



Interagency Aviation TECH BULLETIN



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SUBJECT: NAS1211B20 Ring and Stud Failure, Rappel Spotter Tether Attachment System

DISTRIBUTION: All Rappel Type II Helicopter Operators

ISSUE: On August 19, 2017 a Type II rappel helicopter responded to an initial attack rappel fire on the Sierra N.F. in Region 5. The rappel spotter deployed four rappellers and two loads of cargo on the incident. After the second load of cargo the spotter stated that it felt like their tether was hung up on something then freed itself. Upon further inspection it was evident that one NAS1211B20 ring and stud fittings had failed. The Air Rescue Systems (ARS) spotter anchor attaches to the LH and RH transmission wall via two NAS1211B20 ring and stud fittings.



Figure 1 – Failed NAS1211B20 Ring and Stud Fitting

DISCUSSION: The ARS Spotter Anchor is attached at two locations to a NAS1211B20 ring and stud fitting on the transmission wall. The ARS Spotter Anchor did not fail. Each attach point is able to carry the ultimate load. If one of the NAS1211B20 ring and stud fittings fail the second fitting will pick up the ultimate load. Figures 2 and 3 below illustrates components of the spotter tether system.

The failed NAS1211B20 was recovered and sent to an independent lab for analysis. Hydrogen embrittlement caused the fitting failure. At this time the failure appears to be an isolated case.



Figure 2 – ARS Spotter Anchor and Attach Points



Figure 3 – NAS1211B20 and Kong Quick Link

Listed below are the components and corresponding strengths.

1.	ARS Ring	30 kN	6,744 lbs
2.	ARS Webbing	30 kN	6,744 lbs
3.	Kong Quick Link	40 kN	8,992 lbs
4.	NAS1211B20		2,500 lbs
5.	Transmission Wall Structure		1,650 lbs

The weakest link in the system is the structure the NAS1211B20 is mounted to. The tether system is designed for a 300 lb working load. A safety factor of 3.5 is applied to the working load and then multiplied by 1.5 for the ultimate load.

$$\text{Ultimate Load} = 300 * 3.5 * 1.5 = 1,575 \text{ lb}$$

Ultimate load is well under the design load of the helicopter transmission wall to ensure safety.

The documentation from the helicopter contractor showed the failed ring and stud had been procured from Heli-Tech approximately 7 years ago. The USFS contacted Dart Aerospace (who now own Heli-Tech) to alert them of the matter. In response Dart is working toward issuing a recall on NAS1211B20 ring and stud fittings sold in kits to install STC No. SH261WE by Heli-Tech. Please contact Dart Aerospace for further information on the replacement NAS1211B20 hardware if the installed items are believed to have come from Heli-Tech.

As with all "Standard Parts" a Certificate of Conformity (C of C) should be provided by the producer of the standard part and be sold with that part.

A Standard Part is defined by the FAA as a part manufactured in complete compliance with an established U.S. Government or industry-accepted specification, which includes design, manufacturing, and uniform identification requirements. Examples include, but are not limited to, National Aerospace Standard (NAS), Air Force/Navy (AN) Aeronautical Standard, Society of Automotive Engineers (SAE), Aerospace Standard (AS), Military Standard (MS), etc. The NAS1211B20 is classified as a Standard Part.

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