

Mechanical Release Failure - Helicopter

CAGC SAFETY ALERT

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Safety Alert

07-11

Event Summary

A helicopter experienced a mechanical release cable sheath failure; the sheath broke just past the insertion head at the hook. Previously minor damage had been identified at the location but was deemed not to compromise the integrity of the operation of the hook. The break allowed the mechanical release to engage, dropping a longline and bag runner from a height of approximately 300 ft. The equipment has not been recovered.

Description of Actions Prior to Event

Several months prior to the incident, sheath damage to the cable in question was identified by the Engineer on site and at the time was deemed not to compromise the integrity of the hook; operations continued and the area showing minor damage was covered by black electrical tape – a common aviation industry practice. The Engineer also proactively ordered a replacement part in case, the cable condition deteriorated to the point it needed replacement. The replacement part had been received prior to the incident and was available at site for installation.

On the day of the event, both Engineer and Pilot inspected the cable during their daily inspections prior to flight (in accordance with the manufacturer's requirements – both aircraft and hook) They inspected the black tape but did not see any surrounding damage to the cable, or any visual cue to alert them to a problem.

Description of Incident

At 08:45 am, after the Pilot and Engineer had performed their daily inspections of the aircraft, the helicopter lifted with longline and bag runner attached from the staging area, departing for its first bag pick up. The Pilot headed West Southwest in a slow climb waiting for the telemetry communication system to receive the flight's mission. Once the mission was received the Pilot looked out and down to confirm the orientation of the bag runner then proceeded to turn, accelerate, and climb for the first point as indicated by the Kodiak.

At an estimated 600m from the first point and at a height of 300' Above Ground Level (AGL aka approximate height estimation) the Pilot adjusted his view to check on the longline and bag runner. It was at this point the Pilot realized the load had released. He marked the location via Kodiak and returned to the staging area, performing a visual search for the load during his return. The Pilot was unable to locate the dropped load.

After landing and shutting down, the Engineer and Pilot inspected the hook. Upon investigation and testing it was discovered that the mechanical release cable sheath had broken just before the insertion head at the hook causing the sheath to slip, thereby allowing the release to be engaged.

Immediate Cause

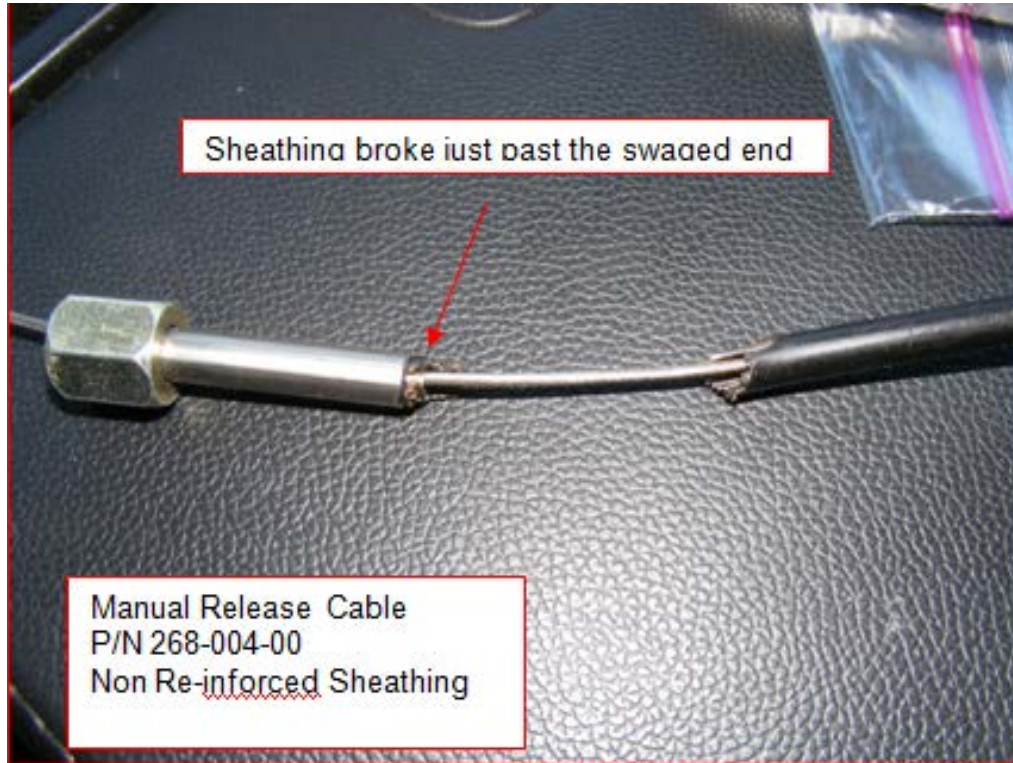
The break in the cable sheath occurred at a point of stress caused by the movement of the hook as it travelled laterally along the load beam. The hook released its load when the manual release cable sheathing broke just behind the swaged head at the hook end of the cable. The sheathing break allowed for motion in the cable that engaged the release mechanism on the hook. Due to the light load on the hook the Pilot did not feel the release happen in cruise.

Recommendations

The following recommendations were developed as potential methods to reduce risk and possibly eliminate the re-occurrence of a similar event. Once approved by the reviewing parties the recommendations will act as a basis for an action plan:

- Immediate release of companies Maintenance Directive requiring additional mandatory hook inspection criteria for Engineers;
- Immediate fleet wide replacement of mechanical release cable 260-004-00;
- Stop work order for any aircraft that has a damaged 260-004-00 cable. Where Engineers find damage to 260-004-00 no external load operations will take place till a new part is installed;
- Fleet wide Engineer briefing on problem and solution, including reviews of daily inspection and cable inspection criteria;
- Engineer management to use safety meetings and pre-job briefings to discuss with Engineer staff one-on-one the findings of any reported, documented visual deficiencies;
- Change of aviation industry best practice: discontinue the practice of covering mechanical release cables with black electrical tape. If tape is discovered during the daily inspection, tape should be removed to allow complete visual inspection of covered area;
- Improve information exchange at crew rotations: mandatory information transfer (written, email or other method) between Engineers on shift. Arriving Engineer to receive information from departing Engineer on any ongoing snags, ordered parts, and overall machine status;
- Pursue manufacturer to aid in the developing better written guidance: engage hook manufacturer to define effective cable inspection criteria.

ADDITIONAL INFORMATION



Broken sheath with black tape removed



Broken sheath with black tape on



Opposite end of cable showed some minor damage. It is an industry norm to use electrical tape to cover over areas such as these.

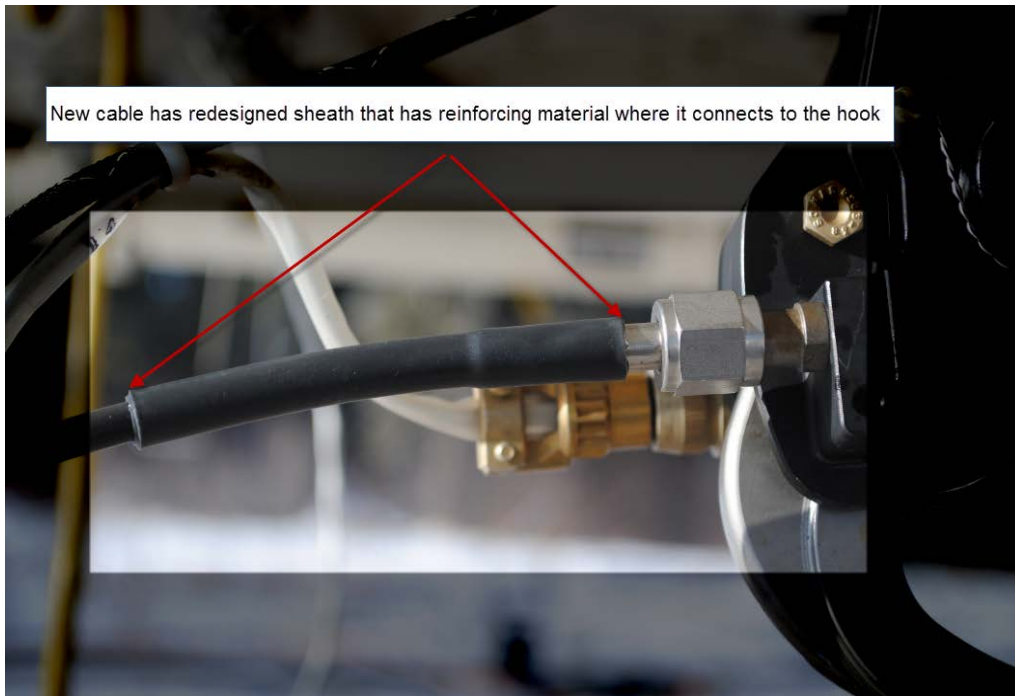


Photo shows insertion point of cable to hook and the new style replacement cable with the additional reinforcement of the area in question.

ADDITIONAL INFORMATION



Photo showing normal hook configuration - new cable part installed