



Interagency Aviation Safety Alert



No. IA 09-04

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Subject: External Load and Short Haul Operations

Area of Concern: Inadvertent Cargo Hook Releases and Cable Adjustment

Distribution: All Helicopter Operations

Discussion: Recently, search and rescue personnel were conducting helicopter short-haul training in “typical terrain” in a National Park, when an inadvertent release of the primary anchor (cargo hook) occurred during a human external load evolution.

After exiting the helispot, at approximately 10 feet above ground level, the short-haul attendant felt a snap or jolt in the short-haul rope system, which he believed to be the inadvertent release of the primary anchor (hook). The release shifted the load to the secondary anchor (3-ring release). Shortly after the release of the primary hook, the litter and attendant began to spin. Several attempts were made by the attendant to slow the rate of spin, but with only limited success. The short-haul attendant attempted to communicate via radio/flight helmet with the aircraft during this time, but was unsuccessful. The helicopter returned to the staging helispot where disconnect procedures were accomplished using hand signals. This incident occurred during the 4th helicopter short-haul “typical terrain” training session conducted during the 2009 season.

The helicopter was a Eurocopter AS 350, configured with a Talon Keeperless Cargo Hook from Onboard Systems as the primary anchor (figure 1). The manual release mechanism for the cargo hook is shown in figure 2.



Figure 1 Cargo Hook



Figure 2 Manual Release Mechanism

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An aviation safety team from the Bureau and NBC-AMD was dispatched to investigate the inadvertent release. The investigation revealed several items that, when combined, resulted in this incident. Damage was noted on the outer sheath of the manual release cable (figure 3). With the manual release mechanism cover removed (figure 4), the rigging of the fore and aft cables could be measured.



Figure 3 Damage to manual release cable



Figure 4 Manual Release Mechanism (cover removed)

With the cables rigged together, the aft cable is pulled approximately 5/8" toward the release position (figure 5). Another helicopter rigged with the same cargo hook was examined to see if there were any differences in rigging. The comparison showed that when rigged together, the aft cable on the second helicopter was not pulled toward the release position, but had approximately 1/8" free play (figure 6).

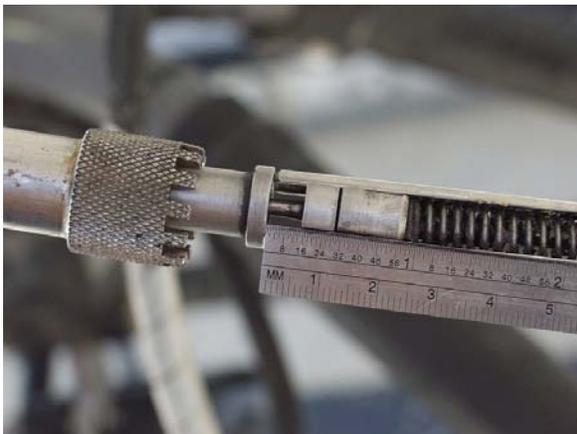


Figure 5 Rigged cables pre-loaded for release

Figure 6 Cable rigging on 2nd aircraft

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When the aft cable is disconnected from the forward cable, both aircraft showed a similar amount of exposed cable (figures 7 and 8).



Figure 7 Gap with cable disconnected



Figure 8 Gap in comparison cable

The examination and comparison of the manual release cable rigging showed that the manual release cable in the incident aircraft had approximately 1/4" of the movement necessary to effect a mechanical release when connected. Any bending of the forward cable, such as when the collective is raised, causes an effective "shortening" of the inner cable relative to the sheath due to the changing radius of the bend.

Unlike conventional hooks which automatically reset themselves, the Talon Keeperless hook must be manually re-cocked. If the cables are rigged with the hook open and minimum clearance is established in the cable system, closing and latching the hook will eliminate any clearance and pre-load the release trigger.

Proper rigging is critical. It is recommended that all A Star helicopters with manual cargo release cables be checked for:

1. Clearance between the attach end of the inner cable and the end of the outer sheath
2. Clearance between the guide on the forward cable and the end of the aft cable
3. General cleanliness and condition of the release cable.

For further information go to: www.onboardsystems.com for the latest revision of the service manual for

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