

Cargo Compartment Halon Replacement Agent - Proof of Concept Testing



Federal Aviation
Administration



Presented to: International Aircraft Systems Fire Protection
Working Group, Cologne, Germany

By: FAA Technical Center

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Background

- Fire suppression systems required in Class-C cargo compartments.
 - Halon 1301 used in total flooding fire suppression systems.
- Ban on production of Halon 1301 (Jan. 1994)
 - Mandated by the Montreal Protocol
- Minimum Performance Standard (MPS) developed as one part of the FAA certification process to test replacement agents/systems.
- Proof of concept testing needs to be conducted to make sure agents are safe to be tested in a full scale environment.



Background

- At sub-inerting concentrations of BTP and HFC-125, the agents acted as fuel and enhanced the aerosol can explosions.
- BTP produced overpressures between 63 psig and 100 psig at concentrations between 3% - 6%.
- HFC-125 produced overpressures of 53 psig at 9% and 11% agent concentrations.

technical note technical

Behavior of Bromotrifluoropropene and Pentafluoroethane When Subjected to a Simulated Aerosol Can Explosion

John W. Reinhardt

May 2004

DOT/FAA/AR-TN04/4

This document is available to the public through the National Technical Information Service (NTIS), Springfield, Virginia 22161.



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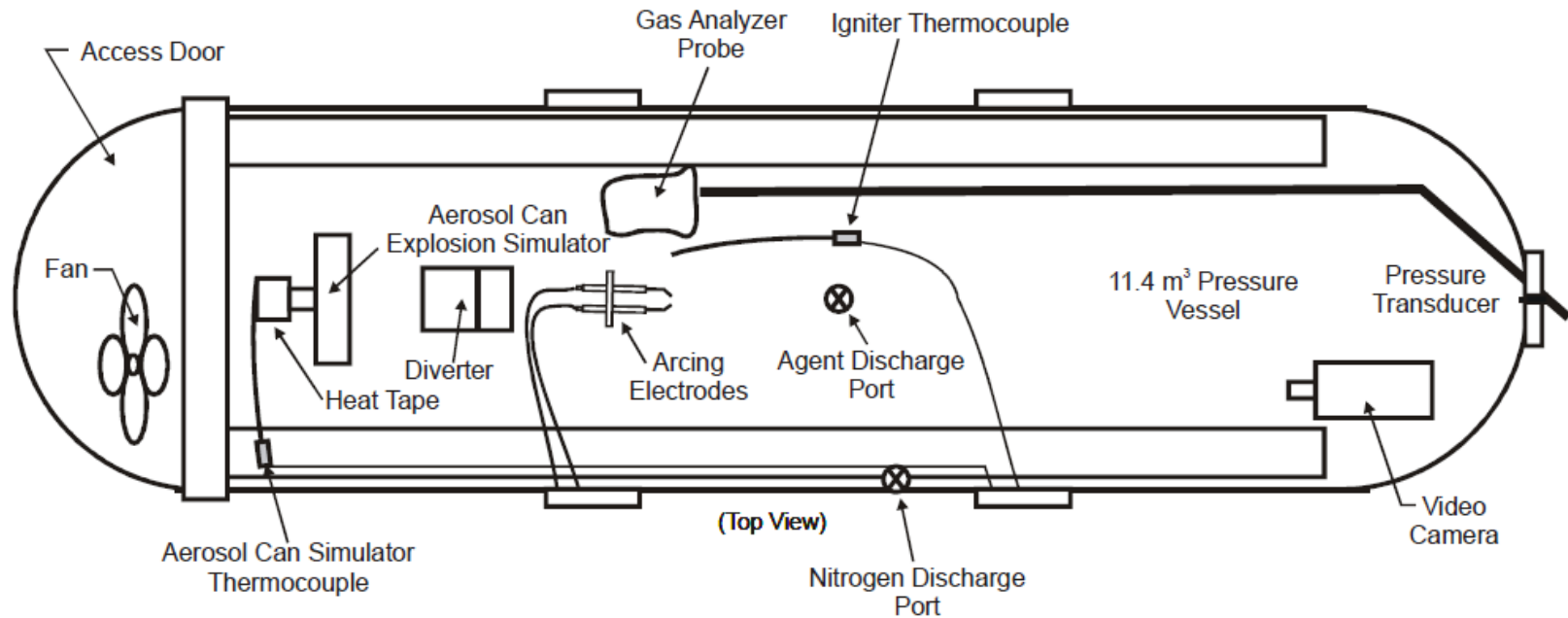


Current Work

- Testing an agent as a potential Halon replacement.
- Testing to be conducted in a 11383 Liter and 21 Liter pressure vessel.
- Map out flammability limits and effects at sub-inerting concentrations in the smaller pressure vessel.
- Observe effects of any peculiar behavior in the larger pressure vessel.



Test Article



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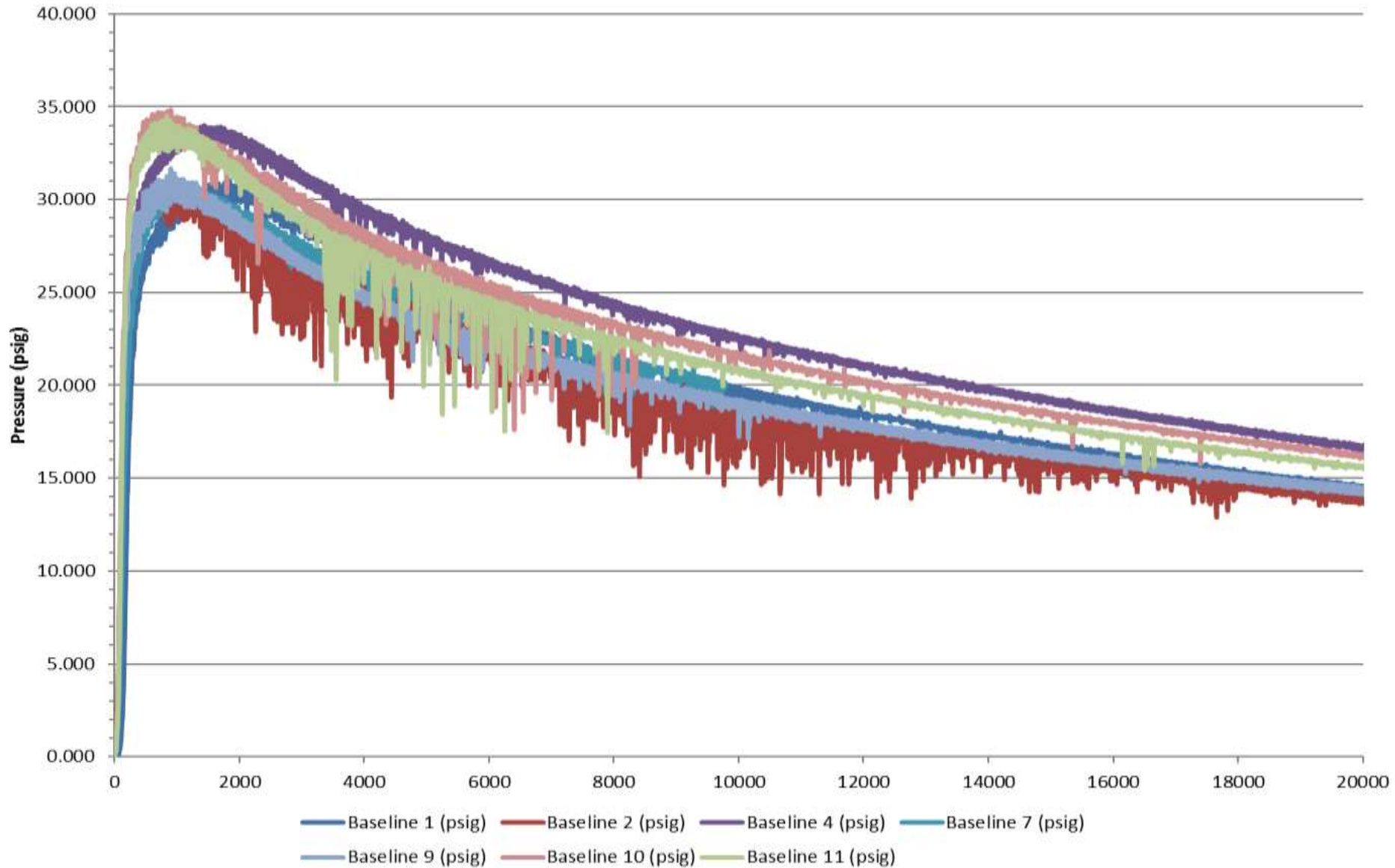
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Test Campaign Status

- Conducted baseline tests in the large pressure vessel.
- Will be conducting tests in the smaller pressure vessel to map flammability limits of the agent.



Baseline Pressures



Preliminary Results

- **Average Baseline Pressure: 30.5 psig**



Future Work

- Complete testing to map flammability limits of agent in the small pressure vessel.
- Conduct testing in large pressure vessel with sub-inerting concentrations of agent.



Questions?

Dhaval Dadia

dhaval.dadia@faa.gov

(609) 485-8828

