

## Gretz Robert

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**From:** Epperson Joe  
**Sent:** Friday, November 17, 2017 2:36 PM  
**To:** Gretz Robert  
**Cc:** Budinski Michael; Fox Matthew  
**Subject:** Front Royal, VA ERA18FA006  
**Attachments:** 1711Image57402.JPG; 1711Image57407.JPG

Front Royal, VA  
10/7/2017  
Piper PA-25-235, N90866  
ERA18FA006  
Bob Gretz, ASI ERA

Mr. Gretz:

The received section of tow rope was visually and microscopically examined in the NTSB Materials Laboratory. The as-received rope was separated at one end and intentionally cut at the other as show in attached image 1711Image57402. The ¼ inch diameter rope had a braided outer layer covering approximately 13 twisted inner strands.

Magnified inspection of the separation found mushroomed fiber ends and partially fused strands indicative of adiabatic heating resulting from high strain rate overstress separations of synthetic fiber ropes. The longest strands were twisted as if they were part of a knot at the time of separation.

A dark band with a metallic sheen was visible on the braided cover adjacent to the separation, see attached image 1711Image57407. A hand held x-ray alloy analyzer revealed significant amounts of aluminum in the darkest part of the band.

Joe Epperson, FASM  
NTSB Sr Metallurgist

Two attached images



