National Airport Fire Extinguishing Agent Performance Test Facility

Improved firefighting training, techniques, and equipment are needed to support FAA airport safety and certification programs.

It is FAA policy to maintain or improve current levels of service and firefighting effectiveness while stabilizing or reducing the costs of that service and associated equipment. The central theme in this research and development effort is the improvement of firefighting techniques and equipment while maintaining or improving cost-effectiveness. Sensitivity to cost is very important, especially at small airports where fire protection can be a very large part of the airport's operating costs.

This program is focused primarily on advancing the state of the art in firefighting strategies and increasing passenger survivability under the extremely harsh conditions of an interior postcrash fire. A secondary focus includes evaluating the effectiveness of elevated boom and cabin skin penetration systems for interior fires, cargo fires, and composite material fires, as well as evaluating the effectiveness of advanced airport firefighting extinguishing agents which are more environmentally acceptable so that ground water and air quality are protected.

Laboratory tests have not proved reliable to predict the performance of extinguishing agents in large postcrash fuel spill fires. Additionally, interior aircraft fire protection requirements can only be measured under actual full-scale interior fire conditions of flashover. Real-time firefighting strategies and fire protection requirements need to be established for new generation aircraft having second-level passenger seating designs. In addition, aircraft constructed of advance composite materials pose unique and specialized requirements on firefighters which will be determined using this facility.

The test facility will consist of three parts:

- A full-scale, environmentally protected ground facility to test new fire extinguishing agents and collect toxic waste and spent fuel without endangering the environment.
- A full-scale aircraft facility with second-level passenger configurations to test new equipment, firefighting tactics, and strategies is planned.
- The FAA's advanced high-performance rescue research vehicle (HPRV) with its 55-foot elevated boom and cabin skin penetration system.

A large military surplus C-133 cargo aircraft will be fire hardened and configured to test agent distribution and fire performance in several unique fire scenarios, including interior fires, cargo fires, and second-level fires.

The ground spill fire facility measures 200 x 120 feet and will be used to assess the performance of unique fire extinguishing agents used for specialized airport fire protection needs. This facility will be used to develop new performance standards for all classes of extinguishing agents including dry chemical and halon alternative clean agents. The facility is concrete protected with a 5000-gallon collection containment vault.

The photograph above shows the advance high-performance rescue research vehicle (HPRV) with its 55-foot elevated boom and cabin skin penetration system conducting a fire test.

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