

Class E Cargo Compartment Smoke Detection and Active ULD Testing



Presented to: International Aircraft Systems Fire Protection Working Group. Atlantic City, NJ

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Date: November 19-20, 2008



Federal Aviation
Administration



*UPS DC-8
Feb. 7, 2006
Philadelphia, PA*



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Cockpit Voice Recorder Transcript¹

2333:44 Aircraft cleared to descend from FL 330 to FL 240
2334:39 “Smell like wood burning”
2335:40 “It’s pretty strong now”
2335:54 Cockpit door opened “It’s more in the back”
2338:39 One pack turned off
2343:18 “Fume evacuation”
2343:27 Packs on max flow, recirc fan off
2347:59 Cockpit door opened again “It’s definitely stronger in the back. No haze or smoke when I shined my light back there” At FL 40
2354:42 “Cargo smoke detectors on” At FL 20
2355:48 Landing gear down
2355:57 “Lower cargo compartment aft smoke detectors on”
2359:00 Touch down
2359:02 “Smoke in cockpit”
2359:45 End of transcript. Crew evacuated through L1 door

¹ Source: NTSB Accident Report



NTSB Recommendation A-07-98 to the FAA.

“Ensure that the performance requirements for smoke and fire detection systems account for the effects of cargo and cargo containers on airflow around the detection sensors and on the containment of smoke from a fire inside a container and should establish standardized methods of demonstrating compliance with those requirements. (A-07-98) “



727 Freighter



Main Deck Airflow approximately one air change every 5.1 minutes (11.8 air changes/hour). Air from one pack supplied with APU bleed air.



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4 Aspirated Photoelectric Smoke Detectors (94-96% light transmission/ft alarm point)

Certified to one minute detection time (FAR 25.858)



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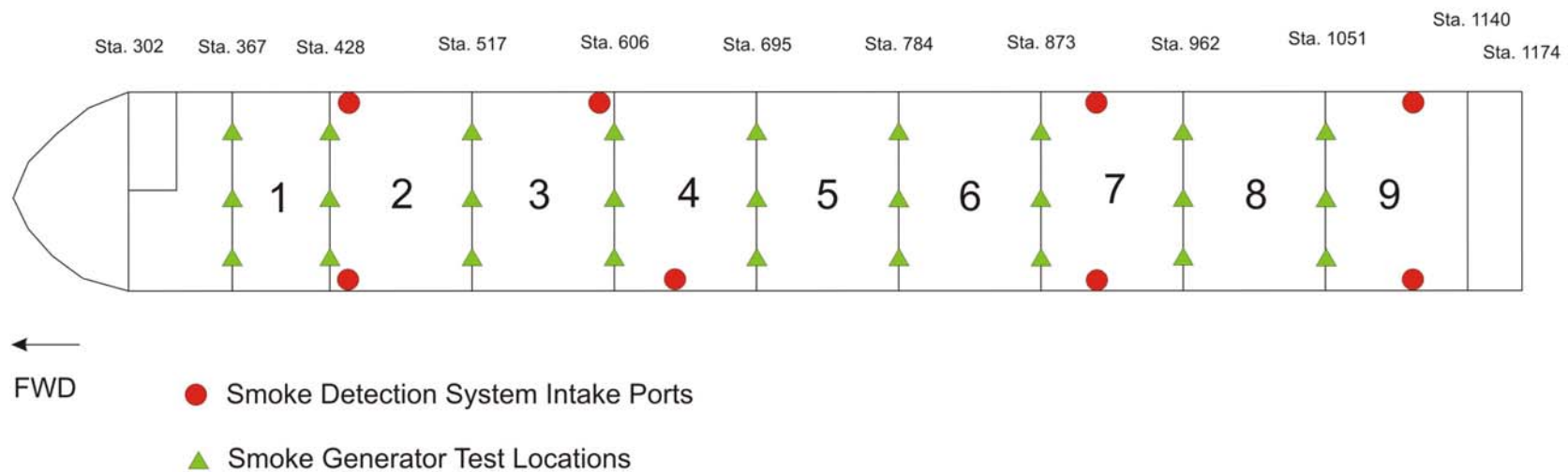
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727 Freighter 88" cargo container positions

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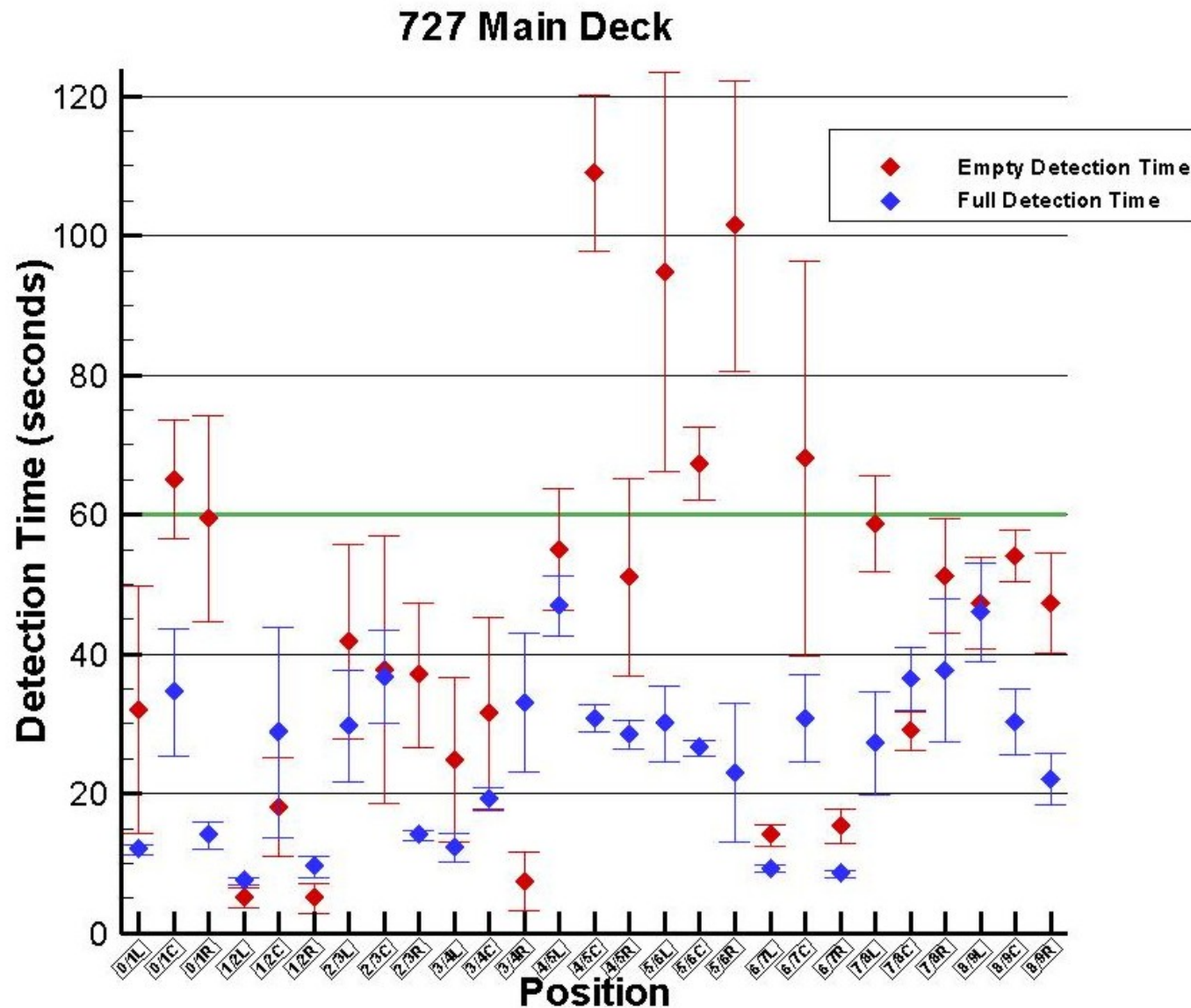
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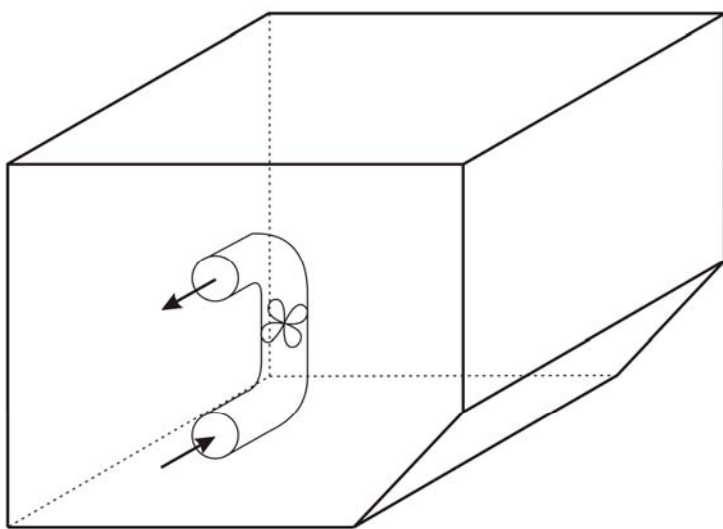
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"Active" LD-3 Container.
Cargo compartment air is drawn in low and
exhausted high at a rate of 500 ft³/min ?



Similar tests will be conducted
comparing smoke detection
times in an empty and fully
loaded cargo compartment.

Testing will also be conducted
to determine the influence of
the airflow from "active"
containers on smoke detection
times.

747SP Below Floor Compartment



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