# THE SYNERGISTIC EFFECTS OF THE COMBINATIONS OF NITROGEN AND HALON 1301 DURING THE MPS AEROSOL CAN SIMULATION EXPLOSION

John Reinhardt
*FAA William J, Hughes Technical Center, Atlantic City, NJ*

As part of the FAA's current effort of identifying Halon 1301 replacement fire extinguishing agents and minimizing its use onboard aircraft, the agency conducted a series of explosion tests to determine the benefits of combining nitrogen and halon systems. With the recent development of an Onboard Inert Gas Generation System (OBIGGS) for aircraft application, such as fuel tank explosion protection, a new wave of aircraft fire protection concepts have emerged. In this research project, an 11.4 $m^3$-closed vessel, simulating an aircraft cargo compartment, was equipped with a nitrogen generation system and a Halon 1301 total flood system to determine if a synergistic effect existed between these two gases. These two systems were independently activated with varying gas volumetric concentrations. The Aerosol Can Simulation Explosion procedures, of the Minimum Performance Standards (MPS) for Aircraft Cargo Compartment Fire Suppression Systems, were used during this program. These results may assist fire protection designers with systems discharge times and fire extinguishing agent volumetric concentrations with the objective of minimizing the amount of Halon 1301 to be used onboard an aircraft. This presentation will discuss the results of this explosion-testing program.