

Forensics in focus




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Introduction - Professor James Lygate



Since our last edition of Forensics in Focus, the Insurance Act 2015 has been passed by the UK Parliament and the Forensic Regulator has published guidance on cognitive bias relevant to forensic examinations. I have taken the opportunity to discuss some of the anticipated implications of the Insurance Act 2015 in this edition.

The Fire and Rescue Service continues to be under financial pressure and given that fire investigation is not a duty required to be performed under the Fire Reform Act or Fire Scotland Act, it will come as no surprise to learn that fire investigation services are being cut back or are under threat.

We expect that the pressure upon Fire and Rescue Service Fire Investigation will result in insurers having to be prepared to instruct their own forensic investigations and we are responding by considering how we can deliver the investigations more economically. That means working smarter in order to work harder and we are very proud of our bespoke case management system which streamlines our processes and enables us to work in compliance with ISO 17020. We have also introduced an App which can be downloaded from Apple iTunes and on android devices – more inside on its time saving functionality.

Working safely is at the heart of what we do and we begin each case by undertaking and documenting a risk assessment. Deon Webber deals with the perennial favourite hot work whilst Mike Wisekal reminds us of the

dangers of working at height. Ian Straker is one of the highly qualified and experienced consultants with whom we work and writes about the new Construction Design and Management Regulations. Not only is Ian able to investigate and advise on construction accidents, his unique and intimate knowledge of the construction industry helps inform our fire investigations in that business sector.

Our article on terrorism was prepared in advance of the events in Paris. Like all of you, I was shocked by the loss of innocent life in Paris and the injured and their families and those who have been bereaved, are in my prayers.

I am delighted to tell you that Eva McKiernan has received a well-deserved promotion to Senior Investigator. She has handled several marine cases this year broadening her experience and putting more stamps in her passport. Eva is profiled in this edition.

May I thank you for your continued support in 2015, wish you the compliments of the season and a very peaceful Christmas to you and your families.



The IFIC App
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The Construction (Design and Management) Regulations 2015 (CDM 2015)

Ian Straker

Ian Straker - Safety Health and Environment Practitioner (expert witness) with over 40 years' experience in the construction industry.

I am sure you are all aware of the statistics below, however it is worth reminding ourselves that there are around 11 construction fires every day in the UK and that annual losses suffered by the construction industry are around £400 million – or over £1 million every day. A fire on-site can lead to injury or loss of life and the costs to a business can be substantial.

As a result of the above statistics, Fire Prevention and Fire Risk Management remains high on the Health and Safety Executives Agenda.

The CDM Regulations 2015 came into force on April 6, 2015, replacing CDM 2007. The principal aim of the Regulations whatever your role in construction, CDM endeavours to improve health and safety within the industry.

The Key documentation prepared as a requirement of the CDM Regulations is the Pre Construction Information.

The regulations define Pre-Construction information as 'information in the client's possession or which is reasonably obtainable by/or on behalf of the client, which is relevant to the construction work and is of an appropriate level of detail and proportionate to the risks involved'.

This information should be passed to the Designers, Principal Contractor and any contractor that may work or be considered to be working on the project to enable them to be able to manage significant hazards throughout the project.

The Pre Construction Information becomes particularly relevant if for any reason there was a catastrophic incident on the site i.e. fire.

One of the first things that would be of interest to me in terms of an investigation would be the Pre Construction information provided by the client. In terms of best practice the Pre Construction information should include the provision of historic information regarding the building/structure together with the development of a HAZOP study/risk register for the project.

Areas of Interest:

The questions I may ask would include but not be limited to the following:-

- Who had an involvement in collating information as part of the HAZOP study – were they fully familiar with the type of works to be undertaken, and how familiar were they with regard to the operation and maintenance of the building/structure?
- Were all of the associated hazards identified and discussed as part of a HAZOP study prior to the start of the project and included in the Pre-Construction Information?
- Was the information relevant and sufficient - did people think information was too trivial to be included?
- Was the HAZOP register regularly reviewed by the subsequent Designers, Principal Contractor and Contractors during the construction phase of the project?
- Did the HAZOP identify any addition hazards as a result of unforeseen works during the progression of the project, were these addressed and closed out and the relevant information made available to those who need it?

In summary the Pre-Construction Information documentation is key to being able to facilitate and influences the successful management of the project through to completion without incident.

Terrorist Incidents

Gareth Williams



Before joining IFIC Forensics Gareth worked with the Australian Police and latterly with the Abu Dhabi Police where he helped establish their explosion investigation procedures.

Fire and explosion investigators in the private sector may occasionally be involved in the investigation of scenes suspected to have been a result of terrorist actions.

The recent crash of a Metrojet flight in the Sinai Peninsula due to an apparent explosion, has reinforced the fact that international means of transportation are still a target for terrorist organisations capable of exposing any security vulnerabilities.

An explosion of this kind results in evidence being dispersed over a wide area and adds to the level of complexity that the investigator will need to manage. Terrorist bombings which have resulted in fires are even more complex as the investigator is faced with the examination of evidence that may have been both physically fragmented and distorted, as well as being fire damaged.

As fire and explosion investigators, it is timely to examine some of the unique factors that will be presented to us when faced with examining the scene of a terrorist bombing. Although the sheer magnitude of the task may appear daunting, and there will likely be increased media scrutiny surrounding the investigation, it is important to remember that the principles of fire and explosion investigation that have served us well over the years at smaller incidents will still be applicable.

Regardless of whether the terrorist bombing has occurred in a plane, train, ship or building, co-operation with a number of investigating agencies will be crucial. Often, the private sector fire and explosion investigator will not be involved in the early stages of the investigation, but will become involved weeks or months later depending on the involvement of Insurance companies. In these instances, the scene of the explosion will likely have already been extensively examined and evidence removed.

It will then be the job for the private sector investigator to attempt to establish the original scene conditions, view photographs if possible of the scene prior to any disturbance, and to determine what evidence has been collected, what testing may have been carried out, and what laboratory results (including device reconstruction) are available.

The level of assistance and amount of information that government agencies will be willing to share will vary considerably. However, a professional, polite disposition as well as being respectful of any local cultures will go a long way in potentially allowing you access to relevant case information, as well as being granted permission to speak to any witnesses.

The private sector fire and explosion investigator may have a wealth of knowledge and experience in the investigation of accidental fuel / air explosions but may have considerably less exposure to the investigation of terrorist bombings or up to date knowledge in the design of Improvised Explosive Devices (IEDs).

IFIC Forensics encourage investigators to complete explosion investigation training courses, and to undertake continuing professional development by reading current literature regarding IEDs and current trends. A collaboration with an IED specialist may prove to be very useful when investigating a terrorist bombing incident.

One such collaboration occurred in July 2004 when IFIC Forensics Principal Investigator Prof J F Lygate was assisted by Mr Dennis McCauley, a specialist in explosions and terrorist devices from the Northern Ireland Forensic Service, in examining evidence from the explosion and fire aboard the Superferry 14.

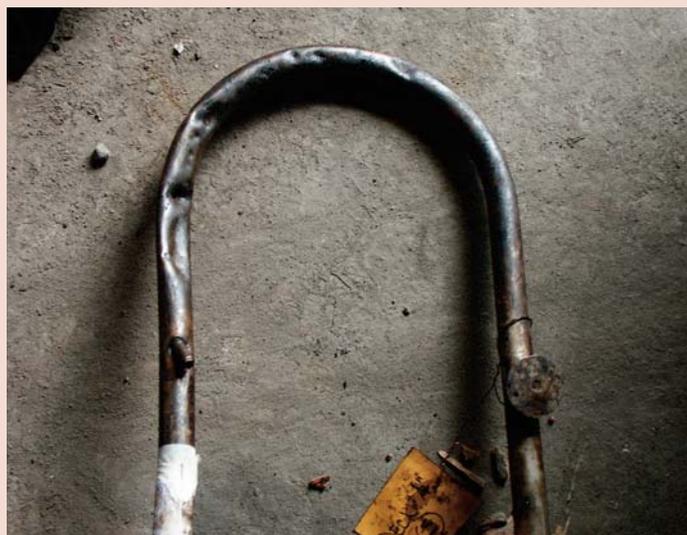
An explosion and fire occurred in the tourist accommodation of Deck A of the Superferry 14 off the coast of the Philippines in the early hours of February 27, 2004. The multi-agency investigation was led by the Philippine National Police. Although a terrorist act was suspected early in the investigation, important evidence was overlooked until the IFIC Forensics investigation.

Prof Lygate and Mr McCauley were allowed access to the vessel and considerable quantity of removed evidence in late July 2004, five months after the explosion. Large piles of fire debris had been placed in a warehouse. As a result of the detailed systematic examination of 106 Deck A bunk ladders by IFIC Forensics, patterns of impact damage were found on two from which it was concluded an explosive device had detonated in close proximity. This crucial evidence could easily have not been detected in a warehouse full of debris, had it not been for the diligence of the IFIC Forensics investigation.

One area of the debris in the warehouse is shown below.



Damage to one of the Deck A bunk ladders is shown below. The pattern of impact damage to this and one other ladder was consistent with particles from an explosive device impacting the ladder



Terrorist bombing incidents provide a unique challenge to the fire and explosion investigator. Adherence to the scientific method, extensive scene documentation through the use of detailed notes, sketches, photographs and videos, a thorough understanding of explosion effects / dynamics, and a willingness to co-operate as part of a large multi-agency effort, will provide a solid foundation for a successful investigation.



The Insurance Act 2015

Professor James Lygate

The recently assented Insurance Act 2015 comes into effect on August 12, 2016 and will modernise significant aspects of UK Insurance Law. The act came about following a joint review of insurance contract law by the Law Commissions of England, Scotland and Wales, which resulted in the Consumer Insurance (Disclosure and Representations) Act 2012 (UK) and the 2015 Act which encompasses a reform of business insurance.

The key areas for change are:

- Disclosure and misrepresentation in business and other non-consumer contracts;
- Warranties; and
- Insurers remedies for fraud.

Duty of Disclosure

The act creates a duty of disclosure on the Policyholder to make “a fair representation of the risk”. It requires them to disclose “every material circumstance which the insured knows or ought to know”.

Insurers will however be expected to take a more proactive approach to pre-contract disclosure and cannot argue that a Policyholder failed to provide relevant information, where the material representation may have put them on notice that further enquiries should be made.

A Policyholder will not be required to disclose a circumstance if:

- It diminishes the risk;
- The insurer already knows of the circumstance;
- The insurer ought to know of the circumstance; or
- The insurer is presumed to know of the circumstance.

The presentation of pre-contract disclosure will be required to be in a format that is clear and accessible to a prudent insurer, hopefully to bring an end to situations where insurers are presented with an overwhelming amount of unstructured information.

In terms of remedies, the Act provides more flexible and proportionate remedies and deals with breaches of the duty to make fair representation considering two scenarios:

If the breach is deliberate or reckless, and the insurer can demonstrate that they would not have otherwise entered into the contract, then the insurer is permitted to avoid the contract and hold the premium.

If the breach is shown to be innocent, the insurer is permitted to remedy on what they would have done had the breach not occurred (refusal, different terms, higher premium etc.). This does however place a burden of proof onto the insurer and introduces an element of subjectivity when determining coverage. The Act contains little in the way of guidance in this respect.

From the perspective of loss adjusters, this more subjective environment is likely to require swifter and perhaps more detailed

loss investigations and consideration will be required to establish whether an alleged breach even warrants investigation if the remedy for the breach is only partial.

In order to control costs, a joined up approach by insurers, claims service providers, legal and forensic experts will be required from the early stages of a claim to triage the claim.

For example, if a Policyholder declares they have had x number of fires, is that sufficient to put the Insurer “on notice?”. What if one of these fires was a “near miss” which if more information was given would have led to a declension to insure, higher premium or policy warranty.

It is likely that expert opinion will be sought on whether a given set of facts presented by a Policyholder was sufficient to put an Insurer “on notice” and prompt further enquiry.

Warranties

These changes have the effect of converting all statements in a proposal into warranties. The existing ‘basis of contract’ clauses are to be abolished and no longer valid. The removal of these ‘legal certainties’ will make establishment of breaches much more subjective which could make the claims process more complicated and drawn out, again requiring more detailed investigation at the outset to determine coverage.

Breaches of warranty currently allow automatic termination of a policy from the date of the breach. Such breaches will now only serve to suspend cover until the breach is remedied. Insurers will have no liability for occurrences during the suspension period.

Breaches of warranties or conditions designed to reduce a risk, will not allow an insurer to repudiate a claim if the Policyholder can show that non-compliance could not have increased the risk of the loss which actually occurred. This means that losses not attributable to the breach will be payable if the policyholder can show that the breach was completely irrelevant to the loss suffered.

If a Policyholder failed to set an intruder alarm and there was a fortuitous fire which was the result of an electrical defect, in the past the policy could be avoided if there was an unfulfilled policy warranty which required an intruder alarm to be set. Perhaps the best that could be argued under the new regime is the delay in discovery which resulted because the intruder alarm system was not set. The tricky bit of such a case is proving how quickly the fire would affect the intruder alarm system and cause it to activate either by operating a PIR detector or effecting the tamper circuit.

Fraudulent Claims

The Act provides that when a Policyholder commits a fraudulent act relating to a claim, the insurer will not be liable to pay a claim to which that fraud relates. The insurer can give notice to terminate the insurance from the time of the fraudulent act and, in the event that the claim has been paid and the fraud identified at a later date, the insurer may recover any sums paid under the claim.

This clarification of the law gives increased protection to insurers. The challenge however is for insurers to prove the fraud. The Act provides no clarity on the definition of 'fraud' or a 'fraudulent claim'.

In America largely due to the activity of the Bureau of Alcohol Tobacco and Firearms who are responsible for fire investigation, over 50% of arson fires are prosecuted. The figure in the UK is about 2.5%. The Fire Service has the power but not the duty to investigate fires and due to growing economic pressures are reducing their fire investigation activity. The investigation of deliberate fraudulent fires is going to, and to a large extent, already relies on Insurers investigating such incidents.

The establishment of a timely, in depth forensic investigation by experienced and qualified practitioners and the provision of sound evidence, is vital for the execution of this part of the Act and potentially to assist the criminal Courts. Adjusters will therefore need to be extra vigilant at loss sites ensuring early examination and monitoring access closely.

IFIC App



IFIC Forensics are pleased to have launched a time and labour saving App for use by insurance investigators and loss adjusters whilst working remotely and on site at a claim.

The IFIC Forensics App, compatible with Apple and android devices, uniquely enables users to upload case information and take and send photos whilst on site at a claim. The ability to instruct a forensic investigation quickly and simply via an interactive form, without the need to return to the office and duplicate records, supports the insurance market's drive for increased business efficiency and reduced operating costs.

A wealth of additional information is available via the App to include forensic expert profiles and contact details, an overview of services available from IFIC Forensics, background information on the company and its Customer Service Charter, office locations and industry news. App users can also subscribe to receive market updates from IFIC Forensics via their App.

To download the free IFIC Forensics App visit:

iPhone App Link: <https://goo.gl/OEDEFJ>

Android App Link: <https://goo.gl/qyTBvk>



Download the App and make sure you enter your contact details into the 'Subscribe' tab to keep up to date with all the latest IFIC Forensics news, informative factsheets and future editions of Forensics in Focus.

If you would like further information on the IFIC Forensics' App please contact Senior Investigator & Operations Manager: John Gow on jgow@ific.co.uk



The Fire Risks of HOT WORK

Deon Webber

Every year, IFIC Forensics deals with the investigation of numerous fires caused by hot work on behalf of its clients. Hot work is recognised as one of the five most serious hazards for fires in the workplace and though the numbers of hot work related fires are relatively low, the resultant fires frequently cause damage running into millions of pounds.

Hot work can be carried out at virtually any type of premise and at any time. Fires from hot work have occurred during construction, during renovation, maintenance or emergency repairs and even during demolition.

WHAT IS HOT WORK?

Hot work refers to methods of work, primarily in construction and refurbishment, which produce heat in the form of flame, hot surfaces or sparks. Sources of heat commonly involved in hot work processes include:

- Gas/electric welding and cutting apparatus;
- Blowlamps/blowtorches;
- Grinding wheels and cutting discs;
- Brazing and soldering.

Typical examples can be the installation of bitumen based roofing sheets, the cutting/removal of ventilation ducting and the welding of new structural elements.



The hazards posed by hot work are well known and it is advised that it should only be carried out when other methods have been considered first. In some industries, hot work is part of the day to day process and permanent hot work areas are provided, constructed from suitably non-combustible materials with the necessary precautions 'built in'.

The main problems arise from temporary hot work sites where operatives have to carry out hot work at a temporary site that they may not be familiar with. In such circumstances, a 'permit to work' system should operate.



PERMIT TO WORK

A Permit to Work is a procedure, with a written permit form, which is used to authorise and control work activities with high risk hazards. Amongst other things, it ensures that all necessary safety procedures for controlling the risks are properly implemented before, during and after the work is completed.

Warranties provided by insurers in relation to hot work tend to be generally restricted to P.I. and P.L. policies where conditions concerning the use of heat are listed alongside warranties and exclusions concerning many other activities. Warranties applicable to non-construction persons are less common.

Policy warranties, in general, follow the guidance which is published by a number of organisations. The guidance provided consider compliance with other regulations such as the Regulatory Reform (Fire Safety) Order 2005 and the CDM Regs 2015.

Such guidance includes; RC7 'Risk Control - Recommendations for hot work' published by the Risk Authority (Fire Protection Association) and European Guideline 'CFPA-E No 12:2012 F' published by CFPA Europe.

GENERAL SAFETY

The main thrust of the guidance is the risk assessment of the task prior to it being undertaken. This process is a requirement of the Fire Safety Order, which requires the identification of fire hazards and the establishment of control measures, such as the provision of firefighting equipment.



As many hot works tasks involve roofs, it is clear that there may be a requirement to carry out hot work close to inaccessible voids. Often it is combustible material such as leaves, grass and birds' nests that can collect in such voids that can be the item to ignite when a heat source is brought near to an 'out of sight' fuel.

Often the use of welding and grinding equipment can produce sparks and hot particles that can fall onto material that is susceptible to smouldering. In such instances a fire may develop a number of hours after work has completed. To prevent such occurrences, a 'fire watch' of 30 or 60 minutes is required after all work is ceased in order to identify any areas of smouldering

During these processes, constant vigilance is required and insurers have a role in enforcing the warranties provided, to limit the risk when carrying out hot work. A hot work fire can not only lead to large financial claims but can destroy property, businesses and livelihoods

Further reading:

Management practices: Hot work – Property and Business Interruption- Zurich January 2013

Fire safety basics for hot work operatives – CFPAEUROPE CFP-A-E No 12:2012

Risk Control: Recommendations for hot work (RC7) Risk Authority 2012



Eva McKiernan - Senior Investigator

I was always interested in science from an early age, taking chemistry and biology options for my Leaving Certificate. With this in mind I was lucky to come across a new degree course of Forensic and Environmental Analysis in my final year of secondary school so applied and was accepted onto the course at Dublin Institute of Technology. As this was only the second year the course was run it was still finding its feet, which gave us a great opportunity to cover a wide variety of topics always with an analytical slant; Fires and Explosions, Criminalistics and Evidence Interpretation, Analytical Techniques, Toxicology, Pharmaceutical Analysis. The seed was planted when it came to interest in fire investigation. To this end I undertook a Masters in Forensic Science at the University of Strathclyde, Glasgow to further educate me in this field. Here, although undertaking courses in Drugs Analysis, Toxicology and Crime Scene Investigation, my curiosity in Fire Investigation was really developed.

Before joining IFIC Forensics and specialising in forensic investigations, I gained experience in a number of analytical positions. I worked as an assistant in the laboratories of the Henkel Loctite Technology Centre as my college placement before spending two years with Merrion Pharmaceuticals as an analytical scientist in the R&D and quality control fields. As I studied for my Masters, I undertook a placement with the Forensic Science Service, completing a four month research project and once I gained my Masters, I worked as a Quality Control Analyst for Bristol Meyers Squibb. I became part of the IFIC Forensics team in June 2012 and have undertaken 170+ forensic investigations in the last three + years.

Being a forensic investigator is hugely rewarding. No two days are ever the same and no two investigation scenes can ever be the same. We can take nothing at face value and I enjoy applying my forensic skills and analytical experience to unravel what has

happened, how and why. Scientifically establishing cause and origin enables us to understand any associated liability and attention to detail is paramount as our evidence may be required to support legal action. Physically it's not an easy job; there are long days on site, lots of driving, bad (or even good) weather to contend with; it's certainly no normal 9 to 5 and I haven't even mentioned the dirt and the smell!!!! Whilst these things are challenging they're also part of what makes it interesting.

It may be surprising, but it's not always the biggest cases that are the most interesting. Every investigation involves putting together the pieces of the puzzle, only you don't have the picture on the box to guide you. One case that I will always remember was a fire in a dry cleaners. After my examination I was of the opinion that the fire was caused by spontaneous combustion of dish towels which had been dried and left in a tumble dryer. Analysis of the material identified the presence of fish oils on the remains of the towels and CCTV footage recovered from a smoke damaged recorder showed the ignition and development of the fire within the tumble dryer and spreading to outside the appliance. To have an opinion based on observations confirmed through further scientific and technical analysis is always a win.



To be able to develop skills and learn through experience is what drives me. It is a cliché but every day really is a school day when it comes to forensic investigation and I can't imagine doing anything else. And when I'm not investigating.... in my 'down time' I love to relax by baking! Even so I love a challenge and took on the task of making the wedding cake for my brother's wedding in October this year. Pictured above for those who may wish to scientifically assess my bakery skills.....and no...I won't be applying to take part in the 'Great Irish Bake Off', I've got too many forensic jigsaw puzzles to piece together.



Health & Safety: Investigations and Working at Height

Mike Wisekal

IFIC Forensics undertake many types of investigations in various environments, structures and locations. At times these places may require an investigator to don a harness to facilitate their safe access for working at heights.

An employer and those in control of a working at height task, must comply with legislation by making sure the task is properly planned and carried out by competent people. IFIC Forensics investigators are trained for working at heights.

While there is various legislation in regards to Health & Safety at work, 'The Work at Height Regulations 2005' specifically outlines the expectations of both the employer and employee for the purposes of preventing death or injury from a fall from height. The Health and Safety Executive offers online guidance for working at height and highlights that 'Falls from height are one of the biggest causes of workplace fatalities and major injuries.' Falls from ladders and roofs are noted as common causes.

A fall can be put in context with the following example of an average built adult. A 20m fall takes approximately 20 seconds, hitting the ground at 60 mph with the force of 2 tonnes. Working at height can be defined as any working place that includes working above or below ground level, where a person could be injured if they fell from that place.

There are simple steps that must be followed before working at height.

- Avoid working at height where it is reasonably practicable to do so.
- Where working at height cannot be avoided, falls must be prevented by either an existing safe control measure or the implementation of the right type of equipment for the task at hand to be performed safely.
- Where the risk cannot be eliminated the right type of equipment must be used to minimise the distance and consequences of a fall.

The approach should be sensible and pragmatic whereby giving consideration to the height of the task, the duration and frequency for which the task will be performed at height, and the condition of the surface being worked on.

Other considerations to help comply with the legislation are:

- Perform as much work from the ground as possible.
- Consider weather conditions.
- Ensure safe access to and from the working at height location and that work location are safe.
- Ensure equipment is suitably fit for purpose, maintained and checked regularly.
- Do not overload or overreach when working at height.
- Adopt appropriate control measures when working on, or near fragile surfaces.
- Provide protection from falling objects.
- Have in place clearly understood emergency evacuation and rescue plans.

The overriding principle is that you must do all that is reasonably practicable to prevent anyone from falling when performing a task that requires them to be working at height.



*Merry Christmas and a Happy New Year
from all at IFIC Forensics.*



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