Hardened Baggage Container

Under an FAA research project conducted from 1991-Present, prototype blast-Hardened Unit Load Devices(Hold's) from a number of designers have been manufactured using a variety of lightweight, high-strength composite materials. HULD candidate material was chosen primarily for its blast-resistant properties in addition to fragment-penetration resistance, fire-retardant characteristics, low weight and low cost. The explosive threat that is required to be contained by the HULD exceeds the charge size specified in the Criteria for Certification of Explosives Detection Systems, in order to provide a margin of safety. In addition to meeting the required HULD design criteria for blast-resistance, the HULD's are also required to conform to existing FAA airworthiness and airline operational requirements. The prototype HULD's that have been designed and tested to date are of the LD-3 classification, which is the most common type of passenger baggage container currently used on wide-bodied passenger airlines. There are currently two companies that have developed HULD's which have been successfully tested to the FAA's requirements for HULD blast resistance. The companies and designs are as follows:

Company: Galaxy Scientific Incorporated, Egg Harbor NJ
HULD Design: Individual panels of Glare composite(aluminum/fiberglass laminate) joined to a high-strength aluminum frame. Container uses a single panel Glare door.
Empty Weight: 390 lbs

Galaxy Huld (Door Closed)

Galaxy Huld (Door Open)

Galaxy Huld (Post Test)

Company: Telair International, Rancho Dominguez CA
HULD Design: Individual panels of Kevlar composite joined to a high-strength aluminum frame. Container door is composed of a single piece of Kevlar with a curtain design.
Empty Weight: 340 lbs

Telair Huld (Door Closed)

Telair Huld (Door Open)

Telair Huld (Pre-Test)

Telair Huld (Post-Test)

In Summary, the feasibility of blast-resistant aircraft baggage containers has been demonstrated, resulting in the development of 2 separate HULD designs by private industry. The units developed are capable of mitigating an explosive threat in excess of the current explosives detection system certification criteria. The development of a hardened container design criteria has also been completed, resulting in a draft specification for LD-3-type hardened baggage containers. The draft specification provides a vehicle by which the FAA could mandate the use of hardened containers that meet or exceed required blast resistance and airworthiness requirements. Research efforts are currently underway to develop a Hardened Container for Narrow Body Aircraft (HCNBA). A full-scale HCNBA is scheduled for blast testing in May of 2002.