

[FireNet] Recent Canberra Structure Losses to Bushfire FireNet January 31, 2003

There hasn't been any discussion on FireNet of the recent tremendous structure loss experienced by bushfire (wildland fire) in Canberra and adjacent communities. Perhaps in AU the discussion has been non-stop, while here in the US the news story was reported by the media and they then returned to other topics. I've pulled the below emails from another international list serve dealing with structural fire engineering. This is only a small part of an ongoing discussion dealing with AU structural fire codes which started with the news article on the destruction of the historic Mt. Stromlo Observatory, also presented on FireNet.

Maybe the below comments from the other list serve will stimulate some additional information to come forth, and encourage discussion on the topic within FireNet. This early survey information reconfirms in part what has been widely experienced elsewhere, that structures most frequently were destroyed by "ember storms" and not from radiation or flame impingement except in cases of adjacent structures; and that structures some distance from wildland fuel were still subject to ignition from airborne embers. Certainly there is a possible lesson here for communities that are treating wildland fuel adjacent to the community but not following through with education, inspections and mitigation for structures further into the community. In earlier discussion on this other list serve it was brought up that this area of Canberra was not considered an especially fire prone location and that what might be considered a normal fire return interval in other areas of AU did not necessarily apply here (a return interval of 200-250 years has been suggested), did this have an impact on community fire planning in the area? Also some empirical evidence is presented for structure survival based on either occupant or fire brigade suppression action during (a controversial topic in the US) or immediately following the primary fire incident.

Another related topic I would be interested in is how are the insurance companies handling the losses?

– Chuck Bushey, IAWF Treasurer, FireNet Moderator

To Michael,

I have been leading the detailed housing loss of survey initiative for the Duffy Region which suffered the highest losses in the Canberra Regions. I may be able to answer some of your questions.

A1 from below:

We are still collecting survey information but it appears that the predominant spread mechanisms in the Duffy area were ember attack and house to house ignition. House ignition through ember attack occurs when they landing with other combustible wind born debris on garden and building features or entering the structure itself through small gaps or vents (with openings greater than 2mm). We have found little

evidence of a direct flame path to the structures or radiation damage from the original flame front. House to house ignition usually occurs in the period after the original fire event when the radiation, embers and flame from a burning house impose on the surrounding structures this event can persist much longer than the original bushfire front.

A2:

The potential for house loss is not principally governed by the cladding material unless it is very close to the continuous fuel load that supports the fire front (hence is impacted on by direct radiation and flame). The main mode of attack is via the house features such as windows, doors, roof features, sub floor space etc. Windows and doors are lost if there is sufficient fuel loading near them, for example this may be in the form of a timber fence, combustible decking, door mats, stored material, combustible vegetation and ground coverings. sub floor spaces and roof features may be attacked by these same elements.

A3:

It is clear from our previous research that brigade and occupant protection suppression activities during and particularly after the fire event influence the probability of house survival far more than specific house design measures. It appears that in Duffy the surviving houses in at least the first three rows all have an associated story behind them in terms of brigade or occupant suppression activity. Water supply was maintained throughout the event however the water pressures in some regions was diminished as houses were lost due to the damaged plumbing in the destroyed house allowing water to flow freely.

A4:

Duffy is not classified as bushfire prone by the current regulations and hence does not have specific design requirements for roofing design to mitigate bushfire attack. I am unsure of the specific wind load requirements for the area.

Regards

Justin Leonard

B.Eng, Combustion Engineer

CSIRO - Manufacturing and Infrastructure Technology

Fire Science and Technology Laboratory

Graham Rd, Highett, Melbourne, Australia, 3190

Ph (61 3) 9252 6353 Fax (61 3) 9252 6244 Justin.Leonard@csiro.au <http://www.cmit.csiro.au>

-----Original Message-----

From: Michael M. Fitz

Subject: Re: BCA and Property damage (collated follow-ups)

To all: I took the liberty and viewed a few of the photographs under #2 -
Jim Davidson and have some questions and comments:

First, has any organization or individual analyzed the spread into each of the buildings? It appears that the brush had been cleared away from a lot of the buildings and significant amounts of parking lots so that there was not a direct fire path to the structure.

Second, the walls of the structures appear to be relatively fire resistant based on the remains and appearance - such as concrete, stucco, etc. so was the spread into the structures via windows, doors or the roof?

Third, were there any fire fighters present to try and suppress spot fires? Were there access or water supply problems such that there were no safe exit routes?

Lastly, were there any roof ratings or classifications for the roofing materials, currently or when the buildings were built? And generally, what were they? For example, the observatory appeared to have a metal roof.

Michael M. Fitz, P.E.

MDE Engineers, Inc.

<mfitz@mde.com>

FireNet mailing list

FireNet@iawfonline.org

<http://www.iawfonline.org/mailman/listinfo/firenet>

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