

**Jon Parker**

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**To:** 9-AFS-200-Correspondence@faa.gov,dk.deaderick@faa.gov  
**Subject:** COMMENT AC120-80A

July 12, 2013

Federal Aviation Administration  
800 Independence Avenue, SW  
121 Air Carrier Branch, Room 831  
Washington, DC 20591

Dear Flight Standards Representatives,

VisionSafe respectfully submits this comment on FAA Advisory Circular 120-80 initiated by AFS-200. This Advisory Circular updates information regarding the hazards and risks of in-flight fires on transport category aircraft.

This Advisory material should include certification information making operators and crews aware that FAA recommended certification standards are optional and thus all aircraft do not meet the same standards for smoke control. It is not unreasonable to think that operators assume that all aircraft would meet the highest recommended or optional testing standard.

### **Recommendation**

A standard of training must be applied so operators can train crews to manage situations that FAA part 25 advisory materials have identified as probable and have recommended (voluntary) certification practices to mitigate. Different certification tests (voluntary and minimum) produce aircraft with vastly different smoke control characteristics. Operators should be advised and encouraged to: (1) Demonstrate awareness of the test standard applied to their aircraft (2) For aircraft certifications with the minimum standard to develop training, provisions, and procedures to demonstrate operational abilities based on the inability to extinguish the smoke source (3) retrofit aircraft to the voluntary test standard.

### **Basis and Background**

FAA's part 25 advisory materials related to cockpit smoke control and testing (AC-25.9a):

Para. 2 (8) recommend that all aircraft be tested to prove that systems can protect crewmembers during continuous smoke events

Para. 7 states that with respect to the smoke source - fires should be assumed to be continuous and capable of generating "products of combustion" – SMOKE – until extinguished

Para. 12.e.3 "Continuous Smoke Test" suggests a method for testing to meet (Para. 2) recommended standards with continuous cockpit smoke generation (Para. 7) to confirm smoke evacuation effectiveness and to use what is now known as Cockpit Smoke Vision Systems to protect crew vision.

Para. 12.e.2 "Smoke Off Test" is the minimum required test and allows certification testing where smoke is turned off after vision is obscured.

While debate and opinions vary on this topic - two things are clear:

The certification standard advises certification to a higher recommended (voluntary) standard using the Continuous Smoke Test.

Aircraft certified using the Continuous Smoke Test will have demonstrated abilities for continuous smoke control, while those using the Smoke Off Test have none.

### **Expanded Discussion**

In our experience operators are not aware that different test procedures are used in smoke control certification and that their aircraft may not be certified using the Continuous Smoke Test, and may have only been certified using the Smoke Off Test.

Operators and crews should be required to demonstrate knowledge regarding the test used under 25.9a related to flight deck smoke control to certify the aircraft they operate – specifically which level of certification standard 12.e.2 (smoke off) or 12.e.3 (continuous smoke). Thus during certification demonstrating any ability to clear continuous cockpit smoke was optional.

AC120-80A materials should address this gap from the operational perspective to mitigate the potential adverse effects of operating aircraft that have only been certified to meet smoke standards for evacuating smoke where the smoke source has been terminated. This is not a practical expectation in many in-flight fire events.

The minimum Smoke Off Test defines the point when smoke is shut off using a reference to a lack of pilot vision – “cockpit instruments are obscured (dial/panel indicator numbers or letters become indiscernible)”. Based on this, advisory materials should recommend and encourage training that applies conditions expected as defined in AC25.9a Para 7 assuming the condition will be a continuous obscuring smoke event. This training will accurately represent what flight crews might face in aircraft certified using the Smoke Off Test when faced with a fire that cannot be extinguished. Such training will provide valuable exposure to reflect recent and real world events in aircraft.

Operators of high risk aircraft carrying cargo, or operating in extended ETOPS environments should be advised to further consider mitigation noted above to reduce risk and/or retrofit aircraft to meet 25.9a 12.e.3 standards.

### **Life Support and Incapacitation**

Crew members can easily be incapacitated when they cannot see due to smoke, or breathe due to continuous thick smoke. The International Federation of Airline Pilots (“IFALPA”) states that a crew member who cannot see should be considered incapacitated. Indeed pilots who forget their eye glasses are not permitted to fly. Aircraft operators have an implied (if not regulatory) obligation to provide safety equipment, within reason, to prevent crew incapacitation due to loss of vision or lack of breathing oxygen. Operators of aircraft which have not been tested to FAA 25.9a 12.e.3 standards for cockpit smoke protection are much more likely to experience complete crew incapacitation when facing continuous smoke. Such operators should, at the very minimum, be aware of this, train for it, and take reasonable measures to protect against incapacitation.

Respectfully submitted.

Sincerely,  
VisionSafe Corp

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Director

# VisionSafe

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