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Fire AUSTRALIA

WINTER 2013

In this issue

About *Fire Australia*

Fire Australia is a joint publication of the Fire Protection Association Australia (FPA Australia), the Australasian Fire and Emergency Service Authorities Council (AFAC) and the Bushfire Cooperative Research Centre (Bushfire CRC).

We aim to bring the latest news, developments and technical information to the fire protection industry, emergency services and fire research organisations. *Fire Australia* is produced quarterly and distributed throughout Australia and New Zealand.

Editorial submissions are welcome and can be sent to joseph.keller@fpaa.com.au.

For more details on submitting a contribution, please contact the editors.

If you would like to advertise in *Fire Australia*, please contact:
Joseph Keller, FPA Australia,
PO Box 1049,
Box Hill VIC 3128, Australia
TEL 1300 731 922
EMAIL joseph.keller@fpaa.com.au

REGULAR FEATURES

ADVERTISER LISTING

Joint editors
Joseph Keller (FPA Australia)
TEL +61 3 8892 3131
EMAIL joseph.keller@fpaa.com.au

Nathan Maddock (Bushfire CRC)
TEL +61 3 9412 9605
EMAIL nathan.maddock@bushfirecrc.com

Shesiedo Frederiks (AFAC)
TEL +61 3 9419 2388
EMAIL shesiedo.frederiks@afac.com.au

Fire Protection Association Australia (FPA Australia) ABN 30 005 366 576
EDITORIAL PANEL Barry Lee OAM, Peter Johnson
NATIONAL PRESIDENT Trevor Voevodin
CHIEF EXECUTIVE OFFICER Scott Williams
PO Box 1049, Box Hill VIC 3128, Australia
TEL +61 3 8892 3131
FAX +61 3 8892 3132
EMAIL fpaa@fpaa.com.au
WEBSITE www.fpaa.com.au

Australasian Fire and Emergency Service Authorities Council (AFAC) ABN 52 060 049 327
PRESIDENT Lee Johnson AFSM
VICE PRESIDENT Greg Mullins AFSM
CHIEF EXECUTIVE OFFICER Stuart Ellis AM
Level 5, 340 Albert Street,
East Melbourne VIC 3002, Australia
TEL +61 3 9419 2388
FAX +61 3 9419 2389
EMAIL afac@afac.com.au
WEBSITE www.afac.com.au

Bushfire Cooperative Research Centre (Bushfire CRC) ABN 71 103 943 755
CHAIRMAN Len Foster AO
CHIEF EXECUTIVE OFFICER Gary Morgan AFSM
RESEARCH DIRECTOR Richard Thornton
COMMUNICATIONS MANAGER David Bruce
Level 5, 340 Albert Street,
East Melbourne VIC 3002, Australia
TEL +61 3 9412 9600
EMAIL info@bushfirecrc.com
WEBSITE www.bushfirecrc.com

PRODUCTION AND DESIGN Coretext
TEL +61 3 9670 1168
WEBSITE www.coretext.com.au

Our cover: Residents evacuate in the face of the Coonabarabran bushfire in NSW on 13 January 2013.

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New ideas, clever products and creative people

By Gary Morgan
Chief Executive Officer
Bushfire CRC

'Social benefit' was the buzz phrase coming out of the 2008 review of the national Cooperative Research Centres program. Finally, 'public good' CRCs have been acknowledged in their long struggle for attention and ongoing support in a funding program renowned for supporting technological breakthroughs in the manufacturing, mining, medical and agricultural sectors.

Recent events indicate that scientific impact for social benefit is being recognised.

The Australian Government has again funded the three major public good CRCs that were scheduled to finish this year. At the start of the year, $47 M was allocated to a new Bushfires and Natural Hazards CRC for an eight-year research program. And in May, the CRC for Antarctic Climate and Ecosystems and the CRC for Aboriginal and Torres Strait Islander Health each received $25 M for five years of funding to continue their important work.

In May, at the annual Cooperative Research Centres Association conference in Melbourne, three Bushfire CRC projects were singled out as among the finest in the country.

PhD student Mika Peace was one of six finalists in the Showcasing Early Career Researchers award. Ms Peace, from the Bureau of Meteorology, gave a five-minute presentation via Skype from the Fire, Weather and Risk Workshop in Busselton, WA, on her research into the interactions between fire and the atmosphere. Although Ms Peace didn't win, there were 51 entrants in this category so it was a great feat for her to be a finalist.

Two Bushfire CRC projects were short-listed as finalists in the Excellence in Innovation Awards: the Community Safety research conducted by Professor John Handmer at RMIT University, and the Phoenix Bushfire Modelling research under Dr Kevin Tolhurst at the University of Melbourne.

Again, we didn't win, but our short-listing was a major breakthrough for science with a social benefit.

Much of this science has been showcased in the pages of *Fire Australia* in recent years. The broader fire and emergency services and fire protection sectors have had access to innovative thinking across a range of areas that are important to our industries.

This issue of *Fire Australia* continues the theme of new ideas, clever products and creative people.

The big fires across south-eastern Australia last summer brought with them a whole new series of questions about what communities and fire agencies did, or did not do, in response to the threat. This edition features an article on what the Bushfire CRC research task force discovered at these fires. Read also about progress towards a new national fire danger rating system, and discover even more reasons to be in Melbourne in September for the AFAC and Bushfire CRC annual conference.

Top: Mika Peace presenting at the Showcasing Early Career Researchers final via Skype.

Above: The bush regenerates a month after the Coonabarabran, NSW, bushfire in early 2013. A Bushfire CRC research task force visited the area to listen to the experiences of local residents.

(L to R) National Executive Officer– Stuart Just; Deputy Chair– Dean Griffiths; Committee Member– Phil Joyce; Chair– Neil Zouaoui; Treasurer/ Secretary–Mark Staley

Formation of Northern Territory Divisional Committee

On 2 May 2013 a special meeting of Northern Territory FPA Australia members was convened to establish the inaugural Northern Territory Divisional Committee.

The afternoon began with a presentation from FPA Australia National Executive Officer Stuart Just, who outlined the Association's vision, mission, values and departmental activities at the National Office. The presentation also provided a good opportunity to outline the activities, roles and responsibilities of an effective Divisional Committee.

Following the presentation, the election of the NT Divisional Committee took place and the Association is now pleased to formally announce the Committee Members and Office Bearers of the NT Divisional Committee.

This Committee has the enthusiasm and drive to bring about real change to the fire protection industry in the NT. We look forward to the growth and development of the Committee and its activities.

Northern Territory Divisional Committee

Neil Zouaoui, Design Integrity Solutions
CHAIR

Dean Griffiths, Chubb Fire & Security
DEPUTY CHAIR

Mark Staley, Wormald–Tyco
TREASURER/SECRETARY

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Marc Hunt, Custom AV
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Phil Joyce, Power & Water
COMMITTEE MEMBER

Drago Kojic, Southern Starr Fire Protection
COMMITTEE MEMBER

John Oliver, NT Fire & Rescue Service
COMMITTEE MEMBER

New member of the FPA Australia Board

FPA Australia is pleased to announce the appointment of a new Co-Opted Director of the Board, Mr Hank Van Ravenstein. Mr Van Ravenstein is the Principal Manager on Fire Risk Management for the Victorian Department of Human Services (DHS). He manages at a high level the Department's fire risk management policy, strategy and principles, and regulatory compliance. He leads the development of a state-wide fire safety culture in DHS and the Department of Health through a service agreement and is responsible for coordinating the delivery of all fire risk and regulatory-related services required to maintain DHS's properties. Mr Van Ravenstein represents DHS on several executive and other high-level discussions, including a number of Australian Standards Committees and other government and agency committees.

The Directors of the Board of FPA Australia extended an invitation to Mr Van Ravenstein to join the Board. Association President, Trevor Voevodin, said he was proud Mr Van Ravenstein had chosen to accept this invitation.

"We welcome Hank to the Board and we know his proven experience and leadership will be highly valuable to the Association," Mr Voevodin said.

"In addition, having a Board Member who is also an active end user of FPA Australia member services, via the significant portfolio of property assets held by DHS, will allow us to gain great insight and important feedback."

Australia's leading experts in fire weather, modelling and risk assessment visited the site of a planned burn that escaped near Margaret River, WA, in 2011.

Fire weather in WA

The Fire, Weather and Risk Workshop attracted almost 100 participants to Busselton, Western Australia, in May. Held with the support of the Bushfire CRC, the Bureau of Meteorology, and WA's Department of Environment and Conservation and Department of Fire and Emergency Services, the workshop brought weather, fire modelling and risk assessment researchers together with forecasters and fire management officers. Participants discussed a wide range of issues, with an emphasis on the transfer of the research to operations. The participants also viewed the area that was significantly burnt in an escaped prescribed fire around Margaret River in 2011. They discussed the unique fire weather issues in the area, including the recovery of both the vegetation and the community. Two years ago, this workshop was held in conjunction with the Bushfire CRC and AFAC annual conference in Sydney. Proceedings from this workshop will soon be on the Bushfire CRC website.

Carbon and fuels

Researchers and end users met in Melbourne in May for the 'Contemporary Challenges in Managing Bushfires' forum. The forum was organised as part of the joint Bushfire CRC and AFAC professional development series. The two major topics of discussion were the political dimensions and research questions surrounding carbon and its relationship to fire, and the social construct of fuels in the interface. Former Bushfire CRC Honours student and now Research Scientist with the federal Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education, Dr Robert de Ligt (pictured), opened the forum with an outline of the National Carbon Accounting System.

Gary Morgan (L) accepting the award from Mr John Kerin AM (R).

PHOTO: COURTESY TIMBER AND FOREST ENEWS

In recognition

Bushfire CRC CEO Gary Morgan (above) was recently awarded the Commonwealth Forestry Regional Award. The award recognises Mr Morgan's outstanding work in the forestry sector at regional and national levels throughout his career.

"Gary's vision and leadership have resulted in Australia playing a pivotal role in forging lasting links with the most fire-prone regions of the world," said Mr Michael Bleby, Commonwealth Forestry Association Regional Coordinator, South-east Asia and Pacific.

Dr Lachie McCaw from DEC launches the Research Forum.

Research advice

The biannual Bushfire CRC Research Advisory Forum was hosted by Western Australia's Department of Conservation and Environment (DEC) at its new premises in Perth in May. The forum featured research updates from about half the current research program over two days.

The Bushfire CRC holds the forum every six months to review the progress of ongoing projects. Researchers and lead end users were given the opportunity to present an update of their activities, inviting discussion from across the members of the Bushfire CRC. The forum provides an invaluable opportunity for all stakeholders that support the research to provide feedback.

Proceedings from the forum are available on the Bushfire CRC website at www.bushfirecrc.com/research/event/2013-raf8.

FPAS consultation seminars complete

The national series of consultation seminars on the upcoming Fire Protection Accreditation Scheme (FPAS) are now complete. The seminars, which were chaired by FPA Australia CEO Scott Williams and FPA Australia Member of the Board Bill Lea, were held in all states and territories in May and June.

Around 400 people attended these important seminars. The attendees provided a significant amount of valuable feedback, which will be used in the development and roll-out of the scheme.

More details about the FPAS scheme are now available on the FPA Australia website: www.fpaa.com.au/fpas. Information includes two articles previously published in *Fire Australia* relating to the scheme. Also included is a comprehensive frequently asked questions guide as well as the recent FPAS Consultation Seminar presented as a webcast video.

FPA Australia expects to begin taking formal applications for individual accreditation and business recognition from July.

For more information please call 1300 731 922 or email fpas@fpaa.com.au.

Mr Scott Williams, co-chair of the FPAS seminars, addresses participants.

Participants at the bushfire planning and design forum.

Bushfire Planning and Design Forum

On Tuesday 30 April an important forum was held in the training facility at the new FPA Australia National Office in Blackburn North, Melbourne. The forum, which was a joint initiative of the Country Fire Authority (CFA) and FPA Australia, was open to all Victorian-based bushfire consultants, and it featured speakers from both organisations.

The event provided a great opportunity for Victorian-based bushfire consultants to gain an understanding of the expectations of the legislative reforms that followed the Victorian Bushfires Royal Commission. The forum marks the continuation of improved dialogue between industry and government on delivering these objectives.

During the forum, CFA CEO Mick Bourke formally acknowledged the importance of accreditation of bushfire consultants in Victoria through the FPA Australia bushfire planning and design (BPAD) scheme. Mr Bourke noted the benefits this would deliver for the industry and the community.

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Collaborative program launched—
Shaping Tomorrow Together

More than 1400 delegates will come together in Melbourne from 2 to 5 September 2013 to discuss the latest challenges and trends in emergency management at the biggest and most important all-hazards conference of its kind in Australasia, the 20th AFAC and 10th Bushfire CRC conference.

Launching the conference program on 17 April, Country Fire Authority (CFA) Chief Officer and Chair of the Conference Steering Committee, Euan Ferguson (right), said the conference theme Shaping Tomorrow Together recognises the need for emergency services to work together collaboratively with the community and other partners from the education, health, business and research sectors, and all levels of government, to shape our future.

"I can assure you the program is of an extremely high calibre. In addition, this will be the biggest emergency management trade expo held in the southern hemisphere, with many businesses showcasing their products that help us protect the communities we serve.

"CFA, the Metropolitan Fire Brigade, Parks Victoria, Victoria State Emergency Service, and the Department of Environment and Primary Industries look forward to hosting this milestone conference."

Bushfire CRC CEO Gary Morgan believes the conference will show why research and innovation are now more important than ever.

"Emphasising the diversity of the research being conducted across all hazards, the science on show across the week will highlight the significant work the Bushfire CRC is delivering to emergency service agencies.

"The Conference and Research Forum present a great opportunity for all emergency management practitioners to learn what we are discovering about the biggest challenges in emergency management across Australasia, and

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finding ways to use this knowledge every day to make our communities safer," Mr Morgan said.

As in years past, the conference will include the popular poster display in the Knowledge Lounge.

For the full conference program, list of speakers and registration details, visit www.afac2013.org.

Key Speakers

Professor Tim Flannery
Climate Change Commissioner
Prof Flannery was named Australian of the Year in 2007 and is an internationally acclaimed scientist, explorer and conservationist. He is one of Australia's leading writers on climate change.

Dr Stefan Hajkowicz
Principal Scientist, CSIRO
Dr Hajkowicz has been widely published in international scientific journals covering his expertise in economics, geography and decision analysis. His models have guided significant government investments.

David Kaufman
US Federal Emergency Management Agency
Mr Kaufman is responsible for providing leadership, analysis, coordination, and decision-making support to the FEMA Administrator on a wide range of policies, strategy, plans, programs and key initiatives. He has extensive experience with homeland security and emergency management issues.

Research Forum—don't miss it

The latest in fire science from around Australia and the world will be showcased at this year's Research Forum, which kicks off the AFAC and Bushfire CRC annual conference in Melbourne on 2 September.

A key part of the conference, the Research Forum highlights the diversity of research being conducted across the sector. The forum is not just for scientists, but for all emergency management (EM) personnel and the wider researcher community.

Topics will include fire weather, community safety, smoke toxins, prescribed burning and a special discussion on the impacts of heatwaves.

With keynote presentations from Professor John Handmer from RMIT University and Ivan Pupulidy of the US Forest Service, the Research Forum is a must for anyone who wants to use new knowledge to make our communities safer. Featured presentations will also include Bushfire CRC project leader Dr Jeff Kepert from the Bureau of Meteorology on extreme fire weather, the University of Western Australia's Dr Illy McNeil on how to identify underprepared residents in bushfire-prone areas, and an outline of the research of the new Bushfire and Natural Hazards CRC.

Partnerships are one of the most important aspects of the Bushfire CRC. The Research Forum provides a great opportunity to connect EM practitioners with researchers to discuss the latest fire science.

"The Research Forum will focus on the latest research from leading researchers and how it is implemented into policy and practice," said Mr Morgan, CEO of the Bushfire CRC.

Register for the Research Forum or the full conference at www.afac2013.org.

Queensland Government responds to QBSA review

The Queensland Government has tabled its response to the recommendations from the Inquiry into the Operation and Performance of the Queensland Building Services Authority (QBSA).

The response makes clear the government's intentions to deliver wholesale reform to all elements of the QBSA and this will include a restructuring and renaming of the body to the Queensland Building and Construction Commission.

Importantly, the response has confirmed the government will undertake an independent review of all existing licences under the QBSA framework, including all those related to fire protection activities, to test for fitness for purpose, eligibility requirements, costs and benefits.

You can view full response to the QBSA review at www.parliament.qld.gov.au/Documents/TableOffice/TabledPapers/2013/5413T2705.pdf.

NSW Department of Planning and Infrastructure Fire Sprinkler Provider List

The requirement for automatic fire sprinklers to be installed in all residential aged-care facilities in New South Wales that took effect on 1 January this year has created a significant increase in demand for fire sprinkler products and services.

With this in mind, the NSW Department of Planning and Infrastructure is supporting FPA Australia in compiling a dedicated list of those member companies engaged in designing, installing and certifying fire sprinkler systems in NSW, including installers that hold an appropriate NSW Office of Fair Trading Contractor's Licence (where necessary).

This list complements the existing sprinkler provider-of-choice category on the FPA Australia website, but further refines this information into the categories of 'design', 'install' and 'certify' as well as accommodating providers that undertake more than one of these functions.

FPA Australia is asking all member companies engaged in this work in NSW to please complete and return the NSW Fire Sprinkler Provider List form, accessible from the FPA Australia website.

Successfully completing and returning this form will ensure member companies that have met the necessary requirements will have their details published on this new list. It is anticipated that the NSW Department of Planning & Infrastructure will make this list available to NSW nursing home owners and operators seeking these services.

Completed and signed forms should be returned to member@fpaa.com.au in order to be added to the list.

For more information on the NSW Fire Sprinkler Provider List please contact FPA Australia membership services on 1300 731 922.

New Technical Document Released – Good Practice Guide 02

A new FPA Australia technical document has been released.

Good Practice Guide GPG-02: Completion of extinguisher service records when not all tasks can be undertaken addresses those situations where extinguishers are installed in non-building locations or in locations where circumstances mean that not all tasks required by an applicable maintenance standard (such as AS 1851-2012) can be completed by a service technician.

GPG-02 is available for FPA Australia members from the CONNECT member resource platform at https://connect.fpaa.com.au. Non-members can view an abstract of the document on the technical documents page of the FPA Australia website: www.fpaa.com.au/technical (then select 'technical documents').

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Experience counts—research finds lessons in a horrific summer

The Bushfire Cooperative Research Centre is helping Tasmania, New South Wales and the rest of the country learn valuable community safety lessons from a destructive bushfire season.

By Nathan Maddock, Bushfire CRC Communications Officer

Learning from experience is important in all facets of life. Bushfire community safety is no different. After one of the hottest summers on record, which saw extreme temperatures, ferocious winds and dangerous fire weather across southern Australia, large and destructive bushfires were experienced—the worst in Tasmania and New South Wales.

A bushfire of the intensity of the Forcett fire, which flared up under catastrophic conditions on 4 January 2013, had not been experienced in Tasmania since Black Tuesday in 1967. While this year's fire did not burn into Hobart as happened in 1967, 193 dwellings were destroyed and 24,000 hectares of bushland and pasture burnt. It is well known that in the town of Dunalley, one-third of all homes, as well as the primary school and police station, were razed. Boomer Bay, Connellys Marsh and Murdunna were also devastated and, as in Dunalley, significant infrastructure was damaged or destroyed. There was social dislocation and the impact on communities was profound.

In NSW, it was the most challenging bushfire season in a decade. Catastrophic fire danger ratings were issued for the first time across a number of areas, including urban centres. Several major fires were experienced and 62 houses were destroyed, 53 from the Coonabarabran bushfire alone. From July 2012 to March 2013, 1.4 million ha, an area larger than Greater Sydney, was burnt. Fifty thousand head of livestock were lost, and 10,170 km of fencing destroyed.

To maximise the lessons learned, the Tasmania Fire Service (TFS) and the NSW Rural Fire Service (NSW RFS) individually requested that the Bushfire CRC undertake independent, community-based research following the bushfires. Importantly, the research experience of the Bushfire CRC in conducting this type of research was acknowledged. This new research built on similar projects undertaken following Black Saturday in Victoria in 2009, and the Perth Hills and Lake Clifton (Western Australia) bushfires in 2011. The new research adds to this collective knowledge.

Both the Tasmania and NSW research programs, or task forces, focused on people's preparation, decision-making and actions during the fires. On both occasions, the research team comprised Australia's leading bushfire researchers from Bushfire CRC partner institutions: the University of Tasmania, La Trobe University, RMIT University, CQUniversity, the University of Western Australia, the University of Canberra, the University of Canterbury and the Australian National University.

Researchers visited residents in the various fire-affected areas to learn from residents' experiences with the bushfires, focusing on their knowledge of bushfire risk, preparations before the bushfire and actions on the day.

Bushfire CRC CEO Gary Morgan said the research was of national significance. "The data gathered will inform not just the residents of Tasmania and New South Wales, nor just the Tasmania Fire Service and NSW RFS, but communities and fire agencies across Australia and New Zealand."

Tasmania—fire in a tourist hot spot

The task force team visited the areas affected by the Forcett bushfire in the weeks immediately following the fire. From a base in the car park of the Dunalley pub, the team was led by the University of Tasmania's Professor Timothy Skinner (now at Charles Darwin University) and Dr Jim McLennan from La Trobe University. In total 226 interviews were conducted across the Tasman peninsula, comprising residents in both the affected and surrounding areas. This would not have been possible without the assistance of the University of Tasmania's Rural Clinical School and the Menzies Research Institute.

Damien Killalea, Director of Community Fire Safety at the Tasmania Fire Service, believes the bushfire presented a unique opportunity for the TFS to assess people's response.

"There were some unique elements about this fire. The conditions were classed as catastrophic at points, and given the time of year, the New Year holiday period, there were large numbers of tourists in the area. These tourists may not have been privy to TFS safety messages," Mr Killalea said.

The research also offered a chance to look at what TFS had learned from the Black Saturday fires in Victoria, and the changes that have been made to bushfire community safety in Tasmania since that time.

"This bushfire was the first time TFS has applied on a large scale what we have learned since 2009. It was a chance to test the range of measures we have put in place," Mr Killalea said.

Task force members interviewed 238 residents in NSW, including people who were affected by the fires as well as people who could have been affected had conditions not changed—such as this housing estate on the edge of Yass.

"The research is vital in that it allows us to see, and measure, how the various community safety initiatives put in place in recent years were picked up by the community.

"The fact that no one died in the conditions that we saw was a great relief. We want to learn why."

Mr Killalea hopes the findings from this research will be wide-reaching.

"The findings will inform the Tasmanian Bushfire Policy. Additionally, I hope that we will learn sufficient to inform a revised national position on bushfires and community safety.

"Getting independent research findings from the Bushfire CRC is absolutely invaluable. For decades, fire agencies made decisions about what was good for the community, and about what they [fire agencies] were going to do, that often ignored things like public safety. Listening to the community [will] tell us about what they went through and getting direct feedback about not just what they experienced, but how they felt and reacted, is the best way to inform our future policy and practices," he said.

New South Wales—a record-breaking fire season

January saw temperature records broken across NSW, with many fires occurring. Three of the most significant were at Deans Gap in Shoalhaven, Cobbler Road near Yass and in Coonabarabran. The Coonabarabran fire made international headlines when it tore through the Warrumbungle National Park and Siding Spring observatory.

NSW RFS Commissioner Shane Fitzsimons noted that these were major fires.

"Both the Deans Gap and Cobbler Road fires started under catastrophic conditions on 7 January, whilst the Coonabarabran fire on 12 January was particularly large, intense and impacted greatly on the community.

"The NSW RFS saw these fires as an opportunity to take a close look at what people did before, during and after the fire, and learn from their experiences. The research is part of the continuing relationship between the NSW RFS and the Bushfire CRC, which helps all agencies better understand people's actions and ensure lessons are learned," Commissioner Fitzsimmons added.

Throughout February and March, the research

Opposite: The Coonabarabran bushfire made international headlines when it threatened the Siding Spring Observatory.

Fifty-three houses were destroyed by the Coonabarabran bushfire. Photo courtesy NSW Rural Fire Service.

team visited the areas surrounding Coonabarabran, Yass and Shoalhaven to interview affected residents. Two hundred and thirty-eight semi-structured interviews were conducted with community members who experienced the fires, as well as those who were nearly affected, or who could have been affected had circumstances changed. An online survey was also conducted with a random sample of 975 residents from affected communities.

Bushfire CRC Research Manager Lyndsey Wright noted that the three fires were chosen for the research because of the extent of areas burnt, as well as the potential for more extensive losses than experienced—houses, stock and possibly lives.

"A large number of houses were lost around Coonabarabran, and stock losses were particularly significant around both Coonabarabran and Yass, but both could have been much higher if it were not for a combination of fortunate weather changes, enormous efforts by RFS volunteers and the response from residents to minimise the impact," Ms Wright said.

While this is the first time the Bushfire CRC has conducted this type of research in NSW, the experience of the research team, particularly Chief Investigator Dr Jim McLennan, was invaluable.

Dr McLennan highlights similar research that shows how ready residents of a particular area may be for a fire.

"Previous research task forces undertaken in Victoria and Western Australia, and in Tasmania earlier this year, demonstrate that readiness for a bushfire threat in a given location is usually related to the history of bushfire in the area. For any given household, a bushfire is a rare event, with most households in bushfire-prone areas not threatened by a fire during the life of the household. Therefore, perceived risk of a bushfire is commonly low.

"Few residents of bushfire-prone areas are actually prepared and ready to leave safely—a majority of people do not have any real appreciation of what a serious bushfire entails, because they are such rare events for any given location," Dr McLennan explained.

The research looks into the preparedness of long-term residents, as well as 'tree change' or 'sea change' residents, depending on the location—people who have moved from a city to more rural areas, attracted by the lifestyle they afford. Previous research has shown that 'lifestyle' residents may not be as prepared as people who have lived in a particular area for a long time, said Dr McLennan.

"We look at how confident residents are in their ability to safely defend or evacuate, and how well they understand what this actually involves. Are people fully aware of not just the physical efforts required to safely defend a home from bushfire, but the significant mental effort required too?

"Similarly, what is the understanding of the right time to evacuate to ensure the safety of all members of the household?" Dr McLennan added.

Longer term benefits

The TFS, NSW RFS and fire agencies across Australia and New Zealand will be able to benefit well into the future from the research conducted.

"Community participation in the research was fantastic, which enabled a good cross-section of community members to be interviewed. The data will provide substantial depth to explore for a long time," Ms Wright said.

Dr McLennan drew comparisons between bushfire safety and road safety.

"Communicating community bushfire safety is not easy; there is no silver bullet. Similarities can be made with reducing the road toll. It is now second nature to buckle up, stay under 0.05 and, more recently, practise safe driving with mobile phones. But the reduction in the road toll was the cumulative effect of education, engineering and enforcement, which took decades to achieve across Australia.

"Why would raising community bushfire safety be any easier? Fire agencies need to look for additional ways to raise householder awareness of risk and encourage planning and preparation. This needs to be beyond the passive availability of community education material on websites and in paper publications," Dr McLennan explained.

The research methods adopted by the task force ensured preliminary findings were quickly available to both the TFS and NSW RFS. More detailed analysis of the data from the task force teams will provide both agencies with the evidence base to review policies and practices prior to the 2013–14 fire season.

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INTRODUCTION TO FPA AUSTRALIA TECHNICAL DOCUMENTS

By Ian Findlay, FPA Australia Technical Department

FPA Australia produces five different types of technical documents for different purposes. Find out how these documents are developed and how to get involved in creating them.

In recent years, FPA Australia has identified a significant lack in available material that provides guidance to the fire protection industry on how to interpret and apply legislation and standards and how to address certain fire protection activities.

In early 2011, FPA Australia implemented a policy for the development and governance of technical documents that describes how the Association intends to capture technical issues and develop technical documentation to support its vision, mission and strategic direction.

Since then, FPA Australia has produced 12 documents on a wide variety of subjects, from the Association's position on the selection of residential smoke alarms to a reference document on cylinder safety caps for technicians working with gaseous fire suppression systems. There are over 20 technical documents currently in development, including some on evacuation diagrams and sprinkler system monitoring that are close to release.

What types of technical documents are there?

FPA Australia's technical documents are intended to inform members, the industry and the community about technical issues and, where appropriate, provide guidance on how to address them.

Position Statement

Publicly available, Position Statements outline FPA Australia's stance on specific technical issues.

Current position statements include:

- PS-01 Selection of Residential Smoke Alarms
- PS-02 Roof Systems for Flame Zone Construction in Bushfire Prone Areas
- PS-03 Adoption and use of AS 1851-2012.

Information Bulletin

Also publicly available, Information Bulletins aim to raise awareness of changes, concerns or other matters regarding the fire protection industry. Topics can range from technical to practice to regulatory matters.

Current Information Bulletins include:

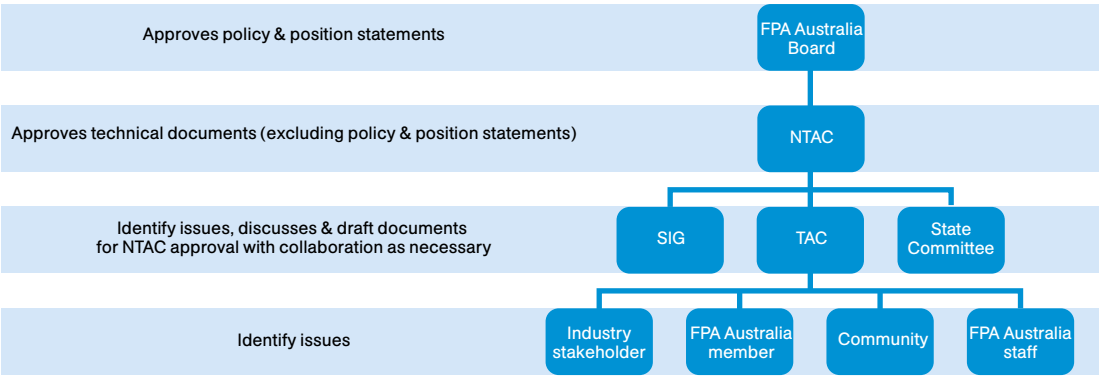
- IB-01 Fire Pump Battery Failures
- IB-02 Use of Genuine Components: Pre-Engineered Fire Systems
- IB-03 Mandatory Standards for Portable Fire Extinguishers
- IB-04 AS 3959-2009 Amendment No. 3.

Technical Advisory Note

The first of the members-only documents, Technical Advisory Notes provide interpretation of non-FPA Australia documents (such as standards, legislation and codes of practice) and advocate best practice for compliance and processes associated with these documents.

Currently there is only one published Technical Advisory Note—TAN-01 Requirement to Consider Simultaneous Draw from a Single Water Supply. However, there are several more Technical Advisory Notes in development.

Figure 1 Hierarchy of approval.



Five types of documents have been created to address this aim (below). While the Technical Advisory Notes, Good Practice Guides and Reference Documents are currently members-only documents, how they may be provided to non-members is currently under discussion.

Who creates these technical documents?

Although FPA Australia's Technical Department coordinates the development of these technical documents, many stakeholders can be involved.

As illustrated in the hierarchy of approval chart (Figure 1, above), issues that could be the subject of a technical document can be identified by:

- the community
- FPA Australia members
- FPA Australia staff
- FPA Australia Technical Advisory Committees (TACs), Special Interest Groups (SIGs) and State Divisional Committees
- industry stakeholders.

How are technical documents created?

Once an issue that could be the subject of a technical document is identified, a proposal must be submitted

Good Practice Guide

Also members-only, Good Practice Guides provide detailed advice on good fire protection industry work practices where other suitable documents do not exist or are silent on these matters.

There are currently two Good Practice Guides:

- GPG-01 Specification & Application of Intumescent Coating Systems for the Fire Protection of Structural Steel
- GPG-02 Completion of Extinguisher Service Records When Not All Tasks Can Be Undertaken.

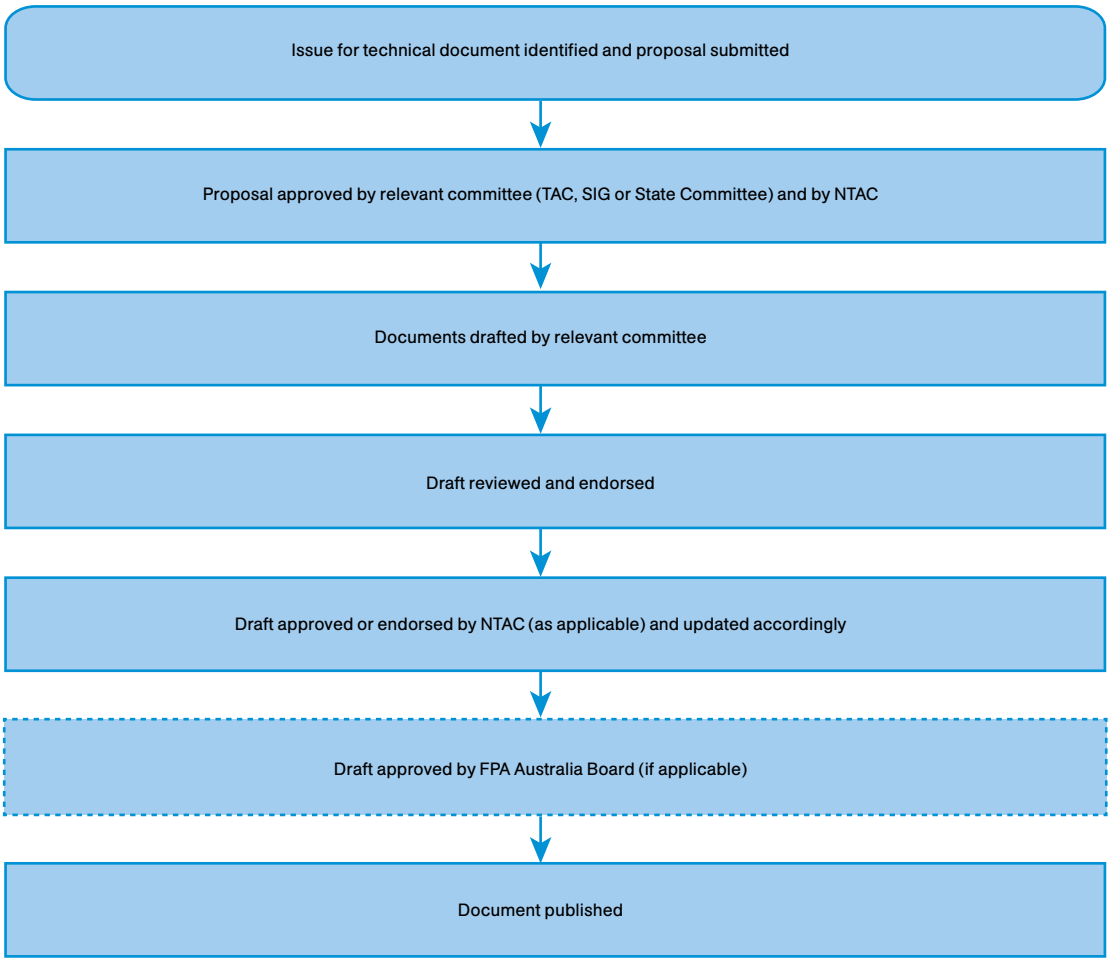
Reference Document

Where other technical documents express FPA Australia's view on an issue, Reference Documents simply collate existing information into a format that is of value to the fire protection industry. Reference Documents are also members-only.

Currently there are two Reference Documents:

- RD-01 Development and Governance of Technical Documents
- RD-02 Cylinder Safety (Transport) Caps.

Figure 2 Development of technical documents from identification of an issue to publication of the technical document.



to FPA Australia before a document can be developed. If endorsed by the relevant TAC (or SIG or State Committee, as applicable) and/or by the National Technical Advisory Committee (NTAC), work on the technical document can begin.

Technical documents are typically developed by a TAC, SIG or State Committee in conjunction with the Technical Department. Documents are then reviewed and endorsed by that committee (and any other relevant stakeholders identified), then put to NTAC. Information Bulletins, Technical Advisory Notes, Good Practice Guides and Reference Documents, can be published once approved by NTAC. Position Statements, however, must be endorsed by NTAC and then approved by the FPA Australia Board of Directors. The process is shown by the flowchart above.

Conclusion

The Association would like to thank all TAC members and other stakeholders that have contributed to the development and review of the currently published technical documents.

These technical documents have allowed FPA Australia to provide a far greater level of information and leadership to the fire protection industry. The documents are being recognised and used by FPA Australia members and other stakeholders. They are also increasingly coming to the attention of others within the industry, including regulators.

As already highlighted, many additional technical documents are currently being developed. More are being identified and worked on constantly to assist members and deliver on the Association's vision and mission. FPA Australia members can access technical documents via CONNECT (connect.fpaa.com.au). Non-members can access full Position Statements and Information Bulletins, as well as previews of member-only documents, via the Technical Information section of the FPA Australia website: www.fpaa.com.au/technical (then select technical documents).

If you would like any further information on FPA Australia's technical documents, such as how they are created, or if you wish to propose a new technical document, please contact the Technical Department at technical@fpaa.com.au.

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New research program takes shape

By John Schauble, Bushfire and Natural Hazards CRC Implementation Team

The Bushfire CRC has produced outstanding research over the past ten years. As the Bushfire CRC's federal funding comes to a close mid-2013, disaster management research will broaden under the new Bushfire and Natural Hazards CRC. The new research program is currently taking shape.

Just over four months since the Prime Minister announced the creation of a new Bushfire and Natural Hazards Cooperative Research Centre, a program that looks to the future of disaster research in Australia is rapidly taking shape.

The Bushfire and Natural Hazards CRC will build on ten years of invaluable research undertaken by the Bushfire CRC, for which Commonwealth funding ceased in mid-2013. Specific bushfire research will of course continue; however it will be augmented by a research program that extends into other natural hazards across Australia, including flood, earthquake, cyclone and tsunami events.

The federal government has committed $47 M over eight years to the new CRC. The states and territories have been asked to contribute to this expanded research activity, at a level at least equivalent to their financial support of the Bushfire CRC.

Without diminishing the significance of bushfire as the major threat to many Australian communities, this new approach acknowledges the devastating consequences that other hazards have on the Australian environment in almost every area of the country.

The experience of the past five years clearly supports the need for a broader research agenda. Since the Black Saturday bushfires in Victoria in 2009, deadly flooding in Queensland in 2010 and 2011 claimed 35 lives and left a damage bill of $2.3 bn. Widespread flooding affected Victoria in 2011 and 2012. In January 2013, on the tail of ex-tropical Cyclone Oswald, Queensland and northern NSW sustained a further $2.4 bn in flood damage.

Record heatwave conditions across Australia in 2013 were a precursor to another summer of fire. Tasmania endured its worst bushfires since 1967, with over 190 homes lost and one firefighter fatality. Fires again hit Victoria, with three lives lost (including one civilian) and 46 homes destroyed. More than 60 homes were destroyed in widespread bushfires across New South Wales.

Cyclone Yasi slammed into the north Queensland coast in 2011, wreaking damage estimated at $3.6 bn. Two Category 4 cyclones formed off the Western Australian coast in early 2013.

The expanded focus of the new CRC appropriately reflects the impact of broader natural hazards on the Australian community and the need for all emergency services and land managers to understand a range of hazards more thoroughly.

The new CRC will conduct coordinated and interdisciplinary research, including work with communities, to improve disaster resilience and reduce the human, social, economic and environmental costs from bushfires and other natural hazards.

The Bushfire and Natural Hazards CRC will undertake research that supports the development of cohesive, evidence-based policies, as well as strategies, programs and tools to build a more disaster-resilient Australia. The funding will enable the new CRC to provide a long-term research base that directly supports our emergency services and other government and non-government agencies as they work to prevent, prepare for, respond to and recover from natural disasters.

The new research organisation, like the Bushfire CRC before it, will be largely end user driven. This means that the various emergency service agencies, departments and non-government organisations around the country that become partners will have a significant say in the development of the research program. How the end users take up the research to the benefit of the broader Australian community is the key to the whole process.

The development of a Cooperative Research Centre research program is driven in part by the processes,

Partners in the CRC have a significant say in the development of the research program at the May workshop.

The new research approach acknowledges the consequences of all natural hazards.

PHOTO: VICTORIA STATE EMERGENCY SERVICE

rules and standards governing all CRCs. Establishing a 'public good' CRC in a compressed timeframe has presented some unique challenges.

Despite this, the Bushfire and Natural Hazards CRC research program is taking shape. Relationships have been developed between researchers and end users and the scope for broadening the program in future has been outlined.

The research program has emerged from two national workshops. The first, attended by jurisdictional representatives and hazard experts, established the broad parameters for future research. The second workshop, in late May, refined the agenda into a series of research 'clusters'.

The program is currently organised around seven of these broad clusters. These emerged from the natural links between 35 research proposals chosen from the 194 research submissions the Bushfire and Natural Hazards CRC received following a public call. The clusters, which are not hazard-specific, will help focus the dialogue between the researchers and end users.

The research clusters currently being considered are:

- Natural hazards prediction and monitoring
- Policy—economics and decision-making
- Resilience—people and community
- Hardening building and infrastructure
- Landscape and settlement vulnerability
- Sustainable volunteering
- Operational capability and agility.

Research projects under consideration range from the broad (Building Community Resilience in Northern Australia) to the more specific (Economics of Bushfires and Natural Hazards). Some encompass a range of disciplines and many lend themselves to collaboration across agencies and jurisdictions. The breadth of the program is challenging for individual agencies and entire states and territories.

It is expected that there may be further changes to clusters as collaborations are established and projects are further refined with end user input.

Gaps in the research program were identified at the second workshop. Since then, researchers and end users have noted further gaps. This was inevitable given the short time frames, and work is currently underway to priortise these gaps.

The Bushfire and Natural Hazards CRC Limited was established as a company in May, with the inaugural Board of Directors appointed: Naomi Brown as interim Chair, as well as Tony Sheehan, Commonwealth Attorney-General's Department, David Place, South Australian Fire and Emergency Services Commission and Stuart Ellis, AFAC. This Board will be instrumental in finalising the immediate research program. The agreement with the Commonwealth was also signed—having an agreed high-level research program was central to this.

Between July and November, end users, researchers and the Bushfire and Natural Hazards CRC Board will work together to help to better scope the research program, taking into consideration funding constraints and other factors. Over the eight-year life of the CRC, other projects can be added to fill gaps and meet emerging needs.

All research proposals are to be finalised by the end of September and the first research should begin in October. A final research program will be developed by November, with variations to the formal agreements. This will address some of the gaps identified in the current program.

The creation of the Bushfire and Natural Hazards CRC marks a new and exciting phase in bushfire and natural hazards research in Australia … and this is just the beginning.

The new fire danger rating system will improve the ability of the fire and emergency services agencies to warn the public about the risk of fires.

Science adds value to danger ratings

PHOTO: DEPARTMENT OF FIRE AND EMERGENCY SERVICES, WESTERN AUSTRALIA

By Nathan Maddock, Bushfire CRC Communications Officer

A new science-based fire danger rating system is being developed by the Bushfire CRC, working with the Attorney-General's Department and all states and territories.

Across Australia, fire agencies use the Forest Fire Danger Index (FFDI) and Grass Fire Danger Index (GFDI) to assess the risk of fire. These indices describe the conditions that allow fires to start and continue burning, taking into consideration the basic weather conditions. They were developed largely in the 1950s and 1960s to determine the risk posed to forestry assets. They were not developed to assist in warning the community, and they do not account for all fire risk factors. For example, topography, fuel availability and fire location are not included in either the current FFDI or GFDI. This means that the indices cannot give a complete account of the potential fire danger in today's world, allowing for appropriate risk management and firefighting decisions.

But this is changing. Two years into a multi-year research project, the Bushfire CRC, the Commonwealth Attorney-General's Department and all states and territories are working to implement a new scientifically based fire danger rating system. The project is part of the Australian Government's $3.6 M National Emergency Management Program, with the Bushfire CRC contracted to complete the research.

"The goal is to implement a versatile, scientifically-based fire danger rating system that can be used by each state and territory. It will use the most up to date science to provide timely and meaningful warnings to the community of the impending level of bushfire danger," said Michael Pahlow, Assistant Secretary of the Attorney-General's Capability Development Branch.

Toward a public warning system

Putting this into perspective, the current fire danger rating system is used by the fire agencies and the Bureau of Meteorology to communicate fire danger warnings to the public. Additionally, fire agencies determine the need for Total Fire Bans, which in turn enables agencies to determine the resource levels needed to manage fires and protect people and community assets.

However, the current system has significant limitations, with the science behind it not sufficiently robust. Nor does it account for all the factors that are now available for calculating risk, making it only partially fit for the purpose required.

The new fire danger rating system will use a series of discrete modules to calculate aspects of fire risk. These modules will measure:

- fire weather indices such as landscape moisture and atmospheric conditions
- fire behaviour indices such as terrain and fuel characteristics
- fire damage indices such as measures of vulnerability and extent of exposure to fire
- ignition factors such as fire history and ignition mechanisms
- social factors such as the potential impact of fire on communications and the community.

Deputy CEO and Research Director of the Bushfire CRC Dr Richard Thornton said the project addresses a

recommendation from the Victorian Bushfires Royal Commission.

"This is a nationally significant research project.

"While the Royal Commission findings were largely based on the Black Saturday bushfires, its recommendations encompass the nation. The research is helping to forecast fire risk in a much more accurate way."

The fatalities factor

Reflecting the need for the new fire danger rating system to indicate the potential for damage to a community, analysis of the 825 known civilian and firefighter fatalities recorded from 1901 to 2011 has been undertaken in partnership with CSIRO. This is the most comprehensive dataset of these fatalities ever assembled.

The analysis of these fatalities has focused on the relationship between where the death occurred, the arrival of the fire to that location, weather conditions, proximity to fuel, and the person's activity and decision-making leading up to their death. From this analysis it is evident that fire weather and proximity to bushland are very strong drivers for defining the potential for fatalities to occur.

Eighty percent of all fatalities occurred within 30 m of bushland, and 50% of all fatalities occurred on days where the fire danger index exceeded 100. The proximity to bush will be taken into account in the new fire danger ratings, which can be localised to specific towns.

By the very nature of life in Australia, our culture includes several iconic bushfires that have all occurred under very severe weather conditions. Black Friday in 1939, Ash Wednesday in 1983 and Black Saturday in 2009 were all horrific bushfires that have made their mark on our way of life. Australian bushfire fatalities are dominated by fires like these. So much so, that in 110 years, 65% of all civilian fatalities have occurred on just ten days.

Dr Thornton believes we need to know more about the days on which these large number of deaths occur.

"Combined with the ability of being able to issue fire danger ratings to individual towns, increasing our understanding of these large events will allow for a substantial advancement in being able to not only help communities understand their level of fire risk, but communicating that lives could be lost should we see conditions like those that were experienced on Black Saturday," he explained.

As well as taking fatalities into account, the new system also needs to be able to integrate the probability of property loss. Work in this area is being undertaken with the assistance of the Centre for Risk Management of Bushfires at the University of Wollongong. This study aims to deliver a spatially explicit framework capable of generating daily maps representing the distribution of the probability of property loss down to an accuracy of 10 km. This will further allow fire agencies to better target warnings and community advice.

Weather forecasting

The role of weather forecasts is also being refined further.

Part of this has been achieved by calculating the long-term average for a comprehensive set of fire danger indicators, undertaken by the Bureau of Meteorology. These data take in the period from 1979 until now, representing the most complete nationwide assessment of fire weather ever undertaken in Australia.

Dr Thornton says this as a major advancement in fire weather science in Australia.

"This will highlight which indicators are the best predictors of bad fire-risk days across the country. The time elapsed since our current system was developed is large, and the leaps in the science great. Our knowledge will be greatly improved if we can more accurately predict days like Black Saturday even further ahead than we can now.

"The next step is then to try to determine a better index to capture these factors," he said.

The summary reports taking in Australia's bushfire fatalities, the probability of property loss and fire danger indicators are now available on the Bushfire CRC website by searching for 'fire danger rating review'.

The current fire danger rating system takes into account basic weather conditions, but does not account for all fire risk factors. The new system will give a more comprehensive account of potential fire danger.

Aspirating smoke detection in industrial and other harsh environments: Part 2

by Paul B Leslie
Special Practices Manager, Xtralis

Aspirating smoke detection in industrial and other harsh environments: Part 1 (*Fire Australia* Autumn 2013) looked at the correct application of fire detection systems in industrial applications, where systems must withstand harsh environments. Here, part 2 considers the approach for installing fire detection equipment, particularly aspirating smoke detection systems, in these environments.

Invariably the approach taken by people who design or install detection systems in industrial applications tends to be much the same as that taken when dealing with cleaner environments. Minimal thought is given to the actual site application. There is limited understanding about the facility, the processes that can take place or the environmental conditions, inevitably leading to the wrong system being installed.

Site survey

A thorough site survey of the facility is fundamental to ensuring the correct system design—a critical step that should be undertaken when planning an aspirating smoke detection (ASD) system. Of course this is not always possible, particularly when the project has not yet been constructed. However, if possible, a site visit should be made to best understand the site conditions. This should thoroughly involve the client.

The advantage of client participation is that many things are revealed about the site that may not be evident when you are simply doing a walk around, or designing from drawings.

Some points to consider when conducting a site survey are:

- building height and access to detection
- construction of the building or application and of neighbouring businesses
- fire hazards or risks in areas of concern
- production processes and activities
- ventilation—whether natural or forced
- what takes place—how, when and where
- working operations or changes throughout the year.

Get to know the environment by checking:

- airflow—movement and speed
- contamination—dust, smoke or other airborne pollution, and chemical contaminants
- local climate—summer and winter temperatures, stratification, humidity and moisture.

Ensure client involvement by:

- asking questions—ensure the end user understands what can be offered, including the benefits and limitations of the proposed system
- drafting a brief letter or report of your findings and intentions
- setting down details so all parties are clear as to what the system can and cannot do.

Smoke testing and design considerations

Uncommon as it is, smoke testing is the best way to determine the way air behaves in a given environment—but testing should only be conducted with the approval of the client. If possible, have the client present. A greater understanding of the site conditions is possible with smoke testing, and effectiveness of early detection can hinge on where detection points (ASD sampling points) are located.

Each application is individual, so will present different conditions from building size and shape, roof

Different types of environments that may be encountered in a site survey.

Onsite smoke testing determines how air behaves.

height, machinery, equipment and processes. All of these affect the way air moves. Is air movement always consistent? What happens when doors or shutters are closed? Does the pattern change if they are left open? The pipe system layout must be harmonious with the air movement. After all, this is what ASD is all about.

Many applications will be straightforward, others more difficult and some will even require special engineering techniques to operate in conjunction with the ASD system. Regardless of the type of environment, to find the correct location of the ASD sample pipe and holes, smoke testing should be completed.

Some applications will require a 'performance-based' approach. It might not be necessary to engage specialist fire consultants to engineer the design, but more simply, a practical or common sense view is to do smoke testing and give the system a trial run to evaluate its effectiveness.

There will be specified applications where meeting prescriptive requirements could be a hurdle if detection is to be effective. In these situations, consult with the appropriate authorities if a prescriptive requirement can adversely affect the detection capability. While fire system design in the main must comply with the requirements of codes and standards, prescriptive layouts are not always practical or the best way in which to detect fires in certain industrial environments.

Smoke emitters are typically the best way to conduct testing. They provide a good indication of air movement, but the test must be done in several locations to gain the best appreciation of air movement. Regin or Ventax smoke emitters, available in different sizes from air conditioning companies, are ideal for this purpose. Coloured smoke emitters are sometimes used to demonstrate the effect of smoke dilution to the client.

Sampling pipe installation considerations

While installation of the sampling pipe is important in any ASD application, it is perhaps even more so when installing in hostile environments. Because the sampling pipe network may seem somewhat insignificant, from time to time it is subcontracted to inexperienced installers who treat it as just another 'conduit run'.

An ASD pipe network is the foundation of the system and a good layout is critical to the overall performance. Sampling holes in industrial ASD system designs are typically larger than those used in cleaner environments—generally around 3 mm or larger—and performance must be carefully modelled using appropriate software. It is also recommended that holes be 'countersunk' to minimise contaminant build-up around the hole. This helps by creating a mini venturi effect, allowing contaminants to be easily drawn back to the detector, where they are filtered.

Airflow

Airflow is the very essence by which this technology functions, so why is it that many forget this basic concept?

No matter what type of detector or controls, or what type of flow sensing is used within a detector,

Sampling pipe—typical countersunk hole.

Sampling pipe—hole without countersinking.

Sampling pipe—hole dirty but not blocked.

implementing a few simple measures can result in a more stable system. A well-designed pipe network can also help find any airflow faults that may be associated with environmental disturbances.

The smoother the airflow within the pipe, with minimal interruption and friction, the better the system will function. The sampling pipe leading directly into the detector ports should be straight and without interruption. This means at least 500 mm of free pipe should be installed between the detector—before any bends or inline components such as pre-filtration units are added.

This consideration rules out any possible flow turbulence that may be created when air is immediately drawn into the detector.

Some other simple measures include:

- Ensure all installed pipe runs are straight, without sagging, and are fixed securely at appropriate intervals. So be it if this means closer spaced fixings than required by local codes or standards.
- Consider expansion and contraction joints—sampling pipe at roof level in metal buildings will inevitably be influenced by building movement.
- Always install long-radius sweeping bends to assist flow and minimise contamination build-up at bends. T-joints and elbows, while suitable in clean applications, are not recommended in industrial environments.
- Minimise pipe joins and ensure the correct glue is applied for the type of pipe used, and make sure to apply the glue sparingly.
- Consider catenary cable where access may be difficult or where obstructions create the need for more bends. Sampling pipe affixed to catenary cable allows straight and true installation of pipe.
- Consider hole orientation.

ASD system engineering

There are many ways in which to approach, adapt or improve the performance of ASD in industrial facilities to ensure the best possible performance. Many system installations are straightforward; others, due to their location, operation and site conditions, require some level of system engineering. That means additional measures are needed to perform reliably within the environment.

This task is made considerably easier if the detection equipment is purpose-built for harsh and difficult environments.

My experience over the years has shown that when designing ASD systems for the industrial sector, it's important to be conscious of the possible pitfalls, often unforeseen by those with little ASD installation experience or those that have only applied ASD in clean environments.

Temperature variations and humidity can create unforeseen issues. Sometimes a detector can only be located in an area where high and low temperature conditions exist. Applications in hot, cold, humid or wet conditions may require some system engineering. Protecting the pipe network from temperature extremes may mean installing specific types of pipe. Metal can be used. Copper, stainless steel and other similar pipe has been used successfully.

Equipment may need protective enclosures to guard against tampering, process wash-downs, steam or any other on-site environmental condition. Detectors may require cooling, which can be accomplished through simple thermoelectric cooling. Chemical pre-filters may be needed to minimise the effect of background air contamination before it enters the detector. Whatever the conditions, in most situations ASD can be adapted.

The importance of selecting the correct technology will be highlighted in the next issue of *Fire Australia*.

Paul Leslie has more than 35 years experience in security and fire, 20 of which have been spent in the area of aspirating smoke detection. Mr Leslie is the current chair of the FPA Australia Divisional Committee in Queensland. He has a dedicated interest in the fire industry and strong involvement in the Association. He also serves on several Australian Standards committees. His knowledge and expertise has included the global design and support of ASD systems in many wide and varied applications.

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What does success look like for fire and emergency services?

By Paul Considine, AFAC Manager Operations, Urban Fire and SES

How do we know if fire and emergency services have performed well at an event? Perspectives on this may differ. Inquiries have taken varying approaches, and the goal posts do not always seem to be fixed. So, what does success look like?

This was the question that AFAC's annual Commissioners and Chief Officers Executive Forum examined between 5–7 June at the Australian Institute of Police Management in Manly, Sydney. There was no expectation that the question could be answered in three days. By holding the conversation, however, Forum participants sought to frame the problem and start working towards some answers.

In recent years, reviews and commissions of inquiry have considered the performance of fire and emergency services in the face of broad-scale natural disasters. Although the process is not always a comfortable one for AFAC members, the value of inquiries in contributing to learning outcomes has always been recognised. What the emergency management industry has not articulated before is what it considers are the elements of managing a successful operational event. There needs to be some objective yardstick against which inquiries and reviews are assessing the performance of agencies. Simply to assert, in the course of an inquiry, that an agency should have done certain things or achieved certain outcomes is of limited value if it cannot be related to an accepted understanding of what success means. The aim of the Forum was to explore what the conditions were for an agency to be seen as having achieved operational 'success'.

The Forum hosted a preliminary discussion on some different success measures, then heard the input of senior and respected figures in the fire and emergency services field. AFAC was fortunate to secure the kind cooperation of Dr Michael Eburn of the Australian National University, Victorian Emergency Services Commissioner Michael Hallowes, Director-General of Emergency Management Australia Mark Crosweller, Emergency Broadcasting Manager of ABC Local Radio Ian Mannix, Mayor Steve Jones of Lockyer Valley in Queensland, and Commissioner Paul White (formerly of Northern Territory Police, Fire and Emergency Services, now South Australia's Liquor and Gambling Commissioner).

In the preliminary discussion, participants noted different ways in which success is currently measured. The Productivity Commission's Report on Government Services provides a data-driven assessment of the year-to-year activity of services, including information on the cost of providing those services. This statistical approach is undoubtedly relevant at one level of government decision-making. It does not tell us much, however, about how a service may have performed in an individual incident or disaster. So the search for 'what success looks like' needs to extend beyond the statistics and into some more overarching concepts.

The Forum was also clear that part of the discussion should be about shaping the expectations of the public, which fire and emergency services agencies serve. There is no point asking if agencies have been successful after an event, if people had wholly unrealistic expectations before the event of what fire and emergency services could do—of course people may be dissatisfied if unrealistic expectations have not been met. That may not reflect operational failure, but it will not 'look like success'. So, an ongoing and forthright conversation with the public and governments about what the sector can and cannot deliver is vital to a realistic assessment after an event of whether 'success' has been achieved.

Different perspectives on 'success'

The invited speakers all brought different, but complementary, viewpoints on 'success' to the discussion. Dr Michael Eburn, in considering the legal landscape, pointed out that the law does not require a comprehensive 'saving' of everyone involved in disasters: there is a recognition that fire and emergency services have to work within the constraints of their budgets and of the reality of emergencies. Overall, the message was that the test of 'success' as measured by legal liability for loss and damage is not as harsh on emergency services as some may think.

Michael Hallowes has addressed AFAC Executive Forums previously about his work creating Emergency Management Performance Standards for Victoria. In this framework, agencies are told what is expected of them but not how to achieve it. Mr Hallowes emphasised the need for community resilience to form part of this discussion, and that the public must understand that there comes a point in natural disasters when government cannot step in to save them—a clear reflection of the Forum's previous discussion about shaping expectations.

Mark Crosweller's very thought-provoking presentation focused on the behaviours of fire and emergency services as roadmaps to success—or, conversely, to failure. Mr Crosweller argued that the fire and emergency sector must:

- get better at respecting the nature of the hazard
- unite in the face of adversity
- exercise humility
- show compassion—connect with the public we serve
- grant forgiveness—to ourselves, and learn from what has happened and move on.

Ian Mannix addressed the Forum very much from a media and community point of view. Success is about keeping people informed, about getting the information from 'inside the room, [to] out of the room'. Success is about not leaving an information vacuum for the community to fill up, and giving all communities all the information they need to minimise loss and damage. Mr Mannix's contribution was powerful in outlining what had to be done in the information environment to avoid being unsuccessful. While acknowledging what has been achieved and the role of ABC Local Radio in that, there is clearly more work to be done across emergency services to build on the extensive developments in information management and flow of the last decade.

Steve Jones held the Forum's attention with an account of his community's experiences in the 2011 Queensland floods. For Mr Jones, 'success' was the community coming together, where government could not (and after the event, where sometimes it would not), to survive adversity and emerge stronger than before. Mr Jones' address was notable for its lack of expectation placed on government—rather, it was a testament to his personal resilience and that of the people he represents.

Finally, with some very personal reflections on a career spent in policing, Commissioner Paul White identified a number of critical points to take into account in pursuit of success. The bottom line for him was that the successful executive will leave his or her organisation better than they found it—there is no finish line at which final judgement will be given, and success is an ongoing concept.

What now?

At the end of three days' discussion, the Forum did not expect, and had not found an answer to, 'what success looks like'. But it did perhaps get closer to clarifying the question. Key findings were:

- The discussion has to be tailored to the audience—'success' means different things in different contexts.
- Engagement with the community before major events is crucial. Community judgements of success will depend on expectations.
- The industry must be forward-looking in its discussion of success. Using past conclusions will not be appropriate in the face of future operational challenges.
- Information management is key.
- The primacy of life remains the most critical factor in what emergency services do.

So where to from here? Forum participants felt that a 'tick sheet' of criteria for success was not appropriate. Instead, AFAC will produce a more detailed discussion document from the Forum's work. The document will consider how to carry on the conversation with the community, governments and other stakeholders about what we can and should do to achieve operational 'success'.

Participants at the Commissioners and Chief Officers Executive Forum, held at the Australian Institute of Police Management in Manly in June this year.

Living in a fire landscape

The research shows that 'home' is much more than a house. People think of home as including outdoor places—especially gardens, neighbourhoods and surrounding bush.

Understanding how people view their surroundings—including nearby bushland—as part of 'home' helps researchers better address community risk and bushfire education.

By David Bruce, Bushfire CRC Communications Manager

"As a fire manager it's always been interesting how I can look at the landscape and a member of the community can tell me that they are seeing something completely different."
—MARK CHLADIL, TASMANIA FIRE SERVICE

Picture the native vegetation of the Adelaide Hills, the Dandenongs, the Blue Mountains, the Perth Hills—all around is fuel for a bushfire. But the natural landscape is also the main reason why people live in such places.

Bushfire CRC researchers are gaining a better understanding of how communities in peri-urban areas perceive native vegetation as both a risk and a benefit.

The lead end user in the project *Fuels and risk planning in the interface* is Mike Wouters of South Australia's Department of Environment, Water and Natural Resources. He believes the research is important for fire and land management agencies addressing the issue of community risk and bushfire education.

"It is essential to understand the reasons why people live in these bush areas and why many do not see the vegetation as fuel. This will help them [fire agencies] understand why, for example, communities might oppose fuel reduction burning and other fire mitigation measures."

Mapping how and where people live

Researchers at the University of Melbourne are using what they call social–ecological place mapping as a starting point to engage with community groups about fire risk management practices. Workshops have been run in South Australia and Victoria.

Starting with a blank sheet of butchers paper, the researchers ask the group, with input from all individuals, to draw where they live and the major features of the built and natural landscape.

As lead researcher Dr Ruth Beilin, Associate Professor in the Department of Resource Management and Geography, explained, participants are then asked to add fire to this complex social and ecological picture.

"This map is a visualisation aid for memory. Our researchers ask, 'why did you put this on the map, why is this thing important to you?' So, the mapping process is coupled with an in-depth interview as we go along," said Dr Beilin.

"If you are an interviewer in a face-to-face interview and you ask a question, the person focuses on you with their answer. But if you are an interviewer watching them draw a map they never leave their own space. They are always interacting with what they are drawing because they are using that as a prompt, not you."

By the end of the session, the butchers paper is a complex mix of features, including the individual's home and property, adjoining roads, bush and parkland, buildings and other structures, rivers and hills — and past evidence of fire and the likelihood of future fire impacts.

"The mapping is a visual research tool. And it is a qualitative tool that gives a greater richness and depth than traditional surveys. It is a catalyst for people to access their deeply held memories and the values that underpin their social understandings of where they live."

How it works

This research project incorporates two broad domains of knowledge—rational knowing and intuitive knowing. Rational knowledge is what we know as objective scientific knowledge, but intuitive knowledge is more linked to the stories that people have of places—the memories, the social meanings they attach to places and sometimes the traditional or local practices that are attached.

The aim of this research is to understand the intersection between an ecological and biophysical science-based rational knowledge of bushfire and a place-based local knowledge that is social, grounded in daily practices and is often intuitive.

"We know where to find objective knowledge: we find it in 'facts', data, 'truths', and it is often associated with scientific ways of knowing. But intuitive knowledge is a little harder to access for researchers and in engaging in community activities," said Dr Beilin.

"Our research considered how to bring together the social and ecological ways in which people engage with their local places in relation to fire risk and management practices. To do this we explored how mapping and mapping 'your' places is a useful tool to connect these two types of knowledge.

"We argue that this sort of visual method—place mapping that is combined with an interview process, which itself engages with the local person's construction of their landscape—presents a better way to engage with communities and their fire management practices and understandings of fire risk."

To understand how this works, it is necessary to understand three underpinning ideas:

1. how people use memory to construct their landscape
2. what it means to talk about 'home'
3. how these concepts can be harnessed by fire and land managers to build a community that is more

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resilient to the need for reorganising and improving their fire mitigation practices.

Memory

The research looked at the idea of social and ecological memory. The workshop participants draw from their rational memory as they build their map, but are questioned as they do this. The questions attempt to understand the underlying decision factors and values. The map, not the interview process, is the focus of their attention.

According to Dr Beilin, this process allows for deeper values and memories to surface, and these are not necessarily part of their rational knowing.

"One of the things you see during the mapping process is negotiating memory. Even though there is a diversity of construction of parts of the map, we note that with individuals and with groups there is also a tying it together so they seem to arrive at a 'certain' story in the end. What they choose to remember and what they choose to forget is important.

"What this shows is that memory is as much a forward construction as it is a reconstruction of the past. Memory is not just what we remember; it is something we actively create, alone and with others."

This is an important finding for people trying to understand and change community behaviour. "We are often passive in the way that we think about other people's stories, whereas if you are thinking about changing those stories you need to be more active in listening to the construction of those stories."

Home

This research is about how people construct a sense of place in the landscapes they live in. After the researchers did the interviews, they realised that the most significant place for people was the place they called home. When it comes to bushfire, researchers and fire managers tend to think about house and home as interchangeable concepts.

But, as co-researcher Dr Karen Reid explains, home is much more than your house. A house is where you live, but a home is how you live in the landscape.

"The research showed that what people think of as 'home' includes outdoor places—especially their gardens, but also their neighbourhood and surrounding bushlands. So home, really, is found in the whole of the landscape, which is quite different from how home has been thought about up until now," said Dr Reid.

But it goes even further. In their gardens, people often emulate what they see in the landscape around them. Sometimes this means gardening with native plants to reflect connection with the local ecological systems seen in national parks. It can also mean fitting in with what your neighbours are doing—showing yourself to be a good community-minded neighbour.

This behaviour has meaning for fire managers and the notion of shared responsibility in a landscape that is on one hand somebody's home and on the other public land and infrastructure. The researchers suggest that this is why there is sometimes a tension between the requirements of homeowners to mitigate the risk before a fire and the lack of control during a fire. The homeowner is granted that control before a fire but loses that control once a fire starts. Fire agencies don't want them at home and expect them to leave.

Some important implications for fire managers arise from this mapping process. Being at home or returning home during fire risk is about protecting values greater than just the house. It's about the home being the whole of the landscape.

Resilience

After a disaster, our tendency as a society is to resolve to 'bounce back' and rebuild the community and the landscape as it was before. The researchers think this is because people feel safe with the familiar landscape and because the pre-disturbance landscape is assumed to have been an ideal 'stable' state. However, resilience theory suggests that social and ecological systems are dynamic rather than static. There are, therefore, multiple pathways to recovery after a disturbance like bushfire.

Rather than 'bouncing back', adaptation to the new post-disturbance state may help communities better respond to future shocks. But adaptation is difficult to achieve, and one reason is that communities need to be able to imagine alternative future landscapes.

Place mapping may offer a method that can help agencies and communities recognise how dynamic their landscapes are and to imagine new ways of managing them. During the mapping process it emerged that on the butchers paper people began to construct what they perceived as familiar and stable landscapes, and tried and true ways of getting things done.

However, under questioning by the researchers, the individuals were prompted to consider alternatives to their scenarios. For example, the person may draw their map with the bushfire coming from the north, because that is the accepted wisdom in the area. But what about a fire from the south? This may be an anomaly, but it may also happen, or may have happened in the past.

"This becomes a transition moment in the interview, when the interviewee explains how the fire from the north may not be the only direction. We ask, 'What will you do now?' What follows is that another fire plan then emerges. And we see that it is through the mapping process that another path opens up for negotiation on fire risk in the area," said Dr Reid.

Developing your own workshop

This research aims to help fire planners and community engagement managers better understand how people view the landscape in different ways. By applying the interview techniques of social–ecological mapping, fire agencies can use this understanding to ensure that all parts of the community are better prepared for fire and other emergencies and better able to recover from disastrous events.

The Bushfire CRC is developing a guide for agencies to run their own social-ecological mapping workshops in their communities. Resources can be found at www.bushfirecrc.com/projects/13/fuels-and-risk-planning-interface.

Mapping the important features of built and natural landscape, including fire as part of the landscape

"I found the workshop really helpful in trying to understand how people use mapping to interact with their memory, the local ecology and the social surroundings of their community. As a fire management planner I will be using the mapping to understand how we can better address risk in terms of what the community sees as well as what we see as fire managers."

—PARTICIPANT FROM SOUTH AUSTRALIAN WORKSHOP WITH THE DEPARTMENT OF ENVIRONMENT, WATER AND NATURAL RESOURCES

HEAT RELEASE RATES

by Barry Lee OAM

Heat release rate (HRR) is defined as the amount of energy that a material produces per unit time when burning. The term 'energy release rate' is more appropriate because heat, strictly speaking, is energy transported as the result of a temperature difference (more specifically, rate of change of enthalpy due to chemical changes at 25°C and one atmosphere pressure).

For most materials the energy release rate changes with time. The fire hazard of materials can be directly correlated to the HRR. Accordingly, HRR has been identified as the most important parameter for predicting fire hazard, and it is commonly used to rank a material's reaction to fire. Because of the radiation feedback on the fuel surface, the rate of heat release also determines the rate of fire-spread. HRR is measured in watts (W), kilowatts (kW) or megawatts (MW), but usually kilowatts (kW = kJ/s).

HRR may be determined using several techniques: measuring the fuel weight loss, measuring the mass flow rate and gas concentrations in an exhaust duct connected to a test burn tunnel, and by oxygen consumed under normal atmospheric fire conditions (this helped to establish a solid foundation for oxygen consumption calorimetry).

Bags and their contents can often burn fiercely and are easy to ignite.

Heat release rates applicable to passenger goods vehicles are equivalent to a petrol pool fire of 8 m^2.

Many factors need to be considered for calculating available safe egress time (ASET).[1] These factors include HRR, building arrangement and smoke toxicity. HRR is the most critical factor, but is subject to uncertainties associated with fuel layout, initial ignition location and many other variables. For this reason, the HRR values given in this article, although widely accepted, should be regarded as approximate.

Values of heat release rate

Selected HRR values given below have been derived from a number of sources. When selecting a HRR for design purposes, fire safety engineers should undertake appropriate due diligence to ensure the selected HRR can be demonstrated as being appropriate for the application.

Passenger baggage

Bags and their contents can often burn fiercely and are easy to ignite. The result is that a normal quantity of baggage on a train, for example, represents a serious fire load. This is not unlike the problem presented by furnishings and fittings in buildings. Airport and aircraft baggage is similar. Once passengers have reached the airside area of a terminal and have checked-in their main baggage, they are likely to only have their hand luggage with them. Because of airline restrictions, hand luggage will be relatively small and therefore it presents a smaller fire load than checked baggage. Building Research Establishment (BRE) studies indicate that two carry-on bags burning simultaneously result in a fire with a peak HRR of 500 kW. For a trolley load of bags,

BRE suggests that a peak HRR of 1.1 MW is appropriate where no sprinklers are present.

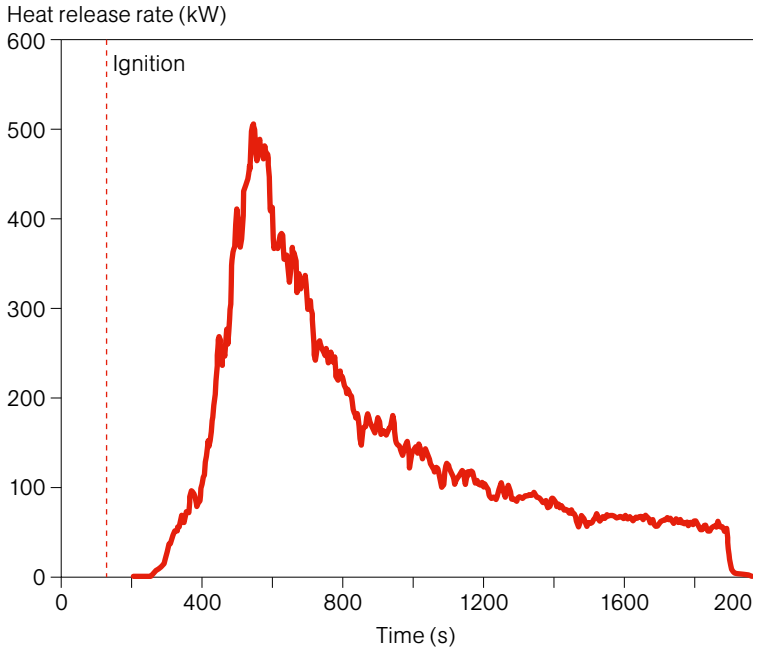
The assumed fire size applicable to a typical loaded aircraft cargo container is 7 MW.

Car parks and road tunnels

Literature surveys suggest that peak HRRs for single passenger cars are between 1.5 and 8 MW, although most of the real tests show HRR values less than 5 MW. When two cars are involved, the peak varies between 3.5 and 10 MW. Time to peak HRR is between 10 and 55 minutes. The peak HRR for heavy goods vehicle trailers varies from 13 MW to more than 200 MW, depending on the fire load of the goods. The time to reach peak HRR is in the range of 10 to 20 minutes. HRRs applicable to passenger goods vehicles (such as buses) range from 20 to 30 MW (equivalent to a petrol pool fire of 8 m^2), while HRRs applicable to flammable liquid tankers range from 200 to 300 MW. Recent research by the BRE suggests that a much higher fire load may be expected in car parks where automatic fire sprinklers are not installed, indicating that 16 MW may be reached at peak. For car parks protected by an automatic sprinkler system, the Standard BS 7346-7 advises a 4-MW design fire load, while an 8-MW load is recommended for car parks without sprinklers.

For rolling stock (for example, train or subway), HRR varies from 7 to 43 MW and the time to reach peak HRR varies from 5 to 80 minutes.

Figure 1 Heat release rate of carry-on luggage.



Shipboard fire sizes

Cabin fire tests conducted for the International Maritime Organization (IMO) point to HRRs in the range of 8 to 10 MW for unsuppressed burns. Fire sizes can be large for shipboard machinery spaces (in excess of 20 MW).

Different loads are recommended for car parks protected with automatic sprinker systems than those without.

Christmas trees represent a serious fire risk. Choose a fresh-cut tree that is not shedding its needles. Cut the trunk at an angle and install the tree in a large, deep, non-tip stand well away from in-use fireplaces, exits and heat sources. Be sure the tree has a constant supply of water. Dispose of the tree immediately if it becomes dry. If using an artificial tree, be sure it is flame-retardant.

Christmas trees (natural vegetation)

The Technical Research Institute of Sweden (SP) has cautioned that a Christmas tree stood indoors and dried out for a couple of weeks over the festive season presents a serious fire risk. Such a fire develops extremely rapidly, with a very high HRR. Tests performed by SP showed that a dry Christmas tree turned into a blazing fire in just a few seconds and developed a maximum thermal output of no less than 1200 kW. This output would be sufficient to produce flashover in a small room.

Pan and spray test fires

Heptane is a frequently used fuel for fire equipment and systems performance testing. The following examples give some idea of the HRRs involved. The HRR applicable to a fire in a 0.3-m square pan is approximately 50 kW, and for a 0.7-m diameter circular pan fire it is about 500 kW. A heptane spray fire (5.8-bar spray nozzle pressure) yields a HRR of 520 kW. Fire in a 250-mm square pan containing 0.75 kg of methylated spirits represents a HRR of 30 kW, while the HRR applicable to fire in an identical pan containing 0.49 kg of hexane is about 115 kW. Normal HRR from a 4-m^2 diesel pan fire is 6 MW.

Fires in household items

A UK statistical summary pointed out that the British thermal units (Btu) given off by wood, cotton and paper in a house fire of the 1950s averaged around 8,000 Btu per pound. Polyurethane, the soft plastic, gives off 12,000 Btu per pound. Soft plastics are foam cushions, carpets and the like. The hard plastic polystyrene from which TVs, DVD players, toys and many other items are made gives off 18,000 Btu per pound. Finnish testing with household freezer and refrigerator fires recorded HRRs in excess of 2,000 kW. Other HRRs of interest in the household context include free-burning upholstered chairs (1 MW), methenamine pill carpet (4 kW), waste paper baskets (10 to 40 kW), TV sets (0.35 MW) and wardrobes (5 MW).

Corn or cottonseed oil (cooking oil) in a 30-mm pan presents a potential HRR of 116 kW. HRRs of other household staples include butter (38.5 MJ/kg), animal fat (39.8 MJ/kg), olive oil (39.6 MJ/kg), castor oil (39.6 MJ/kg) and linseed oil (39.2–39.4 MJ/kg).

Retail shops

As an example, fire load surveys in retail sports stores noted the practice of displaying bulky items, such as sports jackets and tracksuits, on wall-mounted racks ranging from floor to ceiling. This leads to high fuel loads with significant potential for rapid upwards fire propagation. BRE fire tests[2] were undertaken using simulated wall-displayed jackets in sprinklered and unsprinklered conditions. For the sprinklered test the fire grew until the sprinklers operated. The HRR at time of operation was in the region of 860 kW. In the unsprinklered test the fire grew rapidly until it reached a peak of around 6.8 MW, at which point the fire was extinguished to protect the test rig from damage.

In shopping centres, the potential fire size from specialty stores is significant at approximately 25 to 40 MW.

Schools

Surveys have shown that the mean fire load for classrooms in primary schools is 397.5 MJ/m^2, which is about twice that in surveyed high schools. The mean value of total fire load density for all surveyed rooms in primary schools was estimated at 426.3 MJ/m^2 and that for high schools at 313.7 MJ/m^2.

Tyres

The peak HRR from two rubber tyres is estimated at approximately 900 to 1,000 kW.

Wooden cribs

Because there is considerable variation in stick size and overall dimensions, general HRR figures cannot be provided for wooden cribs. However, an indication of HRR may be gained by noting that a wooden crib of dimensions 0.3 m x 0.3 m x 0.3 m yields an HRR of some 250 kW. A wooden crib constructed from six layers of 0.04-m-thick pine sticks (0.6 m x 0.6 m x 0.25 m high) yields an HRR of about 450 kW.

Scaling heat release rate

According to the Technical Research Institute of Sweden[3], HRR can be scaled up to a full-scale equivalent using rules based on physical relationships that have been developed on the basis of geometrical similarity. If the geometrical scale is 1:4, then the HRR has to be multiplied by a factor of 32 (45/2), and time must be multiplied by a factor of 2 (41/2). This means that the maximum HRR for a load of goods on wooden pallets would be 12 to 34 MW, depending on the quantity of goods, and 9 to 29 MW for cardboard boxes with plastic cups. The duration of the fire would be doubled.

References

1. Kong D et al., 2013, 'A Monte Carlo analysis of the effect of heat release rate uncertainty on available safe egress time', *Journal of Fire Protection Engineering*, 23, February 2013.
2. Clark P and Smith D, 2003, 'Hot Data', *Fire Engineering Journal & Fire Protection*, January 2003.
3. *SP Rapport 2008: 42*, SP Technical Research Institute of Sweden, 2008

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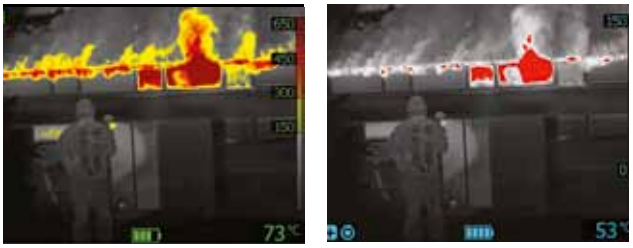

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Preparing our senior operational leaders

By Stuart Ellis AM, Chief Executive Officer, Australasian Fire and Emergency Service Authorities Council

In 2012, AFAC initiated the Strategic Command Program conducted at the Australian Institute of Police Management, Sydney. The program aims to support senior operational leaders and commanders who have been Incident Controllers and are now responsible for operations at zone, regional or state levels. It had been identified that beyond Incident Controller, there was little direct professional development for these senior officers, and this is one important contribution.

The AFAC Strategic Command Program (SCP) is focused on strategic-level command. Participants have the opportunity to examine and challenge some of their fundamental assumptions around their own leadership and control of operations, providing prospects for further personal growth and development. The course recognises and addresses the interdependencies between personal adaptive capacity, crisis command, strategic leadership and the building of high-performance organisational capabilities for emergency management. Each of these interdependencies is explored and examined, drawing on the experiences of current Commissioners, Chief Officers and external presenters, providing participants with enhanced capabilities.

The inaugural course was planned and facilitated jointly by the Australian Institute of Police Management (AIPM) and AFAC, as the result of a need identified by commissioners and chief officers. Representatives from emergency services across Australia and New Zealand, as well as police, attended the SCP. The integration of urban and rural fire services, State Emergency Services and land managers, together with Australian Federal Police officers, has proven to be a valuable learning environment. Greater involvement of police is anticipated in 2014.

One of the philosophies of the course was reflecting on the 70:20:10 learning approach. This recognises that our development components tend to be:

- about 70% from on-the-job experiences, tasks and problem solving
- about 20% from feedback and from working around good or bad examples
- about 10% from courses and reading.

The development of our operational leaders generally happens in three ways.

Three phases in the course

Thus, the course is a small component of the overall individual learning experience and seeks to draw on participants' operational capability, course-presented case studies and reviews. Working from this approach, the course has three main components:

1. pre-course focus phase, preparing for the residential phase
2. residential delivery phase, consisting of one week at AIPM's Manly campus
3. ongoing currency phase to maintain the capabilities of alumni.

Pre-course focus phase

In designing the course, consideration was given to minimise pre-course study while also limiting the residential phase to ensure the most effective use of

2013 Strategic Command Program participants

time by senior agency participants. The pre-course phase involves participants:

- completing specific learning tools developed by AIPM to indicate participants' readiness to commence the program
- completing pre-course reading
- identifying credible individual leaders that participants will subsequently discuss
- considering aspects of a personal command philosophy.

Delivery phase

Agencies need senior operational staff who can oversee multiple incidents concurrently, assess the competence of Incident Controllers while they are on-the-job, and gauge the effectiveness of incident response and information operations. These staff need to anticipate and manage the critical interplay of political and strategic concerns at key times during incident response, and maintain a credible and vital personal leadership approach that ensures their staff are working to the best of their abilities. The delivery phase is a combination of:

- presentations by industry leaders
- case studies of recent operational events and reflection on individual experiences
- further theoretical considerations
- studies on operational leaders
- development of an individual command philosophy.

Presentations by industry leaders are a critical element of the course delivery. Having existing industry leaders attending the program and sharing their experiences with participants is a particular strength of the course. It helps personalise the learnings for each participant. These presentations are the perfect contribution towards a personal command philosophy.

Evenings are spent discussing senior operational leaders and why they have been identified as being effective in their roles. This informal learning has become a much-anticipated element of the course program and assists participants identify leadership traits that motivate, generate respect and achieve results.

Developing a personal command philosophy provides a focus for the command and leadership elements of the course. It is through committing in writing to an approach, identifying how they can further develop, that individuals genuinely reflect and best use the time at Manly to help them in future command roles. Feedback from participants about this approach has been outstanding.

Currency phase

The currency phase includes participation in an online forum. For the 2013 course, those who participated in 2012 will be involved in a webinar to ensure they are abreast of recent operational learnings.

Conclusion

The three-phase program structure, agency integration of participants, varied program elements and focus on individual reflection all contribute to making the SCP a valuable contribution to the development of senior operational staff. If you are interested in attending courses that may occur later in 2013 or in 2014, contact Benjamin Smith, Project Officer Learning and Development, at the AFAC office to register your interest.

The AFAC Strategic Command Program (SCP) is conducted by AIPM and the AFAC CEO and is designed for senior leaders responsible for managing operations at zone, regional and state levels.

FIRE PREVENTION BY CONTROLLED CONTINUOUS OXYGEN REDUCTION

By Ovidi Lasheras, Technical Manager, LPG Fire Australia and ORFPS Working Group Chair, with assistance from the Working Group

Oxygen reduction fire prevention systems are a new approach to fire suppression—they prevent fire in the first place.

A relatively new technology, which has already gained widespread acceptance overseas, is now available in Australia. Taking a radically different approach to traditional systems, which are designed to reduce the consequence of a fire after it has begun, oxygen reduction fire prevention systems (ORFPS) are designed to prevent a fire from occurring at all. ORFPS are in use in a large number of noteworthy applications throughout Europe, the Middle East and now Australia.

Concept

ORFPS are designed to prevent a fire from ever occurring by reducing and maintaining oxygen concentrations at a level below which most fuels will burn.

Normal atmospheric air is a mixture of nitrogen (78%), oxygen (21%) and other gases such as carbon dioxide and argon (1%). This mixture provides enough oxygen to support life and also the propagation of fires. However, if the oxygen concentration is reduced below approximately 15% by replacing it with more nitrogen, the resulting mixture will still provide humans with sufficient oxygen to breathe normally while simultaneously preventing most fuels from burning.

How can an oxygen-reduced (hypoxic) atmosphere still be safe for humans?

At sea level, 15% oxygen content is equivalent, in terms of human physiology, to normal atmospheric air at an elevation of around 2,700 m or being on a commercial flight. With very rare exceptions this level is safe for people. In fact, millions of people all around the world live at altitudes equivalent to exposure at, or below, 15% oxygen concentration at sea level.

Hypoxic air environments are currently used for physical training and rehabilitation of athletes, and in medical research.

How is the hypoxic atmosphere generated in the protected room?

ORFPS convert normal atmospheric air to oxygen-reduced air using a compressor and separation technology to reduce the oxygen concentration. Thereby, the nitrogen concentration of the air is increased. The air is directed into the protected area. Oxygen-enriched 'waste' air, which is produced as a byproduct of the separation process, is discharged to the atmosphere.

A control unit monitors oxygen sensors in the protected area to maintain the oxygen concentrations between pre-set upper and lower limits. The set points used will depend on the application but typically they will be set so as to maintain the nominal oxygen concentration around 15%.

Benefits

While ORFPS are relatively new to the Australian market, they can provide significant advantages that make them attractive for protecting areas such as data centres, archives, warehouses, food storage areas and museums. These benefits include:

- continuous fire prevention, 24 hours a day, seven days a week
- no business interruption as a result of a fire or suppression system discharge
- no fire damage—a fire cannot start in the first place!
- no need for pressure-relief venting of the protected room, as may be required for other solutions such as gas suppression systems
- no system refill costs associated with traditional suppressions systems—no need to remove and send cylinders away for refilling and no post-discharge downtime
- relatively small equipment space required
- simplified low-pressure piping systems.

Data centres are just one of many high-value applications that can benefit from the greatly reduced risk of fire damage provided by oxygen reduction fire prevention systems.

ORFPS Working Group members

OVIDI LASHERAS LPG Fire Australia (Chair) **BRETT STAINES** Chubb Fire & Security **BARRY FARRELL** Fire Protection Technologies **DANIEL WILSON** Kidde Australia **MARTIN MCGETTRICK** Automatic Fire Protection **STEVE O'BRIEN** The Solutions Group **DAVID WHITTAKER** CSIRO (ActivFire Scheme) **DAVID RAMSAY** Tyco Fire Protection Products **RALPH GARBUTT** FireProTec Consulting **STEVE CAPLE** Wormald **GEIR JENSEN** COWI AS Consulting (corresponding member)

Room sealing

In designing a system, consideration needs to be made of inward air leakage. This will influence the size of the system that needs to be installed and how often it needs to run (the duty cycle) to maintain the atmosphere in the protected space within set limits.

OHS considerations

Hypoxic environments created for the purpose of fire prevention are precisely controlled and monitored reduced-oxygen environments. They should not be confused with other environments where hypoxic conditions can occur in an uncontrolled, unwanted or unexpected way. ORFPS are clean-air systems based on adjusting the partial pressure of oxygen.

However, all hypoxic environments are potentially dangerous, and precautions need to be taken if people will enter such environments to undertake activities. Low oxygen levels are hard to detect without appropriate monitoring, and there is serious danger to human life where this is not done correctly.

Therefore, all people entering a hypoxic environment should be made aware of the reduced oxygen level, the risks and the need to stick to safeguards. People should know what the low oxygen emergency alarm sounds like. Each ORFPS installation requires a suitably detailed hazard and risk assessment, sufficient to meet the requirements of health and safety regulations. The assessment should include consideration of the suitability of such a system for the specific application at its location and any protective measures required for the health and safety of all individuals with access to the protected space for all activities to be undertaken.

These precautions are determined by the level of oxygen within the protected space and the kind of activities to be undertaken there. More strenuous activities require a higher oxygen intake, which may be harder to achieve in a hypoxic environment. As oxygen levels reduce, it becomes increasingly important to have adequate provisions in place to protect the health and safety of all people in oxygen-reduced air fire-protected spaces, especially those who may be adversely affected by reduced oxygen levels, such as pregnant women.

As part of the due diligence regarding the application of ORFPS in the workplace (versus the perceived creation of a confined space), Safe Work Australia and WorkSafe Victoria were contacted. As a starting point, it was necessary to gain an understanding of their positions on the definition of a confined space under section 98(1) of the *Occupational Health and Safety Act 2004* and the new national Work Health and Safety Laws that came into effect on 1 January 2012.

WorkSafe definitions

Safe Work Australia and WorkSafe Victoria confirmed in writing that they do not consider that these systems meet the definition of a confined space, as they are designed and engineered for human occupation in a highly controlled and monitored environment. It must be pointed out that both organisations reiterated the need for full hazard analysis and workplace consultation in order to mitigate and manage risks to health and safety and that a maintenance strategy must be in place and strictly adhered to.

Safe Work Australia indicated that each respective state and territory should be consulted independently regarding the application of ORFPS in the workplace, as local definitions of a confined space may differ.

Standards for design, installation, operation and maintenance

Currently there is no Australian Standard for ORFPS; however, relevant National Standards or Specifications currently exist, including:

- PAS 95:2011. Hypoxic Air Fire Prevention systems specification issued by BSI
- VdS 3527:2007. Guidelines for Inerting and Oxygen Reduction Systems
- SN123456:2009. Design and Installation of Oxygen Reduction Systems
- Önorm F 3007:2009 Oxygen Reduction Systems
- Önorm F 3008:2010 Oxygen Reduction Systems Control Panels
- Önorm F 3073:2010 planning, design, installation, commissioning and Maintenance of Oxygen Reductions Systems
- CEN TC 191 WG 6 TG 3 completed a draft of the European Standard on hypoxic air fire prevention systems—Design, Installation, Planning and Maintenance, to be published in 2013
- ISO initiated standardisation work and now monitors the CEN work by liaison.

To address the current lack of any Australian Standard for these systems, Fire Protection Association Australia's Technical Advisory Committee (TAC) for Special Hazards Systems (TAC/11/22) has established an ORFPS Working Group to develop a Good Practice Guide for the design, installation, operation and maintenance of such systems in Australia. Through TAC/11/22 the working group also plans to develop a project proposal to develop an Australian Standard for these systems.

If you are interested in participating in the ORFPS Working Group contact the FPA Australia Technical Department at technical@fpaa.com.au.

References

Jensen G (COWI AS), 2012, 'Fire prevention by oxygen reduction: European standardisation', VdS Conference Fire Extinguishing Systems.

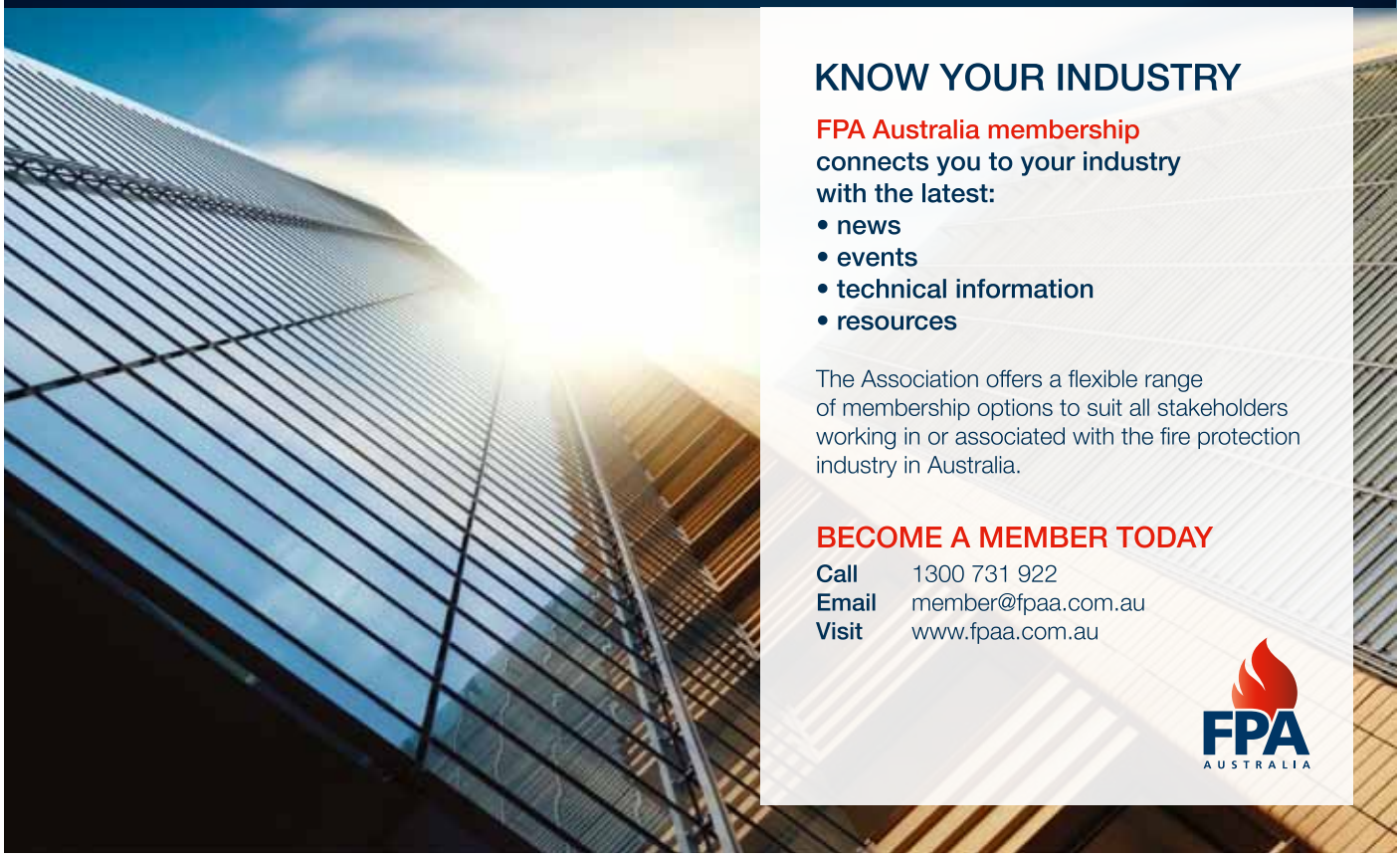
Nichols TR, 2010, 'Protection of data centres. Economic and environmental consideration of alternative technologies', LPG Fire UK.

Jensen G and Nygaard S (COWI AS), 2010, 'Fire Protection requirements for ICT Rooms—Best Practise Document UNINETT'. May 2010.

Chiti S (COWI AS), 2012. 'Hypoxic air fire prevention systems: design challenges and overview on new standards and codes', September 2012.

Higgs S, 2009, 'Into Thin Air' at www.frmjournal.com, March 2009.

Fire Protection Association Australia Life Property Environment



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HOLLAND TUNNEL CHEMICAL FIRE 1949

The 2600-metre, two-bore, four-lane Holland Tunnel opened in 1927. It crosses under the Hudson River and connects Jersey City, New Jersey, to Lower Manhattan in New York City and has full transverse ventilation. At 8.30 am on 13 May 1949, in heavy traffic, a 16-ton trailer truck carrying 80 55-gallon drums of carbon disulphide (a prohibited load) entered the south tunnel via the New Jersey portal. It travelled east for about 880 m before one drum fell onto the roadway and cracked open. Vapour released from the drum ignited on contact with a hot surface, probably brakes or exhaust fittings.

There were 66 people injured, mostly from smoke inhalation, with 27 requiring hospitalisation. Two first responders, a Fire Department of New York (FDNY) battalion chief and a Port Authority patrolman, later died from injuries sustained in fighting the fire. The truck carrying the carbon disulphide and nine other vehicles were destroyed, and a further 13 vehicles were damaged.

The tunnel also suffered extensive damage. At the point of fire origin, the concrete wall lining spalled down to the ribs of the cast-iron primary lining. The 150-millimetre reinforced concrete slab false ceiling collapsed entirely in several places and partially over a length of approximately 150 m. Wall tiles spalled off over some 200 m, 90 m of elevated side walkway and 150 m of roadway required renewal. Approximately 590 tonnes of rubble was removed prior to the tunnel reopening.

As the recent fire 'saves' in the Sydney Harbour Tunnel and the Burnley Tunnel in Melbourne graphically illustrated, much has been learned about tunnel fire protection in the 60-odd years since the Holland Tunnel disaster. Built-in water spray protection, advanced ventilation and communications technology, computer modelling and ongoing R&D are increasingly contributing to improved tunnel fire safety worldwide.

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Serious tunnel fires

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France–Italy, June 2005
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GOTTHARD TUNNEL
Switzerland, October 2001
11 dead

KAPRUN FUNICULAR TUNNEL
Austria, November 2000
155 dead

TAUERN TUNNEL
Austria, May 1999
12 dead

MONT BLANC TUNNEL
France–Italy, March 1999
41 dead

CHANNEL TUNNEL
UK–France 1996
no fatalities

KINGS CROSS
UK, 1987
31 dead

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CALENDAR

AS 1851-2012 First-Attack Fire Equipment

19 July 2013, WA
23 July 2013, VIC
26 July 2013, NSW

This fourth series of the AS 1851-2012 half-day seminars will address activities for first-attack fire equipment. The session will include technical content on: delivery layflat fire hose, fire hose reels, portable and wheeled fire extinguishers and fire blankets. The WA seminar will run in conjunction with the WA Fire Expo.

For more information visit **www.fpaa.com.au/events** or email **events@fpaa.com.au**.

AS 1851-2012 seminar series

A full suite of seminars is currently underway for the roll-out of AS 1851-2012. These seminars address different sections of the Standard along with related topics that will likely affect every individual working in fire protection.

July—First-Attack Fire Equipment (see above)
August—Mechanical Services
September—Special Hazard Systems and Special Water-Based Suppression Systems

For more information on these seminars, visit **www.fpaa.com.au/events** or contact **events@fpaa.com.au**.

WA, SA and QLD Fire Expos 2013

19 July 2013
South Perth Community Centre, South Perth, WA

30 July 2013
Thebarton Community Centre, Torrensville, SA

27 August 2013
Construction Training Centre, Salisbury, Qld

Due to the popularity and success of the 2012 Expo in Western Australia, the WA State Divisional Committee is again hosting this one-day event. In addition, the South Australia and Queensland State Divisional Committees will host their first Fire Expos following the same format.

For more information visit **www.fpaa.com.au/fireexpo** or email **events@fpaa.com.au**.

AFAC and Bushfire CRC Conference—Shaping Tomorrow Together

2–5 September 2013
Melbourne Convention and Exhibition Centre, VIC

The AFAC and Bushfire CRC Conference is Australasia's premier emergency management conference, staged by the industry for the industry. The conference program addresses key issues facing the sector and contributes to a knowledge sharing and learning culture within fire, land management and emergency service agencies across the broader industry.

Key activities

- One-day All-hazards Research Forum —2 September
- Two-day Conference —3–4 September
- Gala Dinner —3 September
- Debate—Is it only a disaster that brings us together? —4 September
- Seven Professional Development Workshops —5 September
- Four Field Study Tours —from 1 September
- Personal Protective Equipment (PPE) Forum—2 September.

For more information, visit **www.afac2013.org**.

2013 Fire Australia Conference & Exhibition—The Journey to Professionalism

20–21 November 2013
Sydney Convention and Exhibition Centre, NSW

Fire Australia 2013 is the premier fire protection industry conference, attracting a wide range of representation from businesses, government and associations.

This year will see the introduction of a second presentation stream. The first stream will continue to be high-level topics addressing fire engineering, strategic issues and the direction of the industry, while the new second stream will focus on practical, technically based content.

The exhibition will once again be a main feature of the event. It will incorporate the Showcase Theatre where exhibitors will present the many new products and services available to the industry.

With speakers from across Australia and overseas, the organisers aim to ensure all presentations are topical and current, affording everyone in attendance additional knowledge and information.

Sponsorship and exhibition

Sponsorship and exhibition opportunities are open now for FPA Australia members and related industry stakeholders.

To download the full conference program and registration brochure, or for more information about the conference, visit **www.fireaustralia.com.au**.

For more events information:

FPA Australia: www.fpaa.com.au/events or register via the FPA Australia CONNECT platform

AFAC: www.afac.com.au/events

Bushfire CRC: www.bushfirecrc.com/research/events_2013

Technical advisory groups and special interest groups

By Kevin Burns, Technical Administrator, FPA Australia

TAC/1 *Maintenance of fire protection systems and equipment*

TAC/1 continues to work with the NSW State Divisional Committee and FPA Australia Technical Department on the development of the Good Practice Guide (GPG) on NSW Annual Fire Safety Statement. Also, the GPG on the adoption and use of 1851-2012 is in the final stages of development.

TAC/2 *Fire detection and alarm systems*

TAC/2 continues to contribute to FP-002 projects such as the adoption of ISO 7240-17 *Sound system control and indication equipment* and the revision of AS 1670.1.

TAC/3/7 *Portable and mobile equipment*

The Good Practice Guide (GPG) for the completion of extinguisher service records when not all tasks can be undertaken has now been published and is available to FPA Australia members. This GPG covers situations such as where the extinguisher has no fixed location or the installation site cannot be accessed. An Information Bulletin on extinguisher cylinder date (MM/YY) stamping has now been drafted and is under consideration by TAC/3/7.

TAC/4/8/9 *Fire sprinkler and hydrant systems, tanks and fixed fire pumps*

TAC4/8/9 has continued reworking the Information Bulletin on Sprinkler System Monitoring. The proposal for a Good Practice Guide on hydrant testing has now gone to NTAC with TAC/4/8/9's endorsement and been approved with work to begin soon.

TAC/11/22 *Special hazards fire protection systems*

TAC/11/22 has provided a revision of the ozone-depleting substance and synthetic greenhouse gas (ODS & SGG) code of practice to the fire protection industry (ODS & SGG) Board for consideration. A draft document on pressure venting requirements has now been circulated for TAC/11/22's consideration. Also, the oxygen reduction fire prevention systems (ORFPS) working group has developed a brief article (see pages 40–42) to create awareness in the fire protection industry of this new technology.

TAC/17 *Emergency planning*

The Information Bulletin on evacuation diagrams is in its final stages of development. The Information Bulletin on emergency planning and alternative solutions is to be expanded to provide greater guidance on how emergency planning should be addressed in alternative solutions. This expanded draft is scheduled to be ready for TAC/17's review at the August meeting.

The working group for the project to develop a document based on the National Fire Protection Association (NFPA) Emergency Evacuation Planning Guide for People with Disabilities will soon have its first meeting to kick off the project.

TAC/18 *Fire safety* and TAC/19 *Passive fire protection*

A draft document on the installation, inspection, access and maintenance of intumescent dampers has been developed. This initial draft has been endorsed in principle by TAC/18 and TAC/19 and is currently with the FPA Australia Technical Department to migrate it into the Good Practice Guide template. TAC/18 and TAC/19 continue to provide input to the revision of AS 1905.1 and projects such as the Good Practice Guide on smoke barriers.

TAC/20 *Bushfire safety*

Since receiving input from TAC/18 and TAC/19 on the Technical Advisory Note 'Requirements for draught excluders in building constructed in bushfire prone area', TAC/20 members have reviewed this document, which is now with the FPA Australia Technical Department to finalise.

Standards Australia

By Kevin Burns, Technical Administrator, FPA Australia

FP-002 *Fire detection and alarm systems*

A revision of the smoke alarm Standard (AS 3786) based on ISO 12239:2010 *Smoke alarms using scattered light, transmitted light or ionization* has now been released for public comment. Public comment closes on Tuesday 18 July. Work continues on the revision of AS 1670.1.

FP-004 *Automatic fire sprinkler installations*

FP-004 continued work on the revision of AS 2118.1 *Automatic fire sprinkler systems—General systems.*

FP-008 *Fire pumps and tanks*

The revision of AS 2941 *Fixed fire protection installations—Pumpset systems* has now been through public comment and FP-008 has met to consider the public comment.

FP-009 *Fire hydrant installations*

Work continues on the revision of AS 2419.1 *Fire hydrant installations—System design, installation and commissioning.*

FP-011 *Special hazards systems*

The public comment on AS 4487 *Condensed aerosol fire extinguishing systems* has now been reviewed by FP-011. The revised Standard is expected to be published soon.

FP-017 *Emergency management procedures*

The amendment to AS 3745-2010 *Planning for emergencies in facilities* is expected to go to public comment soon.

FP-018 *Fire safety*

The revision of AS 1530.4 *Methods for fire tests on building materials, components and structures—Fire-resistance test of elements of construction* has now been to public comment, which closed in early June.

FP-019 *Passive fire protection*

Work has begun on the revision of AS 1905.1 *Components for the protection of openings in fire-resistant walls—Fire-resistant doorsets,* with several meetings held so far.

FP-020 *Construction in bushfire prone areas*

Standards Australia convened a stakeholder forum on 13 February 2013 to discuss matters related to the application and the future development of AS 3959-2009 *Construction of buildings in bushfire prone areas.* The forum was attended by a range of industry and government stakeholders with an interest in construction in bushfire-prone areas.

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For more details on submitting a contribution or to advertise in *Fire Australia*, please contact the editor.

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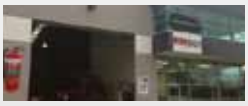

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