

# **RESETTING OF CIRCUIT BREAKERS**

## **SUGGESTED PROCEDURES**

### **Airbus**

The attached is a telex sent to all operators at the end of 1999. It outlines Airbus policy on the issue. Since then, all Flight Crew Operating Manuals have been amended as necessary.

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FROM : AIRBUS INDUSTRIE CUSTOMER SERVICES TOULOUSE TX530526

OPERATOR INFORMATION TELEX - OPERATOR INFORMATION TELEX  
AND  
FLIGHT OPERATIONS TELEX - FLIGHT OPERATIONS TELEX

SUBJECT : ALL AIRBUS AIRCRAFT - REENGAGEMENT OF TRIPPED CIRCUIT  
BREAKERS

OUR REF.: AI/SE 999.0172/99/VH DATED 22 DEC 1999

1/ VALIDITY

ALL AIRBUS AIRCRAFT

2/ REASON FOR ISSUE

FOR AIRCRAFT FITTED WITH CIRCUIT BREAKERS IN THE COCKPIT (ALL AIRCRAFT EXCEPT A330 AND A340), THE FLIGHT CREW OPERATING MANUAL (FCOM) PRESENTLY ALLOWS THE FLIGHT CREW TO REENGAGE A TRIPPED CIRCUIT BREAKER.

THIS RECOMMENDATION WAS PREVIOUSLY INTRODUCED BECAUSE OF A FEW REPORTED CASES OF CIRCUIT BREAKERS UNDULY TRIPPING DUE TO MECHANICAL WEAKNESS, PARTICULARLY AFFECTING A300 AIRCRAFT. AS A CONSEQUENCE, UNDUE CIRCUIT BREAKER TRIPPING HAS RESULTED IN ASSOCIATED EQUIPMENT LOSS.

HOWEVER, FROM A310 DEVELOPMENT ONWARDS, CIRCUIT BREAKERS HAVE BEEN DESIGNED TO WITHSTAND A HIGHER LEVEL OF VIBRATION AND TEMPERATURE VARIATIONS.

CIRCUIT BREAKERS FOR A300 AIRCRAFT HAVE BEEN REPLACED WHEN FAULTY.

TODAY, IN-SERVICE EXPERIENCE SHOWS A VERY GOOD RELIABILITY OF CIRCUIT BREAKERS AND NO PARTICULAR PROBLEM HAS BEEN REPORTED SO FAR.

THE MAIN PURPOSE OF A CIRCUIT BREAKER IS TO PROTECT THE AIRCRAFT, ITS SYSTEMS AND INSTALLATION AGAINST A POSSIBLE SHORT CIRCUIT OR EVEN ARCING.

THE CIRCUIT BREAKER WILL PROTECT THE LINE DOWNSTREAM OF ITS POINT OF INSTALLATION BY SWITCHING OFF POWER TO ANY DEFECT AFFECTING THE LINE ITSELF OR THE EQUIPMENT IT SUPPLIES. IT WILL ALSO PROTECT THE LINE UPSTREAM BY AVOIDING PROPAGATION OF THE DEFECT.

TODAY, THE PROBABILITY OF UNDUE CIRCUIT BREAKER TRIPPING DUE TO MECHANICAL WEAKNESS IS VERY LOW. THEREFORE, THE LIKELY CAUSE FOR CIRCUIT BREAKER TRIPPING IS AN ABNORMALITY IN THE ELECTRICAL LOAD OR IN THE ASSOCIATED WIRING.

CONSEQUENTLY, THE REENGAGEMENT OF A TRIPPED CIRCUIT BREAKER MAY AGGRAVATE THE ELECTRICAL DAMAGE BY PROPAGATING THE ELECTRICAL DAMAGE WITH POSSIBLE RISK OF AFFECTING OTHER EQUIPMENT SUPPLIED

BY THE AFFECTED BUSBAR OR MAY EVEN RESULT IN A TEMPERATURE INCREASE IN THE AREA WHERE THE DEFECT OCCURRED.

### 3/ FLIGHT CREW OPERATIONAL PROCEDURES

FOR AIRCRAFT FITTED WITH CIRCUIT BREAKERS IN THE COCKPIT AND BASED ON THE ABOVE CONSIDERATIONS, AIRBUS INDUSTRIE HAS ADOPTED THE FOLLOWING POLICY IN CASE OF CIRCUIT BREAKER TRIPPING.

NOTE : A330 AND A340 ARE NOT AFFECTED AS THE CIRCUIT BREAKERS ARE LOCATED IN THE ELECTRONIC BAY.

#### - IN FLIGHT

AIRBUS INDUSTRIE DO NOT AUTHORIZE A PILOT TO REENGAGE A CIRCUIT BREAKER HAVING TRIPPED BY ITSELF, UNLESS THE CAPTAIN, USING HIS/HER EMERGENCY AUTHORITY, JUDGES IT NECESSARY FOR A SAFE CONTINUATION OF THE FLIGHT. IN THIS LAST CASE, ONLY ONE RE-ENGAGEMENT SHOULD BE ATTEMPTED.

NOTE: COMPUTERS RE-INITIALIZATION BY CIRCUIT BREAKER MANUALLY SET TO OFF THEN ON REMAINS PERMITTED WHEN LISTED IN THE FCOM.

#### - ON GROUND

THE PILOT MAY REENGAGE THE CIRCUIT BREAKER PROVIDED THE ACTION IS COORDINATED WITH THE MAINTENANCE AND THE CAUSE OF THE CIRCUIT BREAKER TRIPPING IS IDENTIFIED.

NOTE : SIMILARLY TO THE IN-FLIGHT CASE, COMPUTER RE-INITIALIZATION BY CIRCUIT BREAKER MANUALLY SET TO "OFF THEN ON" REMAINS PERMITTED WHEN LISTED IN THE FCOM.

### 3A/ FCOM PROCEDURES

THE FCOM PROCEDURES ARE BEING CHANGED IN ORDER TO REFLECT THE ABOVE POLICY. THIS AFFECTS THE FOLLOWING FCOM CHAPTERS:

- A310 AND A300-600

A/ FCOM VOL 2, PROCEDURES AND TECHNIQUE 2.02.06 P1 IS BEING REVISED TO SHOW THE PROCEDURE AS DESCRIBED IN ABOVE PARAGRAPH 3 OF THIS OIT/FOT.

B/ FCOM VOL 2, STANDARD OPERATING PROCEDURES (SOP) PRELIMINARY COCKPIT PREPARATION 2.03.04 P1 IS BEING REVISED TO CHANGE PRESENT WORDING "CHECK ALL C/B ARE SET, RESET AS APPLICABLE" BY "CHECK ALL C/B ARE SET. IF A C/B IS FOUND TRIPPED, COORDINATE WITH MAINTENANCE FOR RESET."

THESE AMENDMENTS WILL BE PUBLISHED WITH THE NEXT A310 AND A300-600 FCOM REVISIONS 29 AND 24 RESPECTIVELY TO BE ISSUED IN FEBRUARY 2000.

NOTE : THESE REVISIONS DO NOT YET INCORPORATE THE REMARK ON THE CAPTAIN'S EMERGENCY AUTHORITY FOR ONE RE-ENGAGEMENT IN FLIGHT. A TEMPORARY REVISION WILL BE ISSUED ACCORDINGLY WHEN THE REVISIONS ARE PUBLISHED.

- A300

FCOM VOL 8, NORMAL PROCEDURES 8.07.06 P1 (A300 B2/B4) OR FCOM VOL 2 NORMAL PROCEDURES 2.03.06 P2 (A300 FF) PRELIMINARY COCKPIT PREPARATION ARE BEING REVISED TO INDICATE SIMILARLY TO A310/A300-600 SOP "CHECK ALL C/B ARE SET. IF A C/B IS FOUND TRIPPED, COORDINATE WITH MAINTENANCE FOR RESET."

A SPECIFIC CHAPTER WILL BE INTRODUCED IN THE FCOM PROCEDURES AND TECHNIQUES TO SHOW THE PROCEDURE AS DESCRIBED IN ABOVE PARAGRAPH 3 OF THIS OIT/FOT.

A TEMPORARY REVISION WILL BE ISSUED IN JANUARY 2000 TO INCORPORATE THESE CHANGES.

- A319/A320/A321

FCOM VOL 3, ABNORMAL PROCEDURE 3.02.24 P24 "C/B TRIPPED" HAS BEEN REVISED TO HIGHLIGHT THAT THE FLIGHT CREW MUST NOT REENGAGE A TRIPPED C/B IN FLIGHT AND MUST COORDINATE WITH MAINTENANCE FOR REENGAGEMENT ON GROUND.

THIS AMENDMENT WAS PUBLISHED WITH THE LAST FCOM REVISION 29 ISSUED IN SEPTEMBER 1999.

NOTE: THIS REVISION DOES NOT YET INCORPORATE THE REMARK ON THE CAPTAIN'S EMERGENCY AUTHORITY FOR ONE RE-ENGAGEMENT IN FLIGHT. A TEMPORARY REVISION WILL BE ISSUED IN JANUARY TO INCORPORATE THIS CHANGE.

#### 4/ CABIN CREW PROCEDURES

A TRIPPED CIRCUIT BREAKER FROM A CIRCUIT BREAKER PANEL FITTED IN THE CABIN MUST NOT BE REENGAGED IN FLIGHT BY THE CABIN CREW. ON GROUND, THE CABIN CREW MAY REENGAGE THE CIRCUIT BREAKER IF THE ACTION IS COORDINATED WITH MAINTENANCE AND THE CAUSE OF THE TRIPPING IS IDENTIFIED.

4A/ CABIN ATTENDANT OPERATING MANUAL PROCEDURES (PUBLISHED ONLY FOR A319/A320/A321, A330 AND A340) WILL BE REVISED ACCORDINGLY WITH THE NEXT CAOM REVISION:

A319: REVISION 06 (JUN 2000)  
A320/A321: REVISION 22 (JUN 2000)  
A330: REVISION 09 (JAN 2000)  
A340: REVISION 15 (MAY 2000)

#### 5/ MAINTENANCE PROCEDURES

##### 5A/ AIRCRAFT MAINTENANCE MANUAL (AMM)

THE FOLLOWING PARAGRAPH RELATED TO ENGAGEMENT OF TRIPPED CIRCUIT BREAKER HAS BEEN WRITTEN FOR THE AMM :

##### QUOTE

ENGAGEMENT OF A TRIPPED CIRCUIT BREAKER.  
IN FLIGHT, NO ENGAGEMENT OF A TRIPPED CIRCUIT BREAKER IS ALLOWED.  
ON THE GROUND, A TRIPPED CIRCUIT BREAKER MUST NOT BE ENGAGED WITHOUT TROUBLE SHOOTING OF THE ASSOCIATED SYSTEM.

##### UNQUOTE

THIS PARAGRAPH HAS BEEN OR WILL BE INTRODUCED IN THE AMM AS FOLLOWS:

- A300 - ATA 24-00-00 PB 001 (MAR 2000)

- A310/A300-600 - ATA 24-00-00 PB 001 (DEC 99)
- A319/A320/A321 - ATA 24-50-00 PB 001 (NOV 99)
- A330/A340 - ATA 24-53-00 PB 001 (OCT 99)

5B/ TROUBLE SHOOTING MANUAL (TSM) AND FAULT ISOLATION MANUAL (FIM)

A/ THE FOLLOWING PARAGRAPH HAS BEEN WRITTEN FOR INTRODUCTION INTO THE TSM/FIM.

QUOTE

ON THE GROUND, A TRIPPED CIRCUIT BREAKER MUST NOT BE ENGAGED WITHOUT TROUBLE SHOOTING OF THE ASSOCIATED SYSTEM.

UNQUOTE

THIS PARAGRAPH HAS BEEN OR WILL BE INTRODUCED IN THE FOLLOWING TSM/FIM REVISIONS:

- A300 (FIM) (MAR 2000)
- A310/A300-600 (DEC 99)
- A319/A320/A321 (NOV 99)
- A330/A340 (JAN 2000)

B/ A NEW PROCEDURE HAS BEEN WRITTEN FOR THE TSM/FIM ENTRY POINT: ATA24 - ELEC - C/B TRIPPED.

BASED ON THIS ENTRY, ASSOCIATED FAULT ISOLATION PROCEDURES RELATED TO CIRCUIT BREAKER TRIPPING HAVE BEEN INTRODUCED/AMENDED ACCORDINGLY.

THE PROCEDURE HAS BEEN OR WILL BE INTRODUCED IN THE TSM/FIM AT THE FOLLOWING REVISIONS:

- A300 (FIM) (MAR 2000)
- A310/A300-600 (DEC 99)
- A319/A320/A321 (NOV 99)
- A330/A340 (OCT 99)

6/ FOLLOW UP

NO FOLLOW UP OF THIS FOT/OIT IS PLANNED.

BEST REGARDS,

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