

United States Department of Agriculture  
Forest Service

TECHNICAL BULLETIN

OPERATIONS

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**Distribution:** Fire and Aviation Personnel and Contractors Operating AS 350B3 Helicopters for the FS.

**Subject:** AS 350B3 Helicopters Equipped with ECL Airframe Fuel Filter Kit (p/n 350-600024).

**Area of Concern:** Helicopter Operations

On April 30, 2005 a helicopter on an exclusive use contract to the Forest Service experienced an unanticipated flame out just prior to lift off. The pilot provided the following narrative describing the event: "I had completed a preflight on the aircraft; I did the usual walk around then proceeded to start the engine as per the flight manual. The engine started normally, no irregular or warning lights. As I completed the pre take off checks the engine flamed out completely. While starting the aircraft my Mechanic was walking around the machine checking. There was no fuel leaking or draining from anywhere. On inspection we found the problem came from the Airframe fuel filter. It had discharged 2 quarts of fuel out of the fuel drain onto the ground under pressure."

It appears that dirt or grime may have contributed to the airframe fuel filter drain not seating completely, allowing air into the system. Subsequent discussions with the STC holder, Eurocopter Canada, and Eurocopter USA reveal that this is a known situation.

Eurocopter Canada is in the process of writing a Flight Manual change to expand on the daily inspection of the Airframe Fuel Filter. Currently, the Rotor Flight Manual Normal Procedures section states only to check that the A/F Fuel Filter by-pass indicator light illuminates when pushed to test. The STC's instructions for continued airworthiness inspection calls for a visual inspection of the airframe fuel filter for water in the fuel before the first flight of the day. Eurocopter Canada indicated that they are also in the process of writing a Service Bulletin to change the flight manual procedures for inspecting the filter for condition and obtaining a fuel sample prior to the first flight of the day. This will match the STC's Continued Airworthiness Instructions. They are in the process of engineering a modification to the STC to improve the drain valve system for a more positive shut-off valve. When asked what we could do in the interim, Eurocopter said to ensure that the fuel boost pump was on when inspecting and draining the fuel filter.

**Recommendations:**

**Pilots:** Take extra care to follow the POH procedure for draining this filter system. The correct procedure is to turn the boost pump on before draining the filter to obtain a fuel sample and also inspect for drain valve leaks by ensuring that the valve is properly seated.

**Mechanics:** Pay special attention during your visual inspection of the airframe fuel filter poppet. Leaks, or evidence of leaks may indicate the poppet has not been seating properly.

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