

75186



expanded metal technology

DEPT. OF TRANSPORTATION
DOCKETS

00 MAR 27 AM 10:02

March 24, 2000

United States Department of Transportation Dockets
Docket No. FAA-1999-6411 -22
400 Seventh Street, SW., Room Plaza 401
Washington, D.C. 20590

Re: Transport Airplane Fuel Tank System Design Review, Flammability Reduction
and Maintenance and Inspection Requirements

As a manufacturer of "eXess", a technology that provides a means to minimize the development of flammable vapors in fuel tanks, as well as a means to prevent catastrophic damage if ignition occurs, (as described on page 31 of subject proposed rule-making) we, at Suppress X-S, are compelled to submit the following comments:

First, we applaud the agency's effort in recognizing the danger associated with the inadvertent heating of center fuel tanks, and the subsequent buildup of potentially-explosive vapors within the tank, and appreciate the monumental task of presenting a remedy that would prevent such catastrophes as TWA Flight 800.

While we know this proposed rulemaking effort represents a genuine effort on behalf of the agency, and realize the many technical, labor and economic factors contributing to a prescribed course of action in this regard, it is also true that knowledge of the efficacy of expanded aluminum technology for prevention explosion has been available to both the agency and the airline industry prior to the tragedy of TWA Flight 800.

The science is simple. Explosions in fuel tanks are caused by a sudden increase in heat and pressure, caused by an ignition source, such as a spark, electrostatic charge, or projectile entering the tank. Expanded aluminum, configured in a hexagonal mesh to provide maximum surface area, reduces the heat and resultant pressure below the explosive threshold. The aluminum mesh reduces combustion overpressure by absorbing the heat from the ignition source and dispersing it, effectively preventing an explosion.

Expanded aluminum technology is not new. It is currently employed to prevent fuel tank explosions by a number of military organizations in Europe and Asia, as well as civil law enforcement and various industries.

Congress, in its 1999 and 2000 budgets, was sufficiently convinced to include millions of dollars for testing and installation, with priority consideration, for aluminum mesh tank liners in C-130 aircraft and army ground vehicles. In fact, the United States Air Force is currently testing the product at Wright-Patterson Air Force Base, and from observations of initial rounds of testing; it is performing superbly.

While the United States Air Force currently employs a foam product in some fuel tanks for the purpose of explosion prevention, as currently configured, the foam product has several drawbacks. The foam has to be replaced after approximately 15 years, while the aluminum mesh lasts for the life of the tank. The foam product displaces approximately three-to-five percent of the volume of the tank, while the aluminum mesh displaces approximately 1.5 percent. The foam product absorbs an additional percentage of the fuel, while the aluminum mesh retains none of the fuel. At the time of replacement, the foam product presents an environmental hazard, as it retains fuel, while the aluminum mesh product does not have to be replaced. The foam product offers no protection against static charges, while the aluminum mesh grounds a static charge.

The cost of equipping center fuel tanks with aluminum mesh, which is a proven explosion prevention technology, as compared with other proposed measures, is more efficient. Approximately \$50,000, as a one-time expenditure, provides explosion prevention protection for the center fuel tank of a 747 aircraft, as opposed to the costs associated with adopting a more labor-intensive, time-consuming, periodic maintenance and inspection protocol. According to industry reports, the additional weight of the product, throughout a carrier's fleet, would not result in lost revenue miles, as, on average, flights are booked to approximately 70 percent of capacity.

The "eXess" product is not to be confused with other aluminum mesh products, which have been available for approximately 20 years. The "eXess" product is the result of evolutionary advancements in the expanded metal field, with its machinery and methodology patented in the United States in 1998. The key element of the advanced product is its multi-dimensional configuration, which provides for maximum surface area capability.

We suggest a coordinated effort, by the United States Department of Defense, Office of Live Fire Testing and Evaluation and the Federal Aviation Administration to jointly test and certify the equipping of all aircraft under military and FAA jurisdiction with aluminum mesh explosion prevention material. Further, we suggest it would be in the public interest to conduct a public hearing on the subject Notice of Proposed Rulemaking in order to promote a true understanding among all parties about the availability, efficacy and benefits of explosion prevention technology.

In conclusion, we salute the efforts of the Federal Aviation Administration in endeavoring to address the nettlesome problems of fuel tank explosions, especially with the inherent onboard systems configuration. We stand on-the-ready to assist the agency and the industry in any and all undertakings intended to ensure the safety of the flying public.

Respectfully submitted,



Dennis A. O'Connor
President, Suppress X-S, LLC