



Interagency Aviation Lessons Learned



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Subject: King Air 200 Fuel System Management

Area of Concern: Fixed-Wing Flight Operations

Distribution: Aviation Operations

Discussion: A King Air 200 lost power on one of its engines during an air attack mission. The pilot had positioned the aircraft over the fire in a right hand orbit at 5,000 MSL in order to give the ATGS a better view of the fire's right flank. The pilot was operating the aircraft at 130 knots with about a 20-30 degree right bank and about 1/2 a ball out of trim or slightly more left rudder to increase visibility. The King Air has a low wing configuration and the engine's location can sometimes obstruct ground visibility. About 2.5 hours into the air attack mission, the crew felt a noticeable loss of thrust and confirmed the right engine was inoperative. The pilot maintained aircraft control and turned the aircraft toward the airport. The inoperative engine was restarted and the aircraft landed with two operating engines.

Each wing contains an auxiliary fuel tank (aux tank) and fuel is transferred from the aux tank, by a pump, to the nacelle tank; which directly supplies the engine. When the aux tank is empty, the nacelle is supplied with fuel from the wing tanks. There is no wing tank pump, so fuel is transferred by gravity. The nacelle tank carries 57 gallons and under normal consumption rates (38 – 46 gallons per hour), can be depleted in less than one hour if not replenished from the main wing tanks. Flying the aircraft in steeper bank angles when close to the observation area and using rudder pressure to skew the wing to improve visibility may inhibit adequate fuel transfer by gravity to the nacelle tank.

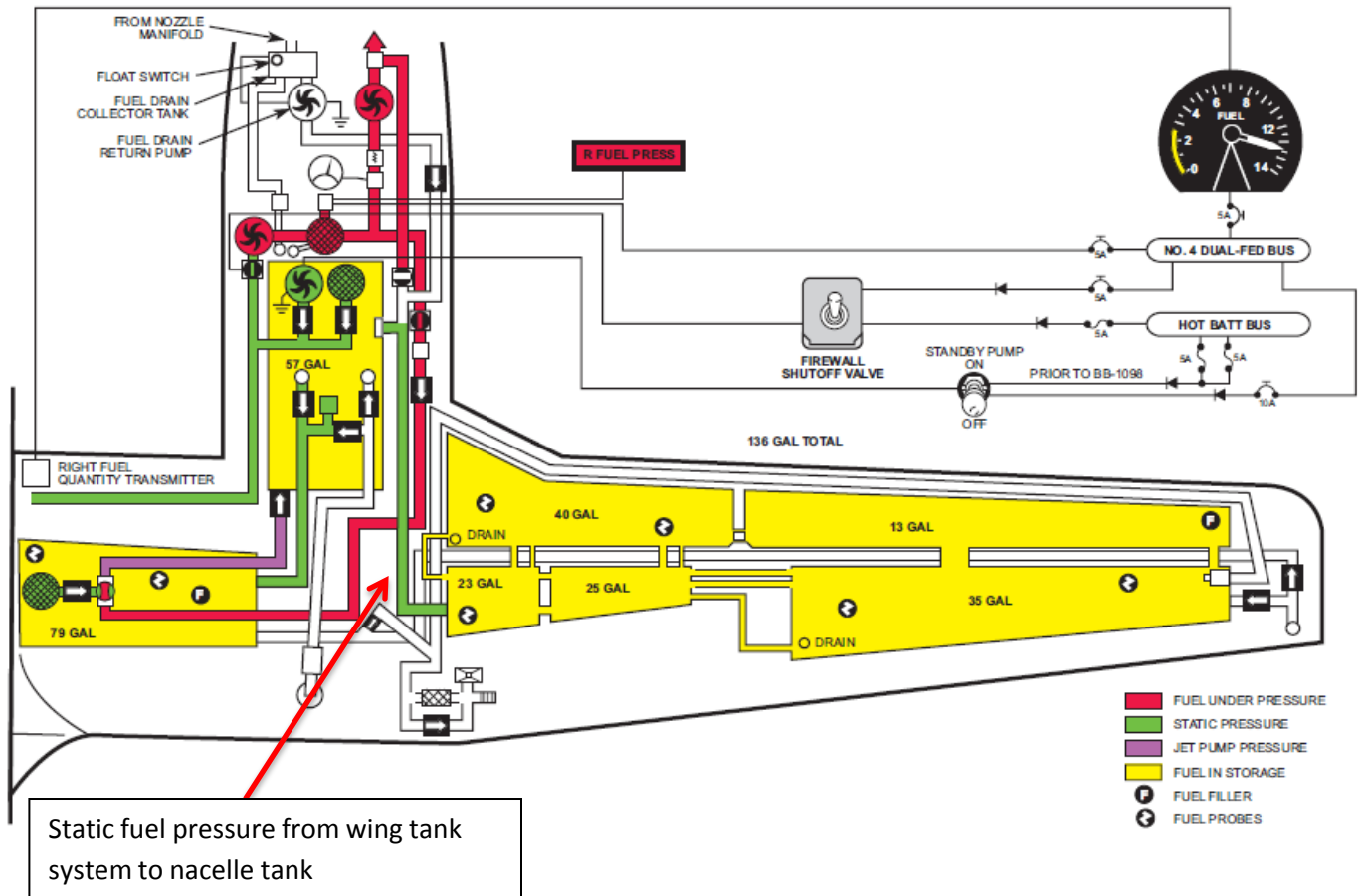
A maintenance check was performed on the fuel system using "Trouble Shooting Flame Out" section in the Maintenance Manual Ch. 72; with no discrepancies discovered. It was determined that prolonged uncoordinated flight with the aircraft banked in a right hand orbit resulted in inadequate fuel transfer from the right wing tank to the right engine fuel nacelle tank that ultimately resulted in fuel starvation. [SAFECOM 15-0369](#)

Recommendations for limiting the risk of fuel starvation include:

- Uncoordinated flight should be entered into prudently and with a complete knowledge of the potential consequences.
- Limit the time of uninterrupted steep turns to reduce the probability of experiencing a fuel quantity condition that would prevent fuel from feeding into the nacelle tank. This can be done in many ways including rolling out to a wings level attitude or reversing the direction of the turn for a period of time to allow for fuel to refill the nacelle tank.
- Orbiting further from the fire area (less bank angle required and better visibility)

Flight crews are reminded to review and maintain familiarity of the fuel system and continue to perform daily system checks.

Fuel System
King Air 200



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