Harry Webster

Full Scale Lithium Battery Tests

A series of tests were conducted in the Fire Safety Branch Boeing 727 test article to determine the effect on the aircraft of a large scale lithium battery fire. Tests were conducted in both the Class E main deck and the Class C below deck cargo compartments. Three battery fire loads were evaluated, with two types of ignition. These included Akaline / Nickel Metal Hydride/Nickel Cadmium, Lithium-ion and Lithium Metal batteries. The aircraft was configured to simulate the internal airflows that would be experienced at altitude in emergency conditions. Measurements were made in the cargo compartments including: temperatures, fire temperatures and heat flux, smoke density, cabin pressure, and CO, O2 and CO2. The conditions on the flight deck were also monitored for temperature, smoke, and CO, O2 and CO2. There was extensive video documentation, including infrared cameras.