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AUTOMATIC FMGS RESET AND RESYNCHRONIZATION

FM RESET

When the FM software cannot work properly or receives instructions to perform impossible operations, it automatically resets itself. A resynchronization with the other FM always follows.

When the reset is a minor one, the system will recover by itself.

When the reset is a major one :

- Resets recur at short intervals (several in two or three minutes).
- The memories are cleared, leading to the loss of F-PLN, GW, CI, CRZ FL, MCDU-entered speeds and nav aids and to database switching.

FM RESYNCHRONIZATION

An FM resynchronization automatically occurs after an FM reset but it may occur independently each time self comparisons between FM1 and FM2 reveal discrepancies.

One single resynchronization lasts approximately 25 seconds.

If several resynchronizations occur within 5 minutes, independent mode commences.

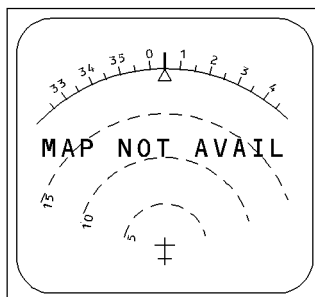
FMCG STATUS DURING A RESET/RESYNCH

While a RESET/RESYNCH occurs :

- The ND shows “MAP NOT AVAIL”.
- The MCDU reverts to the A/C STATUS page, with “PLEASE WAIT” displayed in the scratchpad with the FM FAULT light illuminated.
- Autotuning of Nav aids (VOR, DME, ADF) are lost on the failed side.
- AP and managed modes may be transiently lost (reversion to HDG/V/S or TRK/FPA).
- If the pilot presses a key while the scratchpad is showing “PLEASE WAIT”, there is no change at MCDU level. This is normal, and the crew should no respond by pulling the MCDU circuit breaker.

FFCS-04-0620-001-A001AA

A340-300		
1L	ENG CFM56-5-C2	1R
2L	ACTIVE DATA BASE 28NOV-25DEC AB49012001	2R
3L	SECOND DATA BASE ←25DEC-22JAN AB49012001	3R
4L	ACTIVATE STORED ←CROSSLOAD O2RTES 00RWYS	4R
5L	CHG CODE 11WPTS 00NAVS [] DELETE ALL→	5R
6L	IDLE/PERF +0.0/+0.0 PLEASE WAIT	6R



SINGLE RESET or DUAL RESET WITH AUTORECOVERY

If the RESET/RESYNCH succeeds, all functions are recovered.

Procedure

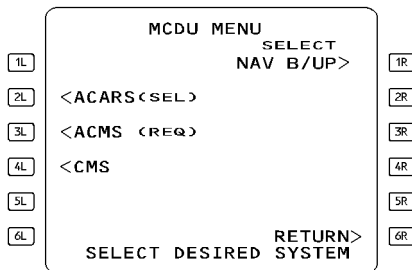
- RESELECT the convenient MCDU page
- REENGAGE managed modes and AP.

WAIT one minute after the "PLEASE-WAIT" message has disappeared before engaging the AP/ FD of the failed FMGC.

SINGLE LATCH

If 4 successive resets occur, the failing FMGC will latch and single mode mode operation commences. While this is occurring :

- Failed side ND displays "MAP NOT AVAIL" and the ND of the failed side displays "OFF SIDE FM CONTROL".
- The MCDU of the failed side displays the MCDU menu, and the FM FAULT light illuminates.
- If AP and FD was previously engaged on the failed side, the AP FD disengage and the righthand column of the FMA shows that the operating FD is offside.
ECAM displays the warning "AP OFF" and "FM1(2) FAULT", and the master warning light and audio remind the pilot of the AP disengagement.
- All functions are restored on the operative side



MCDU MENU PAGE on the failed side

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Procedure

- ENGAGE the non affected AP.
- ENGAGE managed modes.
- SELECT the same range and mode on both ND to give the failed side ND something to display.
- RESET the affected FM with the FMGEC reset breaker on the overhead panel.
- **If successful, a resynchronisation is launched.**
- **If unsuccessful the FMGC operate in single mode :**
 - PULL the FMGEC reset breaker of the affected FMGC.
 - SELECT FM source BOTH ON 1 or 2.

DUAL RESET WITH LOSS OF DATA AND AUTORECOVERY

3 successive dual resets without result erase all pilot entered data (F-PLN, GW, CRZ FL, Cl...)

When the FMGS recovery is obtained :

- Database cycle may have switched
- The FM position bias is lost. The FM position returns to the MIX IRS position.
- Autotuning of VOR/DME are restored based on aircraft IRS position
- FMGS tuning of ILS and ADF is not possible.
- Lateral and vertical managed mode cannot reengage.
- “CAB PR LDG ELEV FAULT” ECAM message is displayed.
- “REENTER WEIGHT/CG” MCDU message is displayed.

Procedure

When the system has recovered the managed speed may not reengage, because its target would be green dot. The PERF/IDLE factor is reset to 00/00. If a PERF/IDLE factor was entered, the performance may be slightly modified after recovery.

- SELECT the initial database.
- SELECT DIR TO the required downpath waypoint
- SELECT LAT REV at downpath waypoint and redefine DESTINATION.
- SELECT the FUEL PRED page and reenter GW and CG values read on the ECAM fuel page.
- SELECT the PROG page and enter CRZ FL.

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- SELECT the PERF page and enter CI.
- CHECK or reengage (as appropriate) the relevant speed/Mach target and vertical mode.
Redefine the flight plan for the remainder of the flight as the opportunity to do so presents itself.
An update of the FM position will be considered if MIX IRS and actual positions differ from more than 20 NM.
- PERFORM a NAV accuracy check when possible.

DUAL LATCH

- Both FMGCs are inoperative. FM and FG capability are lost.
- Both NDs display “MAP NOT AVAILABLE”. Navaid tuning is not performed.
- AP/FD, A/THR are lost.
- Both MCDU revert to the MCDU MENU page.
- ON ECAM following messages are displayed :
“CAB PR LDG ELEV FAULT”
“AUTO FLT AP OFF” if AP was engaged
“AUTO FLT A/THR OFF” if A/THR was engaged.
- “AUTO FLT FM1 + 2 FAULT”

Procedure

- FLY raw data
- TUNE necessary nav aids using the RMPs
- RESET successively both FMGCs with the FMGEC reset breakers on the overhead panel.

● If successful, refer to dual reset with loss of data and auto recovery

Note : A recovery will result in the loss of all pilot entered data.

● If unsuccessful

- FLY raw data
- SELECT FM source to NORM
- SELECT the NAV B/UP prompt on both MCDU DATA pages.
(Refer to 4.04 HOW TO USE for the navigation back up operation)
- SET the landing elevation of the destination on the overhead panel.

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FMGS RESET DURING ILS APPROACH

● **Above 700 feet AGL**

ILS tuning may be lost. The loss of ILS tuning, due to a dual reset, will cause a loss of the LOC and G/S, and the disengagement of the APs and FDs. In this case :

- PERFORM a go-around, if not stabilized at 1000 feet AGL, and if visual references are not acquired.

● **Below 700 feet AGL**

A single or double reset does not affect an ILS approach below 700 feet AGL. ILS frequency is locked and AP/FDs remain engaged.

- CONTINUE the approach.

FMGS RESET DURING NON PRECISION APPROACH

During a non ILS approach, if the master FMGC fails, AP/FD and managed modes are lost and FDs engage in basic modes.

- PERFORM a go-around, if not stabilized at 1000 feet, and if visual references are not acquired.

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MANUAL RESET OF FMGC's

The FMGS may on rare occasions require manual resetting. If this occurs in flight, reset one FMGC at a time.

The aircraft has two reset breakers per FMGC :

- The FM reset breaker resets the flight management part of the FMGC
- The FMGEC reset breaker resets the flight management, flight guidance and flight envelope parts.

Resetting the FM or FMGEC reset breakers disconnects the onside autopilot.

The FM resynchronize further to the reset of one or both FM.

Resetting the FM or FMGC reset breaker does not increment the reset counter : There is no limitation in the number of reset breaker reset.

ERRONEOUS PREDICTIONS

The FMGS may display temporary erroneous predictions that can affect various data such as ECON speed/Mach, optimum flight level, fuel or time predictions. If erroneous predictions are observed :

On ground :

- CHECK the cruise temperature (sign and value), the gross weight and the cruise flight level.

On ground or in flight :

- REENTER the same cost index to restart a computation or
- MAKE a COPY ACTIVE then activate the secondary or
- MAKE a DIR TO the "TO" waypoint.

(In descent or approach, a cost index change does not restart a computation).

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MCDU LOCKED

When a MCDU locks up, all FMGS functions remain available, but the pilot cannot enter information into the MCDU, and cannot call up any other MCDU pages for display. (The page that was on display when this occurred remains on display).

Procedure

– SWITCH OFF the locked MCDU, and SWITCH it on after ten seconds.

Note : *During a RESET/RESYNC, if the crew presses a key while the scratchpad is showing “PLEASE WAIT”, there is no change at MCDU level. This is normal, and the pilot should not respond by switching of the MCDU.*

FM/GPS POS DISAGREE MESSAGE <1

This ECAM message is triggered when either one of the FM positions differs from either of the GPS positions by more than 0.5 minutes of latitude or longitude.

For procedure, refer to abnormal and emergency procedure 3.02.34 and QRH.

ERRONEOUS DISPLAY OF THE ECON CRZ MACH

Due to a software anomaly, the PERF CRZ page may display an erroneous ECON CRZ Mach (Mach .78) during the preflight, takeoff and climb phase.

This error will be automatically corrected during the 3–4 minutes following the top of climb, but the autothrust activity may not be adequate for the passenger quietness. (The FMS uses increments of 0.01 Mach per minute, until the correct CRZ Mach is obtained).

This anomaly does not spoil the FMS predictions that are computed with the correct ECON CRZ Mach.

Procedure

RE-ENTER the COST INDEX, when reaching the top of climb.

The FMS will start a new computation and correct this anomaly ; the autothrust will continuously increase the Mach up to the correct value.

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NO MANAGED SPEED DURING MANUAL APPROACH

During manual approach with FD and ATHR not engaged, if the FM1 part is faulty and the FG1 part is valid, the FMGC 1 does not compute managed speed and remains master.

As a consequence VAPP is not displayed on PFD.

To recover managed speed, the FMGC 2 should be forced master:

Procedure :

- Engage FD 2 or AP2 or ATHR to force the FMGC 2 priority.