PASSIVE HELICOPTER SLING LOAD (HSL) STABILITY

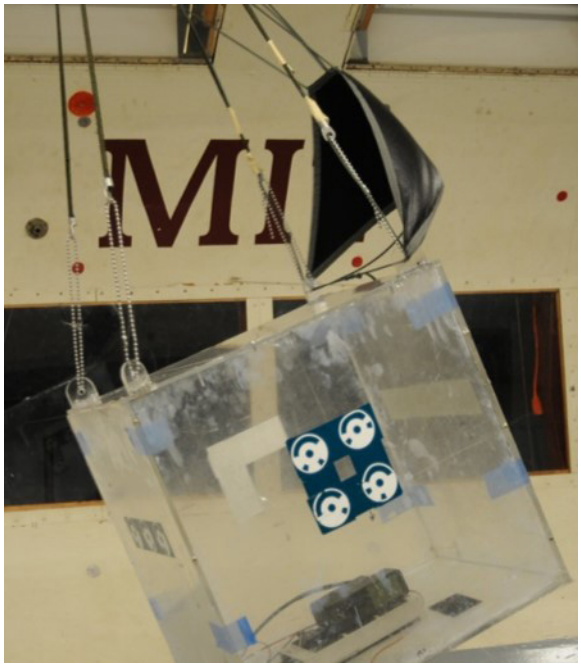
OVERVIEW:

Helicopter Sling Load (HSL) is one of the fastest, most accurate forms of end-to-end delivery in the military today for relatively short distances. The inherent, self-sustaining aspects combined with the ability to air land materiel and personnel at the exact location needed makes HSL a very powerful tool for the military.

Since the Army is developing into a leaner, more agile force, soldiers must have the capability to sustain combat power in very dynamic battlespaces that effectively and efficiently enables them to have decisive operational superiority. Currently, HSL missions do not provide this operational superiority due to the aerodynamic instability of many common HSL payloads. These instabilities require the helicopter to fly slower, which decreases delivery time and range, increases risk of soldier or aircraft harm due to enemy fire, and increases mission cost.

Passive HSL Stability is comprised of a flexible fin attached between the sling legs and is currently being developed by NSRDEC as a tool to increase the stability of HSL payloads, therefore decreasing the risks inherent to HSL missions.

DESCRIPTION:



Passive HSL Stability is currently in early development and is scheduled to transition to Program Manager-Force Sustainment Systems (PdM-FSS) in FY17 under the Sustainment Aerial Delivery Equipment-Sling Load (SADE-SL) Capabilities Development Document (CDD) which is in final staffing. It is currently at Technology Readiness Level 4/5 but is expected to be at 6 by the end of FY16.

The system is comprised of a rectangular sheet of fabric attached between the aft two sling legs as close to the payload as possible (see picture).

Tests have been conducted at both 1/5 (wind tunnel) and 1/2 (aircraft) scale using rectangular TRICON containers, both resulting in increased stability compared to no fin. The U-shaped fin increases stability about 20% allowing the aircraft to fly faster.

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