



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

SAFO

Safety Alert for Operators

SAFO 08020
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Flight Standards Service
Washington, DC

http://www.faa.gov/other_visit/aviation_industry/airline_operators/airline_safety/safo

A SAFO contains important safety information and may include recommended action. SAFO content should be especially valuable to air carriers in meeting their statutory duty to provide service with the highest possible degree of safety in the public interest. Besides the specific action recommended in a SAFO, an alternative action may be as effective in addressing the safety issue named in the SAFO.

Subject: The loss of flight displays and aircraft systems following partial electrical power failure on Airbus A318 through A321 series airplanes

Purpose: This SAFO emphasizes the necessity for operators of the Airbus A318, A319, A320, and A321 series airplanes to provide flightcrews with guidance and appropriate training to more quickly recognize the symptoms and to apply the electronic centralized aircraft monitoring (ECAM) resolution procedures for the loss of flight displays and aircraft systems which occur as a result of AC BUS 1 failure.

Background: There have been approximately 47 reported events in which the failure of AC electrical busses resulted in the loss of flight displays and various aircraft systems on A320 series airplanes. Most of the events were due to failure of the AC BUS 1 subsequently followed by the loss of the AC ESS BUS, the transformer rectifier one (TR1), and the DC ESS BUS. This loss of power normally resulted in the loss of the captain's primary flight display (PFD), the captain's navigation display (ND), the upper ECAM display, the power and integral lighting of the standby attitude indicator (SAI), and illumination of the AC ESS FEED pushbutton plus numerous systems powered from the lost busses.

In 17 of the 47 events the failure of AC BUS 1 also resulted in the failure of one or both of the first officer's flight displays and/or the systems display (lower ECAM). Airbus is actively investigating the unexplained loss of the first officer displays, and the FAA will inform operators of the results of this ongoing investigation as more information becomes available. One of these reported events occurred at night, and although the SAI was providing correct attitude reference information, the crew could not see it. The crew flew the aircraft using the night horizon as an attitude reference until they recovered all displays and most of the lost systems by selecting the AC ESS FEED pushbutton to ALTN which powered the AC ESS BUS and DC ESS BUS from the AC BUS 2. In this case, the ECAM action for this step was not on the first page of the ECAM due to ECAM action priority logic.

Discussion: Failure of AC BUS 1 is indicated by the loss of the PFD, ND, and the upper ECAM as well as illumination of the AC ESS FEED pushbutton on the overhead panel. Additionally, with the loss of AC BUS 1 electrical power, the SAI is unpowered, but it is designed to provide correct attitude reference information for five minutes during gyro spin down. The SAI integral lighting is also inoperative since both functions receive power from the AC BUS 1.

The FAA has proposed Notice of Proposed Rule-Making (NPRM) # FAA-2008-0558 which will result in an Airworthiness Directive (AD) mandating an independent 30 minute supply of electrical power to the SAI. This AD will also ensure proper illumination of the SAI during all phases of flight.

A more detailed description of systems lost with the failure of AC BUS 1 can be obtained by clicking on the following link.

- [SAFO 08020SUP.pdf](#)

Recommended Action: Directors of safety, directors of operations, chief pilots, check airmen, pilot instructors, and line pilots of certificate holders operating Airbus A318, A319, A320, and A321 series airplanes should become familiar with the content of this SAFO. The FAA recommends the following actions:

- It is important for flightcrews to recognize the symptoms of AC BUS 1 failure, and to apply the appropriate ECAM procedures in order to regain the lost flight displays by restoring power to the AC ESS BUS as quickly as possible. The ECAM procedures direct the pilot to select the AC ESS FEED switch to the ALTN position which directs AC BUS 2 electrical power to the AC ESS BUS and recovers PFD, ND, the upper ECAM, and power and lighting to the SAI.
- Operators should emphasize Original Equipment Manufacturer (OEM) written guidance and publish flight manual or operations manual bulletins or quick reference handbook (QRH) procedures, or both, which will better equip flight crews to recognize and resolve the loss of flight displays due to a loss of AC BUS 1 electrical power. Incorporation of the underlying logic of critical aircraft systems in flight crew training for such an occurrence should be a special emphasis item.
- Incorporate AC Bus power loss scenarios (both AC BUS 1 and AC BUS 2) which result in the loss of flight displays into AQP, LOFT, and Subpart N and O simulator training. The training should emphasize the symptoms and recognition of the type of failure and the ECAM resolution procedures for the loss of flight displays and airplane systems associated with these failures. Operators should particularly emphasize switch location and ECAM procedures used to resolve the loss of power to the AC ESS BUS during the night time operational training scenarios.

Questions: For any questions pertaining to this SAFO, please contact Gloria R. LaRoche, AFS-210 at (202) 493-5427 or email to gloria.r.laroche@faa.gov.