

## Communication Summary

9/9/2016

Information From: Ms. Nancy McAtee, NTSB Chemist



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Summary & Factual Information: Ms. McAtee was asked to examine retained particles found in the fuel system. She, in part, indicated that particulate material samples removed from the fuel filter and fuel testing sample were submitted to the Materials Laboratory for examination. These samples were examined using a Fourier Transform Infrared (FTIR) spectrometer with a diamond attenuated total reflectance (ATR) accessory in accordance to ASTM E1252-98 and ASTM E334-01 (American Society for Testing Materials E1252-98: Standard Practice for General Techniques for Obtaining Infrared Spectra for Qualitative Analysis and American Society for Testing Materials). The spectrometer was used to collect and process infrared wavelength absorbance spectra of the unknown material.

A comparison search was performed using a spectral library database for the spectra from each sample. The search did not find a strong spectral match for either a single material or a mixture; however there were similarities to the spectra of several surfactants-a byproduct of the fuel refining processes as well as a common additive in aviation fuel.

The particulate material was then analyzed using X-ray fluorescence (XRF) to determine the elemental composition of the particulate material. The composition of the material consisted mainly of aluminum (Al), iron (Fe), lead (Pb), zinc (Zn), copper (Cu) and chromium (Cr). These metals are commonly found in aircraft fuel systems and fuel.

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I can attest that the above summary is correct to the best of my knowledge:

**Edward F. Malinowski**  
**National Transportation Safety Board**  
**Air Safety Investigator**