

smoulder and give off smoke before flames appear. It seems that the fire aboard the *Helderberg* was not detected until the situation had deteriorated beyond the ability to contain it.

This apparently was also of concern to the board of inquiry, which decided that the detection and suppression techniques relied upon were not adequate. They commented on them: 'The smoke detectors in a Class B cargo compartment are located in the crown of the compartment, i.e., on the ceiling, and are ineffective to detect smoke which exists in a pallet of cargo at the floor level until sufficient heat has been generated to force the smoke to the crown of the compartment where the smoke detectors will then activate the warning bell in the cockpit.'

By the time that happens, of course, the fire could be out of control, which meant, in the view of the board of inquiry, that the mixing of passengers and freight on the same deck was unsafe.

The United States as the state of manufacture of the *Helderberg* was invited to submit comments on the draft Final Report of the board. Two agencies, the Federal Aviation Authority (FAA), the airworthiness authority of the United States, and the National Transportation Safety Board (NTSB), did so.

Both agreed with the board of inquiry and acknowledged that the Class B cargo compartment was not safe, but they differed slightly in their responses.

The NTSB recommended that all cargo carried in Class B cargo compartments in United States-registered aircraft be carried in fire-resistant containers until fire-detection methods were 'further evaluated and revised as necessary'. The NTSB also called for research into fire-detection and suppression, and to establish fire-resistant requirements for the ceiling and sidewall liners in the compartments.

The FAA saw the problem being resolved by upgrading the existing systems. It suggested better detection systems, improved warning systems and an aural and visual warning to the station assigned to individuals trained to fight cargo fires.

It also suggested that the extinguishing system be capable of knocking down and suppressing a fire, thereby allowing time for a trained individual to find and verify that the fire is extinguished. It also suggested a means whereby the flight deck could shut off the ventilation system and prevent smoke-laden air from flowing into the compartment.

*RIGHT: Right-hand forward main cargo compartment fuselage structure with remains of the 9-G net attached. The fire originated in this section of the cargo compartment before it spread rearwards.*

(All photographs: Directorate of Civil Aviation, Department of Transport)

There were other suggestions. Better illumination, better access to all the cargo, a compartment temperature indication system which could be read on the flight recorders, windows, wiring, flight controls and other equipment in the compartment necessary for continued safe flight.

Having considered these suggestions, the board of inquiry said: 'There is no acceptable compromise for the acknowledged unsafe condition of main deck Class B cargo compartments.'

'Passengers and cargo should not be mixed on the same deck level of the aircraft in an adjacent compartment and in the same atmosphere under any circumstances. The licensing authorities throughout the world are urged to re-examine and re-assess whether there is any acceptable compromise to the outright prohibition of main deck Class B cargo compartments in passenger aircraft. The board is of the view that in the light of present experience and knowledge the prohibition should remain if the acknowledged "unsafe condition" of Combi craft is to be eliminated.'

By way of contrast, let's take a brief look at the differences between the Class B and Class C cargo compartments.

