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Information for Operators

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An InFO contains valuable information for operators that should help them meet certain administrative, regulatory, or operational requirements with relatively low urgency or impact on safety.

Subject: Certificate holder's compliance with Title 14 of the Code of Federal Regulations (14 CFR) Part 135, §135.163(f), when utilizing Pilatus PC-12, PC-12/45, and PC-12/47, serial numbers 101-888, airplanes.

Purpose: This InFO provides §135.163(f) electrical power compliance information to certificate holders requesting authorization to, or operating the Pilatus PC-12, PC-12/45, and PC-12/47 airplanes, serial numbers 101-888 (legacy Pilatus), in part 135 instrument flight rules (IFR) passenger-carrying operations.

Background: On August 6, 1997, the Federal Aviation Administration (FAA) published the final rule which expanded the provisions to conduct IFR passenger-carrying operations in single-engine aircraft. These additional requirements include the electrical power requirements of §135.163(f). The FAA authorizes these operations through the issuance of operations specifications (OpSpec) A046, D103, and when required, D104.

Discussion: Section 135.163(f) contains the electrical power requirements for single engine aircraft carrying passengers under IFR. Certificate holders can comply with §135.163(f) by two means; §135.163(f)(1) or §135.163(f)(2). Section 135.163(f)(1) requires two independent electrical power generating sources, each of which is able to supply all probable combinations of continuous inflight electrical loads for required instruments and equipment. In contrast, §135.163(f)(2) requires, in addition to the primary electrical power generating source, a standby battery or an alternate source of electric power that is capable of supplying 150% of the electrical loads of all required instruments and equipment necessary for safe emergency operation of the aircraft for at least one hour.

A. § 135.163(f)(1) Requirements. The Pilatus PC-12, PC-12/45, and PC-12/47, (legacy Pilatus) that are equipped with a 115 amp generator 2 (GEN 2) are not capable of carrying the electrical demand from the required instruments and equipment installed on the airplane when including the installed deice/anti-ice systems. Therefore, the legacy Pilatus airplanes with the 115 amp GEN 2 do not comply with the electrical power requirements of §135.163(f)(1).

B. § 135.163(f)(2) Requirements. Under §135.163(f)(2), the electrical load may be reduced to that required for the safe emergency operation of the aircraft. The regulation also specifies that a standby battery or the alternate source of electrical power must provide for 150% of the electrical loads of all required instruments and equipment necessary for safe emergency operation of the

aircraft for at least one hour. With proper procedures the legacy Pilatus airplanes with the 115 amp GEN 2 are able to comply with the electrical power requirements of §135.163(f)(2).

C. Emergency Operations. When operating a legacy Pilatus airplane in accordance with §135.163(f)(2), a GEN 1 failure is considered to be an emergency operation. This requires:

- Immediate action that includes exiting and the further avoidance of icing conditions, and landing as soon as possible at the nearest suitable airport.
- Monitoring the electrical load on the remaining generator. Although the airplane will automatically shed loads, it may still be necessary to manually reduce electrical loads to prevent exceeding the GEN 2 output of 115 amps. Exceeding GEN 2's capacity could result in a simultaneous discharging of the battery or a failure of GEN 2 to remain connected and supplying power to the electrical system. If disconnected and unable to reconnect GEN2, the aircraft becomes entirely dependent on the battery for electrical power.

NOTE: The windshield heat and the propeller heat are two high electrical load items on the legacy Pilatus airplanes that can cause an electrical overload of the 115 amp GEN 2, even after the automatic load shedding and AFM procedures have been completed.

Although not restricted from utilizing GEN 2's full capacity to meet operational needs during emergency operations, the certificate holder's procedures must include the ability to shed enough electrical loads to comply with the calculated electrical load requirements of §135.163 (f)(2), which on the legacy Pilatus is 76.7 amps (76.7 amps X 150% = 115 amps GEN 2 capacity).

Since additional load shedding is required to comply with §135.163(f)(2), certificate holders must develop aircraft-specific procedures and training and submit them to the FAA for review and acceptance or approval. Unless equipped with the exact same electrical equipment, an Electrical Load Analysis (ELA) should be conducted for each airplane. The different electrical power requirements from aircraft to aircraft should be addressed when certificate holders develop their electrical load reduction procedures and training.

D. Operations Specifications (OpSpec D104). Using §135.163(f)(2) for compliance also requires that the standby battery or alternate source of electric power be listed in OpSpec D104 - Additional Maintenance Requirements - Emergency Equipment. Additional maintenance tests or procedures may be required for items listed in OpSpec D104.

Recommended Action: Part 135 Certificate Holders, Directors of Operations, Chief Pilots, and Directors of Maintenance should be familiar with the content of this InFO.

Certificate holders should conduct an electrical load analysis of each legacy Pilatus airplane used in IFR passenger-carrying operations, and for a GEN1 failure:

- develop and validate any required manual load reduction procedures,
- develop and implement any other company procedures necessary to ensure compliance with §135.163(f),
- develop flight crew training on manual load reduction procedures,

- submit any new/modified procedures and training to the FAA for review and acceptance or approval,
- provide training to flight crew members on any new load reduction procedures.

Contact: Questions or comments regarding this InFO should be directed to the Air Transportation Division's 135 Air Carrier Branch, AFS-250, at 202-267-8166.