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

MAY 10 2011

Nick Sabatini
Nick Sabatini & Associates, LLC
504 Colecroft Court
Alexandria, VA 22314

Dear Mr. Sabatini:

This letter responds to your February 7, 2011, request for a legal interpretation regarding the requirements of Title 14, Code of Federal Regulations (14 CFR), § 21.3 (c)(13), as it applies to manufacturers of electronic flight instrument displays. You describe a typical primary flight display (PFD), which is a type of electronic flight instrument, installed in general aviation aircraft. The PFD provides the pilot a view of attitude, airspeed, altitude, vertical velocity, heading, trim, and other information on a single display device. The pertinent parts of § 21.3 provide:

> **§ 21.3 Reporting of failures, malfunctions, and defects.**
>
> (a) Except as provided in paragraph (d) of this section, the holder of a Type Certificate (including a Supplemental Type Certificate), a Parts Manufacturer Approval (PMA), or a TSO authorization, or the licensee of a Type Certificate shall report any failure, malfunction, or defect in any product, part, process, or article manufactured by it that it determines has resulted in any of the occurrences listed in paragraph (c) of this section.
>
> (c) The following occurrences must be reported as provided in paragraphs (a) and (b) of this section:
>
> (13) A failure or malfunction of more than one attitude, airspeed, or altitude instrument during a given operation of the aircraft.

Your letter contains three separate issues.

First you request our interpretation of what would constitute "more than one attitude, airspeed, or altitude instrument" as found in § 21.3, subparagraph (c)(13) in the context of a typical PFD. You note that an aircraft type certificated under 14 CFR Part 23 is required to have certain independent secondary instruments. For example, 14 CFR § 23.1311 (a)(5) requires, in part, that electronic display indicators have either an independent secondary mechanical altimeter, airspeed indictor, and attitude instrument or individual electronic display indicators for the altitude, airspeed, and attitude that are independent from the airplane's primary electrical power system.

We note that § 21.3 (c)(13) applies to only the attitude, airspeed, and altitude instruments of the PFD. In the case of an aircraft with one PFD containing one attitude, one airspeed, and one altitude instrument, and one set of independent secondary instruments for the attitude, airspeed, and altitude display, we conclude the following from the scenarios you provide in your letter:

(1) If the attitude instrument in the PFD fails, and the independent secondary attitude instrument also fails, a report is required by § 21.3 (a).

(2) If the airspeed instrument in the PFD fails, and the independent secondary airspeed instrument also fails, a report is required by § 21.3 (a).

(3) If the altitude instrument in the PFD fails, and the independent secondary altitude instrument also fails, a reported is required by § 21.3 (a).

(4) If more than one of the three instruments (attitude, airspeed, altitude) in the PFD fail, and none of the independent secondary instruments fail, a report is not required by § 21.3 (c)(13).

(5) If all three instruments (attitude, airspeed, and altitude) fail in the PFD, and none of the independent secondary instruments fail, a report is not required by § 21.3 (c)(13).
(6) In the case of an aircraft with two or more electronic displays, the failure of the attitude, airspeed, or altitude instruments on more than one of the displays must be reported as required by § 21.3 (c)(13).

We conclude that "more than one attitude, airspeed, or altitude instrument" in § 21.3 (c)(13) means more than one attitude instrument, more than one airspeed instrument, or more than one altitude instrument, not a combination of more than one of the different types of instruments.

Second you request whether the holder of a FAA approval listed in § 21.3 (a) needs to report any failure, malfunction, or defect in any product, part, process, or article manufactured by it that it determines has resulted in any of the occurrences listed in § 21.3 (c). You believe that it is not a PFD manufacturer's responsibility to report under § 21.3 (a) when its PFD is affected by a failure, malfunction, or defect in an aircraft's pitot/static system that is part of the aircraft not manufactured by the PFD manufacturer.

Section 21.3 (a) imposes the reporting requirement on the holder of the certificate under whose authority the product was manufactured. We interpret the language "under whose authority the product was manufactured" in a literal sense. If the PFD manufacturer included the pitot/static system as part of its approved design and also manufactured the pitot/static system then a report would be required under § 21.3 (a). If the PFD manufacturer only shows the pitot/static system as providing data to the PFD and the

pitot/static system was manufactured by another production approval holder, then the PFD manufacturer would not be responsible for submitting the report under § 21.3.

Your third question concerns the language of § 21.3 (c)(13), which states in pertinent part, the "failure or malfunction ... during a given operation of the aircraft." You suggest that based on the definition of "operate" in 14 CFR § 1.1 that § 21.3 (c)(13) would not apply to failures or malfunctions that occur during maintenance, inspections, or tests not involving flight.

We note that only § 21.3 paragraphs (c)(12) and (c)(13) make any reference that could be construed as occurrences related to the flight or operation of the aircraft. This distinction from the remaining paragraphs of § 21.3 (c) imply that the FAA intended to treat the reporting under paragraphs (c)(12) and (c)(13) differently from the remaining paragraphs in § 21.3 (c), which could be read as requiring the report whenever the occurrence happens (including during maintenance, inspections, or tests not involving flight). Thus we would conclude that paragraphs (c)(12) and (c)(13) are limited to occurrences that occur during the flight of the aircraft.

We trust that the above responds to your concerns. This response was coordinated with the Aircraft Certification Service, Aircraft Engineering Division, and the Flight Standards Service, Avionics Maintenance Branch. Should you have any further questions, please contact John King, an attorney in the Regulations Division of the Office of the Chief Counsel, at (202) 267-3073.

Sincerely,

Rebecca B. MacPherson
Assistant Chief Counsel for Regulations, AGC-200