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**GENERAL**

The purpose of the Centralized Fault Display System (CFDS) is to make the maintenance task easier by displaying fault messages in the cockpit and permitting the flight crew to make some specific tests.

- There are two levels of maintenance :
- at the line stop : removal and replacement of equipment
  - at the main base : troubleshooting

**COMPONENTS**

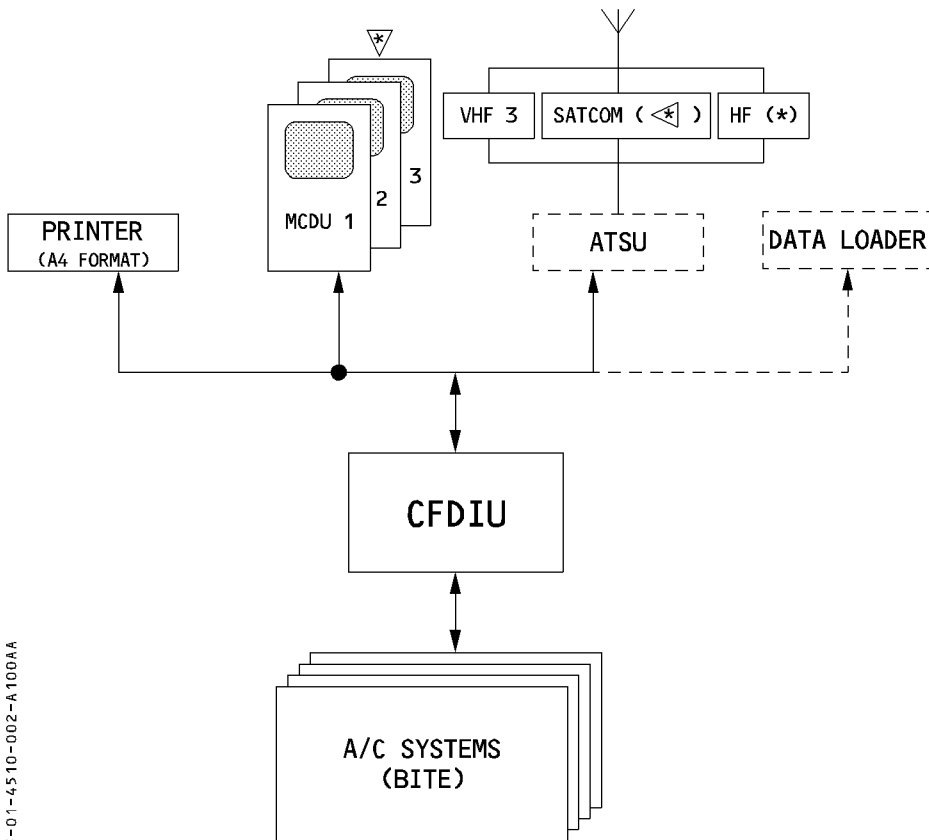
- The CFDS includes :
- the BITE (Built-In Test Equipment) for each electronic system
  - a central computer, the Centralized Fault Display Interface Unit (CFDIU)
  - two MCDUs (Multipurpose Control and Display Units), used also for FMGS (Flight Management and Guidance System), AIDS (Aircraft Integrated Data System), and ACARS (Aircraft Communication And Reporting System, if installed), which work with the CFDIU to display information or initiate tests
  - one printer.
- If a main channel of the CFDIU fails, the backup channel takes over.

**MODES OF OPERATION**

- The CFDS operates in two main modes :
- the NORMAL mode or REPORTING mode (in flight)
  - the INTERACTIVE mode or MENU mode (on ground).
- In NORMAL mode, the CFDS records and displays the failure messages transmitted by each system BITE.
- In INTERACTIVE mode, the CFDS allows any BITE to be connected with the MCDU in order to display the maintenance data stored and formatted by the BITE or to initiate a test.




**ARCHITECTURE**



NECS-01-45 10-002-A 100AA

\* NOT YET INSTALLED FOR ATSU COMMUNICATIONS

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### FAILURE/FAULT CLASSIFICATION

The Centralized Fault Display System (CFDS) identifies the faulty system and puts any failures or faults into one of three classes :

- R
- Class 1:** Failures indicated to the flight crew by means of the ECAM, or other flight deck effect. They must be repaired or entered in the MEL (Minimum Equipment List) before the aircraft can depart.
  - Class 2:** Faults indicated to maintenance personnel by the CFDS, and which trigger a MAINT status entry on the maintenance part of the ECAM status page. The aircraft can operate with these faults, but they must be repaired within 10 days.
  - Class 3:** Faults indicated to maintenance personnel by the CFDS, but which do not trigger a MAINT status. The operator may have these faults corrected at his convenience.

R

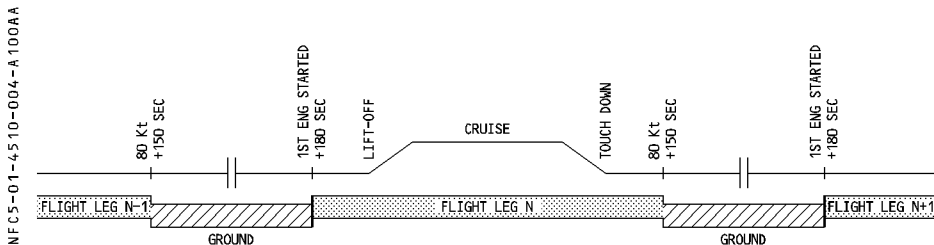
Failure/fault classes	Class 1	Class 2	Class 3
Operational consequences	YES	NO	NO
Indication to the flight crew	YES Automatically displayed : – Warning or caution messages on Engine Warning Display – Flag or indication in the flight deck.	YES Available on the ECAM status page.	NO
Dispatch consequences	Refer to MEL may be : "GO" "GO IF" "NO GO"	No need to refer to MEL except for the message – AIR BLEED For all the other class 2 messages, "GO" without conditions. Can be left uncorrected for 10 days.	MEL not applicable
Indication to the maintenance team	YES Automatically print out at the end of each flight : Fault messages on the CFDS Post Flight Report.		YES Available on request through system report/Test



## FUNCTIONS OF THE CENTRALIZED FAULT DISPLAY SYSTEM (CFDS)

The main functions of the CFDS are :

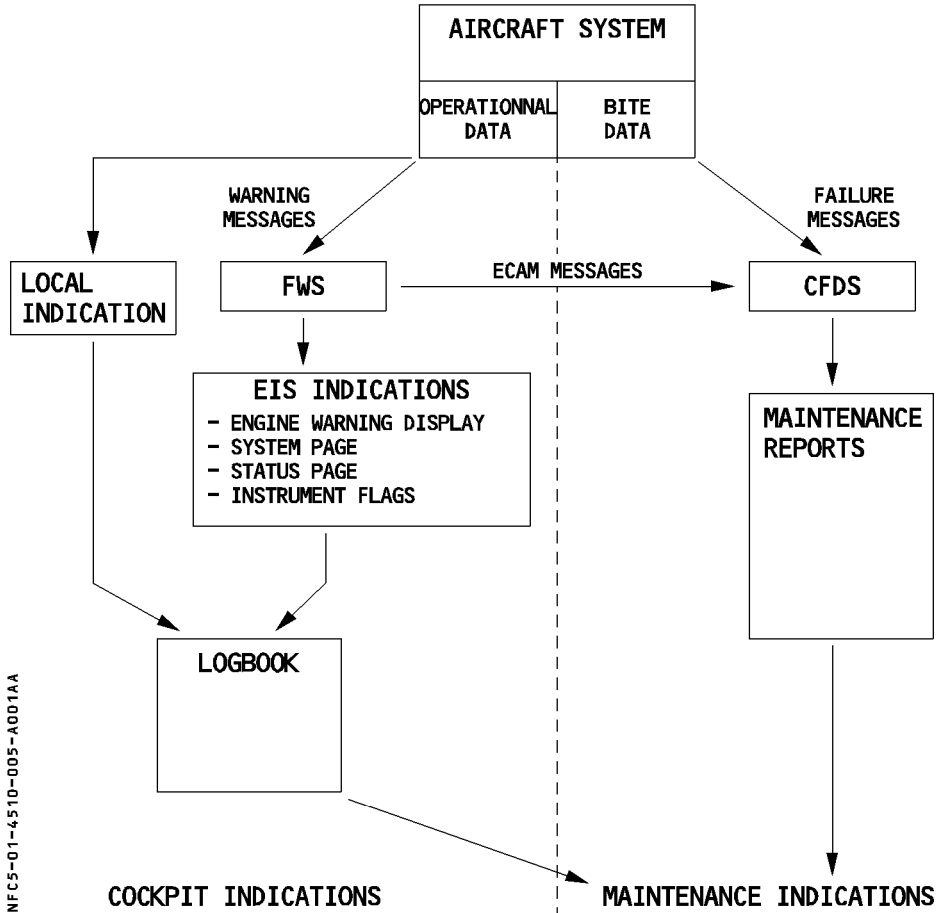
- obtaining and storing messages transmitted by the connected system BITEs, or by the Flight Warning Computer (Warning and Caution titles)
- Detailing the maintenance phases



- Presenting maintenance reports :
  - Last leg report
  - Last leg ECAM report
  - Previous leg report
  - Avionics status
  - System report test
  - Post-flight report.



**COCKPIT/CFDS INTERFACE**



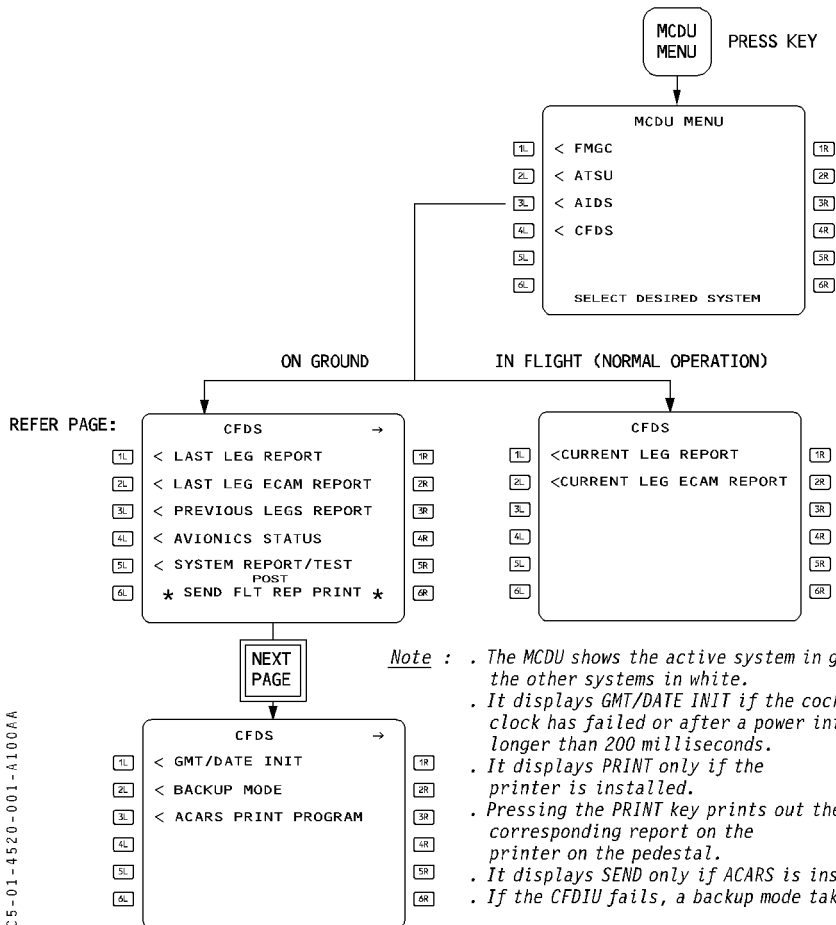
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## MAINTENANCE MENU

The CFDS uses menus displayed on the MCDU. The operator selects functions or reports from these menus.

Pressing the MCDU MENU key and then selecting CFDS brings up the MAINTENANCE MENU page (different pages for the aircraft in flight and the aircraft on the ground).





## LAST (or CURRENT) LEG REPORT

The LAST LEG REPORT (on the ground) or the CURRENT LEG REPORT (in flight), list all class 1 failures and class 2 faults and all system failure and system fault messages received by the CFDS during the last flight leg or the current flight leg. Pressing the IDENT key displays a list of the systems (called identifiers) affected by the failure or fault, which helps the pilot or maintenance person to identify the failure or fault.

TIME AT WHICH CFDS  
RECEIVES THE  
FAILURE/FAULT

CFDS MENU

DENOTES AN  
INTERMITTENT  
FAILURE/FAULT

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LAST LEG REPORT		DATE:23 FEB	
1L	GMT	ATA	
2L	CHECK LGC IU-PHC 1		
	INTERFACE	(INTMT)	←
3L	1105	26-12-00	IDENT >
4L	EIU 1	NO SFCC1 DATA	
	1012	27-00-00	IDENT >
5L	FMGC1		
	0954	22-00-00	
6L	< RETURN		PRINT *

1R  
2R  
3R  
4R  
5R  
6R

LAST LEG REPORT		IDENTIFIERS	
1R	FCDC1		FCDC2
2R	ECAM-1		ECAM-2
3R	DMU		EIU 2
4R			
5R			
6R	< RETURN		PRINT *

1R  
2R  
3R  
4R  
5R  
6R

## LAST (or CURRENT) LEG ECAM REPORT

In flight : The CURRENT LEG ECAM REPORT displays the primary and independent warning (class I) messages and MAINTENANCE STATUS (class II) messages of the current flight leg.

On the ground : The LAST LEG ECAM REPORT displays the primary and independent warning (class I) messages plus MAINTENANCE STATUS (class II) messages of the last flight leg.

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LAST LEG ECAM REP		DATE:23 FEB		PH	
1L	GMT	ATA		PH	← 1R
2L	SFCC1 FAULT			06	← 2R
	1012	27-00			
3L	LAND3 INOP			06	← 3R
	0954	22-00			
4L	ENG1 LOOP A FAULT			05	← 4R
	0933	26-12			
5L	ATS DISCONNECT			05	← 5R
	0922	22-00			
6L	< RETURN				← 6R
					PRINT *

*Note : This screen displays PRINT only if the printer is installed.*



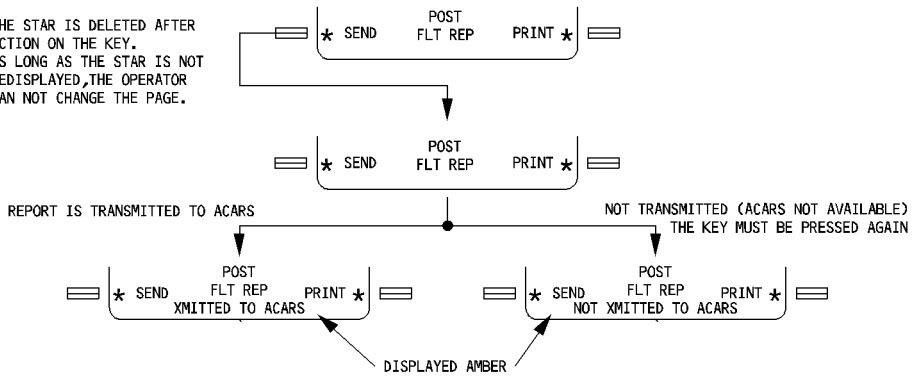


**POST FLIGHT REPORT**

R At the end of a flight, LAST LEG and LAST LEG ECAM REPORTS are printed out automatically after the last engine shutdown.

R It is also automatically sent to the ACARS after the last engine shutdown, or manually by selecting the SEND key.

THE STAR IS DELETED AFTER ACTION ON THE KEY. AS LONG AS THE STAR IS NOT REDISPLAYED, THE OPERATOR CAN NOT CHANGE THE PAGE.



**CFDS  
POST FLIGHT REPORT**

A/C IDENT	DATE	GMT	FLTN	CITY PAIR
XY-ABCD	FEB23	2355	XY-1234	LFBO/LFPO

ECAM WARNINGS

GMT	ATA	PH	
1012	27-00 06		SFCC 1 FAULT
0954	22-00 06		LAND3 INOP
0933	26-12 05		ENG 1 LOOP A FAULT
0922	22-00 05		ATS DISCONNECT
0915	28-21 04		FUEL L TK PUMP 1 LO PR
0904	36-22 04		BLEED LOOP

FAULT MESSAGES

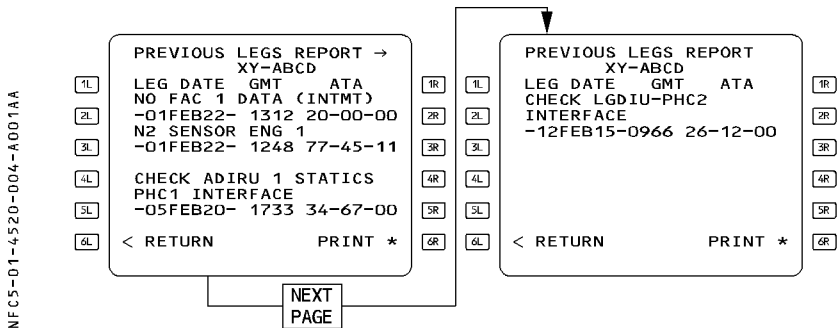
GMT	ATA	
1105	26-12-00	CHECK LGCIU-PHC 1 INTERFACE (INTMT)
1012	27-00-00	FIU 1-:NO SFCC 1 DATA
0954	22-00-00	FMGC 1
0933	36-11-00	BMC 1
0915	28-21-00	FUEL L TK PUMP 1 QM
0904	26-12-00	CHECK R WING LOOP A

COMMENTS

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**PREVIOUS LEGS REPORT**

This report gives access to the POST FLIGHT REPORTS of the previous 63 flight legs.

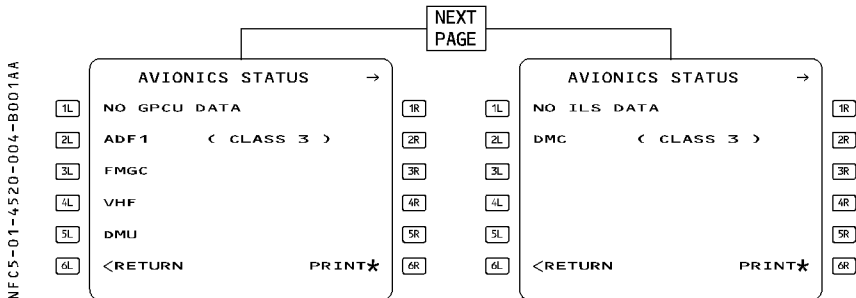


On ground, the Operator can print copies of the screen. If ACARS is installed, the Operator can send the flight report (see the POST FLIGHT REPORT paragraph).

**AVIONICS STATUS**

This screen displays the list of systems affected by a failure or fault. If a system is affected by at least a Class 3 fault, CLASS 3 appears beside it. The display is continuously updated.

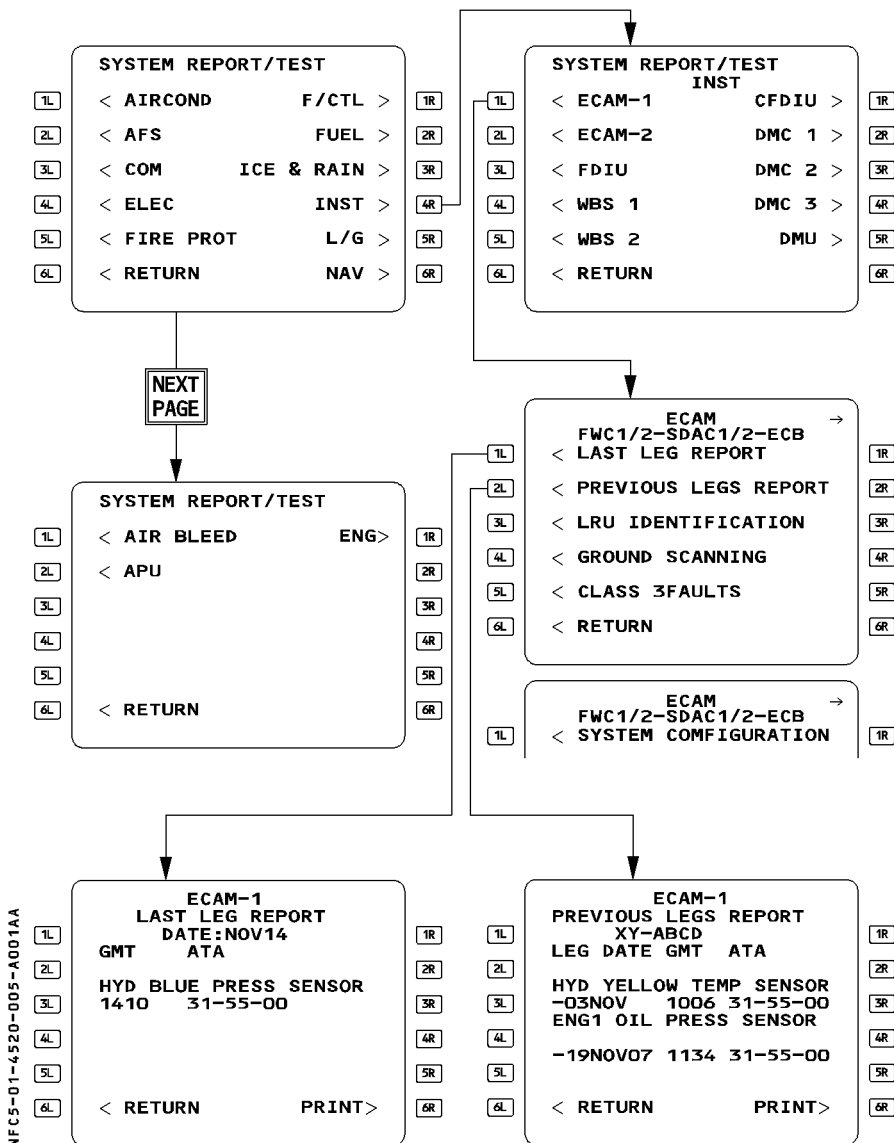
R  
R






**SYSTEM REPORT/TEST**

This screen gives the operator access to all electronic systems. The CFDIU enters into interactive dialogue with the selected system.



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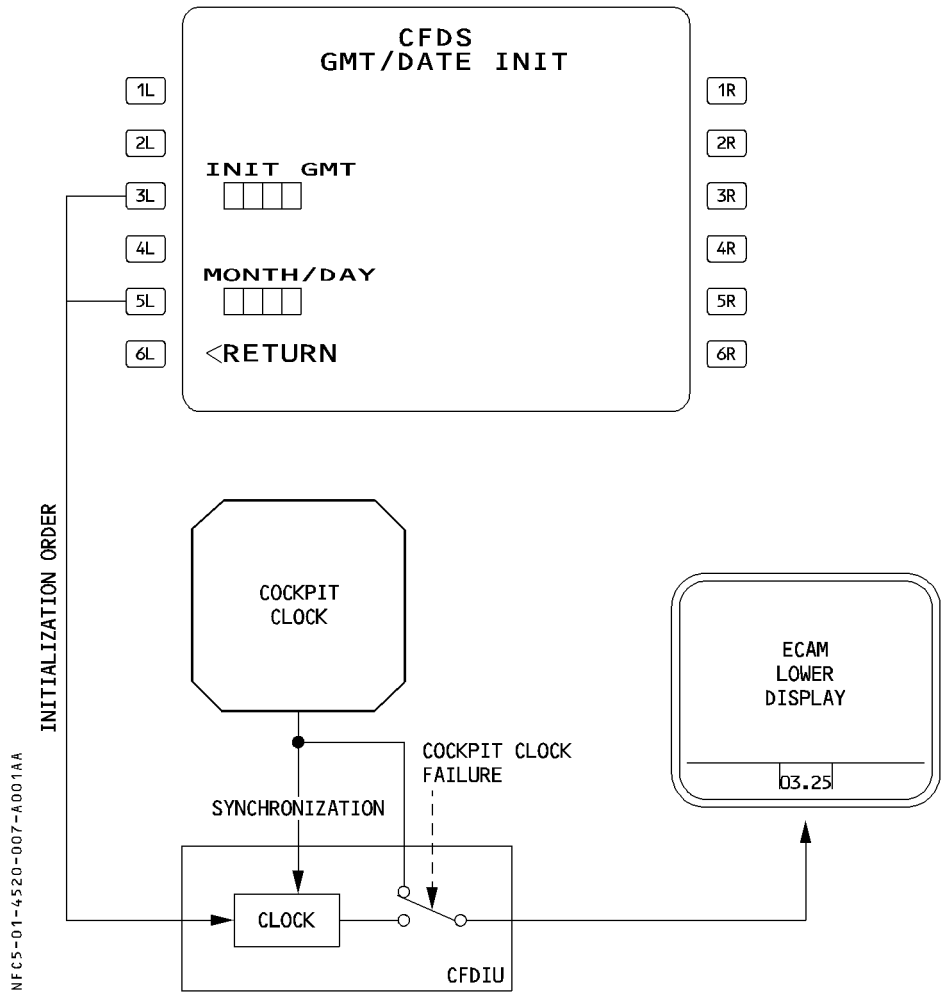
In the above example, the operator has called up menus of the selected systems :

- LAST or PREVIOUS LEG REPORT presents the list of Line-Replaceable Units (LRUs) affected by a failure.
- LRU IDENTIFICATION contains the part numbers of all LRUs in the system.
- GND SCANNING runs the flight monitoring on the ground and indicates the faulty LRU.
- CLASS 3 FAULTS lists class 3 faults detected by the system during the last flight leg.
- SYSTEM CONFIGURATION presents the system configuration in a digital form.

*Note : These screens (except LAST or PREVIOUS LEG REPORT) are not shown above.*

**GMT/DATE INITIALIZATION**

- R A CFDIU clock is synchronized with the cockpit clock in order to keep GMT (UTC) displayed on the ECAM lower display (except in flight Phases 1 and 2, if the weight and balance system is installed). If the cockpit clock fails, the CFDIU clock continues to display GMT (UTC) on the ECAM lower display.
- R If electrical power is interrupted for more than 200 milliseconds, the crew initializes GMT (UTC) and the DATE via the MCDU :
- R – Write GMT (UTC) in the scratchpad, then press the “INIT GMT” key.
- R – Do the same for the month and day.





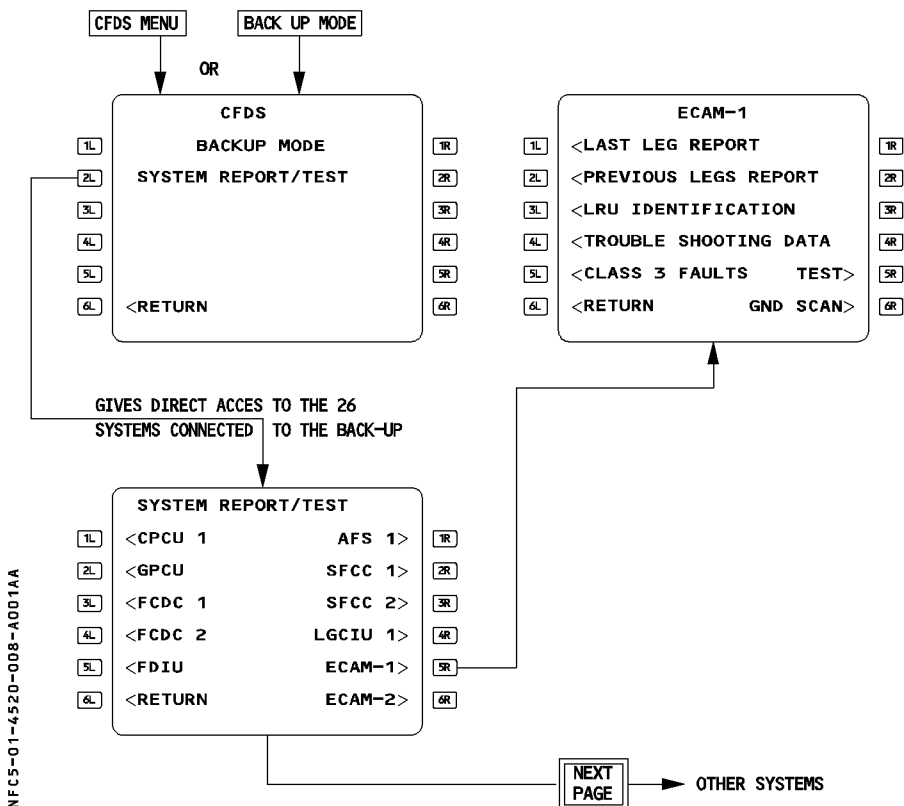
## BACK UP MODE

If the CFDIU's main channel fails, the backup channel allows the CFDS to operate in backup mode :

- on the ground only
- through MCDU1 (or MCDU3, if installed)
- in one mode of operation only : SYSTEM REPORT/TEST
- without the PRINTER or ACARS.

The system changes over from main channel to backup channel :

- Automatically in case of an important failure (power supply, for example). In this case, when the operator selects CFDS on the MCDU MENU, it displays the BACKUP MODE page.
- Manually if the operator selects BACKUP MODE on the CFDS menu after a minor failure.



**ACARS PRINT PROGRAM**

This function gives access to reprogramming page.  
 The programming is provided by the ACARS or manually (on the ground or in flight) :

No star indicates an ACARS programming. The YES indicates that the REAL TIME FAIL will be automatically transmitted to the ACARS.

The star indicates a manually modified programming: pressing the corresponding key changes the YES into a NO. The YES indicates that the REAL TIME FAIL page will be printed simultaneously with the transmission to the ACARS.

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**ACARS/PRINT PROGRAM**

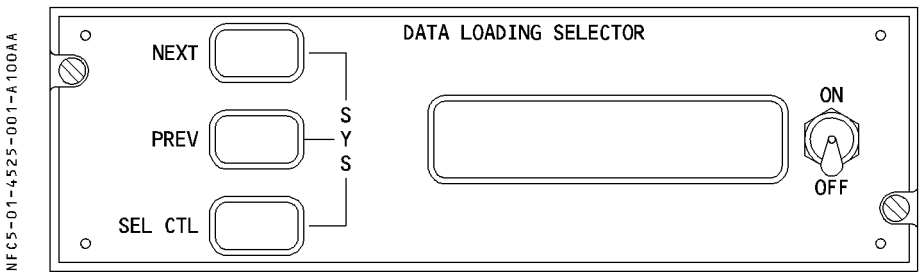
	<b>SEND</b>		<b>PRINT</b>			
1L	NO	POST	FLT	REP	NO	1R
2L	YES	REAL	TIME	FAIL	YES*	2R
3L	YES	REAL	TIME	WARN	NO	3R
4L	*YES	AVIONICS	DATA	YES		4R
5L						5R
6L	<RETURN				PRINT	6R
					*	

*Note : The CFDIU memorizes all manual programming so that at initialisation the last configuration will be retained.*

**DESCRIPTION**

With the data loading system, it is possible to upload databases and operational software, or to download system reports from various onboard computers. The data transfer is performed via 3.5 inch disks and a portable data loader, or (<) the aircraft fixed Multipurpose Disk Drive Unit (MDDU).

**DATA LOADING SELECTOR on the OVERHEAD panel**



When the data loading selector is ON, the 3 keys (NEXT, PREV, SEL CTRL) enable the display and selection of various applicable aircraft systems (FMGC, TCAS < etc...).



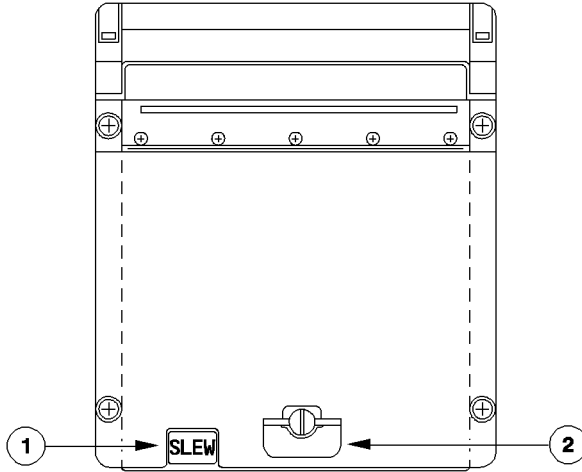


## GENERAL

The printer prints reports from the following systems (if installed) : ACARS, AIDS, FMGC, CFDIU and EVMU. It prints these on paper, and does so either on the ground or in flight. The printer is installed at the rear of the pedestal on the right side.

## SYSTEM DESCRIPTION

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### ① SLEW sw :

The SLEW switch is used to feed paper after having loaded a new roll.

### ② PRINTER DOOR LATCH :

The printer door latch locks the door used for loading paper.

<b>BUS EQUIPMENT LIST</b>
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	NORM		EMER ELEC		
	AC	DC	AC ESS	DC ESS	HOT
CFDS		DC1			