

NATIONAL TRANSPORTATION SAFETY BOARD

Office of Research and Engineering
Materials Laboratory Division
Washington, D.C. 20594



February 17, 2012

MATERIALS LABORATORY FACTUAL REPORT

Report No. 12-015

A. ACCIDENT INFORMATION

Place : Green Cove Springs, Florida
Date : December 26, 2011
Vehicle : Bell 206B, N5016M
NTSB No. : ERA12MA122
Investigator : Robert Gretz, AS-ERA

B. COMPONENTS EXAMINED

Main Rotor Mast (upper end)

C. DETAILS OF THE EXAMINATION

The as-received upper end of the main rotor mast is displayed in figure 1. The mast was fractured about 5 inches below the splined section and about 1 inch below the enlarged diameter. The mast had been saw-cut about 8 inches below the fracture. The mast section below the fracture was darkly discolored consistent with exposure to high temperatures while the section above the fracture was not.

The mast was heavily deformed and bent above the fracture as shown in the middle view of figure 1. Magnified examination of fracture (lower view of figure 1) revealed large overstress shear lips completely around the mast. The orientation of the shear lips and the overall pattern of deformation were consistent with a bending overstress separation. No indications of torsion were noted in the fracture.

As visible in the middle view of figure 1, the paint was damaged at locations corresponding to contact with the main rotor yoke assembly. However, the mast was only lightly marked.

Joe Epperson
Senior Metallurgist



Figure 1. Upper view displays the as-received components. Middle view shows the bending deformation in the mast above the fracture. View at left shows the fracture face.