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Re: Inquiry into the incidence and impact of bushfires

Herewith contributions by: Mr. Georg Molnar,
Honorary Consul for Hungary
and
Dr. Leslie H. PYKE,
Professional Consultant

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PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA

HOUSE OF REPRESENTATIVES

SELECT COMMITTEE ON THE RECENT AUSTRALIAN BUSHFIRES

INQUIRY INTO THE INCIDENCE AND IMPACT OF BUSHFIRES

Contributions by: Mr. Georg Molnar,
Honorary Consul for Hungary
and
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1.0 INTRODUCTION

This inquiry was established in the wake of recent bushfires in the 2002 - 2003 season. Specifically, the fire damage caused in the Australian Capital City in January, 2003 alerted the Federal Government to the devastations which can be caused by uncontrollable fires in our bushland country.

It is recognised that there are many economic, social and environmental issues in respect of bush fire damage, in addition to technical and administrative aspects. Some recommendations are made.

2.0 BACKGROUND

Bushfires can be seen as a way of life on our dry continent. It is recognised that the original inhabitants of Australia used fires as methods of adjusting their environment. Some bushfires in remote regions of our continent are allowed to burn out, or to be extinguished by natural forces, such as through wind changes, rain or geographical barriers.

It is when bushfires impact on urban areas of the provincial towns of Australia and of our capital cities that we become more concerned. There are many instances in Australia where whole towns have been destroyed. Nannup, Western Australia and Snug, Tasmania are recent provincial examples, while the national park bushfires in the Mount Lofty Ranges of Adelaide (1955) and the Blue Mountains of Sydney (2001) are events where rampant bushfires have damaged or destroyed nearby homes and community buildings.

Other nations also experience bushfires. Many such conflagrations are not noticed, such as the bushfires in Africa and Siberia. However, news items about bushfires in California. U.S.A. and in Germany are frequently reported, since those bushfires may be proximate to urban areas and there are well-established media networks to report the bushfires in those more developed regions.

The methods of combating bushfires are usually based on rural and town fire fighting organisations. Those fire brigades usually consist of a core of trained personnel, supported by community volunteers. The core of firefighting personnel is usually maintained on a watching brief, paid from the funds of an established State Authority, which relies on fire services charges from the government or from the local municipalities.

The methods which are used for fire fighting mainly consist of applying large quantities of water to douse the fires. That water is carried by a variety of means such as personal knapsacks, mobile tankers and aerial applications. Most methods require suitable sources of local waters, whether they be in storage tanks, or reticulated to fire hydrants, or from nearby rivers, lakes, estuaries and the sea.

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In some instances water applications to fires may be supplemented with suitable chemicals. Such supplements are especially required if the fire is close to risky hazardous items, such as stored chemicals, electrical equipment or fuel storages.

The technologies which are used to carry the extinguishing waters from the water sources to the fires are mainly by fire tanker trucks, fixed wing aircraft or helicopters (van Wely, 2003). In most cases those transports are supported by water-applying ground crews, which are equipped with means of communication facilities, by radio, telephone or signals...

Ready access to fires is necessary for firefighters. Access may be easy, through local roads and any firebreaks, which may be suitable for wheeled vehicles. However, some bushfires may be in very rough, heavily forested and inaccessible country, such as in the North Kimberleys, Western Australia or even in some jungle national parks such as Canungra, Queensland. In such cases, the usual firefighting strategy is to let the inaccessible fires burn themselves out and to control emerging fires at the accessible perimeters.

Many believe that bushlands should be adjusted to suit the requirements of humankind. Those people support the clearing of firebreaks and the use of control burning of the undergrowth, of the detritus of the trees and of the bush itself. Sometimes they support pruning and felling of trees to clear firebreaks.

Others insist that the bush should be kept in pristine condition, for the enjoyment of all, including for the fauna and flora.. Those people resist any control burning of the bush and point to the likely destruction of local habitats of animals and birds, excessive smoke pollution and loss of natural amenity, as community costs..

The balance between those two pressure groups underlies any strategy for contemporary bushland firefighting. Any benefits/cost analyses should take into account such social and environmental parameters, over time.

Most bushfires have been started by natural means, such as lightning. Some may be lit by electrical fault arc-overs which may be caused by accidents to conductor-carrying poles or by electricity leaking over dust on insulators. Recently it has been detected that some deviant people may, themselves, light bushfires. In some cases civil and criminal charges have been laid against such people and prosecutions have resulted.

A characteristic of the Australian eucalyptus bushland is that the trees may exude an aromatic of eucalyptus vapour, which, in high summer, can be highly combustible That bluish tint of the eucalyptus vapour gives rise to the name of the "Blue" Mountains in New South Wales..

As a result of that vapourous exudation, bushfires can maintain themselves in the canopy of the trees. Such crown fires can be very dangerous, when fanned by hot, dry winds and can spread long distances at the tree top levels, even before the ground cover is burnt. There have been instances where ground firefighting crews have been trapped by crown fires. Wind-blown burning sparks from crown fires can also penetrate roof crevices of houses and start spot fires in the roof spaces.

To combat the effects of bushfires, advice is available for persons who wish to build, live in and operate dwellings in bushland areas. In some cases mandatory firebreaks around properties (usually about two metres clear of any combustible materials) are enforced by the local municipalities, such as for example, in the Darling Range areas of Perth, Western Australia. However, in most cases in Australia, the homeowners exercise their rights about the methods of construction, the materials used and the garden environments of their homes.

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The media is used by many Fire Authorities to educate residents about the dangers of bushfires and how to mitigate any damage to property. Survival and maintenance of life is also an important Fire Authority education message to residents. As a result, it is considered that most persons would know that it is desirable to take precautions, such as clearing rainwater gutters of dried leaves and twigs, filling the rainwater gutters and tanks with water, applying water to combustible areas of their dwellings, closing windows and shutting down any air conditioners, when bushfires threaten. Suitable planned evacuation lifelines are also imparted to residents and their children.

Prudent property owners may offset perceived risks by using appropriate insurance policies. Premiums can be high, in some recognised bushfire-prone areas. In some instances claims negotiations, subsequent to damage or loss by a bushfire, can be quite acrimonious, especially if the homeowner has not taken reasonable precautions.

3.0 TRAINING COURSES

It is mainly with the above background, that training courses are developed for fire fighters. Most courses are organised by Technical and Further Education, in each State of Australia. They aim to show students how fires are started, how they spread and how they can be extinguished. In some cases, special courses in seasonal bush fire management are offered.

Those formal courses which could lead to Diplomas and Certificates, in such an area as in Fire Management, may be supplemented by offerings from other training providers. Those courses may be in-service or available to interested members of the community.

A review of current courses in these areas of fire control indicates that there is much emphasis on the technical aspects of firefighting. The types of equipment, the chemicals which may be encountered and used, the methods of access to burning properties and maintenance of firefighting and communication equipment are adequately covered. As an example, the training courses for fires in holds of ships, which are conducted by the Country Fire Authority of Victoria in Geelong, Victoria are well-recognised.

In most cases, volunteer fire fighters are also encouraged to study the formal training courses in fire fighting. The laudable aim is to bring them up to, at least, the standards to which the core officers of the fire brigade operate. However, incentives for volunteer fire fighters for further study in those areas of fire control are not well-established. As a result, volunteer firefighters may not be trained and they might join the fire management operations as they see fit, as community-minded citizens and in response to seasonal demands.

Unfortunately there have been some instances of community volunteers joining a fire brigade just to see large fires. In some lamentable cases, it has been found that some volunteers may even light the fires themselves.

Those observations open the needs for psychological appraisals of fire fighting personnel. Profiles of suitable fire management operators need to be established and maintained for selecting and hiring permanent and volunteer fire fighters, for motivating them and for managing fire-fighting operations.

Other aspects which would reinforce courses in fire management are offerings in the areas of risk assessment. Such risk management course structures are well-established in other areas such as health management, financial planning and project administration. Data collection, information communication and action plan techniques, based on perceived risks, are commonly practised in many professions. In the areas of fire management the obvious parameters of ambient meteorological conditions need to be weighed against the current availability of resources and any expected changes in conditions or resources, to guide the fire command administration.

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Correlation techniques of risk management need to be included in fire management courses, so that the managers of bush fire prevention are equipped to assess externality data and information. Modern bushfire management is a very sophisticated business and needs careful planning and execution.

Security is another aspect which needs to be explored in fire management courses. It is notoriously unclear how disaster management is exercised in each State for such events as cyclones, fires and floods. Some States are attempting to rectify those administrative problems, such as the recent Parliamentary enquiry into natural crisis management in Western Australia..

At the levels of overall administration, it would be worth-while including fire management courses in the training for police and health officers, so that they can recognise and understand the needs for evacuations and property securities, under proper authorisations. Responsibilities for such actions could be taken more readily by the firefighters, if the community can see that they have the training, jurisdiction and authority to issue instructions to homeowners.

Cases have been recorded where an evacuation has been ordered by volunteer firefighters, and accepted, only to find that the opportunity has been taken to loot the properties in the absence of the owners. Trained personnel who are issued with authority cards after completing courses in fire management would help assure the community of the needs for prescribed actions.

It is noted that even the strategy of evacuating residents from a bushfire area may be under question. Many homeowners prefer to stay with their properties, so that they can assist with the fire protective methods. Indeed, it is recognised by some fire commanders that many residents may know more about protecting their property than the volunteer bush firefighters. That attitude has caused several arguments between homeowners and the firefighters about the sources of authority for enforcing evacuations.

4.0 TECHNOLOGIES

Technological developments have assisted in fire control methods. Improved methods of water deliveries, the uses of chemical retardants and better dwelling constructions are mitigating the devastations caused by fires. Bush fires are reported in a more timely manner, using better communications equipment. Computers can assess meteorological conditions, to assist decisions to mitigate bushfire damage.

Considerable research is being done on fire management, infrastructure recovery and community crisis co-ordination. Jackson (2003) indicates that professional engineers are at the forefront of those activities.

Fire Engineering Conferences are conducted by the Institution of Engineers, Australia for Building Surveyors, Quantity Surveyors, Architects, Developers and Project Managers. A typical example is the conference which was conducted in Perth in October, 2001 (I.E.Aust., 2001) While much of that Conference work deals with the built environment, the principles can be extended to bushfire management.

The technological improvements range from building designs and access to safety provisions and includes fire retardant coatings, chemical and gas dousings and more effective applications of water.

A significant fire combating equipment layout has been developed in Europe as the Automotive Fire Combating Unit (Appendix). The tracked AFCU is designed to protect the fire fighting personnel and can travel at reasonable speeds in difficult terrain, to deliver a water cannon to the base of fires (Molnar, 2003).

Professional engineers are at the forefront of these technological improvements. That profession has the keys to all aspects of crisis co-ordination in bush fire management. They know the details of the infrastructure, how to assess risks and how to administer projects effectively. The Terms of Reference of this Inquiry allows more contributions from professional engineers.

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5.0 RECOMMENDATIONS

The following recommendations are made, in respect of the specific points of this Inquiry:

(a) Investigations into the extent and impacts of bushfires should include contributions from professional engineers.

(b) Risk management procedures which are used by professional engineers should be included in considerations of the factors which contribute to the impact an severity of bushfires.

(c) Hazard reduction strategies for mitigating the effects of bushfires should include advice from the engineering profession.

(d) Land management policies should be drafted by planning leaders from the profession of engineering.

(e) Use professional engineers in the work of applied research into bushfire mitigation.

(f) In the reviews of planning and building codes to protect life and property from bushfires, involve the profession which is most affected - engineering.

(g) To improve response arrangements for bushfire fighting, request professional engineers for advice in respect of the technologies which can be used.

(h) Appoint professional engineers as co-ordinators to improve resource sharing between agencies and jurisdictions involved in bushfire fighting.

(I) Liability and indemnity insurance coverage for bushfire damage should rely on the experiences of professional engineers.

(j) Use the advice of professional engineers from their work with volunteers, psychological motivations and socio-economic environmental parameters in bushfire management.

The abovementioned Automotive Fire Combating Unit (AFCU) is a specific example of contributions which are being made by professional engineers and gives rise to further recommendations. The AFCU has been developed in Europe as purpose-designed appliance for combating bushfires, forest fires, hazardous material fires (explosives, chemical substances, chemical plants, oil and gas refineries and oil wells) and fires that have affected large areas where conventional fire fighting methods are inadequate or ineffective.

The engineering specifications for the AFCU provides a controlled environment, protection and safety for the on-board personnel, who are specially trained to apply the AFCU fire fighting technology. The AFCU applies the combined forces of a high-powered air blower, provided by a ram jet engine, with a 2 000 litres per minute capacity water cannon. The manoeuvrability of the fire combating action is horizontally +/- 90 degrees (total of 180 degrees) and vertically +/- 10 degrees. One full load of 20 cubic metres of water is designed to combat fires over an area of 3.5 hectares (35 000 square metres). The AFCU has the mobility of a tracked armoured personnel carrier and has a designed speed of 40 km/hour on flat surfaces and up to 15 km/hour while combating fires in rough terrain. The main water tank can be replenished while the AFCU is in motion. Dimensions of the AFCU are approximately 12 metres long, 3 metres wide and 2.8 metres high. The AFCU is equipped with an air-conditioned, sound and heat protected control cabin, on-board communications equipment, temperature gauges, control and monitoring systems, personal protection and safety equipment.

The control cabin accommodates three persons, with dedicated tasks assigned to the commander in charge, the driver of the vehicle and the operator of the equipment. The external safety of the AFCU is provided by a high temperature protective sheeting, painted with a covering which withstands flames of temperatures up to 1 200 degrees Celsius. The internal safety of the AFCU is provided by a 100 mm. thick water blanket which circulates water and allows direct exposure to flames and extreme heat for up to 10 minutes, should the main water tank empty.

The AFCU is equipped with a night vision system.

It is recommended that the engineering, functional and production capabilities of the Automotive Fire Combating Unit be tested in Australia.

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APPENDIX The Automotive Fire Combating Unit

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