

# FIREPOINT



IAAI JOURNAL



# Firepoint

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**FIREPOINT: IF YOU HAVEN'T PAID YOUR FEES FOR THE  
CURRENT YEAR, PLEASE DO SO NOW.**

**EDITORIAL**

This month's journal highlights two forthcoming major events: a seminar in Brisbane on 21 July on "Rights of Access to a Fire Scene", and a Sydney Conference on "Electrical Fires... The Shocking Truth" on 18 and 19 August.

Give serious thought to attending at least one of these important meetings.

Ian Moore has an article on Liability of Fire Engineers, and Bill Powell raises some important safety issues in "Scene Safe".

*Wal Stern*



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## QUEENSLAND CHAPTER REPORT

### Welcome

Since our last report in Firepoint, the Queensland Chapter has held their Annual General Meeting and finalised the program for the one day seminar on "Rights of Access" being held in July. Reports on these issues follows -

### Seminar 2005

#### "Rights of Access to a Fire Scene"

21 July 2005 - Brisbane

The QAFI is proud to announce that it will be holding a one day seminar in Brisbane on 21 July 2005 addressing the **Rights of Access to a Fire Scene and Rights of Evidence Collection**.

The aim of the seminar is to provide clarity regarding the powers of respective Government agencies to enter a fire scene and conduct an investigation and to provide clarity regarding rights of various private sector parties (mainly tenants and landlords and their agents) to access the premises to conduct an investigation into the cause of the fire. (Historically there have been many attempts by tenant's agent to exclude a landlord's agent from entering the premises, or vice versa. The legal basis for these situations will be explored to assist investigators, loss adjusters and claims staff in the future.)

The event will be a full day seminar (approximately 9:00am to 3:00pm); commencing with speakers from relevant Government Departments and the private sector, outlining the following information.

- Legislative or other power or duty, to enter a fire scene and conduct an investigation.
- Hierarchy of powers w.r.t. other legislation and Government agencies and private sector.
- Power to allow or deny access to persons from other Government agencies or private sector.

- Government agency handover of the scene, to either other agencies or to the owner(s).
- Power to seize evidence.
- Obligation to preserve evidence so that it is not inadvertently destroyed.
- Duty of care for testing and handling of evidence.

After lunch, the speakers will form a panel, where various hypothetical situations will be put to them from the delegates and from the Panel Moderator. Such a hypothetical could be a multi-tenanted factory where initially the seat of fire is not known, it is not known whether the fire was deliberately set by an intruder, there are tenant/landlord issues, the precarious nature of the building could be a Workplace Health and Safety problem, and there could be environmental concerns due to run-off into the local creek.

The seminar will be of benefit to members of the QAFI, NSWAFI, VAFI, IAAI as well as Police, Fire Services, Electrical Examiners, Gas Examiners, EPA, WHS, local government, loss adjusters, factual investigators, insurance claims staff and insurance lawyers from all over Australia.

A detailed registration brochure will be distributed shortly; however you can register your interest by email to [admin\\_officer@qafi.asn.au](mailto:admin_officer@qafi.asn.au)

### Annual General Meeting

The Queensland Chapter's "Annual General Meeting" for the year ended 31<sup>st</sup> December 2004 was held on the 31<sup>st</sup> March 2005.

The following members were successfully elected into their respective positions on the 2005 QAFI Executive Committee -

President-	Gary Nash Forensic Services Australia (Qld) P/L
1 <sup>st</sup> VP-	Michael Holohan Queensland Police Service - Scientific
2 <sup>nd</sup> VP-	Aldo Pirlo



## QUEENSLAND CHAPTER REPORT

McLarens Young

Secretary- Rowley Ahern  
McLarens Young

Treasurer- Ashley Jones  
Deacons Lawyers

### Committee

- Brett Hanlon, GAB Robins Australia
- Brian Richardson, DIR - Electrical Safety Office
- Edward (Ted) Beitz, Q.F.R.S.
- Murray Nystrom, Australian Forensics
- Paul Cannington, QFRS

On behalf of our members, I wish to thank these dedicated members for their support of our Association and wish them a successful tenure in their elected roles.

The following 2004 committee members retired at the recent AGM -

- Kate Ridgway, (Past President)
- Bob Campbell, QPS (mid-term)

I would like to sincerely thank these members for their service to the Queensland Chapter.

## Membership

**Un-financial Members** - A number of members have not renewed their membership for the period 1 January through to 31 December 2005. Final reminder invoices have now been issued. If you are unsure of your membership status, please contact Julianne on (07) 3822 4700 or e-mail [admin\\_officer@qafi.asn.au](mailto:admin_officer@qafi.asn.au)

Not sure if you have advised your current e-mail address? Send a quick e-mail to Julianne anyway. [admin\\_officer@qafi.asn.au](mailto:admin_officer@qafi.asn.au)

## Incoming President's Address

*Gary Nash, Forensic Services Australia (QLD) P/L*

Thank you once again for the opportunity to serve you for another term as President of the

QAFI. I would like to thank the 2004-2005 committee for their efforts throughout the past year, particularly those who are leaving the committee. I would like to welcome new and existing members to the 2005-2006 committee and thank them in advance for their active participation in managing the association and coordinating functions for the benefit of members. I also wish to thank Julianne Foley for her dedication and continued support of our association.

The main focus of this year will be to continue with the organisation of the Major Project for 2006 and to hold a Rights of Access seminar. This seminar will provide members with information regarding the rights that various government representatives have to access a property and investigate a fire incident. It will then discuss the rights of building owners, tenants, and neighbours and their representatives to conduct their own independent investigations. Other aspects to be considered include rights of evidence collection. We are planning for the format to start with several speakers and then end with a panel session of all the speakers and possibly with some additional advisors.

Although we have had a relatively slow start this year, it is time to step up a gear to ensure that the 2006 conference and the Rights of Access seminar are successful.

Thank you,

**Gary Nash**

## Diary Dates

### 21<sup>st</sup> July 2005

#### Rights of Access - One Day Seminar

Will be held at the Eagle Street Conference Centre, Brisbane City.

The registration brochure will be distributed by the end of May at the latest. Contact Julianne on 3822 4700 or email [admin\\_officer@qafi.asn.au](mailto:admin_officer@qafi.asn.au) for further information or to request the registration form.

## Victorian Chapter News

### MEMBERSHIP

All members should have received membership accounts for year 2005/2006, due 1<sup>st</sup> July 2005. Please forward your \$ 40.00 fee to Treasurer Bob Hetherington. Any enquires should be directed to him. You need to be financial to vote at our AGM in July.

Merchandise presentation and orders on the website are still being developed, but limited stocks will be available at Training Sessions and AGM.

Members should contact John Lording for merchandise.

### TRAINING

#### **SESSION 8<sup>TH</sup> APRIL 2005 - CASE STUDIES**

This session was held at the MFB Training Rooms and the session included Fire Incident and Worksafe's Role in Investigations, presented by Neil Ware ( Worksafe), Vehicle Explosion investigations by George Xidias (VSFC) and Tree

Harvesters and Associated Fires by Russell Lee.

30 members were present. A special thanks to the CFA members who travelled so far and who attended the session.

Presenters were given VAFI Polo shirts. Many thanks to them for their support. Also thanks to the MFB who through Ian Hunter sponsored the afternoon tea.

### PLANNED TRAINING FOR 2005

#### **JUNE 2005**

Friday 3<sup>rd</sup> June VAFI presentation of Victorian Investigation Policy & Procedures at Ballarat Area.

#### **JULY 2005**

Wednesday 13<sup>th</sup> July One Day Seminar OH&S for Fire Investigations Includes VAFI AGM Details TBA

### **SEPTEMBER 2005**

Friday PM VAFI Presentation of Case Studies Details TBA

### **NOVEMBER 2005**

Friday PM Fire Investigation Training / Prac. Details TBA.

All training session details will be forwarded by mail to members and advertised on the website.

Booking are essential for session arrangements.

VAFI WEBSITE : [www.vicfire.com](http://www.vicfire.com)

All members should check the NEWS section of the website for possible changes to training sessions and other information.

Any suggestions for the website or information should be forwarded to Trevor Pillinger. Contacts are listed on the website. The links section is also helpful to check other related sites.

Brian Neal

**ELECTRICAL FIRES...**  
**"THE SHOCKING  
TRUTH"**

**THURSDAY 18 - FRIDAY 19 AUGUST, 2005**

**Day 1:**

**Session 1**

Opening

**Nick Carey and Mark Svare**

*"Electrical Safety at the Scene  
& Fixed Wiring Installations"*

**Session 2**

**Arthur Donnelley** (Gas)

*"Gas & LPG Appliances"*

**Dennis Spencer** (Office of Fair Trading)

*"Regulatory and Standards Requirements"*

**Session 3**

**Natalie Clode** (Suncorp Insurance)

*"The Insurance Perspective"*

**Nick Carey & Mark Svare**

*"Arc Fault Circuit Analysis (Arc Mapping)"*

**Session 4**

**Greg Kelly** (Greg Kelly & Associates)

*"Role of the Private Investigator  
& Interaction Between Agencies"*

**Trevor Blackburn** (Assoc Prof UNSW, School  
of Electrical Engineering)

**AGM of the NSW AFI**

6pm Thurs 18 August 05

**Dinner:** 7pm Thur 18 August 05

**Day 2:**

**Session 1**

**Nick Carey & Mark Svare**

*"Appliance Fires"*

**Session 2**

**Danny Carson** (Fire Investigation Research

Section, Queensland Emergency Services)

*"Investigations of Electrical Fires in  
Queensland"*

**Guest Legal Speaker**

(Blake Dawson Waldron)

*"The Legal Perspective: Criminal & Civil  
Evidentiary Requirements"*

**Session 3**

**Nick Carey & Mark Svare**

*"Application of Scientific Method in Forensic  
Electrical Investigations"*

**Greg Kelly** (Greg Kelly & Associates)

*"CASE STUDY"*

*Providing Fire*

*Investigation Education...*

*The Path to Prevention*



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**NSW ASSOCIATION  
OF FIRE  
INVESTIGATORS  
IAAI CHAPTER #47**

2005 ANNUAL CONFERENCE  
OF THE NSW AFI INC



**ELECTRICAL FIRES..**  
**"THE SHOCKING TRUTH"**

**18 - 19 August 2005**  
**Carlton Crest**  
**Sydney**

Accredited by 

NSW ASSOCIATION OF FIRE INVESTIGATORS  
AFI (NSW) 7118 047 405

CONTACT PRESIDENT PAUL BAILEY ON  
+ 61 2 9742 7395  
SECRETARY@NSWAFI.COM.AU  
WWW.NSWAFI.COM.AU

CHAPTER 47

### CONFERENCE OBJECTIVES

The objectives of the 2005 NSW AFI Conference on Electrical & Appliance Fires include:

- Presenting the possible versus probable causes of electrical and appliance fires;
- Identify the roles of key players such as investigators, litigators, insurance representatives and product safety experts in the proceedings that follow an electrical fire;
- To discuss the evidence required to prove electrical/appliance ignition; and
- Identify ways to protect against an electrical or appliance ignition.

### WHO SHOULD ATTEND?

- Fire Investigators
- Fire Safety Officers and Inspectors
- Consultant Engineers
- Fire Brigade Officers
- Rural Fire Service Members
- Police Officers
- Fire and Physical Evidence Examiners
- Local Government Ordinance Officers
- Insurance Risk Surveyors
- Fire Protection Designers
- Forensic Consultants & Practitioners
- Loss Adjusters & Assessors
- Architects and Building Designers
- OH&S Disaster Planners
- Civil Litigation Lawyers & Solicitors
- Security Services
- Claims Officers & Underwriters

### NEED MORE INFO?

#### For a Full PROGRAM

Log onto our website at  
[www.nswafi.com.au](http://www.nswafi.com.au)  
Email our Secretary at  
[secretary@nswafi.com.au](mailto:secretary@nswafi.com.au)  
Call our President Paul Bailey  
(02) 9742 7392

#### Need Accommodation?

[www.quickbeds.com.au](http://www.quickbeds.com.au)  
*Ask for the conference rate at the Carlton Crest on  
+ 61 2 9281 6888 or check out their website at  
[www.carltonhotels.com.au/sydney](http://www.carltonhotels.com.au/sydney)*

### CONFERENCE FEES

Fees include refreshments, morning and afternoon teas & lunch both days. Dinner is included in two-day registrants, but is not included in the one day rate. **PLEASE NOTE:** to receive the "early bird" rate, your payment must be received by last mail 06/05/2005.

Early Bird Rate registration prior to 6/5/2005	Full Conference Rate registration after 6/5/2005
Member \$395	Member \$425
Non Member \$450	Non Member \$475
One day rate - does not include dinner Thursday Member \$250	
Non Member \$300	
Dinner only - Thursday evening (includes meal and drinks) \$80	

**NSW Association of Fire Investigators**  
**PROVIDING FIRE INVESTIGATION**  
**EDUCATION...**  
**THE PATH TO PREVENTION**





**NSW ASSOCIATION OF FIRE INVESTIGATORS INC**  
(IAAI CHAPTER No.47)

**Web:** [www.nswafi.com.au](http://www.nswafi.com.au)  
**Email:** [secretary@nswafi.com.au](mailto:secretary@nswafi.com.au)

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## **PRESIDENT'S REPORT**

I welcome readers to another edition of Firepoint.

### **Conference Update:**

#### **ELECTRICAL FIRES THE SHOCKING TRUTH**

**The Investigation of Appliance and Electrical Fires.**

**17<sup>th</sup>, 18<sup>th</sup>, 19<sup>th</sup>, August 2005**

As I'm sure you are aware this year's conference looms large on the horizon. The organizing committee is now making the finishing touches and by all accounts this conference will provide leading edge information and techniques to all delegates.

The popularity of this topic amongst practitioners has been astounding, with the practical workshop selling out in just under a week. Spots for the other two days of the conference are filling fast so I suggest that you don't wait any longer and get your application forms in. A conference program can be found in this edition of "Firepoint".

### **Annual General Meeting**

I would like to make all members aware of the Annual General Meeting to be held in conjunction with the upcoming conference. It is intended that the meeting will be conducted after the first day's proceedings at approximately 6pm. I urge all NSW Association members with an interest in promoting fire investigation to consider spending some time on the committee. To

maintain the vitality of any organisation it is essential that there is a steady stream of new people with new ideas. Our recent participants on the committee have introduced new and exciting innovations and I know that there are many bright and talented people in our industry looking for a medium to have their voice. If fire investigation is your chosen field then time on the Association of Fire Investigators committee should be one of your career goals.

### **Education Evening**

The Association sponsored another successful education evening recently where Inspector Mark Cavanough of the NSW Fire Brigades Fire Investigation and Research Unit outlined a major project being undertaken by the NSW Fire Brigades in the field of fire investigation. Essentially the project entitled, "**AS SAFE AS HOUSES**", looks to research fires specifically in Class one (residential) dwellings, to determine if the current requirements of the Building Code of Australia adequately reflect the risks associated with such dwellings. Anecdotal evidence is suggesting that new building methods coupled with engineered building materials and highly flammable furnishings may be introducing risks to both occupants and firefighters that have not previously been encountered. Fire Investigators will play a key role in assessing these risks and providing

legislators with vital evidence with which to make informed decisions.

I was pleased to see so many people at the seminar and the lively discussions during and after highlighted the level of interest in such a vital project.

We intend to continue providing our members with up-to-date information at these education evenings. For our next evening we have planned to have a member of the newly formed Arson Squad from the NSW Police Service to explain their focus for the field of fire investigation and how you, as investigators, can assist them. One not to be missed!!

In closing, I look forward to meeting as many of you as possible at the conference in August. I'm sure the few days together will be beneficial for all and bring us one step closer to understanding the mysteries of fire investigation.

Kind Regards, Stay Safe

Paul Bailey  
President.

**56<sup>th</sup> IAAI Annual Training  
Conference  
Washington DC – April 2005**

**Ross Brogan - AFSM – CFI – Liaison to  
Australian IAAI Chapters**

The ATC was held at the Hyatt Regency Hotel, in Crystal City, Virginia, (Washington D.C.) between April 25 & 29, 2005.

Arriving late on Friday night, Saturday allowed me some free time to see some of the sights of Washington DC, including the Smithsonian Air & Space museum, and, the night light sights of the Washington monuments.

Sunday involved meetings with; the Certified Fire Investigator (CFI) committee discussing training proposals for the CFI exam and new questions to be added to the question bank. The Fire Investigator Standards (FISC) committee included training involving basic NFPA 921 for investigators, ethics for fire investigators, plus court and expert witness testimony courses, all to be available worldwide on [www.firearson.com](http://www.firearson.com) [click CFITRAINER.net] website of the IAAI. A further meeting was held with Jon Jones who is assisting the IAAI to develop training modules for the CFITRAINER.net site. These training modules are available now and available to anyone who wishes to log on and register; there is no necessity to be an IAAI member. In the near future the training on this site will increase (with at least 3 new modules becoming available - NFPA 921, Ethics & The Scientific Method of investigation) and the necessity to be a IAAI member will apply. With the training modules on CFITRAINER.net, once completed successfully you will be able to print a certificate of completion for your training records. To complete the day, a meeting of the Editorial Board of the International Fire & Arson Investigator magazine was held to finalise content for the new edition.

The Sunday night Presidential Reception allows all of the regulars to catch up, see old friends and make new ones from the participants who have attended. I walked into the reception and bumped Stuart Ritchie from Sydney; I wasn't aware he was even attending the conference.

The ATC this year was run along 3 separate lines of education – Basic Fire Investigators – Advanced Fire Investigators – Private/Insurance Investigators. Some sessions were stand-alone and others were

repeated to allow members to attend as many sessions as possible.

The basic session included – Securing the fire scene & evidence collection; Post-Blast investigation; Fire investigation problem solving techniques; Forensic photography; NFPA 921 fire & explosion investigation guide; and, Electrical review for fire investigators.

The advanced sessions included – Ethics for fire investigators (this will be one of the training sessions in CFITRAINER.net); Investigating firefighter line of duty deaths; Fire modelling; Fire deaths, some myths; Forensic photography; Profiling; Fire scene reconstruction; and, Collection of Hazardous evidence.

The Private/Insurance sessions included – The Underwriters laboratory (UL Standards); Consumer Product Safety Commission (USA Consumer Affairs); Insurance Council & Indicators of Fraud; Testimony & Eyewitness opinions.

An Expert Witness Testimony course was conducted during the week to qualify some investigators in courtroom techniques. A general session was run on Financial Profiling; the USFA training programmes, and NIST Major Fire investigations.

During the week an organised tour was run through the ATF Arson Repository and the NIST fire laboratory facility, for a limited number of attendees.

Concluding the week was the testing of candidates on the weeks' session material. Each lecturer is requested to submit several questions and answers based on their lecture material; these are used to form a test question sheet. Approx. half of the attendees sat the test, which I proctored. For successfully passing the test you receive a

certificate of successful completion of tested training hours; if unsuccessful, or do not choose to take the test, you receive a certificate of attendance only. The tested hours are used for points in the CFI qualification or can be used as qualification on a personal CV.

On the committee side I was kept very busy; being on the International Training & Education committee I was requested to chair sessions and introduce speakers. I did this for Joe Toscano, presenting NFPA 921 (3 times); Dan Madrzykowski, Doug Walton and Kevin McGrattan discussing major fire investigations from the NIST lab.; finally chairing the test session Friday. Monday afternoon I attended a meeting of the Chapters' Liaison committee discussing liaison matters and protocol changes, etc. Directly after, the Chapters' Presidents' meeting was held, where representatives of all chapters attend to hear about current matters and future changes to the organisation. This is where I represent all the Australian chapter Presidents (Paul Bailey – NSW; Alex Conway, Vic.; Garry Nash, Qld.) and continually stand as they call the roll of all chapters, informing the meeting of chapter member numbers and AGM dates. Discussion is held on current matters and any outstanding business dealt with. This year a new committee has been formed – the International Ambassadors committee – to assist with recruitment and formation of new chapters around the world. The Israel chapter reported on their Annual Conference, held in December in Jerusalem, with a grant received from the IAAI they were able to have NFPA 921 translated and printed in Hebrew; selling over 200 copies at the conference. A Presidential Citation was presented to Chapter President Schlomo Maor by IAAI President Schlattman for the chapters efforts in this regard. President Schlattman reported he had visited 20

chapters during the past year (including NSW, Qld and New Zealand).

On Tuesday the IAAI Membership committee chair (Joe Sesniak) hosted a lunch for those attending members from outside the USA (this includes the members from Canada, Australia, Ireland, UK, Sth Africa and Israel) [Frank Fagan from New York City attended; which made us question whether NYC is actually part of the USA??] The lunchtime gathering allowed discussion on matters affecting those chapters outside the US and, members of the IAAI Board to address us on membership issues and the training grant scheme.

On Wednesday I assisted with the CFI committee by sitting on a CFI exam panel for Breyten, from RSA; who was successful, and gives Sth Africa one more new CFI.

Thursday allowed me to make a presentation to the FISC committee showing the progress I have made with the web-based training programme detailing how to use NFPA 921 and what it means to investigators. This Powerpoint presentation is a work-under-construction and will be part of the CFITRAINER.net programmes later in the year. The same afternoon the AGM was held to bring members up-to-date with the current status of the organisation. In May 2004 IAAI members totalled 7,700 worldwide; at this date the total is 8,256. The CFITRAINER.net website has listed 400 new hits since Monday (3.5 days) showing how popular the site is. The newest chapter was inaugurated and Secretary Paul Carolan (NSW Chapter member) was presented with the Charter of the new Chapter of Eire (Ireland). Paul chose to thank several people for inspiration and assistance in forming the new chapter (John DeHaan, myself and Steve Austin – the IAAI Govt. rep). The results of the IAAI Board member elections

were announced, with Eileen Stauss being named as new Second Vice President.

As a matter of interest to all of us was a motion put before the meeting to increase IAAI annual dues from \$50 to \$100 US per year. There was a large amount of discussion on the issue, with several members from outside the USA joining the debate regarding the value-for-money issue for members of international chapters. Eventually the matter was settled with a vote to increase to \$75 US per year.

Being the chair of the Offshore Chapters (outside USA) Financial Grant committee I presented a report on the last twelve months – grants were successfully sought by NSW, Israel and Eire; totalling \$4,900 US. This grant money is to be used to allow chapters to conduct training, or a conference, in their own country. At present there are eighteen (18) eligible chapters who may apply for a grant.

Overall, the 2005 ATC was successful, hosting in excess of 300 members. The ATC will be held in Denver, Colorado, in 2006; with the application fee dropped to \$350 US, \$100 US cheaper than this year. The hotel fee in Denver has also been set, by negotiation, at \$85 US per room, in the host hotel.

As a last matter, Paul Cannington from Qld (QAFI) is now the appointed Liaison for the Qld chapter, leaving me with NSW and Vic. to represent. Hope to see you soon, good luck and good training.

Regards

Ross Brogan AFSM, CFI.

[Ross.Brogan@fire.nsw.gov.au](mailto:Ross.Brogan@fire.nsw.gov.au)

## LIABILITY OF FIRE ENGINEERS. POSSIBLE MITIGATION MEASURES.

*Ian Moore  
Pitt & Sherry*



*Ian Moore leads the Fire & Risk consultancy section for Pitt & Sherry Pty Ltd, an Australian owned engineering, design, scientific and management services company*

*Ian has had over 15 years experience as a fire and risk specialist. This is the third of a series of articles he has prepared for "Firepoint".*

### **Introduction**

*"If the house that has been built collapses and kills the owner, the architect (or in this article read engineer) shall be punished by death....*

*If the contents have been destroyed, he must restore what has been destroyed and because he did*

*not make the building strong and it collapsed he must rebuild the house at his own expense".*

King Hammurabi,  
King of Babylon and  
Chaldea, 3000BC

This paper is the second of two papers and provides some mitigation strategies to the possible liabilities faced by fire engineers as previously discussed in Paper 1.

It should also be noted that although the court system generally follows previous case histories and procedures (torts law) each case is different and no one can accurately predict the outcome of a trial prior to all the facts being established. Hence there are no uniform defence strategies, smart words or methods of writing reports that will be a defence against all, if any claims.

### **Fire Safety Design**

With respect to the issue of the design solutions the question

has to be asked would the above policy change how we perform our work?

In a perfect world the answer should be no it would not change how we perform our work. However, in reality the answer would definitely be yes and words commonly used, such as "worst credible scenario" and "unlikely", would take on a whole new meaning if used at all.

Can it be stated that our present work practices give us a sense that we will not face litigation and we only pay lip service to such a notion and areas of liability discussed in Paper 1. Or is there a total arrogance in our attitude, a lack of understanding of the ramifications of our work, a lack of knowledge of the true risk of litigation, or a combination of the above?

### **Potential Areas for Liability**

The issue of potential liability or increasing the liability of the fire



engineer, the engineering firm to which the fire engineer is employed and other members of the design team, by performing performance based design is regularly raised during design meetings and lectures to fire engineering students. The subject is also the subject of numerous conference and journal papers.

However, the issues tend to be raised by building surveyors or fire engineers with, little knowledge of liability issues, or solicitors with little knowledge of fire engineering.

Some of the issues that need to be taken into account include:

- What civil liability will exist with respect to contents protection that is currently not included in the BCA?

- During a "level 3", quantitative risk analysis, having identified scenarios that will result in deaths, even though rare, should they be addressed? The courts tend to look at the event not the probability if a simple solution was available.

- Given that extremely low

probability events are a defence in negligence claims, what probability would allow the fire engineer to discount say a scenario that results in multiple deaths? Fire is already a  $10^{-6}$  / year event, therefore does a fire engineer have to look at  $10^{-7}$  / year,  $10^{-8}$  / year probability before it can be discounted?

- The guidelines suggest a comparison between the deemed-to-satisfy and the proposed design as getting over the problems with absolute probabilities.

However, the liability exists in the fact that the deemed-to-satisfy can have multiple deaths and hence can the proposed design also be designed to have multiple deaths? What issues exist with respect to the location of the deaths.

- If the low probability of an event is the only defence against negligence, does this mean that probabilities should be used as part of all designs and Level 1 and Level 2 methodologies should either not be performed or made more sophisticated?

- If having started to look at a design using performance and it is found that to meet the performance requirements would require a greater number of systems to be installed from the Deemed-to-Satisfy (DtS) requirements can the design revert to the Deemed-to-Satisfy design?

- The performance requirements state that fire spread between buildings should be prevented. The issues therefore are:

a) Can the designer rely on the design of the constructed buildings on the adjacent property to prevent fire spread? Accordingly, can the proposed building be built with openings relying on the adjacent building to prevent spread? Therefore, if the design of the adjacent building changes the risk of fire spread would change. The proposed design therefore restricts the adjacent properties due to a possible flaw in its design.

b) If there are no adjacent buildings, does fire spread still have to be assessed?

There are more issues than cited above and hence given that each legal case is different no absolute analysis of liability could be performed.

### ***Prevention Strategies***

The following are a list of measures for lessening the risk and affects of litigation.

1. One must know their job responsibilities and functions and how they relate to accountability. Make certain that assignments are within your realm of responsibility and competence. The engineer should ask themselves if they feel confident in making decisions
2. The use of building registrations and NPER registration will go along way to demonstrate areas of competency. At the moment many organisations are using unregistered engineers and hence their areas of competency have not been approved. This requires a greater level of review by the registered engineers and will be another source of liability

with respect to management practices.

3. The areas of competency and responsibility should be clearly stated on the job and position descriptions for each engineer. This will clearly demonstrate where an engineer has overstepped their competencies.
4. Maintenance of professional skills through conferences, further study etc is required to demonstrate competence and due diligence and care in providing advice that takes into account the latest technology. This forms part of NPER registration and IEAust membership.
5. One of the best defence mechanisms for engineers is to ask for assistance on legal decisions and on liability issues.
6. Be consistent in arguments and designs. Changing arguments from job to job will demonstrate a lack of understanding of the issues and

provide an avenue for cross-examination.

7. Make sure all conversations, notes and field visits are recorded with dates.
8. Include alternatives in design with pros and cons of each design to demonstrate due diligence in assessing the design and impartiality in assessing the design proposed by the client.
9. Clearly state the scope and limitations of the assessment.
10. Documentation can serve to demonstrate thoroughness and attention to detail. Accordingly, compliance with a recognised and audited QA system will go along way to demonstrate this.
11. Where possible mitigate and subrogate your liability to contractors and other organisations through contracts signed by both parties and getting sign off for all design decisions. For example where an audit is

performed with a Building Surveyor the contract should clearly state that all liability for failure to detect DTS faults is with the Building Surveyor.

### ***Performance Requirements versus Deem to Satisfy Provisions***

As has been documented in much of the literature it is the Performance Requirements of the BCA that are required to be met but that the Deemed to Satisfy (DtS) Provisions are by definition considered to meet the Performance Requirements. However, the DtS provisions are not based on scientific principles but rather a reflection of past attitudes and test methods to fire safety. In many cases the DtS provisions can be demonstrated not to meet the performance requirements.

Therefore unless the engineer is sure that the DtS provisions provide a safe solution then merely complying with the DtS provisions is not considered sufficient and the equivalency argument is not a sufficient defence.

Determining equivalency to one provision without due regard to the other provisions again does not necessarily mean the design is acceptable or that the engineer is free from liability. The inter-relationship of the various areas of the BCA is demonstrated by the requirement in BCA 2004 to assess all related performance Requirements. It is therefore recommended that the engineer consider compliance with the Performance Requirements

Recommended inclusions in the report therefore include the following concepts:

"The assessment is limited to an analysis of the level of compliance of the proposed design to the performance requirements of the BCA as detailed in this proposal/report. The analysis will not be an assessment against the Deemed-to-Satisfy provisions of the BCA or the adequacy to which those provisions satisfy the performance requirements."

### ***Property Protection***

It is recommended that the following comments be included in the proposal or report in order to make the client fully aware of the implications of their decisions.

- "The assessment does not assess the level of contents and property protection within the subject building. Acceptance of this fee proposal including the scope of works and limitations contained therein is considered to be an acceptance of the risk for contents and property protection within the subject building. Responsibility for the this risk is considered to be subrogated to the owner and their insurer unless otherwise directed via further correspondence in which case this fee proposal becomes invalid and a new proposal shall be issued."

- "It should be noted that the proposed design may increase the level of contents and property damage above that of a Deemed-to-Satisfy design and that total or partial loss of the building structure and contents may result. The installation of

sprinklers and other active systems in combination with human intervention will serve to reduce the level of property damage."

### ***Deletion of sprinkler protection***

It is recommended that the following provisions be included in the design brief:

- "Deletion of the sprinkler system/fire walls has the extremely real potential in the event of a fire of severely increasing the level of property and contents damage sustained by the subject building to the extent that a total loss of contents and property may be incurred. An assessment of the actual level of property and contents damage, and design considerations that may be adopted to mitigate such damage are beyond the scope of this report and have been excluded from the analysis as part of the fee contract formed by the fee proposal dated.... and the client acceptance dated...."

### ***Assumptions and Limitations***

The strategy report should clearly state the assumptions used, ie tenability criteria, models use etc, as well as the limitations, ie no property protection issues addressed, design limited by correct management and training, etc.

There is a clear difference between an assumption and a limitation that has not been brought out in many of the reports reviewed by the author.

Assumptions are those items that are deemed to be present based on engineering judgement so that the analysis can proceed. Limitations are those items that bound the analysis. For example it is assumed that on office fire grows at a Medium rate. The analysis and design is therefore limited to a fuel load typical for an office and can not be changed into high rack storage cupboards.

### ***Recognition of other design solutions***

It should be stated that the engineer recognises that other design solutions may achieve the same

outcome and that analysis of these solutions has not been performed or that analysis has proceeded based on it being limited to one solution based on client advice having been made fully aware of other solutions.

### ***Conclusions***

As stated above there are no definite mitigation measures to the possibility of having litigation brought against the fire engineer. However, the concepts outlined in this paper if followed will go along way to helping form a defence against such litigation and minimise the quantum of any liability.

### ***New Training Courses***

The International Association of Arson Investigators offers training courses in various areas of fire investigation on the Internet.

These are new programmes, especially designed for the Internet.

If you want to know more, check it out at [www.CFITrainer.net](http://www.CFITrainer.net)

## **SCENE SAFE.**

**By Inspector Bill Powell**

*NSW Fire Brigade, Fire Investigation and Research Unit*

This article is designed to inform Firefighters about two types of construction utilised in modern houses (Building Code of Australia Class 1), that may have an adverse effect on their safety.

The safety issue doesn't concern those involved in construction of the building but on the eventual end user, the residents, and most importantly on members of the fire service, who may need to enter the building during fire fighting operations.

Visually these types of houses appear to be like any conventionally built timber framed cement rendered structure.

### **Type 1 – Orientated Strand Board**

( See Photos 1 and 2)

Orientated Strand Board is an engineered wood product. It is manufactured in a cross-orientated pattern similar to ply wood, to create a strong, stiff structural panel. It is

composed of thin rectangular shaped wood strands arranged in layers at right angles to one another, laid up into mats that form a panel, bonded with fully waterproof adhesives.

In the first phase of orientated strand board manufacture logs are debarked and cut to a uniform length. The logs are then turned into strand wafers.

The strands are dried with heat in a large rotating drum and screened to grade strands that are the correct size. The dried strands are sprayed with liquid or powder resin and then transported in layers on a conveyor system to a forming line, where the layers are cross orientated into mats.

For face layers, the strands generally run along the panel, while for core layers, the strands are randomly orientated or run across the panel. The mats are trimmed to a workable size, then moved to a press where the wood strands and glue are bonded together under heat and pressure to create a structural panel.

For the past two decades orientated

strand board has been used for residential and non-residential construction in America.

Now this type of house construction is occurring in Australia.

Prepared orientated strand board panels approximately 15 mm in thickness are stapled to timber studs to form exterior walls. No noggins are required in the support frame.

These walls are later covered by wire mesh and are cement rendered. Buildings also utilise orientated strand board for flooring (specially rated for flooring) and roofing. The roofing panels are externally clad with bituminous style tiles (Pabco Premier 25).

Upper level floor trusses (support joists) are constructed in an "I-Beam" configuration using orientated strand board for the web, and laminated veneer for the flanges of the joist.

Due to this type of floor joint construction, it is suspected that when there is a fire there is a loss of structural integrity, and the weight of the upper level may cause premature collapse. This is especially so if the fire



has caused internal plasterboard linings to fail, exposing the timber joists.

Remember also that a lot of plasterboard ceilings and walls in modern construction are now glued and not nailed to the timber supports. Consideration should also be given to the added combustible fuel loading created by this form of building material.

### **Type 2 – Polystyrene Foam Blocks**

(Photos 3 and 4)

Polystyrene foam blocks or sheets, of approximate thickness 75 mm are being fastened by galvanised large head nails (roofing style) to the timber framing of houses, forming the exterior walls.

These walls are later cement rendered, over a plastic mesh – the roof being tiled. In a north western area of Sydney, this type of construction has been used in the building of two level townhouses connected in groups of four, three and five.

The common adjoining wall for each occupancy was constructed by hollow polystyrene

blocks, being permanent form work, and these were then in-filled with concrete.

The outer wall thickness of the block is approximately 55 mm, total thickness of the finished wall is approximately 250 mm. This single wall extends the height of both levels.

Upper level floor trusses (support joists) are constructed in a “I” (hybeam) configuration using laminated veneer.

These joists are “gang nailed” and dyna bolted to the concrete wall, the polystyrene form work having been cut away to expose the concrete surface.

Again, in a fire situation premature structural collapse of flooring supporting of the upper level may occur. With the displacement of plasterboard internal linings, burning polystyrene foam has the characteristics of melting and dripping as it burns, enabling easy fire spread to other combustibles. Due to the large vertical surface area exposed, rapid and severe fire development can occur.

Enormous quantities of thick black smoke is generated contributing

to making fire fighting activities dangerous, and may necessitate evacuation of residents from nearby properties.

In a fire involved or fire damaged structure the collapse of the common concrete dividing wall is always imminent, this being synonymous with a “tilt up” slab in commercial or industrial premises.

A recent serious fire in Melbourne, involved polystyrene form work being utilised for the construction of concrete lift shaft walls, within a 20 level building, which was undergoing refurbishment.

### **Conclusion**

The main concern for these types of building components and construction method is the life safety risk to firefighters who may have to make an entry to a building constructed in this fashion, without the knowledge that this type of construction is employed.

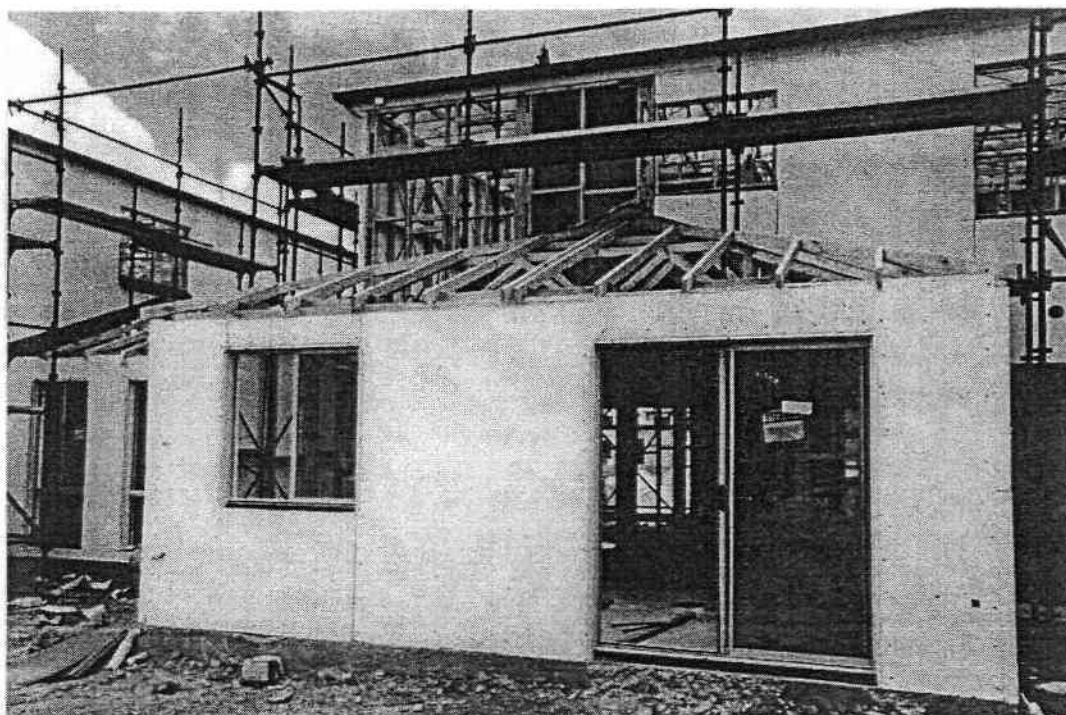
This construction method cannot be determined by external observation. The only way to tell is to have prior knowledge of the building construction.



No.1	Orientated strand board - under construction.
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No.2	Finished house.
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No.3	Polystyrene foam construction.
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No.4	Finished house.
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