

Docket No. SA-520

Exhibit No. 2-O

NATIONAL TRANSPORTATION SAFETY BOARD

Washington, D. C.

Post-accident Bulletins

(6 Pages)



Boeing Long Beach

Flight Operations Bulletin

February 10, 2000

ATA: 27-40, Horizontal Stabilizer

Bulletin No. DC-9-00-02

MD-80-00-02

MD-90-00-01

B-717-00-01

Applicable to: *All DC-9, MD-80, MD-90 & B717 Aircraft*

Subject: STABILIZER TRIM INOPERATIVE/MALFUNCTION

The Boeing Company is actively engaged in the investigation of the Alaska Airlines Flight 261 accident under the leadership of the NTSB. It is the consensus of those parties involved in the investigation that Boeing issue the following recommendations to all DC-9, MD-80, MD-90 and B717 operators and flight crews:

RECOMMENDATIONS:

If a horizontal stabilizer trim system malfunction is encountered, complete the Flight Crew Operating Manual (FCOM) checklist(s). Do not attempt additional actions beyond that contained in the checklist(s). If completing the checklist procedures does not result in an operable trim system, consider landing at the nearest suitable airport. If an operable trim system is restored, the captain should consider proceeding to an airport where suitable maintenance is available, or to the original destination based on such factors as distance, weather, etc.

The Primary and Alternate trim motors are each equipped with a thermal cut-off device which interrupts electrical current to the motor if that trim motor overheats. Repeated or continuous use of the trim motor may cause a thermal cutoff. After the motor cools, it will automatically restore trim function when the thermal cutoff resets. Because an overheat cutoff in one trim motor does not affect the functions of the other, if the alternate trim motor overheats, the primary trim system may be used to retrim the stabilizer; the reverse is also true. However, if the flight crew uses the primary trim system repeatedly to resist a runaway in the alternate trim system, the primary motor could overheat, and the crew may be left with a runaway alternate trim if the primary

*Long Beach Flight Operations, 3855 Lakewood Boulevard, M/C: (D041-0055)
Long Beach, CA 90846-0001, USA/Phone: (562) 593-1249/Fax: 593-3471*

FACTUAL REPORT

Attachment 2-O-1

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trim thermal cutoff occurs. This action could also cause both trim motors to overheat, and result in a temporarily inoperative stabilizer. Also, if a runaway trim motor overheats and stops, it could again runaway once it has cooled and the thermal cutoff resets. If the crew determines that the stabilizer is inoperative, and suspects that they may have a thermal cutoff, and if flight conditions permit, the captain may delay the diversion to an alternate airfield long enough to allow for a cooling period/thermal reset. After a reset, the crew should refer to the recommendations paragraph above.

Finally, flight crews are advised that excessive or prolonged testing of the trim system on the ground before departure may generate enough heat to produce a thermal cutoff during routine trimming shortly after takeoff.

Should additional information be required, please submit your inquiries through your local field service representative or to Boeing Long Beach, ATTN: Flight Operations Customer Service, 3855 Lakewood Boulevard, Mail Code: D041-0055, Long Beach, California 90846-0001, USA, fax: (562) 593-3471.

T. J. Melody
Senior Manager/Chief Pilot
Boeing Long Beach
Boeing Commercial Airplane Group

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Long Beach Flight Operations, 3855 Lakewood Boulevard, M/C: (D041-0055)
Long Beach, CA 90846-0001, USA/Phone: (562) 593-1249/Fax: 593-3471



ORDERS: 8300.10, 8400.10, and 8700.10

APPENDIX: 4

BULLETIN TYPE: Joint Flight Standards Information Bulletin for Airworthiness (FSAW), Air Transportation (FSAT), and General Aviation (FSGA)

BULLETIN NUMBER: FSAW 00-08, FSAT 00-07, and FSGA 00-04

BULLETIN TITLE: Resetting Tripped Circuit Breakers

EFFECTIVE DATE: 08-21-00

TRACKING: N/A

APPLICABILITY:

M/M	ATA Code	14 CFR	PTRS
N/A	All operators and ASI's		1621/5626/362 6

 NOTE: THIS BULLETIN REQUIRES PTRS INPUT. SEE ITEM #6.

1. PURPOSE. The purpose of this bulletin is to summarize Federal Aviation Administration (FAA) guidance regarding resetting tripped circuit breakers (CB). Specific objectives are:

A. To increase awareness in flightcrews, maintenance personnel, and ground servicing personnel of safety information and recommended procedures generated by manufacturers in respect to resetting tripped CB's.

B. To ensure that approved operating procedures generated by manufacturers to ensure safe flight operations is incorporated in the manuals used by flightcrews and maintenance personnel, and in their training programs.

C. To encourage operators to establish company policies and procedures regarding the resetting of tripped CB's. The policies and procedures should emphasize the potential hazards of resetting a tripped CB.

2. BACKGROUND. Historically flightcrews, maintenance personnel, and airplane ground servicing personnel, e.g., airplane cleaners, airplane fuelers, and baggage loading personnel have viewed the resetting of a CB as a relatively common occurrence in operations. Generally, resetting a CB is met with no adverse

results. However, a review of Service Difficulty Reports involving tripped and reset CB's reveals that the opposite is sometimes true. Smoke, burned wires, electrical odors, arcing, and loss of related aircraft systems have been reported as a result of resetting tripped CB's.

3. DISCUSSION. Airplane manufacturers normally provide guidance in their flightcrew operating manuals (FCOM), maintenance manuals, and airplane servicing manuals that enables flightcrews, maintenance personnel, and airplane ground servicing personnel to perform their tasks with a high degree of safety. This guidance generally addresses the resetting of tripped CB's. Operators should ensure that specific CB resetting procedures based on manufacturer's guidance is reflected in their manuals. The FAA has developed the following summary statement to emphasize the importance of caution in resetting tripped CB's and to recommend certain general safety practices.

4. SUMMARY STATEMENT. The following statement summarizes FAA philosophy, policy, and regulations in respect to resetting tripped CB's. The overriding message is one of caution. Operators should develop training programs and manuals for use by flightcrews, maintenance personnel, and airplane ground servicing personnel in which company policies and procedures with regard to resetting tripped CB's are clearly stated and readily available. Operator's policies and procedures should promote general awareness of safety concerns associated with resetting tripped CB's and should stress the importance of strict adherence to specific safety guidance generated by the manufacturer.

A. General. There is a latent danger in resetting CB tripped by an unknown cause because the tripped condition is a signal that something may be wrong in the related circuit. Until it is determined what has caused a trip to occur, a flightcrew, maintenance, or airplane ground servicing personnel usually have no way of knowing the consequences of resetting a tripped CB. Resetting a CB tripped by an unknown cause should normally be a maintenance function conducted on the ground.

B. In-Flight. A tripped CB should not be reset in flight unless doing so is consistent with explicit procedures specified in the approved operating manual used by the flightcrew or unless, in the judgement of the captain, resetting the CB is necessary for the safe completion of the flight. A logbook write-up including a description of the exact conditions when the trip occurred, when the CB was reset, and the results of resetting the CB is an appropriate safety practice for tracking purposes and may provide the key to effective trouble-shooting and corrective action by maintenance on the ground.

C. On-the-Ground. A CB tripped by an unknown cause may be reset on-the-ground after maintenance has determined the cause of the trip and has determined that the CB may be safely reset. A CB may be cycled (tripped or reset) as part of an approved trouble-shooting procedure, unless doing so is specifically prohibited for the conditions existing. If an operator's minimum equipment list (MEL) contains procedures that allow a tripped CB to be reset, then the same cautions with reference to resetting tripped CB's identified elsewhere in this bulletin also apply.

D. CB Associated with Fuel Pump Circuit. Special caution is appropriate where fuel pumps are involved, because of the possibility that arcing might lead to ignition of fuel or fuel vapors. The FAA has issued airworthiness directives (AD) affecting certain airplane makes and models that prohibit the resetting of fuel boost pump CB's in-flight. Those AD's also prohibit resetting a fuel boost pump CB while the airplane is on the ground, without first identifying the source of the electrical fault.

5. ACTION. Principal Operations Inspectors (POI), Principal Avionics Inspectors (PAI), and Principal Maintenance Inspectors (PMI) shall ensure that their assigned operators conduct a review of their operating and maintenance manuals to ensure the contents adequately address resetting tripped CB's. Inspectors shall strongly recommend that operating, maintenance, and airplane ground servicing personnel manuals, as well as training programs contain company policies and explicit procedures regarding resetting tripped CB's, both in-flight and on-the-ground. The procedures shown in the manuals used by the operator's flightcrews, maintenance personnel, and airplane ground servicing personnel should be consistent with the airplane manufacturer's guidance and this bulletin.

6. PROGRAM TRACKING REPORTING SUBSYSTEMS (PTRS) INPUT. In order to track the monitoring activity associated with this CB resetting policy, the inspector shall enter the pertinent manual surveillance code (e.g., 1621 for POI, 5626 for PAI, or 3626 for PMI) in the appropriate block of the PTRS Tracking Form 8000-36. In the case of an air carrier, it is also important to complete the Designator Block with the appropriate air carrier designator code.

7. INQUIRIES. This bulletin was developed jointly by AFS-200 and AFS-300, in coordination with SEA AEG and ANM-100. If there are questions or comments regarding this bulletin, contact Fred Sobeck, Continuous Airworthiness Maintenance Division, AFS-300, at [REDACTED]

8. EXPIRATION DATE. This bulletin will expire on 08-31-01.

/s/
L. Nicolas Lacey
Director, Flight Standards Service

