



National Transportation Safety Board



Inadvertent Activation of Fuel Shutoff Lever and Subsequent Ditching

Liberty Helicopters Inc., AS350 B2, N350LH
New York, New York, March 11, 2018

Survival Factors presentation

Overview

- Passenger restraints
- Passenger egress
- Postaccident FAA actions

Before-Flight Preparations

- Passengers watched safety video
- Harnesses fitted
- Boarded helicopter
 - Tethers connected to harness and helicopter
 - FAA-approved restraints secured over harness
 - Headsets provided

Harness/Tether System - Harness

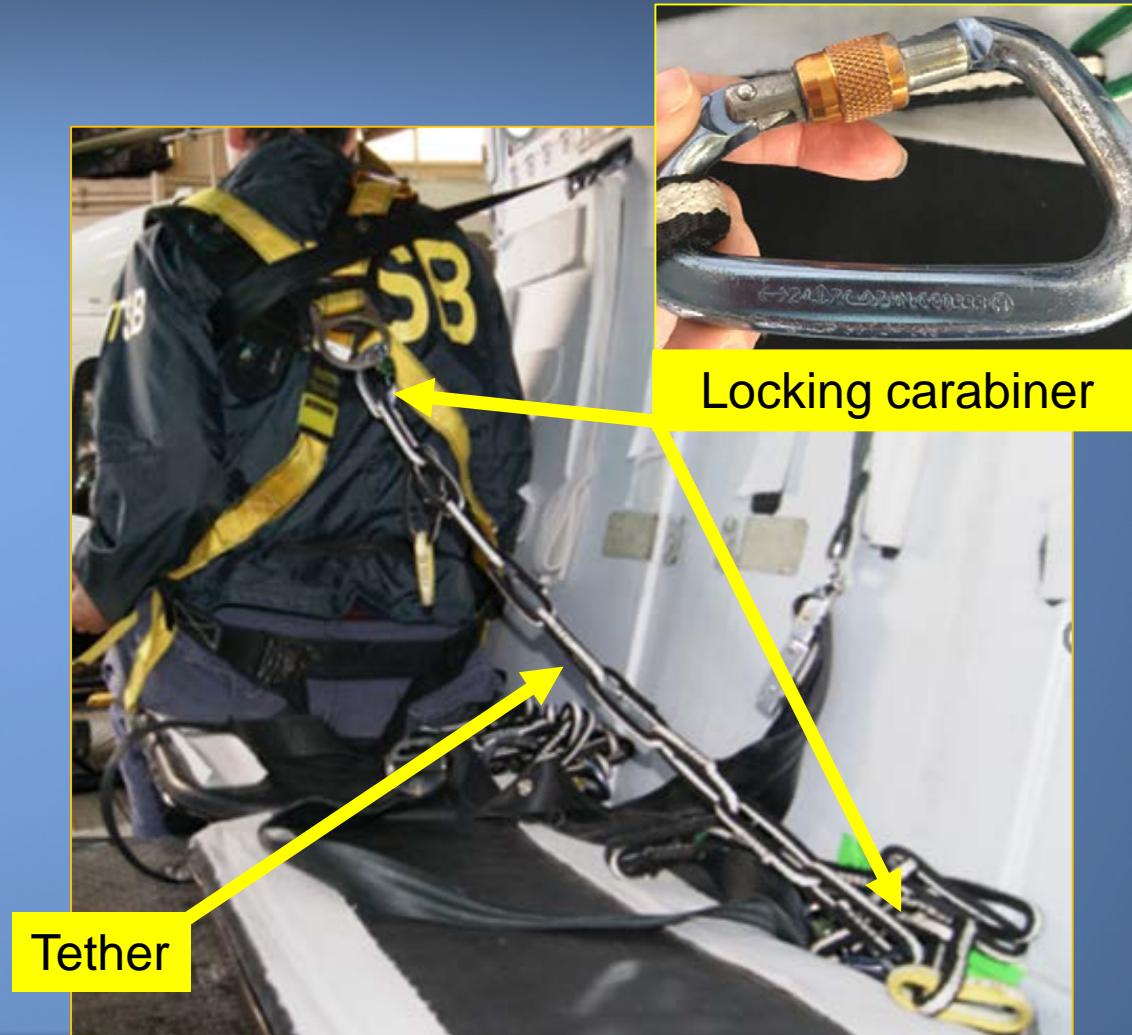
- Prevent passengers from falling when FAA-approved restraints removed in flight
- Cutting tool in shoulder pouch
- Lanyards, carabiners, and zip ties attached items to harness
 - Smartphones, cameras, headset cords
- PFD worn around waist



Harness/Tether System - Tether

Locking carabiners connected tether

- D-ring on harness (back)
- Attach point (cabin)



FAA-Approved Restraints

- Lap belts, shoulder harnesses fastened over harness/tether system
- Routed under arm, adjusted loosely
 - “Freedom of movement”



Passenger Egress

- Two methods to egress from harness/tether system in an emergency
 - Open “quick release clip”
 - Use cutting tool
- Locking carabiners – no quick release features, difficult to access
- Tether routing made access for cutting difficult
 - Pilots concerned cutting tool ineffective

Accident Flight

- Passengers conscious – no traumatic injuries
- Helicopter inverted, submerged in 11 seconds
- Occupants experienced cold-water immersion
- Pilot released FAA-approved restraint
- Inability for passengers to rapidly extricate themselves was a critical factor

Postaccident FAA Actions

- FAA issued Emergency Order prohibiting supplemental passenger restraint systems (SPRS) without letter of authorization (LOA)
- LOA required applicant to demonstrate SPRS quick release

SPRS Concerns

SPRS approval process focused on release mechanism, not other factors, such as:

- Aircraft-specific installations
- Potential for entanglement

Summary

- Decision to use locking carabiners and cutting tools for egress unsafe
- Harness/tether system likely contributed to fatalities
- FAA approval process for SPRS inadequate
- SPRS installations not comprehensively evaluated



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