



NTSB National Transportation Safety Board

Office of Aviation Safety



Carson Helicopters

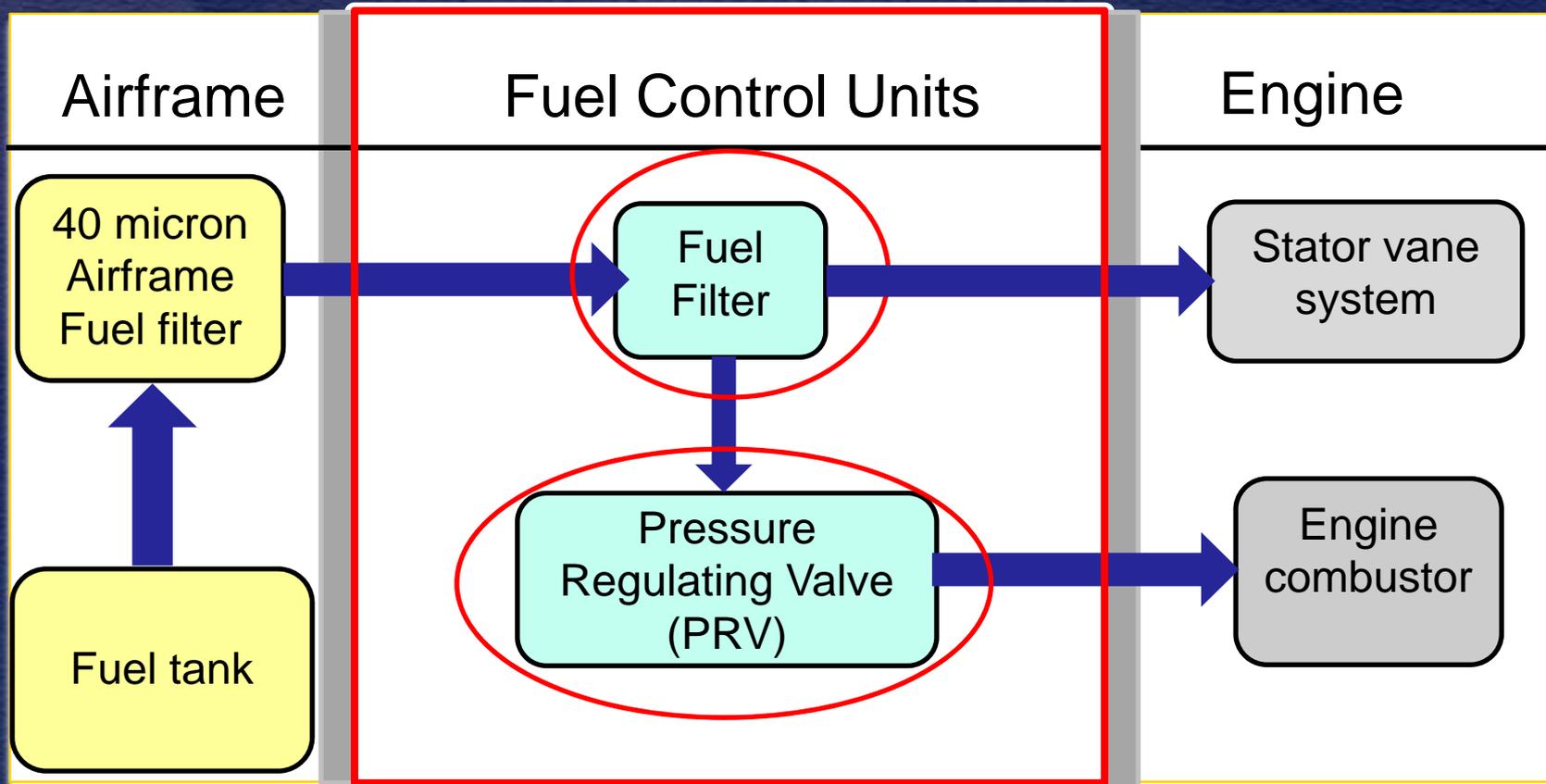
Fuel Filtering Mike Hauf

Carson Helicopters S-61N
Operated by U.S. Forest Service
Weaverville, CA
August 5, 2008

Overview

- Both engines were operating at topping speed
- Engine topping indicates unrestricted fuel flow during accident takeoff
- Minute quantities of contamination found in fuel control units
- Fuel filtering should be improved

Airframe and Engine Fuel System



FCU Fuel Filter Examination

- Left filter 25% blocked and right filter 50% blocked
- Engines at topping shows sufficient fuel flow to engines
- Filter contains bypass valve to ensure constant fuel flow

PRV Examination

- No contamination found by visual examination
- Trace contamination found with electron microscope
- Left PRV: 2-3 fragments of fiberglass; 10 micron diameter
- Right PRV: fragments of cloth; 20 microns thick
- Contamination did not affect fuel control operation
- Nonetheless, fuel filtering needs improvement

Manufacturer Corrective Action

- FCUs susceptible to contamination
- Sikorsky Alert Service Bulletin issued January 2010
 - Replace the 40-micron airframe fuel filter element with a 10-micron element
 - 10-micron fuel filter reduces contamination to the FCU
- Carson had 10-micron filters in 2007 but had not installed in accident helicopter





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