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AVIATION SAFETY LETTER

In this Issue...

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you'll not live long enough to make them all yourself ...

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Post-Accident Survivability—Direct-to-Airframe Helmet Cord Connections

An Aviation Safety Advisory from the Transportation Safety Board of Canada (TSB)

On December 7, 2005, an MBB-BO105 helicopter was operating near Marystown, N.L. The helicopter was observed flying along the shoreline, at low altitude, in snow, and in darkening conditions. The helicopter struck the water about 1 000 ft from shore, and sank to the bottom of Mortier Bay. The pilot and passenger escaped from the helicopter; however, they later perished in the frigid water. The TSB investigation into this accident (A05A0155) is ongoing. After the accident, an examination of the pilot's aviation helmet found that the end fitting of the communication cord was fractured at the point where it attaches to the helicopter (see Figure 1).

Figure 1. Fractured cord end fitting

The communication cords for front-seat occupants connect to receptacles located on the overhead center console. When the helicopter was recovered, the metal pins from the end fitting were still inside the receptacle. Metal remnants from the connection show that the cord was being pulled sideways, towards the pilot's door, when the fracture occurred. A downward pull is required to release the connection. A break test of a similar fitting required a 70-lb pull before the cord failed. After ditching or water impact, the occupants of a capsized helicopter are prone to disorientation. Therefore, unimpeded egress through any available exit is vital to survival. An attached communication cord that will not release cleanly may impede this egress.

In the past, similar BO-105 helicopters have been fitted with an intermediate "pig-tail" communication cord for helmet connections. Instead of plugging the helmet cord into the helicopter's receptacle, the helmet cord is instead plugged into this intermediate cord (see Figure 2).

The helmet connection plug can release cleanly from the intermediate "pig-tail" cord receptacle as it is pulled in the direction of travel during egress. Over a period of years, the use of the intermediate helmet cords at this operator declined, perhaps because pilots were not aware that the cords ensure separation in an emergency. However, since this accident, the operator has indicated that the use of intermediate "pig-tail" cords for helmet connections will now be re-instituted where necessary.

Figure 2. Intermediate helmet "pig tail" connection cords

Other operators may have aircraft with similar direct-to-airframe connections, and may be unaware that these can impede egress in an emergency. Therefore, Transport Canada may wish to advise the aviation community that these connection types may impede egress, and that an intermediate cord can help to mitigate this hazard.
Done. —Ed. △