



U.S. Department
of Transportation
**Federal Aviation
Administration**

Memorandum

Subject: **ACTION:** Request Review of and Concurrence with,
Associated Equivalent Level of Safety (ELOS) ACE-
97-5, for the Extra EA-400 Airplane

Date: **FEB 3 1998**

From: Extra Project Officer, Project Support, ACE-112

Reply to: Karl Schletzbaum
Attn. of: (816) 426-6932

To: Manager, Small Airplane Directorate, ACE-100

Request that your office review and provide concurrence to the proposed finding of equivalent level of safety (ELOS) to the fuel system requirements of FAR 23.991(d).

Background: The Extra EA-400 airplane is a T-Tail, high wing airplane fabricated almost completely of composite materials. It utilizes a TCM TSIOL-550-C reciprocating engine. The fuel system is equipped with both engine driven and auxiliary fuel pumps. The auxiliary pump is utilized for three functions: pressure for priming, vapor suppression and as an emergency fuel pump. The auxiliary pump, if operated in the emergency mode while the engine driven pump is functioning normally, will provide too high a fuel pressure at the engine and could potentially flood the engine.

Applicable Regulations: The applicable regulation is FAR Part 23.991(d) which states:

“(d) Operation of any fuel pump may not affect engine operation so as to create a hazard, regardless of the engine power or thrust setting or the functional status of any other fuel pump.”

Applicant's Position: The emergency switch that controls the auxiliary pump's emergency function is a separate switch from the normal switch that controls the pump. The emergency switch is guarded, so that operation of the auxiliary fuel pump will not occur except as a separate deliberate action involving emergency procedures.

FAA Position: The FAA concurs with the applicant's position, and finds that the utilization of a separate guarded switch for the auxiliary pump's emergency function is sufficient to satisfy the intent of FAR Part 23.991(d).

Compensating Features: The emergency auxiliary pump switch is prevented from unintentional actuation by the utilization of a separate guarded switch that is in the emergency section of the cockpit control panel.

Recommendation: We concur that the Extra EA-400 proposed design of the auxiliary fuel switch provides an equivalent level of safety as envisioned in the regulations of paragraph 23.991 (d) of the FAR.

Concurred by:

Larry Malin
Manager, Project Support Branch, ACE-112

2/1/98
Date

for *Larry Malin*
Manager, Standards Office, ACE-110

2/1/98
Date

for *James R. Cooney*
Manager, Small Airplane Directorate, ACE-100

2/3/98
Date