



# Interagency Aviation SAFETY ALERT



No. IASA 20-04

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**Subject:** Synthetic Long Lines

**Area of Concern:** Manufacturer's Maintenance, Inspection, and Splicing Recommendations

**Distribution:** All Helicopter Operations

**Discussion:** Recently, a Type 2 helicopter experienced an uncommanded release of both the long line and bucket while departing from the dip site with a full bucket of water. The bucket was destroyed when it impacted the ground. The investigation into the event revealed that the brummel splice used to attach the ring which connects the long line to the aircraft belly hook, separated. The synthetic line manufacturer stated that a brummel splice is not recommended for the brand of line used and that they have not tested their synthetic lines with brummel splices.

There are multiple splice types throughout the industry, but not all splices are created equal. Splices on synthetic lines reduce the overall strength of the synthetic line. The degradation of strength varies significantly with the type of splice, synthetic line type, and location of the splice. It is important to follow specific manufacturer requirements for maintenance, inspection and splice(s) types that can be used on specific types of lines.

U.S. Forest Service and DOI contract language states that knots are not permitted in synthetic long-lines. Knots can decrease strength by as much as 50%. Splices may be used in the assembly of the long line, but mid-line splicing repairs are prohibited. Re-splicing at the end of the line is permitted, but only if the line is in good condition and the new splice is inserted in accordance with the manufacturer's recommended splicing practices. Again, **splices should always follow the manufacturer's recommended splicing practices.**



**Recommendations:** All contractors and crews inspect their aircraft's sythetic lines to ensure splices on each end of the long line are in compliance with the synthetic line manufacturers recommendations, and ensure that manufacturers maintenace and inspection procedures are followed. Contractors may purchase spools of synthetic line from the Original Equipment Manufacturer to assemble their own lines, but must follow the manufacturer's splicing recommendations.

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