FIREPOINT

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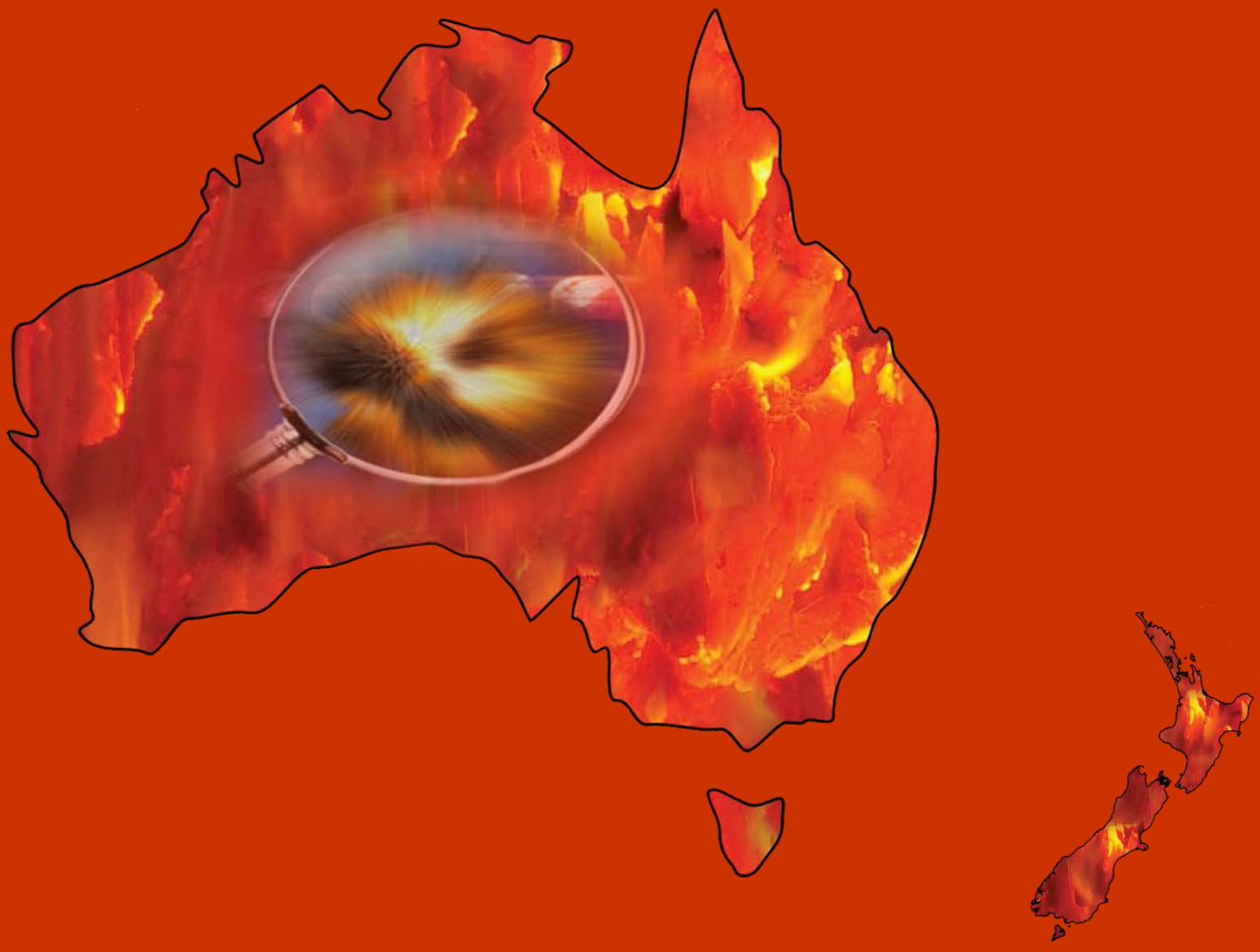

AAFI Journal

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Please submit to your chapter or michaelw@eivic.com.au

Editions for 2016: March and October

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Contents

Editorial

Welcome to the second edition of the on-line FirePoint, several people have been work extremely hard on this edition, unfortunately, the task has been made more difficult due to a lack of content being provided. This magazine will only be as good as the combined membership make it, therefore we encourage all Chapters to encourage their members to think hard about what they can provide.

We need articles, case studies, editorial comments, photographs, pictures or cartoons and advertising to make this magazine the best and most informative magazine possible.

We have had some casual discussions between Chapters, and it appears that the magazine will be published twice a year at this stage, we are happy to receive comments on this discussion.

From the next edition we will be offering contribution prizes for different categories, theses may include:

- Best article.
- Best photograph.
- Best chapter contribution.

These will be judged on feedback from the readers and the editorial committee. Prizes will include book and hardware vouchers.

We cannot have enough content in the archive ready for the next editions, please forward anything you can contribute, even ideas.

We will be planning the next edition for October 2016.

The national conference is fast approaching and we will be meeting to discuss the future direction of FirePoint at the Chapter's Meeting, we also request your feedback for presentation of your comments and ideas at this meeting. We hope to see as many people as possible at the conference, please contact NSW with any contribution you can make to the success of the conference.

We look forward to the future discussion and contributions.

Regards
Fire Point Team

Victorian Association of Fire Investigators

President's report

Welcome to the 2nd edition, it great to see some positive feedback about the 1st magazine, as stated in the Editorial we really need a greater contribution from the members to make this magazine valuable, please forward any content to the committee for inclusion into the magazine, we would like to see or available content than less.

Since our last magazine the committee have continued to work hard to provide two more training session, the last session of 2015 was held at the State Forensic centre on Explosives, this was attended by over 80 members and was well received.

This year our first training centre was again held at the Forensic centre and the topic was Fireworks and Fire Ground Safety, this topic was a result of Mick Roberts being awarded the annual scholarship to assist him to conduct a study tour of the Firework industry within China. We were again supported by Les Vearing presenting of Fire Ground safety in regard to dangerous vegetation.

The annual general meeting held in conjunction with the October 2015 training session saw two new members to the committee, Laura Noonan and Simon O'Leary, I welcome them on behalf of all the members.

I also thank Trevor Pillinger for his decades long service to the VAFI and committee, I'm sure he will still be around to assist when needed.

At the AGM two long serving members were awarded Life Membership, John Lording and Andrew Kerr, both of whom you will all know. Both have provided years of service and commitment to the association, on behalf of the membership, I congratulate both on their elevation.

We continue to have record membership and training day attendances, this could become a problem if members forget to respond to the requirements of registration in time. We are privileged that the facilities that are made available to us are first rate, but due to current circumstance we are required to meet the requirements of these facilities, this and the requirement to provide catering necessitates the registration of all attendees. If you intend to attend a training session please respond as early as possible, these sessions are filling up earlier than before. On the other side, if you do respond and do not attend, please expect a fee to be added to your annual fees, this is the only fair way to ensure all members have a position available.

As always, we invite members of the other Chapters to attend any of our training sessions.

We have encountered a few hurdles in the implementation of the new website, but we are almost there, it will require all members to log in to the new site to receive access to the Membership Area, we will email all members once ready.

Please check the website for updates on the training schedule and other important news, we will continue to also use the email system to notify members of events and news.

Please stay safe on the fire scene, and see you at the next training session.

Michael Weekes
President – VAFI

Interest

Examples of scene excavation

Before

After

The Glove Capacitor

Tim Cousins 2016

Tim Cousins is an engineering system failure analyst specialising in electrical, electronic and computer systems with 25 years experience. Many of these engineering failures result in fires.

The man in the dark uniform looked me up and down. Our eyes met and he grinned. Behind him a young man was being questioned and behind me a queue. A toe poked out through my worn left sock on my shoeless feet. I had been meaning to fix that with the needle and thread kindly provided by the hotel I had just left. I reached out for my bags and I recoiled with the snap of electricity through my fingertips. The guard laughed. "It always does that," he said grinning all the more. My shoes followed my bags on the conveyor and for a moment I was lost in thought as they collided and piled up at the end of their run. My bags and boots had just run through the security scanner on a rubber conveyor at Perth Airport and the static discharge I felt provoked thoughts, which filled my flight home with ideas of charge separation, accumulation, relaxation and discharge as well as quenching distances, ignition energy, and flammable atmospheres.

One of the basic principles behind any static discharge is that the individual charges need to accumulate first, something to capture and store the electric charge once it is generated. The accumulator is represented by a capacitor 'C' in the following diagram. It is not perfect and the charge leaks away through multiple pathways, including the atmosphere. The resistor 'R' represents this leakage. I have also drawn a spark gap 'G' in the middle of the circuit to represent the point of electrical discharge should the voltage across the capacitor rise high enough.

As charge accumulates (we will talk about mechanisms later) the voltage rises and the charge increasingly leaks away through 'R' in proportion to the voltage rise so the rise in voltage flattens off to look like the slope on the left half of the graph below. If we stop accumulating charge the voltage decays away, again through 'R' in the manner shown in the right half of the graph (refer

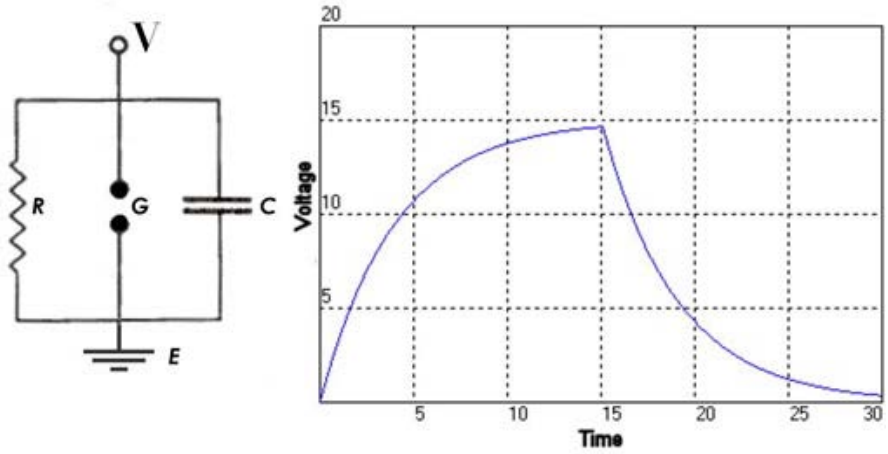

Figure 1 The Static Discharge Model

From this we can see that the peak voltage will depend on the amount of current leaking away assuming the same rate of charge accumulation. So on dry, low humidity days, the leakage through the atmosphere can be very low allowing the peak voltage to rise very high. Likewise, on humid days the leakage is higher leading to lower peak voltages assuming the same rate of charge accumulation in both cases. Ask any audiophile about the differences when playing vinyl records on humid vs. dry days. The static charge attracts dust etc. The purists have been known to spray distilled water onto the record before playing. Not my cup of tea but I do understand why it would make a difference.

In our model a static discharge occurs if the peak voltage exceeds the breakdown voltage of the gas surrounding the spark gap at 'G'. The actual breakdown voltage turns out to be a function of the type gas, the gas pressure and the discharge gap distance. It was first discovered by Friedrich Paschen in 1889 and is known as Paschen's Law. Paschen's Law is worth 'googling' if you have a spare moment.

If the spark occurs in an explosive gas and the energy contained within the spark is greater than the ignition energy required for that gas; and the spark gap is large enough to avoid quenching the initial ignition then it is possible to ignite the gas.

So how does charge accumulate in the first place? In answer to this we must first do some work (supply energy) to strip off electrons from one side of the capacitor and move them across to the other side (charge separation). The amount of work or energy required to do this is the area under the graph shown in Figure 2. Don't worry about the math; the curve looks very similar to the pressure inside a gas bottle as it is being filled.

This is a much more useful analogy for this article. We might also include a small hole in the bottle to represent the resistor leaking away the stored energy. The hole is small on a dry day and large on a wet day.

To fill a gas bottle, we need to do work to compress the air. This is no different to charging a capacitor. The work typically involves mechanical movement or relative motion between a solid surface rubbing or lifting of another solid surface, or liquid flowing across or through a solid as well as immiscible liquids separating out in a container. The effect is to strip off electrons from one side and transfer it to the other. That is to say, to strip electrons off one side and transfer them across a phase interface or boundary (Google it) to the other.

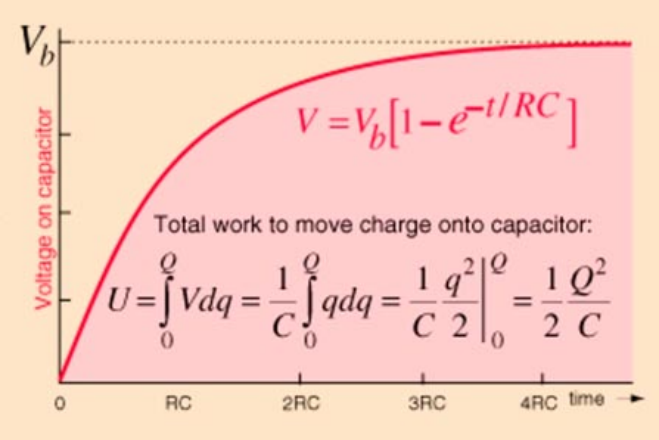

Figure 2 From www.hyperphysics.phy-astr.gsu.edu

So when we look at a fire scene where a static discharge is suspected then we can ask the question, 'Is there any physical process to do with phase boundaries that might result in electrons being stripped off AND where might they accumulate?

Here is an example from my case files that might stimulate the imagination. Imagine a printing press operator wanting to clean some spilt ink from the press cylinders. He wears a single dishwashing glove on his right hand and swishes a cleaning rag around in a plastic bucket containing a mix of water and hydrocarbon solvent. The mixture was often made because some stains would dissolve in the hydrocarbon while others would dissolve in water. So mixing the two worked better at dissolving a wider range of contaminants. If we go back to thinking about phase boundaries we have the solid (rag) and the liquid and within the liquid we have a hydrocarbon solvent that is immiscible in water. We add to that the 'work' of swishing the rag around in the liquid and lifting it out of the container.

After wetting the rag the operator walks back some 10 metres to the printing press. When he arrived he reached out with his un-gloved left hand to hold onto the machine. He bends down to clean the surface. The rag burst into flames just as it touches the machine. The operator immediately drops the rag whereupon it ignites the solvent trail leading back to the bucket.

We can see a real possibility that the operator generated a static charge through his actions swishing the rag around in the solvent/water mix. So why did it not ignite the solvent in the bucket? Instead he walked back to the machine - a time of about 15 seconds when the charge should have relaxed (think of the right hand side of the graph in photo 1 below).

What happened? Do we have a third phase boundary here?

Photo 1 Recreation of the incident. Note the operator's right hand was enclosed in a rubber glove.

The solvent soaked rag was held in the operator's right hand which was protected from discharge to ground by the rubber glove the operator was wearing. Might this have formed a capacitor and was there a mechanism for the charge to continue to accumulate?

The Leyden Jar was invented 1745 at the University of Leyden by Pieter Van Musschenbroeck. It is essentially an early design of capacitor and is capable of storing electric charges. A simple Leyden Jar can be built at home from a small plastic bottle with aluminium foil wrapped around the bottom two-thirds of the outside. Fill bottle with water and push a nail through the centre of the lid so that it touches the water.

On a dry day comb your hair with a plastic comb in one hand while holding the jar in your other. Then touch the comb onto the nail and remove. The charge will be transferred to and stored within the jar. In this case work was done by combing your hair, stripping electrons off and transferring them to the comb, which are then transferred to (accumulated within) the Leyden Jar when you touched the comb to the nail.

The glove on the operator's hand is of remarkably similar construction to the Leyden Jar, if we think of the sweaty hand inside the glove as the aluminium foil.

So if the glove forms a capacitor 'C' then what can we say about the resistor 'R'?

If we estimate the length of time from the initial charge (when the rag was swished around in the solvent container) to the point when the rag was introduced to the press and ignited to be no more than 15 seconds and to relax the charge from say 10,000 volts (which should be easily achieved) to 4,800 volts, the minimum required to produce a competent spark larger than the minimum quenching distance, over 15 seconds (modelling the human/rag as a capacitor at 200 Pico Farads, Refer NFPA 77 (2000) Table A.3.1.5 Examples of Capacitance of Various Items).

Then the resistance to ground 'R' can be no more than 100,000 M ohm (1.E+11 Ohms) calculated as follows:

$$R = t/(C*\ln(V/V0))$$

Where

R = Resistance to ground in Ohms

C = Capacitance in Farads

V= Initial Voltage

V0 = Residual Voltage

t=Time

For non-latex 'anti-static' gloves the electrical resistance between the 'palm of glove' and the human body is expected to range between 2.E+6 to 2.E+7 Ohms (Lesniewski. T and Yates K (2002) Table 3). This will produce a discharge time between 0.0003 to 0.003 seconds respectively into the operator.

The 'Safeskin Hypoclen Latex' glove, on the other hand, has a palm of glove to body resistance of 2.E+12 Ohms and would discharge into the operator over 294 seconds.

This is a huge difference in relaxation times and the operator was not using an anti-static glove.

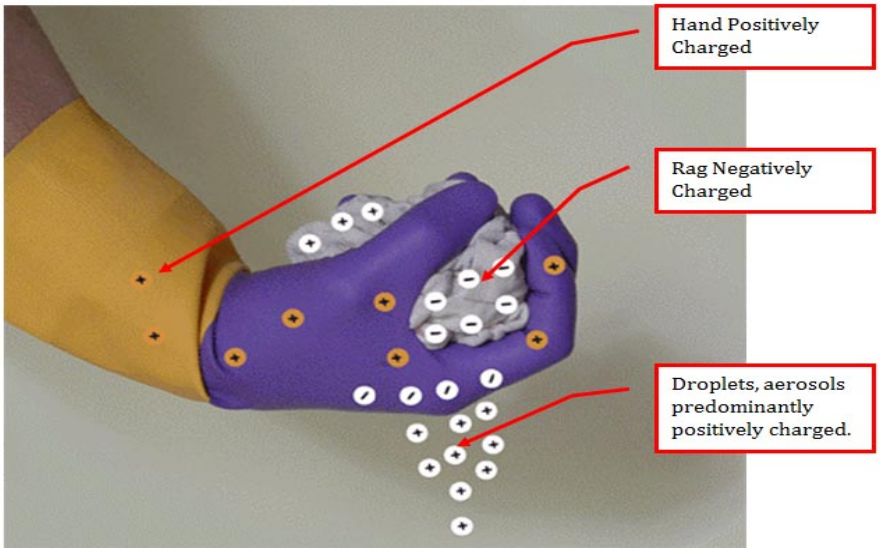

Photo 2 Charge Separations from Dripping Solvent

It is highly likely that the solvent soaked rag was charged when the rag was 'swished around' in the plastic bucket. This charge, let's say for the sake of argument, is a negative charge. It attracts a positive charge in the operator's sweaty hand on the other side of the insulating glove. The solvent that runs around the gloved hand will be composed of both negative and positive charges. The negative charges will accumulate on the glove surface, attracted by the positively charged operator; the positive charges in the solvent are removed through dripping, evaporation or mist formation by squeezing the rag. As they depart the rag they leave the rag more negatively charged. This in turn attracts more positive charges onto the operator's sweaty hand reinforcing the cycle and charge starts to accumulate (refer photo 2).

This process is a variation on double layer charge separation through atomization. Refer to Figure 4.

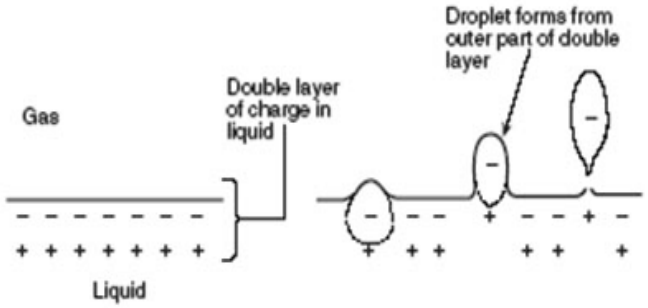

Figure 4 Typical charge generation by atomization (H.L. Walmsley, "Avoidance of Electrostatic Hazards in the Petroleum Industry," p. 19.)

This same principle operates if the charge accumulation is reversed i.e. the operators hand is negatively charged.

The build-up of the charge across the glove capacitor resolved itself via a discharge from the charged rag to the machinery when the rag was introduced to the printing cylinder as illustrated in Figure 3.

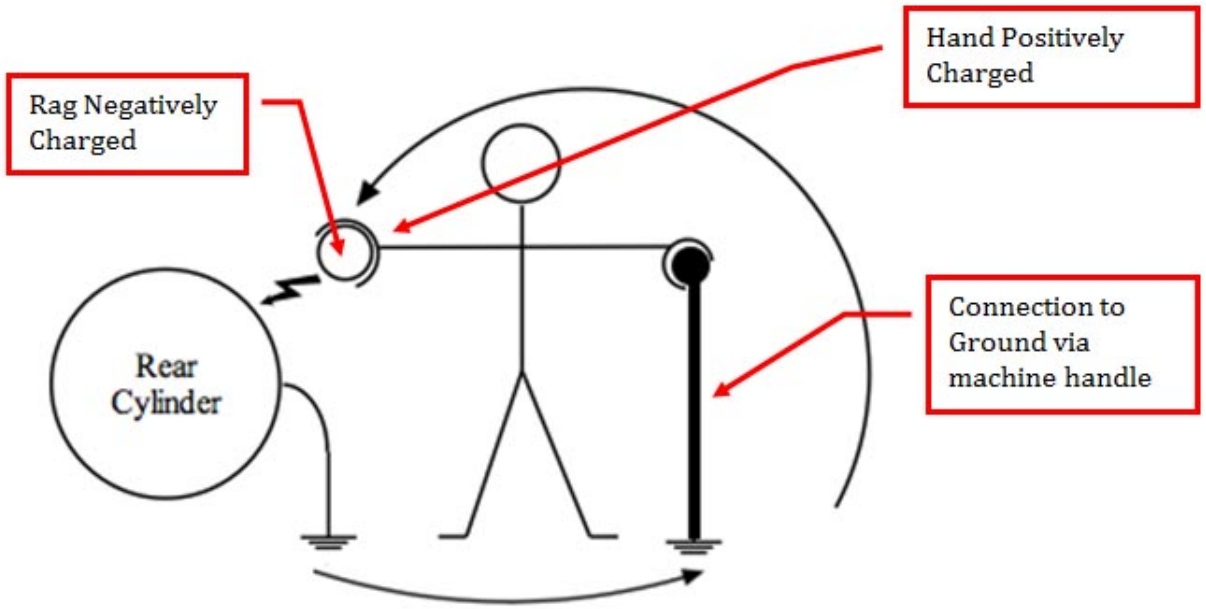

Figure 3 Electron Discharge path of Glove Capacitor

As the rag approaches the rear cylinder, the charge separation maintained by the insulating glove is equalised by a spark discharge to the rear cylinder, which is electrically common with the operator via the metal parts. The spark jumps between the surface of the rag and the metal cylinder and as it does it passes through a vapour a rich atmosphere at the rag (above the upper explosion limit) to the cylinder where the vapour is too lean (below the lower explosion limit).

Somewhere in between the two locations the vapour will be at stoichiometric concentrations requiring only the minimum ignition energy to ignite.

I looked at the security screening at my home airport as I walked past off the plane. Identical equipment but I have never been zapped in Melbourne. Perhaps the relative humidity is higher than in Perth. It was nice to be home.

Arson

Russell Lee

These two photos are from 10 years ago. Complete destruction of dwelling down to concrete pad by arson attack. No-one home

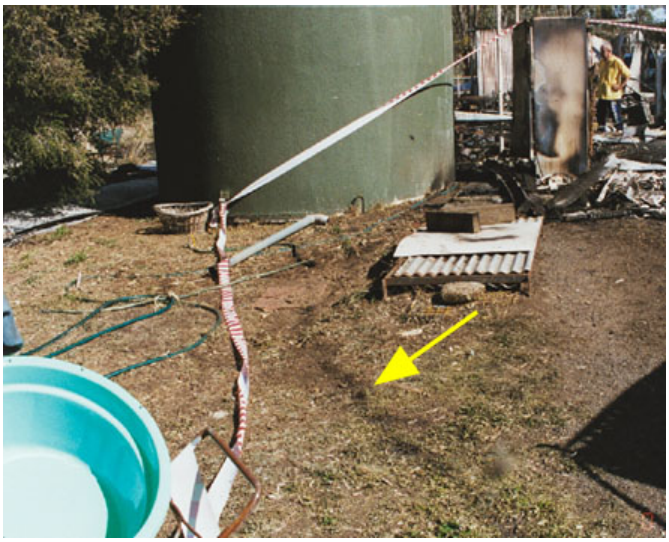

Photo 1 – Accelerant Trail across rear lawn to wall below window just beyond the water tank. Trail runs between tank and steel cupboard.

Photo 2 – Accelerant Trail ended at Arrow at base of wall below open window. Note spalling on the concrete of water tank. Wall line runs between upright pipe columns.

Victorian Association of Fire Investigators (including Tasmania) Inc.

(A0029027P)

2016

International Association of Arson Investigators

Chapter 58

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Website: www.vicfire.com

Committee meetings:

Date:	**Meetings are held every second Wednesday of each month**
Venue:	**MFB Burnley Complex, 450 Burnley Street | Richmond | Victoria | 3121**
Time:	**Commencing 6:00 pm.**

ALL WELCOME!

Membership Application

I _____

Make application for membership of the Victorian Association of Fire Investigators including Tasmania Inc., in accordance with its constitution and by-laws and agree to be bound thereby. I include with this application, payment of the annual dues.

Mailing Address

_____

_____

Telephone: _____

Email: _____

State any relevant qualifications obtained:

_____

_____

State any relevant organisations to which you belong:

_____

_____

Provide names of two referees who are current financial members of VAFI:

_____

_____

Applicants signature _____

Date:: _____

Send to: The Commander

MFB (C/-FIA) Burnley Complex

or

450 Burnley Street | Richmond | 3121

Email to: membership@vicfire.com

Queensland Association of Fire Investigators

Presidents Report

The QAFI finished 2015 on a high with a one day seminar held at the QFES training academy. The principal focus of the day was ventilation effects within a fire compartment and determining the visual indicators in these post fire scenarios. The seminar reached the maximum number of attendee for the venue. The day was well accepted by all attendees with great feedback. Full credit is extended to the QAFI committee for their efforts to make the day the success it was. Other features of the day were the case study presentations of the HMAS Bundaberg ship fire, use of drones in Fire Investigations and other case studies.

The QAFI annual general meeting was held in March. The meeting was held in conjunction with a breakfast seminar featuring a presentation on developments in modern firefighting techniques and the effect they are having on the fire investigators ability to interpret fire indicators.

The annual general meeting resulted in QAFI electing a new president for the chapter. Chris Markwell was elected President unopposed. Chris has been involved in the fire investigation field for over 10 years. He has been the driving force in curriculum development for fire investigation practitioners in QLD and other states.

QAFI is planning a number of morning and ½ day seminars in 2016 culminating in one day seminar late in 2016. As the outgoing president following a 4 year tenure I would like to thank the QAFI committee for their support and I look forward to working with the president into the future.

I look forward to meeting everyone in Sydney in September during the AAFI conference.

Regards

Gordon Hemphrey
President

QAFI
QUEENSLAND ASSOCIATION OF FIRE INVESTIGATORS INC

NSW Association of Fire Investigators

Presidents report

Well we are well into the year and for NSWAFI this will be a big year as we host the Australasian Association of Fire Investigations in September. The organising committee is working hard with the conference organisers and we are working to a very productive conference. Steve Carman is due to fly into Sydney the week before so he can set up a number of live burns for the event. This will be a unique opportunity to attend a conference and learn from one of the best educators in the fire investigation industry. Abstracts for the conference are still being received, so if you have a topic that you would like to present then please send it to http://aafi2016.com.au/abstracts/ Registrations are now open for the event and are found here. This will be a great event to attend so please give it some consideration.

I thank all our members that have renewed their membership fees. For those that have not can you please pay your fees and email our treasurer with the details. Membership numbers have increased over the past 6 months which is encouraging. If you know someone in our industry that is not a member then please direct them to our website and download a membership form.

NSWAFI is planning four more education nights for 2016. The next one is on Thursday 7th April and will be held at Fire & Rescue Greenacre site. We have managed to secure a number of FRNSW sites for our education nights for the remainder of the year. There will be an education night on Thursday 2nd June, Thursday 4th August (AGM) and Thursday 1st December.

News from the IAAI is that as of March 2016 there are 8888 members. Current IAAI-FIT=1486 and current IAAI-CFI=2097. These numbers are up, which is great for the IAAI. The annual International Training Conference (ITC) is being held in April in Orlando. I was fortunate to win the IAAI Foundation scholarship and will be attending my first ITC, which should be a great event. This is the biggest Fire Investigation Conference in the world, and I will be there selling the AAFI 2016 conference and hope to get some of them to visit Australia and attend our conference.

There has been some interest from our members and from NZ in the Certified Fire Investigator program. This is encouraging. If you have been in the fire investigation industry for a number of years then please give some thought. Please contact me for more information and check out https://www.firearson.com/Training-Certifications/Default.aspx.

Don't forget that our website contains plenty of useful information. http://www.nswafi.com.au/ Also check out our Facebook site and give it a like!!!! https://www.facebook.com/NSWAFI/

Thanks for taking the time to read my message, and thank you for being part of this association.

Michael Forbes IAAI-CFI CFEI GIFireE
President

Training schedule

7/4/16 Education night Greenacre

2/6/16 Education night Alexandria

12-14/9/16 AAFI Conference, Coogee

4/8/16 Education night and AGM, Eastwood

1/12/16 Education night, Huntingwood.

AAFI16
THE LEARNING IS IN THE BURNING
Australasian Association of Fire Investigators Conference
12–14 September 2016 | Crowne Plaza Coogee Beach, Sydney

Photography Awarded to Michael Forbes

The Awards Committee sought nominations for the awards listed below, which customarily are presented at the annual meeting by the Association. Rules for the Annual IAAI Photo Competition meant that photos were judged on the quality and content of the cause represented, technique and composition of how well the photo depicted its category. In addition, winning photographs will be published in the Fire & Arson Investigator journal.

Michael Forbes from New South Wales Fire and Rescue entered the competition in both categories and for the first time, the awards were both presented to one person and to a recipient not from the USA.

Award Category 1 Arson

This photo shows a trailer of petrol along a wall of shops. The item in the foreground is a glove the arsonist was using which ignited in his hand when he lit the lighter and then threw the glove onto the pour pattern which started the burning of the vapour. The yellow melted plastic further along the trailer is the fuel container. This trailer was 59m in length. This photo is the one that was submitted for consideration.

This photo shows the trail of ignited petrol.

This photo shows the end of the trailer and the cut open roller door which in which petrol was poured inside the shop.

Award Category 2 Accidental

This photo shows the damage to a HP Laptop from an explosion within the battery pack of the unit. The laptop was located in a bedroom of a unit and was plugged into a power outlet at the time of the explosion. The fire damage shows the left side of the laptop damaged which is the location of the two battery cells that exploded. The unit was fitted with a sprinkler and this operated which contained the fire to the bed and preserved the laptop.

This photograph shows the bedroom of the unit. The laptop was located on top of the small desk beside the bed.

This photograph shows the underneath of the HP laptop.

Note the two batteries that exploded were found and placed back on the laptop to show where they originally came from.

IAAI CFI

Congratulations to Belinda "BJ" Jones on obtaining her IAAI-Certified Fire Investigator. She is now the 6th in Australia and the first female to do it! Well done.

NFPA 921 "Guide for Fire and Explosion Investigation"

– Use in Court

Ross Brogan AFSM, MA, IAAI/CFI

National Fire Protection Association (NFPA) 921 (2014) – "*Guide for Fire and Explosion Investigation*" is a document that has been produced by the NFPA (USA) as an adjunct document to the Standard, NFPA 1033 (2014)– "*Professional Qualifications for Fire Investigator*". NFPA 1033 contains "*Job Performance Requirements (JPR's)*" that are required to obtain the professional qualifications of a fire investigator. NFPA 1033 provides the required standard to obtain the qualification of 'Fire Investigator' and NFPA 921 provides the educational information to enable a person to reach those performance requirements.

In essence NFPA 1033 is a 'Standard'. By definition a 'Standard' is – "*A document, the main text of which contains only mandatory provisions using the word 'Shall' to indicate requirements and which is in the form generally suitable for mandatory reference by another standard or code or for adoption into law.*" [Author's comment: Something that MUST be followed.] NFPA 1033 contains the following wording to describe what the document is – "1.1 Scope. *This standard identifies the minimum job performance requirements (JPR's) for fire investigators*." "**1.2 Purpose**. *The purpose of this standard shall be to specify the minimum job performance requirements for serving as a fire investigator in both private and public sectors*." (NFPA 1033, pp 6/7).

NFPA 921 is a 'Guide' – "1.1 Scope. *This document is designed to assist individuals who are charged with the responsibility of investigating and analysing fire and explosion incidents and rendering opinions as to origin, cause, responsibility, or prevention of such incidents, and the damage and injuries which arise from such incidents*." "1.2.1. Purpose. *The purpose of this document is to establish guidelines and recommendations for the safe and systematic investigation or analysis of fire and explosion incidents*." (NFPA 921. Pg. 9) [Author's comment: The NFPA 921 document is referred to as an '*Industry Standard*']. Further to these referenced areas NFPA 921 describes how the document should be used "**1.3 Application**. *This document is designed to produce a systematic, working framework or outline by which effective fire and explosion investigation and origin and cause analysis can be accomplished. It contains specific procedures to assist in the investigation of fires and explosions*." (NFPA 921. Pg. 9)

Both NFPA 1033 and 921 are internationally recognized documents and have been adopted by internationally recognized authorities and organizations around the world, such as the International Association of Arson Investigators (IAAI) National Association of Fire Investigators (NAFI), plus others; recognized by authors such as DeHaan, Icove, Lentini, Babrauskas; and adopted by authorities such as the Australasian Fire Authorities Council (AFAC – [Fire Investigation Analysis Group – AFIAG]) and Fire Services around the world (i.e. Australian, New Zealand, UK).

The January 2015 edition of the IAAI magazine *(Fire & Arson Investigator)* contains an article in the *FISC Bulletin Board*, written by T.D. Hewitt and W. McKenna relating to reference to the use of NFPA 921 in courts and court cases across the globe, involving USA, Canada, New Zealand and Australia. *(NFPA 921 in Court – By the Numbers)* The authors indicate that NFPA 921 is becoming recognized by the courts, more often, as authoritative as an industry standard. The

authors also indicate that their research returned a large number of cases where 921 was referenced, and, state "*This is a phenomenal number of cases citing a document that in legal terms amounts to merely an authoritative treatise or industry standard*." (F&AI, Pg. 21)

The article was researched to give an indication of how NFPA 921 has been used/is being used, and the increase in use of the Guide. Not only has the Guide been increasing in use, as referenced in court cases, but the jurisdictions it is being used in is increasing as well. This shows that the Guide is increasing in popularity amongst expert fire witnesses/fire investigators around the world, as a reference for the cases they are presenting.

As far as use of the Guide, and its parameters, it has been most widely referenced in American and Canadian court cases, with only two mentioned as being used in Australasia, during the time that the study was conducted. [The author is aware of this 'Guide' being used and referenced in many other court matters throughout Australia and New Zealand in the past, but these are not mentioned and may possibly not be accessible through search engines) It is shown in the article that there are many ways in which this Guide has been used in courts. The two instances where it was found to have been used in Australia and New Zealand are shown below.

Case 1. - Australia.

NFPA 921 was used in an Accidental Death/Worker's Compensation/Liability case by an Expert Witness/Fire Investigator to show that the "Guide" is an 'Industry Standard'. This was accepted by the court.

Case 2. - New Zealand.

NFPA 921 was used by the expert witness to establish that a recognized methodology was used to conduct the investigation, gather evidence and to reach a viable conclusion on origin and cause. **** The very unusual thing about this matter was that the opposition expert witness agreed that the initial investigation used NFPA 921 'Basic Methodology' correctly to reach the conclusion on origin and cause; however, there was some disagreement on some opinions and evidence selected, but ultimately OK with the methodology used in the investigation. ****

Although the article by Hewitt and McKenna indicates that references to NFPA 921 is increasing in use in court cases across the researched area it does also mention the importance of using an 'Industry Standard' when conducting an investigation, and, in particular the "Scientific Method" as espoused by NFPA 921. Whether you are bound by court precedent such as Daubert, Frye (USA) Makita (Australia) or any number of other court-set precedents regarding fire investigation (around the world) it is imperative that you utilise a well-known and recognized methodology for that investigation, one that has been recognized by your peers and can be explained as one that is in common use; and, is one that "*is 'generally accepted' by a meaningful segment of the scientific community*". (Frye vs United States, 293 F. 1013) One of the main points to understand with regard to your "Expert Opinion" is that "*the testimony is the product of reliable principles and methods*";
this would relate to the use of the 'Scientific Method' as a basis for the investigation (at the scene) by the investigator, and, the investigator using a methodology based on this principle during the investigation (Plus adherence to the Standard NFPA 1033.) (Brogan, 2013).

In the 'Final Words' to the Hewitt/McKenna article, there is this "*Also consider that with each edition, NFPA 921 grows larger, addressing more issues, and potentially impacting more future cases*." (Hewitt/McKenna (2015), Pg. 25) Take heed, of what amounts to a warning in the article regarding the future impact of NFPA 921, it is highly recommended that guidance offered by 921 be followed, and, that you are able to justify your method for conducting your investigation. The following is offered in another article by T.D. Hewitt (FISC Bulletin Board) in the October 2014 issue of Fire and Arson investigator magazine, entitled "Renewed Focus on Industry Standards: The Growing Implications of ASTM Standards for Fire Investigations in the Offing:

In the litigation context, it is important for fire investigators who may offer expert testimony to be intimately familiar with all industry standards that apply to the qualifications of fire investigators and to the conduct of investigations. Even if investigators have good reason to deviate from the standards in the field, they should be prepared to explain the reasons for the deviations and to offer other authoritative references to support their decisions. (F&AI, October 2014, pp.23/24)

NOTE: See Terry-Dawn Hewitt & Wayne J. McKenna, A Perfect Storm Brewing for Fire Investigators in Court, 2014 at pp. 11-20, available for free download from the Legal Scholarship Network: http://ssrn.com/abstract=2381519

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Fire Investigators Association of New Zealand

Presidents Report

Since the first issue of FirePoint, FIANZ has been continuing to develop a much closer relationship with individual NZFS Fire Risk Management Officers, with about a third now belonging to FIANZ.

In March 2016, Sheryl Reveley advised that she was stepping down from the position of NZFS representative on the FIANZ Board and also the FirePoint coordinator, due to her new operational role in Timaru.

New Legislation:

On April 4th 2016, the Health and Safety at Work Act 2015 came into force. It provides a significant change to New Zealand's current health and safety legislation and is a response to the scrutiny placed on health and safety practices following the Pike River Mine disaster on November 19th 2010, when as a result of a methane explosion, 29 miners were killed.

It has created a new legal term “Person Conducting a Business or Undertaking"(PCBU).

It is a broad concept and encompasses employers, those who manage workplaces, manufacturers, importers and suppliers. Individuals (excepting workers) can also be PCBUs.

A PCBU must also, so far as is reasonably practicable, provide and maintain a work environment that is without risk to health and safety.

There are also specific duties imposed on PCBU’s, as far as is reasonably practicable:

- provide and maintain safe plant and structures and safe systems at work;
- ensure safe handling and storage of plant, substances and structures,
- provide adequate facilities for the welfare of workers at work as well as provide all information, training, instruction and supervision that is necessary to protect all persons from risks to their health and safety; and
- monitor the health of workers and conditions of the workplace for the purpose of preventing injury and illness of workers arising from the conduct of the business or undertaking.

Directors and Officers - due diligence

Another significant change to the legislation is the specific duty placed on those holding governance, or senior management, roles to assume a due diligence duty. That due diligence duty is imposed on 'Officers' of the PCBU, who are defined as:

1. Directors of companies,
2. Partners in a partnership,
3. Any general partner in a limited partnership,
4. Any person in a position comparable with that of a director in a body corporate or unincorporated body; or
5. Any other person occupying a position in a PCBU that allows the person to exercise significant influence over the management of the business (i.e. a chief executive).

The duty of due diligence imposed on Officers is onerous, and requires them to:

- acquire, and keep up-to-date, knowledge of work health and safety matters;
- gain an understanding of the risks and hazards associated to the business;
- ensure the PCBU has and uses appropriate resources to eliminate and minimise risks;
- ensure that the PCBU has appropriate resources and processes to respond to information regarding incidents and hazards in a timely manner; and
- ensure that the PCBU has and implements processes for complying with duties under the Act.

Penalties have increase significantly. The range are fines of up to $300,000 or a term of imprisonment not exceeding 5 years for an individual, or up to $600,000 or a term of imprisonment not exceeding 5 years for a PCBU or an Officer.

All PCBU's must be able to demonstrate their compliance by having a formal documentation for:

- A Health and Safe Policy.
- Risk Assessment, Control Plan and Site Register.
- Fire Investigation Scene/ Site Emergency Procedures.
- Accident Serious Harm Notification form and procedures.

As a result, private sector fire investigators investigating on behalf of insurance companies now have to meet the safety and health policy for each company (and they all have different forms, standards and requirements) as the insurers are now legally responsible when they instruct an investigator to attend a scene.

The Private and Public sector investigators are also legally responsible as a PCBU for themselves and any person who is on a scene under their control.

Future training

Future Training / AGM

To assist members in complying, FIANZ is preparing a training package to be presented at the 2016 AGM and Training conference, to be held will be held at NZ Fire Service National Training Centre, Rotorua on Friday 1st and Saturday 2nd of July 2016.

On Friday July 1st, an 8 hour NZQA Unit Standard, 17602 Apply hazard identification and risk assessment procedures in the workplace, will be delivered. This will enable members to claim that qualification to help meet the new legalisation requirements.

The AGM and further training will take place on Saturday 2nd. Members can either attend both or just the Saturday program.

The draft program (refer timetable below) and time frame for Saturday includes fire cells and live burns.

FIANZ can be contacted at either, admin@FIANZ.org.nz or by using the contact form on the FIANZ website, http://www.fianz.org.nz/

Or by mail to FIANZ (Inc.) Secretary/Treasurer

40A Kentucky Way
Palmerston North 4412
New Zealand

Sat 2nd July		
8:30 – 9:30	AGM	
9:30 – 9:45	Speaker 1 – electrical failures and fire	Stu Allen
9:45 – 10:00	Morning tea	
10:00 – 10:45	Speaker 2 – electrical engineers role	Ian Alexander
10:45 – 11:00	IAAI Certifications	Ken Legat
11:00 – 12:30	Investigate live fire scenes (x4)	4 x experienced members will take members though a fire scene analysis
12:30 – 1:15	Lunch	
1:15 – 2:30	Live fire scene discussion and videos	Paul Glanville
2:30 – 3:30	FIANZ OSH templates & SOP's	Ian Lavender/Ken Legat
3:30 – 4:00	FIANZ future, feedback and close	

Ken Legat
President FIANZ

Waitoa - Electric related fire

Kilbirnie and Wellington fire crews attended a small fire in a block of shops in the suburb of Hataitai on Friday 12th february this year, upon arrival there was smoke showing from the roof, fire fighters found a small fire in the wall which was extinguished. This fire was near the front of the shop on the right hand side.

On Monday the 15th february the same stations were called to the same shop where there was a fire in the roof but this time it was the rear left hand side.

As firefighters were removing the roofing iron sparks were seen between the corrugated iron and the gas pipe. Firefighter withdrew and and started testing for live electrical circuits. The firefighters had been told that power had been disconected to the building.

The building owner and the electrical supply company both sent electricans to the site, concern grew as 100 volts was detected on the roof area and 240 volts was detected in a stainless steel splash back at the rear of the shop. The gas pipe passed close to the splashback.

Some time later the operators of a café 5 doors away called the electrical supply company to report power surges in their shop. The electricians at the fire scene went up to investigate and found that the Neutral wire was loose which allowed the power to go to ground, the power followed the gas pipe to the shop and caused the ignition.

Monday's fire shows minor damage to roof area, note burning to gas pipe.

Friday's fire shows minor damage to wall, flashing was removed by firefighters

The café is the white building behind the tree.

Power coming in to the mains service box then distributed to the café and other shops.

Crazy Rabbit Café

The crazy Rabbit café is one of the 3 shops with the grey roof, the fire affected building is the brown roof middle grey roof.

Electrical arcing within an electrical socket (NZ)

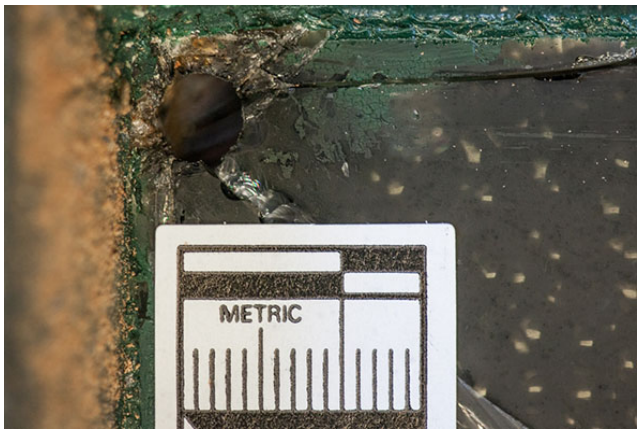
Views of melting copper on the copper connectors and terminations within the 230V wall socket & plug spades, caused by electrical arcing.

Unusual 'Modus Operandi

Neil Kitchen – NZ

5mm hole punched into glass in very corner of pane, then accelerant. Petrol forced through hole likely with a drink bottle or similar, the accelerant went across the window inside sill and onto the curtain it was then ignited by match causing extensive interior damage…unusual thing is the glass remained intact when the fire service extinguished the fire. Otherwise we would never have known about it.

How many more of these have we had where the glass has shattered and the evidence been destroyed. Case remains un detected, premises was a licenced tavern. Any thoughts /other examples of similar MO to me please on neil.kitchen@police.govt.nz (we still have the whole window taken out intact.)



Health and Safety (NZ)

Photo care of NZ Police photography team Christchurch.

A NZ Fire service fire investigator using appropriate PPE for the environment including a newly purchased extendable plank for working on identified compromised floors. The use of the NZFS PID with extendable wand for testing for the possible use of accelerants allows an extended range of testing area when working from a safe location.

The second photo identified the extent to which the floor had been compromised after scene excavation to floor level. Early use of the safety plank was more than appreciated by the investigator in providing a safe working environment.

2016 Australasian Association of Fire Investigators Conference

Crowne Plaza Coogee

Monday 12th Sep – Wednesday 14th Sep 2016

"The Learning Is In The Burning"

NSWAFI will be hosting the biannual AAFI conference in 2016. This will be held at the Crowne Plaza Coogee. Overlooking Coogee beach this hotel is located just 20 minutes from the CBD and is close to the airport. The hotel has spacious rooms overlooking the ocean, deluxe bedding and premium amenities. With modern conference facilities you will feel right at home in a comfortable learning environment.

The international guest speaker will be Steve Carman. Steve served 20 years as an ATF Special Agent and a leading member of ATF's premier Certified Fire Investigator (CFI) cadre from 1991 until he retired in 2008. Since then, he has owned and operated Carman & Associates Fire Investigation. He has also directed or participated in hundreds of fire and explosion tests and data collection from those tests for application to his and others' investigations.

Steve will conduct a one-day workshop with a number of burns at the FIRU Research Facility at Londonderry. He will ask delegates to participate in some practical exercises and some test burns to demonstrate his "learning from burning" program.

A call for papers will occur at the beginning of 2016, so think about a presentation proposal for the conference and stayed tuned for more information from NSWAFI. You can follow us on Facebook now at www.facebook.com/nswafi