



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

Memorandum

ACE-100
#201 ygb
1999 JUN 10 AM 10: 07

Subject: ACTION: Review and Concurrence, Equivalent Level of
Safety ; ACE-99-04

Date: MAY 17 1999

From: Manager, Los Angeles Aircraft
Certification Office, ANM-100L

Reply to Elizabeth Bumann
Attn. of: (562) 627-5265

To: Manager, Small Airplane Directorate, ACE-100

Our office is currently processing an application for a restricted category Amended Type Certificate for the Gippsland Aeronautics, Inc. GA200C model aircraft through the bilateral with Australia. The single engine aircraft, powered by a Lycoming IO-540-K1A5 engine rated at 300 BHP (2700 RPM), will be utilized for agricultural operations only.

The purpose of this memorandum is to request your office to review and provide concurrence to an equivalent level of safety finding for the aircraft fuel quantity indication requirement, §23.1337(b)(1).

Background:

The Gippsland GA200C fuel system consists of three interconnected fuel tanks comprised of two integral wing tanks (27.75 gallons capacity each) and a sump tank (2.4 gallons capacity). Fuel from the wing tanks is gravity fed to the sump tank, located in the lower fuselage beneath the cockpit floor, from the inboard corner of each wing tank. The fuel is drawn from the sump tank by an electric boost pump, through a filter bowl / sediment chamber and firewall shutoff, to the engine injector.

Two mechanical direct reading fuel sight gauges, one located on each wing, are used to indicate the quantity of usable fuel to the pilot during level flight. The left hand gauge, located in the inner fuel tank access panel, is incrementally marked from EMPTY to 30 gallons (bottom to top of gauge). The right hand gauge, located in the outer fuel tank access panel, is incrementally marked from 30 to 53 gallons (bottom to top of gauge). The sump tank does not have an exterior fuel filler port nor a sight gauge to indicate the amount of fuel within the tank, however it's entire capacity is considered unusable in level flight.

Applicable Regulations:

In accordance with §23.1337(b)(1), each quantity indicator must be calibrated to read "zero" during level flight when the quantity of fuel remaining in the tank is equal to the unusable fuel supply determined under §23.959(a). Unusable fuel is defined as the quantity of fuel remaining in the fuel system when the first evidence of engine malfunction occurs under the most adverse fuel feed conditions occurring under each intended operation and flight maneuver.

Compensating Features:

The compensating features include:

- a) a yellow low fuel warning light located on the coaming above the instrument panel for each wing tank to warn the pilot that the fuel level is approaching empty or unusable fuel;
- b) a placard (see attachment) located on the coaming above the instrument panel identifying quantity markings for both the left and right wing tanks, similar to the quantity gauges located on each wing

Applicant's Position:

The GA200C aircraft utilizes two fuel quantity gauges, one on each wing, to provide a better fuel quantity indication of the usable fuel level over the complete FULL to EMPTY range. The left hand gauge registers accurately from EMPTY to 30 gallons and the right hand gauge from 30 gallons to FULL (53 gallons). Note that the two gauges are not intended to indicate the individual quantity levels within each tank. A separate fuel quantity indicator for each tank is not required, §23.1337(b)(5), since the outlets and airspaces are permanently connected between the tanks.

A warning system is incorporated such that if the total fuel level within the right or left wing tanks falls below approximately 13.2 gallons usable fuel then a yellow "right tank low fuel" and/or "left tank low fuel" warning light located on the instrument panel coaming will begin to flash intermittently (see attachment). The frequency of the flashing light(s) will progressively increase as fuel continues to be consumed. When one or both of the low fuel warning lights begin to illuminate continuously than less than 5.3 gallons (unusable fuel) remains.

Recommendation:

We concur that the Gippsland GA200C fuel quantity indicators and corresponding markings for the wing tanks provide an equivalent level of safety as envisioned in the regulation and therefore meet the requirement of §23.1337(b)(1).

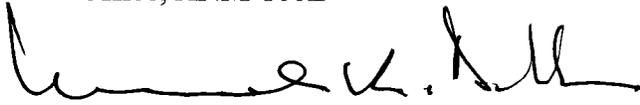
Concurred by:



Manager, Los Angeles Aircraft Certification
Office, ANM-100L

5/17/99

Date



Manager, Standards Staff, ACE-110

6/16/99

Date

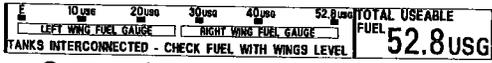


Manager, Small Airplane Directorate
Aircraft Certification Service, ACE-100

6/18/99

Date

Attachment: Gippsland Aeronautics Model GA200C Airplane Flight Manual, Section 2
"Limitations" (one page)



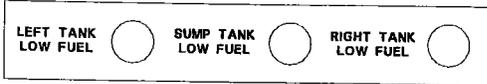
On coaming above instrument panel.



Adjacent to each internal door handle.



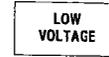
Adjacent to each external door handle.



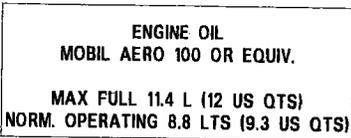
Adjacent to caution and warning lights.



Adjacent to warning lights test button.



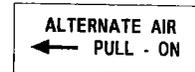
Adjacent to alternator warning light.



On oil filler access panel.



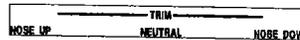
Around lamp dimmer knob.



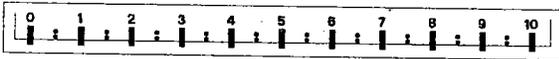
Adjacent to Alternate air control.



Adjacent to each fuel filler neck.



Under trim indicator.



Adjacent to the dump lever vernier stop.



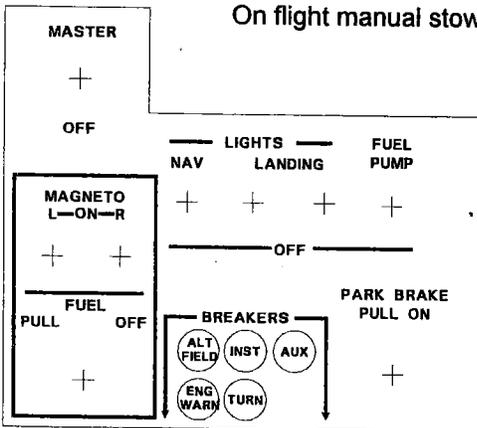
Adjacent to starter button.



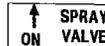
On flight manual stowage.



Adjacent to each static port.



Around appropriate switches and controls.



On the spray lever.

RESTRICTED CATEGORY AIRPLANE FOR AGRICULTURAL USE AND DISPENSING FIRE RETARDANTS ONLY

ALL OCCUPANTS MUST WEAR AN APPROVED CRASH HELMET WHEN OPERATING THIS AIRCRAFT

THE USE OF THE SECOND SEAT IS RESTRICTED BY THE REQUIREMENTS IN FAR 91.313.

On the inside face of right hand cockpit panel.

2.16 NOISE ABATEMENT

This airplane has not been shown to comply with the noise limits in FAR Part 36 and must be operated in accordance with the noise operating limitation prescribed under FAR Sec. 91.815.