

# NATIONAL TRANSPORTATION SAFETY BOARD

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



December 10, 2010

MATERIALS LABORATORY FACTUAL REPORT

Report No. 10-116

## A. INVESTIGATION INFORMATION

Place : Tucson, Arizona  
Date : July 25, 2010  
Vehicle : Eurocopter AS350B3, N509AV  
NTSB No. : WPR10FA371  
Investigator : Elliott Simpson, AS-WPR

## B. COMPONENTS EXAMINED

Fuel Line Assembly with Copper Gasket and Fuel Jet Union  
Manifold Assembly and Diffuser Case s/n 191SFP  
Intermediate Case s/n 03316PR

## C. DETAILS OF THE EXAMINATION

The as-received accident parts are displayed in the upper view of figure 1. The lower view show a closer view of the area where the fuel line, with jet union, is attached to the diffuser assembly with the copper gasket between. The components were intact but reportedly found disconnected at the jet union to diffuser connection.

New exemplars of the components were also received for comparison. Figure 2 displays the exemplars of the jet union and associated attachment hardware.

The bores of the accident jet union attachment holes were visually examined with a stereo microscope to inspect for possible thread contact from the attaching bolts. No obvious thread marks were identified; however, the holes were roughly machined making discrimination of thread marks from the surface texture problematic. The same holes in the received exemplar jet union also showed the roughly machined surface texture. See figure 3 for comparison of a typical accident jet union bore and the bore of the new exemplar jet union.

The bores of the mating holes in the manifold flange were smoother in texture but again, no thread markings were identified.

Joe Epperson  
Senior Metallurgist

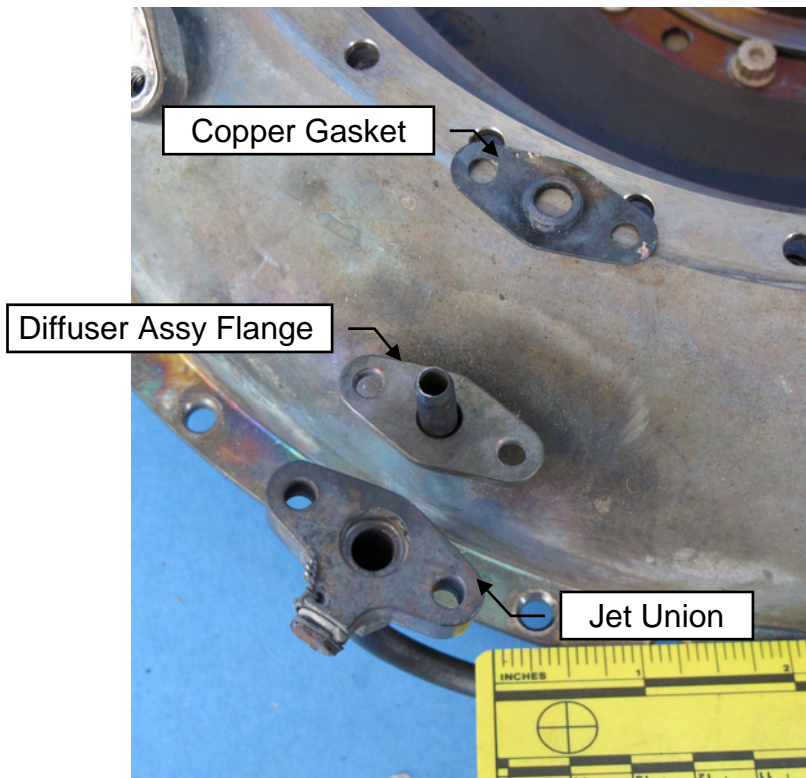
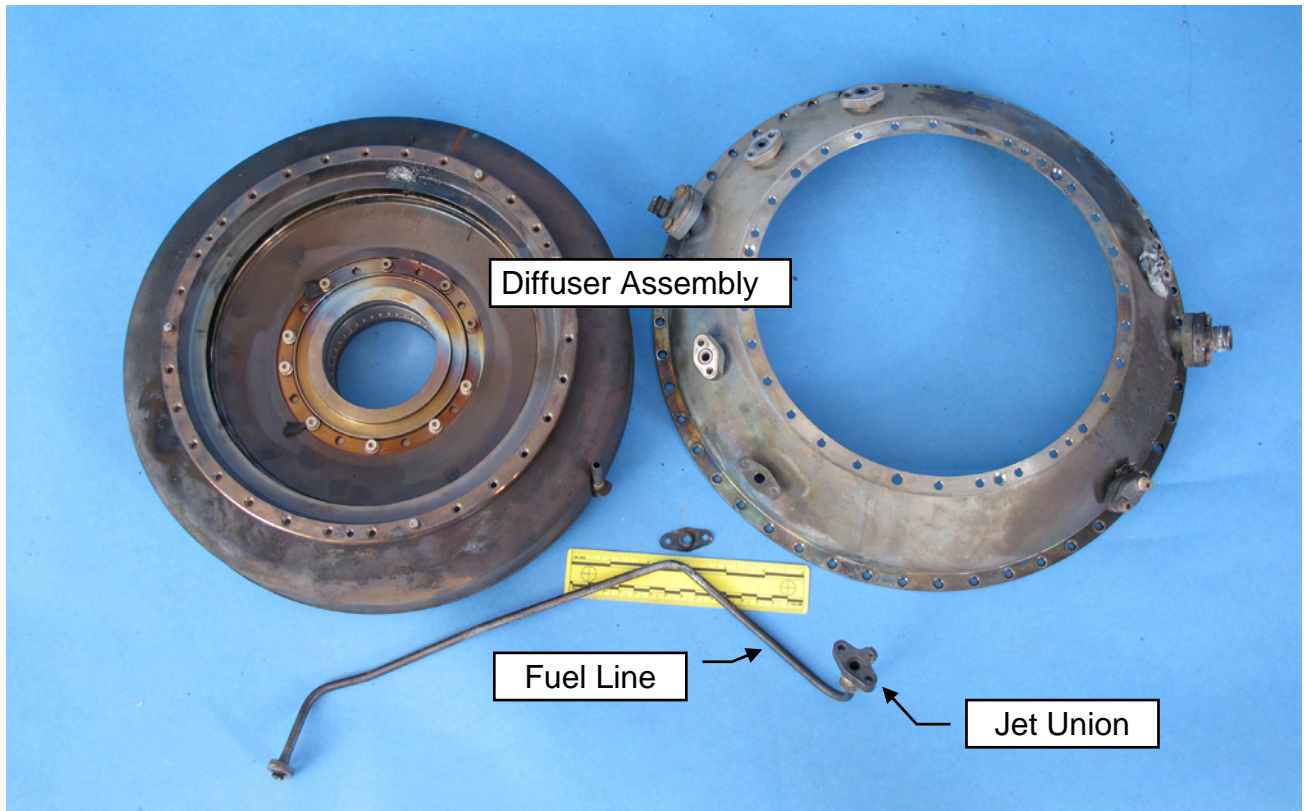


Figure 1. Above are the as received labeled accident components. A closer view of the jet union diffuser interface is shown at left.

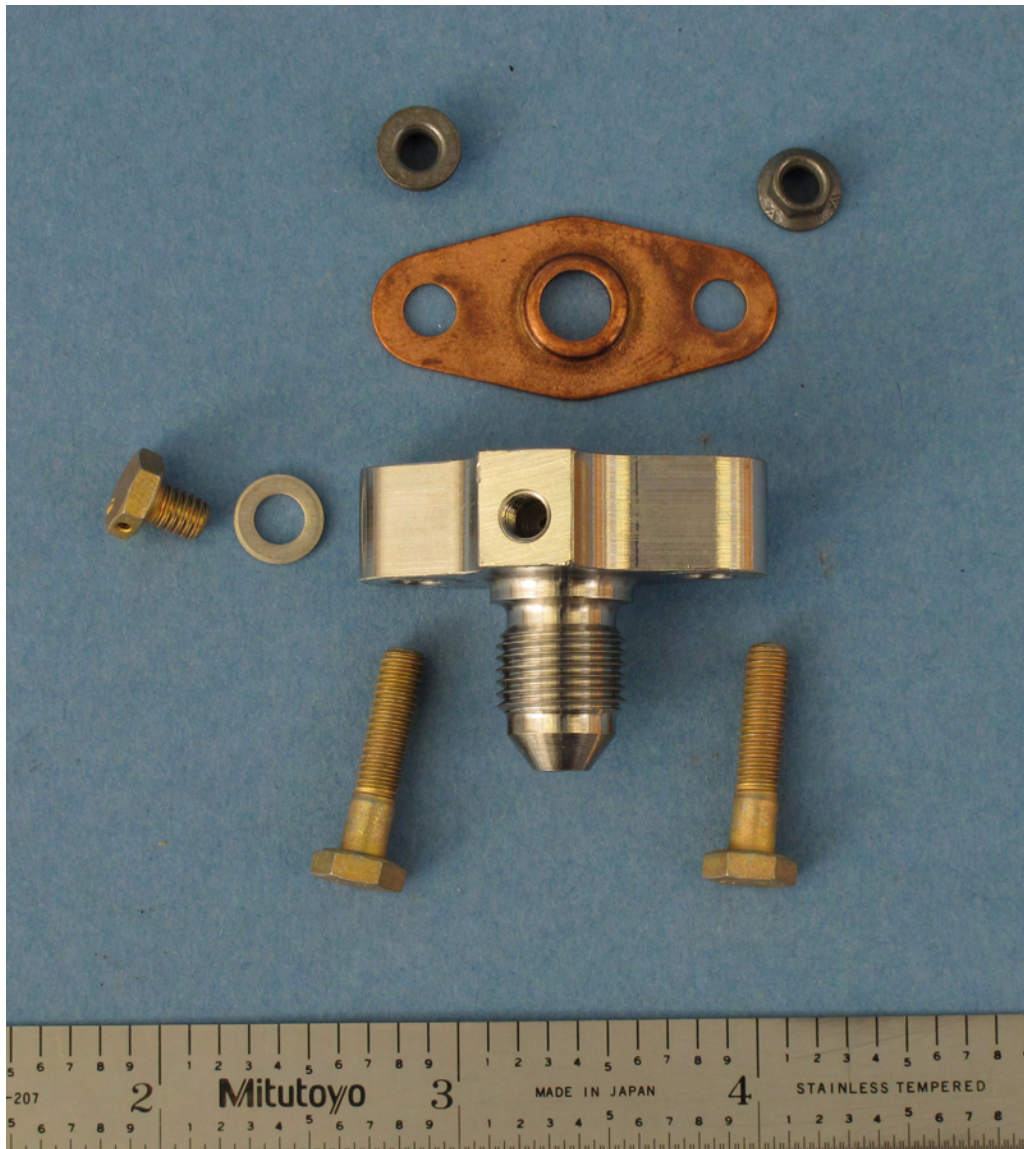


Figure 2. The exemplar jet union and associated hardware.



Figure3. Comparison views of the bores on the accident jet union at top and the exemplar union below both showing roughly machined textures.

