HELICOPTER SLING LOAD UNMANNED HOOKUP (HSLUH)

OVERVIEW:

VCT-3 Hookup device

Army helicopter sling load operations require between two to four personnel beneath the aircraft during a payload hookup. Poor environmental conditions, such as nighttime, winds, and whiteout/brownout conditions, combined with dangerous hookup conditions, such as the hookup team being on top of the load, causes a significant safety concern. In anticipation of the approved Sustainment Aerial Delivery Equipment Capability Development Document (SADE-SL CDD), NSRDEC invested in the development of an HSL Unmanned Hookup technology to address this concern. NSRDEC posted a Request for Information (RFI) in November 2013 and funded two contractors to develop prototypes. The two prototypes are dubbed the Auto Capture Hook-250 (ACH-250) and the Vertical Capture Transporter 3 (VCT-3). Both devices are rated to a 25,000 lb working load and a 76,100 lb proof load.

DESCRIPTION OF ACH-250:

Plucker for VCT-3

This device is a grapple hook design with three spring-loaded articulating arms. It can be suspended below a helicopter using either an HSL sling or reach pendant attached to the ACH-250 via a 25K Apex. The ACH-250 works by maneuvering the device to capture a loop attached to the payload. A successful hookup only requires the ACH-250 to capture the loop using one of its three arms; however any combination of one, two or three arms will result in a successful hookup. In order to secure the loop it must capture one leg of a loop and not the entire loop. Once the loop is secured, the helicopter increases altitude, flies to the destination landing zone (LZ) and releases the payload. The payload is lowered to the ground, which removes the load on the system, and the arms of the ACH-250 are lowered to the down position. Raising and lowering the arms is accomplished using a wired controller. During operation the controller remains in the aircraft and is held by the Crew Chief.

DESCRIPTION OF VCT-3:

Wireless Controller for VCT-3

This device is a cone on cone design. The hookup device (white in color) is attached to a 25K Apex and is suspended under a helicopter using either an HSL sling or reach pendant. The hookup device weighs approximately 280 lb. The hookup device is maneuvered to fit over and capture the bottom cone (referred to as the plucker and red in color). The plucker weighs approximately 70 lb. The "capture" occurs when the spring loaded arms within the hookup device lock around the silver mushroom cap of the plucker. Once the plucker is captured, the helicopter increases altitude and flies to the LZ. At arrival, the helicopter places the payload on the ground and releases the plucker, which disconnects the payload from the helicopter. The "release" action of the hookup device is controlled by a wireless controller. To release the load, the Crew Chief presses Button 1.

ACH-250

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