any qualification or standard that the appointed “Authorised Officer” needs to fulfil this role.

In 2011 a University of Central Lancashire (UCLAN) student undertook a survey to gauge the opinions of Fire Investigators prior to these changes; in this they questioned FI’s thoughts of the impact and one conclusion said “With limited financial resources, expertise and analysis available across the UK there is a strong case that FI will suffer or stop all together.” This survey and dissertation conclusion is a good starting point to evaluate how the professional’s opinions may have changed since the closure of the FSS and a marked reduction in funding over the past 3 years.

AIMS and OBJECTIVES

The aim of the research is to provide an overview of the current position within the United Kingdom (UK) in relation to fire investigation. The main objective is to survey a number of

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professional fire investigation practitioners and lead Officers, to gauge their response to the changes in Government funding which has seen the closure of the FSS and the final agreement on the National Occupational Standards by Skills for Justice.

**METHODOLOGY and PROGRAMME**

The methodology of the dissertation will be to create a survey that questions professional FI’s on how they see the changes to the national picture of fire investigation. I propose to interview experts within the field of fire investigation on their thoughts and understanding of the new draft code of practice and the recent changes. I propose to examine documentation and legislation to ensure that the paper highlights where the UK FRS currently stands and potentially offer a differing solution to how the future of Fire Investigation within the UK could look.

**PLAN of WORK**

I plan to start with a literature review on UK Fire Investigation documentation such as Dear Chief Fire Officer Letter 1/2006, NPAI documentation on the Closure of the FSS and many other papers around forensic working within the UK that have influenced the current UK Fire Investigation structure. This will assist in developing a survey which will be forwarded to as many professional FI’s as possible. Whilst the survey is being answered I propose to interview experts within the FI industry to get a differing approach, these individuals will include private and public sector, insurers and Police Scenes of Crime Officers and their responses will enable me to understand a variety of views on Fire Investigation within the UK and how the future looks from their comments.
Appendices 2 – Email Evidence

Dear Fire Investigators;

I hope that this email finds you well, and that you are the correct person from your organisation with the reference for Fire Investigation (FI). I would be grateful if you could forward this email to your contacts for Fire Investigation (EG all FI level 2's), also if known your Police Senior Investigating Officer (SIO) and any Private sector investigating practitioners that work in Fire Investigation in your locality.

The intention is to collate the responses and forward a summary back to those within this email group.

The results will enable me to develop an overview on our collective views on FI and its current and future direction. The survey will support my MSc in Fire Scene Investigation, but will also be available to feed into some National discussions around FI direction if required.

As I am sure you are aware in the past few years some areas have changed within FI (SFJ level 5 Cert agreed and the closure of the FSS) and I think this is a good opportunity to gauge where we are.

I understand that we are all busy people and that this survey may be a low priority, but I hope that you can assist. The more responses equals a more robust overview. The survey is anonymous but if you wish to discuss areas further please do not hesitate to contact me via the details at the bottom of this email.

There are only 25 questions, some with comment boxes but I would estimate 10 - 20 minutes.

https://www.surveymonkey.com/r/GTF6JH9

Thank you in advance and I look forward to collating your responses.

Group Commander Ian Tonner

Operational Support & Communications

Fire Service HQ

Warwick Street

Royal Leamington Spa

Warwickshire Fire & Rescue Service

Office Number 01926 423231 Internal: 3226

Mobile No. 07813 689360

e-mail : iantonner@warwickshire.gov.uk

Twitter: @warksfirerescue

FaceBook: facebook.com/warwickshirefireandrescueservice

Web: www.warwickshire.gov.uk/fireandrescue
Peter,

I hope this email finds you well, I am 25% through my final dissertation for the MSc Fire Scene Investigation at UCLAN. My Dissertation is looking at the UK FI scene and its current direction. I have developed a survey that will go to as many practitioners as possible to ask their thoughts about where FI is going etc. (training, qualifications competence etc)

As well as a general survey I would like to ask some experts from the industry questions on their thoughts and ideas for the future? This could be via the telephone or face to face? This will enable me to get a good discussion on my thoughts and analyse against yours etc.

Firstly would you be happy to complete the survey (Early Jan 2015) and would you be available to discuss your views on the future of FI in the UK. 30 mins max unless we get talking? I would forward a set of outline questions as a starting point?

I look forward to hearing from you soon, have a nice Christmas

---

Group  Commander Ian Tonner  🚒

Operational Support & Communications
Fire Service HQ
Warwick Street
Royal Leamington Spa
Warwickshire Fire & Rescue Service

📞 Office Number  01926 423231 Internal: 3226
📞 Mobile No.  07813 689360
✉ e-mail :  iantonner@warwickshire.gov.uk
🔗 Twitter:  @warksfirerescue
🔗 FaceBook:  facebook.com/warwickshirefireandrescueservice
🔗 Web:  www.warwickshire.gov.uk/fireandrescue
Fire Investigation Survey MSc

Mick,

I hope this email finds you well, I am 25% through my final dissertation for the MSc Fire Scene Investigation at UCLAN. My Dissertation is looking at the UK FI scene and its current direction. I have developed a survey that will go to as many practitioners as possible to ask their thoughts about where FI is going etc. (training, qualifications, competence etc)

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Facebook: facebook.com/warwickshirefireandrescueservice

Web: www.warwickshire.gov.uk/fireandrescue
Freedom of information acknowledgment (042-15 95383)

Carmichael, David <David.Carmichael@justice.gsi.gov.uk>

23 Jan (5 days ago) - Reply to me

Dear Mr Tonner

“Thank you for your email of 03 January 2015, in which you ask for the following information from the Ministry of Justice:

I have been directed to you from the CPS who were unable to assist with my request for data, I am undertaking my MSc in Fire Scene Investigation, and to ensure that I have the correct information on Fire cases vs Convictions who would be best to talk to; or email?

The idea is to gauge the number of cases in 2000 for example against those in 2014 to see if there has been any changes in the conviction rate which may link to some changes to the way that Fire Services investigate fires?”

Any information will be beneficial thank you.

Your request has been passed to me because I have responsibility for answering requests relating to court proceedings statistics.

Your request is being handled under the Freedom of Information Act 2000 (FOIA).

Under the Act, the department is required to provide you with a response within 20 working days. I will write to you in response to your request for information by 10 February 2015.

The Freedom of Information Act includes a number of exemptions to releasing information. Some of these are qualified exemptions which require us to consider whether it is in the public interest to disclose or withhold the information. In these circumstances we may need more time to consider your request, and if this is the case I will write to you by the date above to inform you of when you can expect to receive a response.

If you have any queries regarding this request please do not hesitate to contact me, quoting ref: 042-15 FOI 95383 in all future correspondence

David Carmichael

Criminal Justice System Statistics

Post Point 7.02, 102 Petty France

London SW1H 9AJ
I have been forwarded your contact details from Mick Gardiner as the CFOA lead on FI. I am undertaking a MSc Fire Scene Investigation at UCLAN and am two weeks away from the final dissertation submission. If you have the time? I attach some questions on the sheet provided that has been forwarded to experts in the sector EG, Dr Carey Dr Mansi, Mick Gardiner, Dave Scaysbrook. Apologies on the short notice but the time to develop the questions and get some peer input prior to the release last week has been ongoing.

Once complete I would be happy to share the results if this assists any national direction for FI.

So far in seven days 101 returns have come through 68% FRS and a good spread across Police, Private and Insurers for the others. below the line is the email forwarded and attached are some questions for you if you have time.

Thank you.

Dear Fire Investigators;

I hope that this email finds you well, and that you are the correct person from your organisation with the reference for Fire Investigation (FI). I would be grateful if you could forward this email to your contacts for Fire Investigation (EG all FI level 2's), also if known your Police Senior Investigating Officer (SIO) and any Private sector investigating practitioners that work in Fire Investigation in your locality.

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There are only 25 questions, some with comment boxes but I would estimate 10 - 20 minutes.

https://www.surveymonkey.com/r/GTF6JH9

Thank you in advance and I look forward to collating your responses.
MSc Survey and discussion

Ian Tonner <iantonner@warwickshire.gov.uk> 17/12/2014

to Nick

Nick

I hope this email finds you well. I am 25% through my final dissertation for the MSc Fire Scene Investigation at UCLAN. My Dissertation is looking at the UK FI scene and its current direction. I have developed a survey that will go to as many practitioners as possible to ask their thoughts about where FI is going etc. (training, qualifications, competence etc)

As well as a general survey I would like to ask some experts from the industry questions on their thoughts and ideas for the future? This could be via the telephone or face to face? This will enable me to get a good discussion on my thoughts and analyse against yours etc.

Firstly would you be happy to complete the survey (Early Jan 2015) and would you be available to discuss your views on the future of FI in the UK. 30 mins max unless we get talking? I would forward a set of outline questions as a starting point.

I look forward to hearing from you soon, have a nice Christmas

Group Commander Ian Tonner

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Web: www.warwickshire.gov.uk/fireandrescue
Appendices 3 – Full Expert Interview Notes

Nick Carey - January 2015

Ian – Have you undertaken the Survey and are there any Questions that you would like to discuss?

Nick – Yes I have completed the survey. The survey had a number of questions that were based on the closure of the Forensic Science Service (FSS). As the FSS closed almost 3 years ago the effect has diminished a bit as others have to some extent made up the shortfall.

Ian – In a short paragraph could you explain your vision and the direction of FI in the next few years?

Nick – In the public sector, I think that there may be a lot of pressures on fire and police services to maintain an adequate response from competent professionals due to financial restrictions. The services may look to outsource fire investigation. This would may have a detrimental effect on response times and the number of fires that are investigated beyond an appliance commander. In the Private sector, my view is that insurers will still need fires and explosions investigating.

Ian - Where does the Code of practice fit in against the NOS?

Nick – The code of practice is now called the Fire Investigation Protocol [Protocol]. The Forensic Regulator requested (but did not fund) the consultation process. The Protocol does now not attempt to repeat the NOS but refers to them. Therefore, to be a competent fire investigator you need to demonstrate that you work to the requirements of the NOS. In my view, the Protocol and NOS complement each other.

Ian – Are there any FI problems that you foresee in the future?

Nick – The fire services and Police services will need to demonstrate that their fire investigators are competent. There are currently existing accepted ways of proving FI competency (The CSFS Fire Investigation Diploma, the IAAI CFI programme and other similar programs). The fire service may need to reduce the number of FI's that respond to fires if they are not all assessed as competent. Who knows how Chief Officers will respond to this requirement!

Ian – In the next five years do you feel we will be in a better place for FI in public and/or private sector?

Nick - The Protocol and the COP will raise the game for public sector investigations. I’ve worked in both worlds and in the public sector there is a huge diversity across the UK with the knowledge and skills of public sector FIs. Some are very experienced, knowledgeable, thorough, competent and skilled with their
investigations - producing detailed notes, good quality photographs and good quality reports. Others are dropped into the deep end as soon as they have finished a basic course. There are a minority investigators who even after attending the relevant training and mentoring should not be allowed to investigate the cause of fires. This may seem harsh, however, I’ve been able to observe a large number of FIs throughout the UK.

I think that the private sector will also have to improve the CPD of their experienced investigators as some of them are behind current working practices.

Appendices 3 Continued –

Pete Mansi - Friday 16th January 14:15 Hrs

Ian – Have you undertaken the Survey and are there any Questions that you would like to discuss?

Pete – As a private Investigator now I highlighted in the comments box that there are some questions that are slightly fire centric and I was unable to answer.

Ian – In a short paragraph could you explain your vision and the direction of FI in the next few years?

Pete – I have seen my vision come and go a couple of times since 2003. In 2005 and again in 2009, the introduction of the NOS was a great step forward and this enabled us all to have a competence standard to work towards, the SFJ level five was agreed although the working group had highlighted levels 6 & 7. The issues that this raises for Fire Services and companies is the need for all the assessors, verifiers and evidence to fulfil the standard whether you are a Firefighter or a forensic scientist etc.

Ian - Where does the Code of practice fit in against the NOS.

Pete – The original draft from the forensic regulator was known as a code of practice which is now looking to be more of a protocol; this fits better for the FRS as it would have been hard for Fire Services to gain the accreditation ISO 17020; as required therefore changing this to a protocol allows the Fire Investigators to have guidance to work towards.

Ian – Are there any FI problems that you foresee in the future.?

Pete – I think we need clear focus on what it is we do and need as a discipline, we need to ensure that we link our practices across both public and private, meaning standards terminology and the system of work, what goes on in London should link
to what is going on in a smaller more rural Service. Items such as a Fire Fighter investigating a fire with a timeframe that is unrealistic may create a wrong decision where as a longer more in-depth investigation with no time limit may change the outcome. Also we must bear in mind that in the private sector the case inevitably has the potential to go to court and the burden of proof differs from a FF investigation into origin and cause.

Ian – In the next five years do you feel we can iron out these issues etc?

Pete – I hope that over the next few years that the SFJ NOS and protocols from the Forensic regulator can all work together and ensure that whoever and wherever the FI comes from that the standard and quality of work is the same.

Pete – Comments, this is a good time to ask the questions you are asking and I am keen to see what results and details you get back; Interview was closed at 14:44.

**Appendices 3 Continued –**

DCFO Blacksell - January 17th 2015

Ian – Have you undertaken the Survey and are there any Questions that you would like to discuss?

Answer – No

Ian – In a short paragraph could you explain your vision and the direction of FI in the next few years?

Answer – I am aiming to be in a position where FRS Fire Investigators are all carrying out investigations in a consistent manner, to national guidance, and are able to maintain their competence within a defined competency framework. I would also like to see much better information sharing, between FRS as well as between FRS and partner agencies such as Trading Standards. I would also like to try and ensure that all stakeholders recognise the benefits that Fire Investigation has to wider firefighter and community safety, and therefore why it is a vital component of the delivery of a modern Fire and Rescue Service.

Ian - Where does the Code of practice fit in against the NOS?

Answer – The Code of Practice (which actually is likely to be a Protocol which will effectively be an addendum to the overarching Forensic Science Code of Practice) refers to the NOS consistently throughout the document (in the finished version following on from consultation responses) and does not replace the NOS in any way.

Ian – Are there any FI problems that you foresee in the future?
Answer – I can see that if FRS do not see the wider benefits of FI it could be possible that some may decide to stop FI altogether as a cost saving measure, due to the fact that there is no statutory duty to carry it out (although there is a power) We have already seen some FRS start charging the Police for carrying out criminal investigations and again there is the potential that could cause the Police to call on the FRS less and less to save money, which could impact on the volume and quality of prosecutions.

Ian – In the next five years do you feel we will be in a better place for FI in public and/or private sector?

Answer – I feel we may be in a better place regarding consistency and information sharing, both of which are more efficient, however overall we need to see what other financially driven changes happen which may impact negatively

Appendices 3 Continued –

Mick Gardiner - 12 December 2014

Ian – Have you undertaken the Survey and are there any Questions that you would like to discuss?

Mick – I have undertaken the Survey and am very happy that the questions are being asked at this time. It will be interesting to see the views of the respondents

Good Luck

Ian – In a short paragraph could you explain your vision and the direction of FI in the next few years and outline any problems you foresee?

Mick – It’s impossible to describe my vision in a paragraph but from my regular interaction with experienced practitioners on the front line it appears problems for which we had once found solutions are again mounting. I fear that some long established inter-service working relationships in the public-sector appear to be going in reverse with some crime scene examiners reverting to just taking scene photographs and the police relying too heavily on the opinion of fire service personnel and the support of forensic fire investigators being requested far less often

I would like to refer you to an article I wrote after the The Council for the Registration of Forensic Practitioners (CRFP) had been abolished in favour of a Forensic Regulator responsible for England and Wales. This was also a time when government was doing away with the Forensic Science Service (FSS) and handing the provision of forensic support to the established private sector providers. In the article entitled 'Under Scrutiny' I described a golden era of fire investigation where Fire and Police Chiefs and Scientific Support Managers took notice of a series of government reports & circulars and recognised the benefits of developing inter-
service working practices by investing resources in fire investigation training and service delivery. From the lesson learnt they were able to develop effective fire and arson reduction strategies.

Over recent years, as funding to the public sector has been progressively cut, we have seen a decline in such investments and as a result changing attitudes towards roles and responsibilities. As the GATR Business Development Director, I obviously have a vested interest in the delivery of fire/arson investigation training programmes which for almost twenty years have been primarily aimed at the public-sector. As co-founder of service delivery provider GFI I also know the current level of demand for forensic support at complex crime related, fatal and serious injury fires.

As one who believes passionately in the inter-agency 'team approach' my hope is that that the golden era will return and we will see a fully functional public-sector and private sector working in harmony to learn the lessons which motivate the design and delivery of effective fire safety and arson reduction strategies.

Ian - Where does the Forensic Regulators Draft Code of Practice fit in with the established three tiers of fire investigation and against the NOS and SFJA Level 5 Certificate in Fire Investigation Learning Outcomes and Assessment Criteria.

Mick – I honestly don't know. The NOS, which began life in 1996, was designed and developed over many years. It involved subject matter consultants bringing together numerous representatives of UK Fire & Rescues Services and Police Services, Forensic Scientists, Training Providers et al. unfortunately it took until May 2013 before SFJA converted the NOS into the Level 5 Certificate. But it is on the record which members of the wider fire investigation community contributed to the NOS and SFJA award and model assessment processes.

As I understand it there have been a number of draft versions of the Forensic Regulators COP and these have all been compiled under confidential cover by an anonymous group of authors. The original consultation process of the wider fire investigation community was five (extended to seven) weeks over the summer holiday period and at a time when the Forensic Regulator came to the end of his term of appointment. Despite assurances a year ago that the wider fire investigation community would be informed who the authors are, it has not been made public who the authors are, which organisations or interest groups they represent. We are told our contributions and the responses to them will again be anonymised which does not inspire confidence or demonstrate a transparent and accountable process which we should expect.

Ian – In the next five years do you feel we will be in a better place for FI in public and/or private sector?

Mick – So much has happened in the last year or two let alone five years I will reserve judgement.
The fact that the fire investigation UK National Occupational Standard has at long last been translated into an award process whereby public and private sector practitioners knowledge and understanding can be tested along with their level of competency is a significant step forward. Let's hope that there is a will amongst policy makers to re-strengthen proven inter-agency initiatives.

**Appendices 3a – Expert Profiles**

**Deputy Chief Fire Office Chris Blacksell Humberside FRS**

CFOA- Lead for Fire Investigation.

Chris Blacksell is responsible for all Fire and Rescue Service Delivery across the four Local Authority areas covered by Humberside Fire and Rescue Service. This includes the Operational Response to fires and other emergencies, emergency call handling and mobilising, Community Safety activities and Technical Fire Safety activities in relation to the Regulatory Reform (Fire Safety) Order. He is also responsible for all Commercial Services delivered by Humberside Fire and Rescue Service and is a Director of HFR Solutions, a trading company controlled by Humberside Fire Authority, which currently delivers a range of services including private Fire and Rescue services, training, specialist rescue teams, and Ambulance services to large industry.

Chris Joined the Service in March 1988. He began his career at Hull’s Central Fire Station and has served as an operational officer in every area of the Service. He completed a Master’s Degree in Fire Investigation to become one of the first Yorkshire and Humberside Regional Fire Investigators, and led on a number of high profile cases, including fire related murders. He was promoted to Deputy Chief Fire Officer in April 2014 and is also the Chief Fire Officers Association (CFOA) Strategic Lead for Fire Investigation. In that role he chairs the CFOA UK wide Fire Investigation Strategic Steering Group.

Chris is also a Director of CFOA Bluewatch Ltd and is a member of the CFOA Members Sounding Board

**Dr Andrew Monclieff, MA BA (Hons)**

Andrew began his post-graduate academic career studying the rocks and sediments left behind in East Greenland and other parts of the Arctic by one of the world’s deepest glaciations. After achieving his doctorate he joined the British Antarctic Survey, with which he completed two field seasons in the spectacular mountains of Alexander Island on the Antarctic Peninsula.

In 1992 Andrew decided to leave the academic world and joined Hawkins where he trained in the investigation of fires and explosions, disciplines in which he has
Andrew also introduced Hawkins to forensic geology and carries out small, but significant numbers of investigations relating to geology. These include the deterioration of natural building materials, failures in quarries and mines and the use of rocks and soil in the identification of fraud.

On the criminal side, Andrew has now conducted numerous geological investigations into serious crimes, the most high profile example being the Soham murder enquiry. He used soil and rock evidence to show that Ian Huntley had driven his car on the remote track where the bodies of Holly Wells and Jessica Chapman were found. He was also deeply involved in the release and subsequent acquittal at re-trial of Barri White and Keith Hyatt, who had been wrongly convicted for the murder of Rachel Manning. Andrew became a Director of Hawkins in 2006 and Managing Director in 2013 and is based in the Cambridge office.

**Mick Gardiner** – MIFireE, CEO GA Fire Investigation

Formerly 27 years in the fire service. 11 years as a fire investigator. Author of FM Global’s ‘Guide to Fire & Arson Investigation’. Contributor to design and development of UK National Occupational Standards (NOS) and many other national and international initiatives. Former CRFP Lead Assessor and European representative on the IAAI Training & Education working group.

**Dr Peter Mansi FIFireE, MCSFS, IAAI-CFI, IAAI-ECT, IAAI-CI**

With over 30 years operational experience with the London Fire Brigade, I am a Forensic Fire Investigator, and previously a Group Manager for the London Fire Brigade’s Fire and Arson Investigation Team; I was also the Borough Commander for the City of London. I have developed the organisational structure, training regime and response to incidents of the Fire and Arson Investigation Team within the London Fire Brigade, regarded as one of the best models of a fire investigation department in the world. I have either led, managed and/or reviewed some of the most complex fire investigations in the UK and Ireland over the past decade, for example the Lakanal high rise multi-fatel fire, Warwickshire fire fighter fatalities, Bray Co Wicklow fire fighter fatalities and Bethnal Green Road fire fighter fatalities.

A Certified Fire Investigator, Evidence Collection Technician and Certified Instructor with the International Association of Arson Investigators; a Member of the Chartered Society for Forensic Sciences and a Fellow of the Institution of Fire Engineers, I attained my PhD in fire and arson investigation methodology in December 2012, challenged by Professor Drysdale during my viva voce in April 2012.

My professional memberships and continuing professional development ensure that the fire investigations that I am involved in are carried out to the highest standards.
and in accordance with current best practice. I currently investigate fires in the private sector and am a Partner in Fire Investigations (UK) LLP, Fire Investigations (Global) LLP and Hazard and Risk Management Solutions Ltd (HARMS). I am also the Managing Director of Peter Mansi Fire Investigations (UK)Ltd.

Dr Nick Carey – IAAI, CFI, GFireE FSSocDIP

Nick joined Hawkins in June 2012 after a 27 year career with the London Fire Brigade. During the last 16 years of his fire service career he was a full-time Fire Investigation Officer.

In 2009 he was awarded a PhD with the University of Strathclyde for his research into the interaction of fire and electrical circuits and the metallic damage to electrical conductors located within fire scenes titled “Developing a reliable systematic analysis for arc fault mapping”.

He has undertaken a number of electrical examinations within the UK. This has included multi-agency teams investigating several firefighter fatality incidents and the investigation into the cause of the Cutty Sark fire in Greenwich. He has given evidence as an expert witness in Coroners’ and Crown courts on many occasions.

He has delivered electrical training to Fire Brigades, Police Forces and Forensic Laboratories throughout the UK and oversees.

Nick specialises in the investigation of fires in domestic, commercial and industrial premises, as well as electrical failures. Nick is an Associate based in our London office.

Penny Harper MA (Oxon) Solicitor, Director, FRSA

Penny-Harper is the founding Director of Legal Experience Training, Legal Experience Training was set up in 2010. She has overall responsibility for client relationship management, the design and delivery of courses and the selection and training of course tutors. Penny has extensive experience of designing and delivering legal knowledge and skills based learning and development as well as assessed programmes. Penny regularly speaks at conferences and writes articles including those published in the “New Law Journal”, “Construction”, “The Solicitors Journal”, “The Tax Advisor”, “People Management” and “Fire”. Penny is the principal author of “The expert witness” published by Sweet and Maxwell, which is a practical guide for witnesses. Penny has sat on a “Skills for Justice” working group considering the necessary skills for those collecting, writing and giving evidence within the justice system. Penny is also a Board Member of the AFI- UK giving legal and training advise to members.

Penny has particular experience of delivering learning outcomes based training and the use of objective competency assessment criteria to assess skills. She is regarded by clients as an excellent course designer and trainer.
Appendices 4 –Survey

Introduction

This survey is targeted at Fire Investigation practitioners across Private and Public sectors. It asks for views on changes made to the United Kingdom Fire Investigation process over the past years. The results will be presented within a final dissertation to enable a critical discussion on the outcomes from the survey.

The survey aims to gather information on your skills, level of training, ongoing competence and thoughts on changes to fire investigation.

The intention is to feedback findings from the Survey to inform professionals in managing Fire Investigation moving forward.

The author of the Survey is a Serving Group Commander from the UK FRS, the survey results will form part of their final project MSc Fire Scene Investigation at University Central Lancashire.

Thank you for your time to undertake the questions.
Changes in Fire investigation provision in the UK in the past years

Please complete the below detail to assist with understanding your role in Fire Investigation.

For Your Information - The 2006 Fire Service Circular
"The Investigation of fires where the supposed Cause is not Accidental" highlighted levels of Fire Investigation as:

- Level One: Basic fire and arson investigations.
- Level Two: Intermediate fire and explosion (non-terrorist) investigations
- Level Three: Advanced fire and explosion (non-terrorist) investigations

This may assist with some questions later in the survey.

*1. Your Role
Which of the following best describes your current role?

<table>
<thead>
<tr>
<th>Role</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire Service Fire Investigation Officer</td>
<td></td>
</tr>
<tr>
<td>Police Senior Investigating Officer (SIO)</td>
<td></td>
</tr>
<tr>
<td>Police Scene Of Crime Officer (SOCO)</td>
<td></td>
</tr>
<tr>
<td>Forensic Scientist</td>
<td></td>
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<tr>
<td>Insurance Fire Investigator</td>
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</tr>
<tr>
<td>Freelance Fire Investigator</td>
<td></td>
</tr>
<tr>
<td>Other (please specify)</td>
<td></td>
</tr>
</tbody>
</table>

*2. Experience
How many years experience do you have carrying out level 2 / 3 scene investigations?
(EG. Above the routine level 1’s)

<table>
<thead>
<tr>
<th>Years</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 5 Years</td>
<td></td>
</tr>
<tr>
<td>5 - 10 Years</td>
<td></td>
</tr>
<tr>
<td>10+ Years</td>
<td></td>
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</tbody>
</table>

3. Fire Investigation Reports
On average how many Fire investigation do you carry out each year? (FSC 1/2006 Levels 2 & 3)

<table>
<thead>
<tr>
<th>Range</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 6</td>
<td></td>
</tr>
<tr>
<td>6 - 12</td>
<td></td>
</tr>
<tr>
<td>12+</td>
<td></td>
</tr>
</tbody>
</table>
4. Fire Investigation Court Testimony.

In either capacity how many times have you been requested to attend court in the last 3 years?

<table>
<thead>
<tr>
<th>Role Description</th>
<th>Times</th>
</tr>
</thead>
<tbody>
<tr>
<td>As a Fire investigation expert witness in Crown Court</td>
<td></td>
</tr>
<tr>
<td>Evidence of fact only in Crown Court</td>
<td></td>
</tr>
<tr>
<td>To give information to a Coroner's Court</td>
<td></td>
</tr>
<tr>
<td>If you have not given evidence in court please Mark 0</td>
<td></td>
</tr>
</tbody>
</table>
Changes in Fire investigation provision in the UK in the past years

5. Have you gained any formal fire investigation qualifications?

[ ] Yes
[ ] No

Currently working towards

If yes or working towards (please specify)

6. Do you believe that a qualification is necessary for undertaking fire scene investigations?

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>[ ]</td>
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<td>[ ]</td>
</tr>
</tbody>
</table>

7. If you have no recognised qualifications, what (if any) has been the main barrier to this?

- Limited Personal Finance
- Limited Organisational Finance
- No Personal time to study
- No Organisational time to study
- No known Occupational gain
- No Interest
- Employer unable to support
- Other

I have a qualification

Other (please specify)
Changes in Fire investigation provision in the UK in the past years

8. Since working in the field of fire scene investigation, how many Continuous Professional Development (CPD) hours training on average per year do you undertake? (taking 1 full week at 37hrs)
   - 0 - 20 (up to half a week)
   - 20 - 37 (between half and a full week)
   - 37 - 74 (1 to 2 weeks)
   - 74+ (More than two weeks)

9. Given the hours stated in Q8. Do you feel this has been sufficient to maintain competence in your role?
   - Yes
   - No

   If you need to clarify your answer please use comments box.

10. In the past 3 years -
    Have you seen a/an ................................in fire investigator?
    - Increased workload
    - Decreased workload
    - No significant change

    If possible please specify a reason (e.g. increase / decrease in local fires/arson, loss of scientific support, loss of forensic scientist or increase / reduction in FI team ETC.)
11. In respect of serious and fatal fires, in your opinion, has there been a change to the frequency of forensic scientist attending fire scene investigations in the past 3 years?

- Increased
- Stayed the same
- Decreased
- Ceased altogether

Do you have any comments on this response?

12. In your opinion, has any change to the frequency of Forensic scientists attending, caused your own level of involvement at fire scene investigations to?

- Increase
- Decrease
- Stay the same

E.G. Are you now producing expert witness reports & testimony, when previously you did not? (please specify)
13. In your opinion has any change in the frequency of forensic scientists attending scenes made any difference to your confidence at these investigations?

- Yes
- No
- Not sure

If Yes or No? (please specify)

14. In your opinion, has the attendance or non-attendance by a forensic scientists made any difference to the outcomes of these investigations / cases?

- Yes
- No
- Not Sure

Any Comments? (please specify)
15. Since the closure of the Forensic Science Service; if the need for a forensic scientist is necessary to attend a Fire Scenes in your region where do they come from?

- Local Police
- Regional Police
- Private sector Forensic provider
- Fire and Rescue Service

I don't know

Any comments? (please specify)

16. Where do you obtain your initial (level 2) Fire Investigation training?

- In-House Training
- Fire Investigation Training Company
- Fire Service College
- University Courses

Other (please specify)

17. Where do you obtain your Fire Investigation CPD training?

- In-House
- Fire Investigation Training Company
- Fire Service College
- University Courses

Other (please specify)
18. Where do you obtain your Specialist Fire Investigation Training?

- In-House
- Fire Investigation Training Company
- Fire Service College
- University Courses
- Other (please specify)

19. In your experience have you found that any of the factors listed below limit your training?

- Capacity (not enough personal time)
- Capacity (not enough organisational time)
- Cost to send delegates (limited funding)
- Other work pressures (Not seen as a priority)
- Local facilities (limited venues)
- Other (please specify)
## Changes in Fire investigation provision in the UK in the past years

Would you agree or disagree with the following statements?

**20. The closure of the Forensic Science Service, has had a negative impact on quality Fire Scene Investigations in England and Wales?**

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</table>

If Strongly agree or agree please specify:

**21. The closure of the Forensic Science Service, has had a negative impact on laboratory analysis for Fire Investigation in England and Wales?**

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
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<td></td>
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</tbody>
</table>

If You Strongly agree or agree can you specify:

---

97
22. Do you believe there is a need for a register of qualified Fire Investigators (Public & Private) in the United Kingdom?

- Yes
- No
- Don't Know

If "Yes" what qualifications would they require to be included? (please specify)

23. If you answered "YES" to Q22 where should the register sit?

- Chief Fire Officers Association
- National FRS register
- UK Association Fire Investigators
- Chartered Society of Forensic Sciences
- The Forensic Regulator
- Institute of Fire Engineers (IFE)
- Skills For Justice
- Not Sure
- Other (please specify)
24. Were you consulted on the content of the Forensic Regulators Draft Code of Practice which was circulated for Public Consultation in August 2014?

- Yes
- No

Not Aware

Did you have the opportunity to respond (please specify)

25. If you were consulted upon the draft code of practice do you agree or disagree with the proposals?

- Agree
- Disagree
- Not Consulted

Any Comments
Appendices 5

The Protocol

Code of Practice for Investigators of Fires and Explosions for the Criminal Justice Systems in the UK

Draft 6 06 July 2014
TABLE OF CONTENTS

1. AIMS ............................................................................................................................... 3
2. SCOPE .............................................................................................................................. 3
4. REQUIREMENTS (ISO/IEC 17020:2012:4) ...................................................................... 4
   4.1 GENERAL ..................................................................................................................... 4
   4.2 VALIDATION ................................................................................................................ 5
   4.3 ROLES AND RESPONSIBILITIES ((ISO/IEC 17020:2012:6, NOS SFJFI1, SFJFI2, SFJFI3) ................................................................................................................. 6
   4.4 PERSONNEL ((ISO/IEC 17020:2012:6, NOS SFJFI1, SFJFI2, SFJFI3)) ....................... 7
5. ESTABLISHING REQUIREMENTS ((ISO/IEC 17020:2012:7, NOS SFJFI1, SFJFI2) ... 9
6. CASE ASSESSMENT ........................................................................................................... 10
   6.1 PRIOR TO INVESTIGATION AT THE SCENE (NOS SFJFI1, SFJFI2) ............................ 10
   6.2 SCENE INVESTIGATION ((ISO/IEC 17020:2012:7, NOS SFJFI1, SFJFI2) .......................... 10
7. REVIEW OF CRITICAL FINDINGS .................................................................................. 13
8. UNDERTAKING CASE REVIEWS (NOS SFJFI1, SFJFI2, SFJFI3) ............................... 13
9. CASE MANAGEMENT ........................................................................................................ 14
10. REPORTING ..................................................................................................................... 14
   10.1 Report format and sections ....................................................................................... 14
   10.2 Final review and checking ....................................................................................... 15
   10.3 Submission ............................................................................................................... 15
   10.4 Storage and archival of material ............................................................................. 15
11. CASE RELATED CONFERENCES ................................................................................. 15
12. DISCLOSURE (NOS SFJFI2, SFJFI3) ............................................................................ 15
13. ATTENDANCE AT COURT (NOS SFJFI2, SFJFI3) ....................................................... 16
14 BIBLIOGRAPHY ............................................................................................................. 16
1. **AIMS**

1.1 The Protocol has been developed to ensure that individuals engaged in the examination of fire and explosion scenes within the framework of the Criminal Justice Systems of the UK (England, Wales, Scotland and Northern Ireland) work within the unified code of practice set out herein. It is acknowledged that such individuals may work within private sector organisations (such as fire investigation, insurance consultancies or commercial forensic science providers), public sector organisations (such as fire and rescue services or police services) as well as academic institutions.

1.2 The Protocol sets out:

1. a code of practice for fire investigators detailing the appropriate understanding, knowledge and competencies required to undertake fire and explosion scene investigations within their particular area of expertise.

2. a structured, systematic approach for the engagement of fire investigators within the investigative process such that their participation maximises the quality of the information obtained from the scene investigation assisting in the production of robust evidence for the criminal justice process.

3. the requirements for scene investigation, specifically for the identification, recording, recovery, interpretation and presentation of specific types of evidence encountered, in accordance with applicable quality standards and accepted national and international procedures. (For example, but not limited to, those presented in Skills for Justice National Occupational Standards relating to fire investigation (SJFFI1, SJFFI2, SJFFI3), the Chartered Society of Forensic Sciences diploma in fire investigation, the Institution of Fire Engineers Unit 6 fire investigation (T/505/5936) and the International Association of Arson Investigators certified Fire Investigator Program).

1.3 The Protocol maps to the requirements of ISO 17020 within the context of fire and explosion scene investigation and to the Forensic Science Regulator’s Code of Practice

2. **SCOPE**

2.1 The Protocol is directed specifically at fire investigation practitioners who undertake casework within the UK criminal justice systems.

2.2 The Protocol outlines a code of practice and the standards expected in relation to the investigation of fire scenes and scenes related to physical or gas phase explosions within the UK criminal justice systems.

2.3 The Protocol does not include the chemical analysis of fire debris for the presence of ignitable liquids.

2.4 The Protocol does not include examination of scenes relating to explosive devices or events associated with terrorist activity.
3. DEFINITIONS

3.1 Fire scene investigators: In the UK, fire scene investigators include practitioners from both the public (fire and rescue service nominated fire investigation officers and officers tasked with determining whether a particular scene may involve deliberate ignition, police, publicly funded forensic science providers, academic and other public bodies) and the private sector (fire investigation organisations, private forensic science providers and other commercial organisations).

3.2 Deployment to incidents: The nature of deployment of fire investigators will depend upon the nature of the incident and the level of response required. This is a judgement made on a case by case basis. Incidents may require a low resource response, a technical specialist or a multiagency response to be deployed. In all cases, fire investigators must work within their areas of expertise and competence.

3.3 Fire scene investigation: in its broadest sense involves the assessment of evidence related to a fire scene or a physical/gas phase explosion together with post fire/explosion damage to provide a determination (where possible) of the area(s) of origin of the fire/explosion, the most likely ignition mechanism involved and the mechanism by which a fire/explosion may have developed and spread.

3.4 Specialist information: Fire scene investigators may also provide information of a specialist nature such as the interpretation of electrical causes of fire or the computer modelling of fire behaviour. Fire scene investigators may also recover items from fire scenes for the purposes of further laboratory based investigations.

4. REQUIREMENTS (ISO/IEC 17020:2012:4)

4.1 GENERAL

4.1.1 Fire investigators must be impartial and independent and undertake their investigative duties with professionalism, maintaining the confidentiality of all materials relating to their investigation. Fire investigators must provide impartial, expert opinion to the court.

4.1.2 Fire scene investigation is an opinion based process supported by a broad body of scientific and engineering knowledge and the specific skills and experience of the practitioner.

4.1.3 Fire scene investigation demands a level of scientific and discipline specific knowledge, skills and competence for an investigator to be in a position to determine the origin, cause and development of a specific event.

4.1.4 A fire investigator must be competent to proffer a professional opinion on the origin, cause and development of a fire within their area of expertise and must not overstep the boundaries of their expertise.
4.1.5 Fire investigations must be undertaken following a systematic data gathering and investigative approach (widely known as the 'scientific method') accepted within the fire investigation community and presented in appropriate national and international guidance and reference documentation.

4.1.6 At all times, good scientific practice must be followed and particularly where items are being recovered from fire scenes for further analysis or examined in situ. This includes recording the items correctly in situ and recording the recovery, packaging and labelling of items.

4.1.7 If the fire investigator is required by law or otherwise requested to release information they must inform the instructing authority of these requirements.

4.1.8 The recognition of the fire investigator as an expert witness is a matter decided upon by the courts, and fire investigators must have an awareness that they may be called to present evidence in this capacity and are responsible for ensuring they have full awareness of the responsibilities of an expert witness.

4.2 VALIDATION

The techniques, and equipment used throughout the fire scene investigation should be scientifically validated either through the professional literature or by an in house validation method.

Samples recovered from a fire scene requiring chemical analysis must be transferred to a laboratory where analytical testing conforms to the appropriate quality procedures (normally ISO/IEC 17025) or if not, the reasons for using a different facility should be fully documented.

4.2.1 Scene Examination

4.2.1.1 Area of origin

Validation of the interpretation of the origin of a fire or explosion involves an assessment of factors which must include (but is not limited to) the observed post fire indicators such as burn and smoke patterns, the fire load, the observed degree of damage and ventilation and temperature indicators. The basis for the interpretation of these factors is well documented in the professional literature. Relevant support for the findings of the area of fire origin(s) should be documented.

4.2.1.2 Cause

Validation of the interpretation of the cause of the fire must involve an assessment of all viable ignition sources on a case by case basis. These can include, but are not limited, to chemical or biological cause (including self heating), electrical, naked flame, radiant heat, mechanical or smoking
materials. Support for the inclusion or exclusion of a potential ignition source present at the scene must be documented.

4.2.2 Estimation of uncertainty

Tests and measurements used in fire scenes are indicative and not quantitative. Uncertainties in the entire forensic fire scene investigation process arise from a number of sources which include:

1. competence of the investigator and their specific expertise,
2. information received,
3. specific environmental conditions,
4. destruction of evidence due to the fire,
5. fire suppression activities.

These factors must be taken into account on a case by case basis in the interpretation and evaluation of a scene.

4.3 ROLES AND RESPONSIBILITIES (ISO/IEC 17020:2012:6, NOS SFJF11, SFJF12, SFJF13)

4.3.1 In general, the degree to which a fire investigator will be engaged in any investigation will be defined by their specific expertise and documented in their terms of reference.

4.3.2 Fire investigators responsibilities include:

1. understanding their role within the investigation and the investigative team,
2. understanding the potential for other evidence types which may be present at the fire scene,
3. understanding relevant crime scene and laboratory procedures required to ensure the preservation, integrity, continuity and confidentiality of evidence as well as their disclosure obligations,
4. ensuring as far as practicable that the methods used in the investigation of the fire scene are accepted by the fire investigation community and/or are peer reviewed (for example in the relevant scientific literature),
5. reporting and justifying in case notes or within their statement/report as appropriate, any deviations from accepted fire scene investigation practice,
6. ensuring that their examination does not impact adversely on the requirements of other specialists at the scene but rather works alongside other specialists to maximise the overall opportunities of quality of evidence recovery at the scene,
7. exercising all reasonable professional skill and care to prevent avoidable danger to health or safety and to prevent avoidable adverse impact on the environment,
8. making and retaining full, contemporaneous, clear and accurate records of the examinations undertaken. These may include (but are not limited to) the terms of reference, a scene plan detailing where items were within the scene including, if appropriate wiring diagrams, decision making and scene examination strategy, the time tasks were undertaken, and exhibits/productions recovered. All records must be maintained in appropriate and secure storage and must be disclosed in their entirety, in a timely manner, if requested,
9. ensuring the security and storage of all correspondence in electronic or physical format including text and images,
10. understanding the reliability (precision and accuracy), variability (statistical variance), errors and calibration related to any instrumental measurement or engineering method undertaken including ‘ad hoc testing’,
11. writing statements and reports and attending court to give evidence if called upon to do so,
12. undertaking appropriate formal and informal peer review and critical checks of statements and reports,
13. presenting findings and evidence in a logical, balanced, transparent and robust manner confining opinions to those based on personal skills, professional experience and knowledge,
14. ensuring a full understanding of the ethical standards required and the expectations and obligations of appearing as an expert witness for the courts,
15. understanding the admissibility of expert evidence (whether tendered by the prosecution or the defence) in criminal proceedings and the disclosure obligations of witnesses,
16. presenting evidence in a fair, unbiased and impartial manner with honesty, integrity and objectivity, and without any form of discrimination,
17. taking all reasonable steps to maintain and develop their professional competence, through membership of a professional body and engaging in continuous professional development or other agreed competency framework,
18. alerting appropriate authorities to any findings which may have implications for public safety,
19. ensuring (if appropriate) that professional indemnity Insurance is in place.

4.4 PERSONNEL ((ISO/IEC 17020:2012:6, NOS SFJFI1, SFJFI2, SFJFI3))

It is recognised that fire investigators have a wide range of experience and background knowledge. Their training and knowledge can be arrived at through a wide ranging combination of qualifications (academic and/or non-academic), structured specialist training courses and experience of scene investigations within the fire investigation domain. Irrespective of the means
used, fire investigators must have the essential knowledge and skills presented in Table 1.

Table 1: Knowledge and skills set

<p>| | |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>1</td>
<td>Understand the importance and relevance of health and safety at scenes and that this may vary on a case by case basis.</td>
</tr>
<tr>
<td>2</td>
<td>Understand the importance of a structured, systematic methodological approach to fire scene investigation and excavation including the documentation (e.g. written, photographic) of the scene investigation including the documentation of potential evidence in situ. Understanding the importance of evidential integrity and chain of custody.</td>
</tr>
<tr>
<td>3</td>
<td>Be aware of aspects of fire science and fire engineering which may have a relevance to fire investigation (e.g. smoke spread, structural performance, passive and active fire protection systems, fire tests, and human behaviour in fire).</td>
</tr>
<tr>
<td>4</td>
<td>Understand the mechanisms of heat transfer.</td>
</tr>
<tr>
<td>5</td>
<td>Understand the physical chemistry of materials and how this influences the reaction of materials when exposed to heat.</td>
</tr>
<tr>
<td>6</td>
<td>Understand the differing types and mechanisms of ignition.</td>
</tr>
<tr>
<td>7</td>
<td>Understand the chemical properties of solid, liquid and gaseous fuels as they relate to their thermal decomposition including pyrolysis and combustion and how such materials will react when exposed to heat.</td>
</tr>
<tr>
<td>8</td>
<td>Understand the mechanisms and influencing factors of fire growth and development in a wide range of circumstances.</td>
</tr>
<tr>
<td>9</td>
<td>Understand the interpretation of post fire indicators (including their limitations) and the use of such indicators in the determination of the area of origin of a fire.</td>
</tr>
<tr>
<td>10</td>
<td>Understand the potential involvement of electricity as a cause of fire and awareness of the post fire indicators of electrical involvement including for example the potential application of techniques such as arc fault mapping.</td>
</tr>
<tr>
<td>11</td>
<td>Be aware of the importance of the examination of fuses and electrical appliances and the appropriate means of securing electrical appliances post fire</td>
</tr>
<tr>
<td>12</td>
<td>Be aware of diffuse phase explosions and gas explosions including the pattern of damage.</td>
</tr>
<tr>
<td>13</td>
<td>Understand the factors which may contribute to fire fatalities including aspects such as toxicity of products of pyrolysis and combustion.</td>
</tr>
</tbody>
</table>
14. Understand the procedures relating to the recovery of items from fire scenes including the importance of continuity and integrity of evidence.

15. Understand the requirements for contamination control, appropriate packaging materials required and the importance of control and comparison samples in the collection of fire debris suspected to contain ignitable liquids.

16. Be aware of the wider forensic science fields which may be encountered in fire investigation (e.g. crime scene investigation, forensic biology, toxicology, forensic anthropology, forensic archaeology) and the requirements of such specialists within the investigative framework.

17. Keep an accurate and true record of casework, to write reports and /or statements appropriate for the UK criminal justice systems, to give testimony and in doing so, communicate detail of their involvement in the case and conclusions, in a clear, unbiased and appropriate manner.

18. Understand the UK criminal justice systems and in particular the rules of evidence, the obligations of being a witness, including acting as an expert witness.

5. **ESTABLISHING REQUIREMENTS ((ISO/IEC 17020:2012:7, NOS SFJFI1, SFJFI2))**

5.1 A briefing must normally take place where the fire investigator is informed by the investigating authority about the nature of the incident and any background information that may be of relevance. The content of the briefing must be recorded in the fire investigator’s notes.

5.2 Any conflicts of interest or perceived conflicts of interest must be declared and discussed. The terms of reference must be clearly stated prior to commencement of the fire scene investigation. This may be for example via a forensic strategy meeting or an initial instruction either in person, by telephone or in writing from the investigating authority. It is recognised that establishing clear instruction is a dynamic process that requires incontrovertible communication between the relevant practitioners and that in cases where the fire service instigates the investigation, such a pre-investigation meeting may not always occur.

5.3 The terms of reference for the fire scene investigation should include:

1. information relating to the purpose of the requested examination, the expertise required and if appropriate, the timeframe and agreed cost
2. the availability of suitable resources, facilities, specialists or other equipment (e.g. aerial platform)
3. establishing a reflective review point for evaluation of progress or changes in priority against requirements in light of information received.
4. discussion and agreement of any limitations imposed on the investigation as a consequence of health and safety risk issues and necessary control measures.

6. CASE ASSESSMENT

Fire investigators attend many different types of scenes including those where explosions or fatalities may have occurred. Because of the variety of scenes, other forensic practitioners and other specialists may also be a part of the investigative team and the fire investigator should familiarise themselves with, and provide input to, the investigative strategy applicable to the scene being investigated.

6.1 PRIOR TO INVESTIGATION AT THE SCENE (NOS SFJFI1, SFJFI2)

1. On arrival at the scene, the fire investigator should introduce themselves to the point of contact and other members of Police or fire and rescue service staff and be prepared to show appropriate identification assuming that these practitioners are already in attendance. The fire investigator must note the names of the key people involved in the investigation and their role and work alongside the other investigative agencies in accordance with the agreed strategy. They must also establish the legal power under which they are operating (for example having written authorisation if required).

2. Prior to any work being undertaken, the fire investigator must discuss and agree any limitations imposed on the investigation as a consequence of health and safety risk and necessary control measures and take responsibility for their own health and safety. The scene risk assessment should be documented.

3. The fire investigator must record the scene perimeters, cordons, logs and common approach paths if in place and must ensure that they adhere to these.

4. If possible, the initial fire scene investigative strategy must be outlined and agreed between the investigating authority, crime scene manager or their representative and other specialists present, being mindful of the potential for recovery of other types of evidence.

6.2 SCENE INVESTIGATION ((ISO/IEC 17020:2012:7, NOS SFJFI1, SFJFI2)

6.2.1 It is recognised that scene investigation is a dynamic activity and as such the investigative strategy must be reappraised regularly and communicated to all relevant parties as the scene investigation progresses.

6.2.2 The fire investigator must record their actions, decisions and observations, strategy, processes, any exhibits/productions seized, etc. Records should include scene notes, scene plans and wiring diagrams as appropriate,
supported by photography (if permitted). Field recording forms may be used. All documentation must be retained and all such notes must be made available for disclosure purposes.

6.2.3 Any equipment brought to the scene by the fire investigator must be clean and contamination free. The cleaning and monitoring of equipment must be recorded in accordance with the requirements of RG201: 6.2

6.2.4 Any limitations imposed on the findings by the fire investigator as a result of restricted access at the scene (e.g. for safety reasons) should be recorded.

6.2.5 The fire investigator must follow and document a systematic data gathering and investigative approach to the scene investigation which is accepted by the profession as good practice and widely referred to as the ‘scientific method’. This includes, but is not limited to:

1. a preliminary external examination of the scene
2. a preliminary internal examination of the scene
3. a detailed external examination of the scene
4. a detailed internal examination of the scene
5. a scene reconstruction

Preliminary examinations must;

1. provide a set of overview photographs of the scene,
2. provide the fire investigator with an initial perspective of the scene, identify items of potential evidential relevance relating to the origin, cause and development of the fire as well as the identification of other potential evidence,
3. identify information which may need to be gathered from potential witnesses or other sources (for example CCTV).

Detailed examinations must;

1. identify and protect items of potential forensic evidence so that an assessment can be made of their relevance and that they can be recovered by other practitioners competent to do so,
2. document, record, retrieve and package items appropriately within their area of competence and in discussion with the investigating authority or crime scene manager,
3. interpret the physical post fire indicators at the scene systematically to identify the potential area of origin being mindful that there may be more than one such area,
4. undertake a systematic and fully documented excavation as appropriate to the scene and in line with the requirements of the investigation and agreed terms of reference.

6.3 Retrieval of items from the scene (RG201:7).

6.3.1 Preservation, packaging, labelling and documentation

1. The fire investigator must have permission from the investigating authority to recover and remove items from the scene. Prior to
removal of such items, they must be fully documented including *in situ* photography, with a scale where appropriate.

2. Items must be packaged suitably and labelled independently such that each item can be unequivocally identified. This must be done in accordance with the requirements for sample integrity and continuity of evidence such that a chain of custody is in place. Any deviation from appropriate packaging material shall be documented along with the reason for the deviation.

3. The potential for contamination and cross contamination must be assessed on an item by item basis and all possible safeguards put in place and documented to minimise the possibility of contamination.

4. All package containing recovered items must be sealed at the scene.

5. A list of items recovered from the scene must be kept including recording who has responsibility for the items. These records shall include details of when the items have been handed over to the investigating authorities.

### 6.3.2 Transfer and transportation

1. The fire investigator must ensure that they witness the handover of items recovered from the fire scene to another person or organisation and ensure there is a written record of this within their notes.

2. Any damage or potential for contamination during retrieval and/or transportation of items from the scene must be documented.

### 6.4. Examination of items retrieved from the scene

1. Examination of items (for example electrical appliances) must be undertaken, once the prioritisation of other evidence such as DNA and fingerprints has been fully discussed with the investigating authority.

2. All relevant practitioners (for example practitioners engaged for the prosecution, defence or insurance industry) should be notified by the fire investigator undertaking the examinations that such examinations are taking place and be provided with the opportunity to attend.

### 6.4.1 Anti-contamination precautions (RG201)

1. Examination of items recovered from fire scenes must be undertaken in a well-lit and clean environment. Benches must be cleaned with detergent prior to such examinations taking place.

2. Appropriate personal protective clothing including gloves must be worn.

3. Equipment must be cleaned with detergent prior to and following the examination of any items and this must be documented.

### 6.4.2 Examination

1. The condition of packaging must be recorded and fully documented.

2. The fire investigator must be aware of the potential needs of the defence or other experts when undertaking the examination of items
and ensure that adequate and accurate documentation including photography is carried out prior to any destructive processes being undertaken.

3. Care must be used in handling more fragile items given that damage may occur during the examinations and when this does occur, it must be documented.

7. REVIEW OF CRITICAL FINDINGS

Critical findings are those which make a significant contribution to the finding in the case and can be subject to differences in interpretation by individual fire investigators.

1. All proposed hypotheses for the origin, cause and, if required, development of the fire and/or explosion must be stated.
2. Each hypothesis must be evaluated and the conclusions reached must be justified in light of the case circumstances and interpretation of physical evidence observed and recorded at the scene including subsequent laboratory examinations if applicable.
3. Critical findings and conclusions must subject to peer review.

8. UNDERTAKING CASE REVIEWS (NOS SFJFI1, SFJFI2, SFJFI3)

8.1 In some circumstances fire investigators may be asked to undertake a review of case related materials such as photographs, fire investigation reports, witness statements and other documents.

8.2 Instructions may be provided by the investigating authority either in person, in writing or by telephone. In all cases the fire investigator must document:

1. The name and contact details of the instructing authority.
2. The terms of reference.
3. An agreement of the items to be reviewed.
4. The time scales under which the case review will be carried out.
5. An agreement of costs.

8.3 Should there be any conflict of interest, the fire investigator must discuss this with the instructing authority.

8.4 A list of material required from other experts must be passed to the relevant individual (for example the disclosure officer or defence solicitor) at the earliest point to allow them to locate and pass on material which might be pertinent.

8.5 The fire investigator undertaking the case review for the defence must understand the different requirements in relation to disclosure related to the work that they are undertaking.

8.6 Limitations imposed on the conclusions drawn by the fire investigator as a result of the method of examination of the evidence (photographs, written
notes and reports) or as a result of restricted access at the scene (e.g. for safety reasons) must be communicated to the instructing authority.

9. **CASE MANAGEMENT**

9.1 A review must be undertaken to check that the investigating authority’s requirements have been adequately addressed in accordance with the terms of reference.

9.2 All reports or statements must be peer reviewed prior to submission to the investigating authority.

10. **REPORTING**

1. The report must be signed and dated on each page prior to submission.
2. Draft documents must be marked as such and left unsigned.
3. The report must be clear and easy to read. The summary and conclusions of the report must be easily understood by the layperson, to render it suitable for presentation in court. The use of technical terminology must be kept to a minimum with non-technical explanations of these terms given where they are felt to be essential.
4. The report must contain sufficient detail and precision for other fire investigators to be able to comprehend the significance of the results.
5. The report must make clear any assumptions made and/or limitations on the extent or reliability of the evidence assessed, and the significance of this on the results.
6. The fire investigator must not stray outside her/his area of expertise when writing the report.
7. The report may include any relevant illustrations including a scene diagram and a selection of photographs.

10.1 **Report format and sections**

10.1.1 Many fire investigators will have their own reporting formats and standard operating procedure for reporting their investigations and findings.

10.1.2 Where such formats do not exist the report should include some or all of the following sections:

1. Introduction,
2. Background,
3. Details of the scene investigation undertaken,
4. Findings including assumptions and limitations,
5. Discussions and conclusions including considerations of all relevant hypothesis,
6. Non technical summary if required
10.2 Final review and checking

Before signing and submitting the report it must be checked for typographical and grammatical errors. A critical check on the conclusions through a peer review process must be undertaken to ensure that
1. there is consistency within the report
2. any conclusions drawn are justifiable considering the information contained within the report
3. the report is a complete and stand-alone document

10.3 Submission

1. The report should be produced as quickly as is practical within the specific circumstances of the case and within the agreed timescale.
2. Interim and supplementary reports may also be requested and the fire investigator must provide these.
3. If there are any delays in producing the requested reports the instructing authority should be informed.

10.4 Storage and archival of material

All materials pertinent to the case must be stored and archived securely. This must include all unused material, for example written notes and photographs. An Index of unused material should be compiled.

11. CASE RELATED CONFERENCES

The fire investigator must be prepared to:

1. Attend case conferences or meetings called by the instructing authority to discuss their findings, report or any other issues relevant to the case.
2. Discuss their findings and interpretations openly and in an unbiased manner including details of any further work which may in their view be required. They should be in a position to discuss alternative hypotheses given the facts provided and identify and summarise any areas of disagreement.
3. All such discussions should be documented fully.

12. DISCLOSURE (NOS SFJFI2, SFJFI3)

The fire investigator must ensure that they adhere to the obligations placed upon them in relation to the disclosure of used and unused materials within the jurisdiction within which they are practicing.
13. **ATTENDANCE AT COURT (NOS SFJFI2, SFJFI3)**

13.1 The fire investigator must make themselves available to attend court when requested to do so.

13.2 They must understand the obligations that they have to the court and the UK criminal justice systems.

13.3 In particular they must:

1. Ensure that they are well prepared and have reviewed their contemporaneous notes and report in advance to their appearance in court to give their evidence.
2. Ensure that all relevant documentation, such as a copy of their report and contemporaneous notes, are taken to the court.
3. Ensure that their appearance and behaviour is in accordance with standards expected by the courts.
4. Deliver all evidence in a clear, audible, and comprehensible manner. They must avoid using overly technical language when answering questions and offer explanations for such language if required.
5. Ensure a clear delineation between what is factual evidence and what is opinion evidence.
6. Ensure that testimony given is in accordance with the contents of their written report.
7. Answer questions truthfully and impartially.
8. Consider any alternative hypotheses that are presented to them, particularly in light of new facts which may emerge during the conduct of the trial.
9. Ensure that any conclusions and statements given are within their field of expertise.
10. Attempt to bring to the attention of the court any evidence which appears to have been misunderstood or misstated by a lawyer.
11. Be willing to enter into discussions with other specialists prior to attendance at court, with regards to confirming areas of agreement and/or to explore any differences in opinion that exist regarding findings and conclusions.
12. Be prepared to change their opinion if the facts dictate it, and to state this change clearly to the court.

14 **BIBLIOGRAPHY**

1. Criminal Procedure Rules (England and Wales)
2. Criminal Justice Act 2003, Part 5
4. Guidance booklet for expert witnesses, COPFS
5. Guidance booklet for experts, CPS
6. The Code for Crown Prosecutors CPS
7. Codes of Practice and Conduct, 2011, Forensic Science Regulator
8. Legal obligations, FSR-1-400, 2012, Forensic Science Regulator
10. Practice advice for expert advisors, 2011, SOCA
11. Practice advice on the management of expert advisors, 2011, SOCA
12. The Disclosure Manual, CPS
15. ISO/IEC 17020:2012
16. RG 201:2013, UKAS
17. EA-5/03