

Class E Cargo Compartment Smoke Detection



Presented to: International Aircraft Systems Fire
Protection Working Group. London UK

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Federal Aviation
Administration



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



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2:16am



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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



Smoke Barrier Access Opening



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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



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747SP Below Floor Compartment



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Test Project

- **Smoke tests will be conducted with the compartment empty, fully loaded with containers, and loaded with a mix of containers and pallets. Smoke detection times will be compared to determine which configuration produces the slowest detection times.**
- **Sandia smoke transport CFD code will be used to simulate all the actual smoke test scenarios. Smoke test results will be compared to simulation results.**
- **Results of above testing will dictate future activities.**

