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Advanced Technology for

Fire Suppression in Aircraft

The Final Report of the Next Generation Fire Suppression Technology Program

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ABSTRACT

Fires and explosions were, and continue to be, among the greatest threats to the safety of personnel and the survivability of military aircraft both in peacetime and during combat operations. Production of halon 1301 (CF_3Br), long the fire suppressant of choice, ceased as of January 1, 1994 due to its high ozone depleting potential (ODP). By 1997, the U.S. Department of Defense (DoD) had identified the best available replacement for halon 1301 in aircraft, HFC-125 (C_2H_5F), but it requires two to three times the mass and storage volume and contributes to global warming. Meanwhile, new aircraft were in various stages of design, and the international community was questioning the necessity of maintaining the large reserves of halon 1301.

A new undertaking, the Next Generation Fire Suppression Technology Program (NGP), was created to identify, through research, fire suppression technologies with reduced compromises. Supported primarily by the DoD Strategic Environmental Research and Development Program (SERDP) as Project WP-1059, the NGP goal was to "Develop and demonstrate technology for economically feasible, environmentally acceptable and user-safe processes, techniques, and fluids that meet the operational requirements currently satisfied by halon 1301 systems in aircraft." The multiple demands on the new technologies were daunting.

In its decade of systematic research (1997-2006), the NGP revitalized the field of fire suppression science. This book tells the story of how the NGP came about, what research was performed, how it modernized the thinking in the field, and the technical findings that emerged related to fire suppression in aircraft. The enclosed CD compiles the collected publications from the program.

Keywords: flame inhibition, fire research, fire suppression, halon, aircraft

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