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Thesis

Analysis of Six Fire Experiments Conducted at Kemano Village (BC) by Forintek Canada Corp. in 2001

Abstract

Introduction from the report: In Canada, more than 95% of single-family and two-family houses are of wood-frame construction. A recent review [1] of statistics revealed that fires involving household contents are the leading cause of fire deaths in houses and that most of these deaths occur before the house's structure is involved in fire. Nonetheless, concern is often expressed that, since wood is combustible, its use as a structural building material compromises fire safety. In response to this concern, Forintek undertakes research to identify how and where wood products can safely be used in the construction of housing. The high cost of conducting research has meant that the fire performance of wood products is usually assessed in laboratory tests in which assemblies are simple and small, and the fire exposure is idealized.

Kemano, a small "company town" in Canada, was recently, closed and some its buildings made available for research. In partnership with researches at the National Research Council Canada (NRC) and with the assistance of Weyerhaeuser Corporation, Forintek accepted an invitation to undertake research in the town. This afforded a unique opportunity to assess the performance of wood-frame assemblies when exposed to fire in furnished houses as opposed to laboratory tests.

Six fire experiments were conducted. The experiments involved large fires that challenged the houses' wood-frame structures. The first item ignited in all tests was a waste-paper basket in contact with a piece of upholstered furniture or a mattress. Fires were allowed to follow their natural course for a significant period of time without intervention by fire fighters.

This report will discuss in detail the results of all data acquired in those fire experiments [2] except one of them (House 514) which was analyzed separately as a directed study [3]. The directed study report is attached at the end of this report as

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Supervisor

Hadjisophocleous