

Fire Research & Investigation Unit

Heads Up

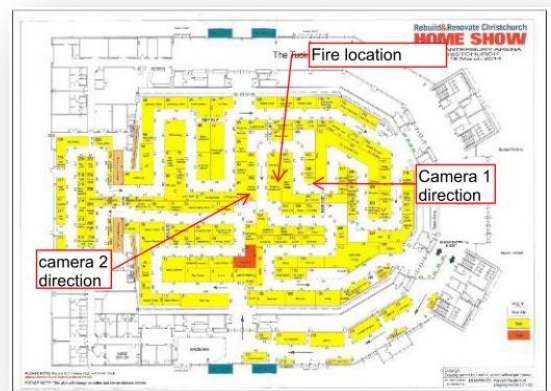


BACKGROUND

A fire occurred in the CBS Canterbury Arena. This is a purpose built multipurpose arena of approximately 9,000 square metres with an internal height of approximately 26m high. The arena has a sprinkler system, with smoke detection in the air handling ducts.

The Arena had been fitted out to accommodate the “Rebuild & Renovate Christchurch Home Show”, which consisted of approximately 200 stands set up for various different retailers to display their wares. The arena set-up had been completed with all stand-holders having their wares in place ready for the show opening the following day.

The Arena had been shut that evening and all power switched off, except two fridges and the spa pool stand. The Arena was opened around 6.00 a.m. the following day by security. No smoke was observed at that time although no internal entry was made by security.



Above: site plan of CBS Arena showing layout.

INCIDENT DETAILS

The Fire Service Communications Centre received an automatic sprinkler call at 6.28 a.m. from the CBS Canterbury Arena. The first fire service appliance arrived at 6.34 a.m.

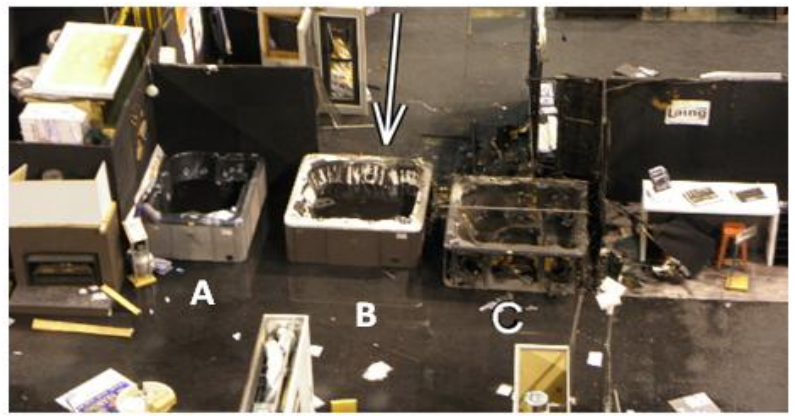
Attending crews were faced with smoke logged conditions and a sprinkler activation that had occurred which contained a fire at the spa pool stand. A firefighting crew was required to extinguish the fire as the spa pool was shielding the fire from the sprinkler discharge. Two spa pools were significantly fire damaged with a small amount of damage caused to a third spa pool (pool A in the photo over page). As the fire occurred the day before the show's opening, the remedial work to mitigate the effects of the extensive smoke logging and firefighting water led the organisers to cancel the show.

FURTHER INFORMATION

The fire investigation determined the most likely cause was the extension cable leading to the multibox by the spa pool stand, or the multibox itself.



Above: the developing fire prior to sprinkler activation.



Elevated photo of the fire scene- Spa Pools annotated A, B and C. Arrow highlights direction of approach of fire crews.

BUILDING PERFORMANCE

The building is protected by an automatic sprinkler system installed in accordance with NZS4541. It is connected directly to the NZFS.

The building is provided with a smoke extraction system, however as the smoke detectors were located only within the air handling system (which was not operational at the time of the fire), this system did not activate in the early stages of the fire.

Once the fire was extinguished, the ventilation system was activated which assisted in clearing the smoke from the space.

LESSONS LEARNED/RECOMMENDATIONS

1. Due to the high roof within the main arena the fire had grown to a significant size prior to activation of the sprinkler system.
2. The sprinkler activation had cooled the smoke resulting in significant low level smoke logging.
3. The sprinkler system was effective in containing the fire but not in extinguishing it due to shielding by adjacent products. However this does demonstrate the value of sprinkler systems in detecting and suppressing or holding fires. This provides effective property protection and enhances business continuity after a fire.
4. The smoke detection within the ventilation system was only of benefit when the system was operating. Where air management systems are installed alternative smoke detection should be installed external to the system.
5. In buildings with large spaces (e.g. arenas) alternative detection systems such as flame or beam detection should be considered.

INFORMATION SOURCE

New Zealand Fire Service documents:

Internal Incident Report

Fire Investigation Report

Onsite documentation by Specialist Fire Investigator & Fire Engineer



For more information, or to contribute to 'Heads Up'
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