HIGHLIGHTS

REVISION NO. 54 May 01/08

Pages which have been revised are outlined below, together with the Highlights of the Revision

CH/SE/SU C PAGES	REASON FOR CHANGE	EFFECTIVITY

CHAPTER 72

L.E.P. 1- 1 REVISED TO REFLECT THIS REVISION INDICATING NEW,REVISED, AND/OR DELETED PAGES

CHAPTER 72

ENGINE

LIST OF EFFECTIVE PAGES

N, R or D indicates pages which are New, Revised or Deleted respectively
Remove and insert the affected pages and complete the Record of Revisions and the Record of Temporary Revisions as necessary

CH/SE/SU	C	PAGE	DATE	CH/SE/SU	C	PAGE	DATE	CH/SE/SU	C	PAGE	DATE
RECORD OF TEMP. REVISION											
L.E.P.	R	1- 1	May01/08								
T. of C.		1	May01/02								
72-OBSV		101	Aug01/99								
72-00-00		201	Nov01/07								
72-00-00		202	Feb01/05								
72-00-00		203	Feb01/05								
72-00-00		204	Feb01/05								
72-00-00		205	Nov01/07								
72-00-00		206	Feb01/05								
72-00-00		207	Feb01/05								
72-00-00		208	Feb01/05								
72-00-00		209	Aug01/06								
72-00-00		210	Aug01/06								
72-00-00		211	Nov01/07								
72-00-00		212	Nov01/07								
72-00-00		213	Nov01/07								
72-00-00		214	Nov01/07								
72-00-00		215	Nov01/07								
72-00-00		216	Nov01/07								
72-00-00		217	Nov01/07								
72-00-00		218	Nov01/07								
72-00-00		219	Aug01/06								
72-00-00		220	May01/02								
72-00-00		221	Aug01/06								
72-00-00		222	May01/02								
72-00-00		223	Aug01/06								
72-00-00		224	May01/02								
72-00-00		225	Aug01/06								
72-00-00		226	May01/02								

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CHAPTER 72

ENGINE

TABLE OF CONTENTS

	WARNINGS/MALFUNCTIONS	CFDS FAULT MESSAGES				FAULT ISOLATION PROCEDURE
		SOURCE	MESSAGE	ATA	C	
R	ENG 1 - Engine roll back associated with Upper ECAM DU Flags ENG 1 - N2 decreases while EGT and FF stay stable					720000 P 201 T 810 803
R R	ENG 1 - Engine Stall					730000 P 214 T 810 866
R	ENG 2 - Engine roll back associated with Upper ECAM DU Flags ENG 2 - N2 decreases while EGT and FF stay stable					720000 P 205 T 810 804
R	ENG 2 - Engine Stall					730000 P 214 T 810 866

TASK 72-00-00-810-803

Roll Back on Engine 1

1. Possible Causes

- VALVE-AIR RELEASE, L WING TK (86QM)
- engine
- ECU
- low pressure fuel shut-off valve
- IP bleed check valve
- PS3 sense line
- Hydromechanical Unit (HMU)
- fuel pump

2. Job Set-up Information

A. Referenced Information

REFERENCE	DESIGNATION
AMM 28-24-00-720-001	Functional Test of the LP Fuel Shut Off Valves
AMM 36-11-41-200-001	Inspection/Check of the IP Bleed Check Valve
AMM 71-00-00-710-006	Minimum Idle Check
AMM 72-00-00-200-026	Inspection/Check of the PS3 Line
AMM 72-21-00-290-003	Borescope Inspection of the Booster Rotor Blades, Stages 2,3,4 and 5 through the Booster Inlet and Borescope Ports S03 and S05
AMM 72-31-00-290-002	Inspection of the High Pressure Compressor Rotor Assembly
AMM 72-32-00-210-002	Inspection/Check of the HPC Front Stator Assembly
R AMM 72-41-00-290-001 R	Borescope Inspection of the Combustion Chamber Liners, Dome Areas,HPT Nozzle Vanes and Shrouds (as far as visible through two opposite ports)
AMM 72-51-00-290-004	Borescope Inspection of High-Pressure Turbine Nozzle Assembly
AMM 72-54-00-210-005	Inspection of the Turbine Case
AMM 72-54-00-290-005	Inspection of the Stage 1-3 Blades
AMM 72-54-00-290-006	Inspection of the Stage 4 Blades
AMM 72-54-00-290-007	Inspection of the Stage 2-4 Nozzle Segments
AMM 72-54-00-290-008	Inspection of the Stage 1-4 Stationary Air Seals
AMM 73-11-10-000-003	Removal of the Fuel Pump and Filter Assembly
AMM 73-11-10-210-003	Visual Inspection of the Fuel Filter Cartridge
AMM 73-11-10-400-003	Installation of the Fuel Pump and Filter Assembly
AMM 73-21-10-000-002	Removal of the Hydromechanical Unit (HMU)
AMM 73-21-10-400-002	Installation of the Hydromechanical Unit (HMU)
AMM 73-29-00-710-040	Operational Test of the FADEC on the Ground (with Engine Motoring)

REFERENCE	DESIGNATION
R AMM 73-29-00-710-040	Operational Test of the FADEC on the Ground (with Engine Non motoring)
R AMM 79-00-00-281-002	Check of the Electrical Master Chip Detector for Particles

3. Fault Confirmation

R A. Test

R CAUTION : IF THE ENGINE WAS NOT RESTARTED AFTER THE EVENT OR WITHIN 24 HRS, DO THE ENGINE DRY OUT PROCEDURE, OR FURTHER DAMAGE TO ENGINE MAY OCCUR.

R (1) If the engine was successfully restarted after the event:
R - do the operational test of the FADEC 1A and 1B (with the engine non motoring) (Ref. AMM TASK 73-29-00-710-040).

R (2) If the engine could not restart after the event or no start attempt was done:
R - not applicable. No test must be attempted.

4. Fault Isolation

A. This ECAM warning is shown if the engine is running below minimum idle and N2 is less than 50% with the Master Lever set to ON.

CAUTION : WHEN THE "ENG/MASTER" LEVER IS IN THE "ON" POSITION, BE VERY CAREFUL NOT TO SET THE "ENG/MODE" SELECTOR SWITCH TO "CRANK" OR "IGN/START".
IF YOU DO SET THE SELECTOR SWITCH TO ONE OF THESE POSITIONS, THE ENGINE WILL START. THERE IS THUS A RISK OF INJURY TO PERSONS AND OF DAMAGE TO EQUIPMENT.

- Do the trouble shooting related to the failure message(s) triggered (if any) during the fault confirmation test referred to in Para. 3.A.
- Do a check of the Post Flight Report (PFR), of the FADEC Last Leg Report and SMR/Class 3 Report for ECU, HMU, ALT, FMV, VSV, PS3 failure messages.

(1) If any failure message is shown:
- do the trouble shooting related to the failure message(s).

(2) If the fault occurred just after the engine start sequence or during taxi out or at first engine acceleration:
- do a check of correct operation of the low pressure fuel shut-off valve (Ref. AMM TASK 28-24-00-720-001),
- check that the drive mechanism of the valve is not broken.

(3) If no failure message is found, or if at the time of the event, the crew reported symptoms such as stall, high EGT, sudden power loss, high vibration:
- make sure the fan rotates freely and smoothly,
- do a visual inspection of the LPT stage 4 rotor blades,
R - do a check of the Master Magnetic Chip Detector for particles (Ref.
R AMM TASK 79-00-00-281-002),
- examine the fuel filter cartridge, do a contamination check of the
R fuel filter (Ref. AMM TASK 73-11-10-210-003),
- visually inspect the PS3 sense line to make sure that there is no leakage or blockage (Ref. AMM TASK 72-00-00-200-026),
- visually examine the VSV actuation system hardware, look for broken, loose or damaged hardware (Ref. AMM TASK 72-32-00-210-002).

(a) If nothing is found:

1 do the following inspection as necessary:
- do a borescope inspection of the high-pressure compressor-rotor assembly (Ref. AMM TASK 72-31-00-290-002),
- do a borescope inspection of the high-pressure turbine blades/nozzles (Ref. AMM TASK 72-51-00-290-004),
- do a borescope inspection of the low pressure turbine (Ref.
R AMM TASK 72-54-00-290-005) and (Ref. AMM TASK 72-54-00-290-
R 006) and (Ref. AMM TASK 72-54-00-290-007) and (Ref. AMM TASK
R 72-54-00-290-008) and (Ref. AMM TASK 72-54-00-210-005),
- do a borescope inspection of the combustion chamber (Ref.
R AMM TASK 72-41-00-290-001),
- do a borescope inspection of the low pressure compressor (Ref. AMM TASK 72-21-00-290-003).

2 If nothing is found:
- do an inspection of the IP bleed check valve for free operation and condition of the flappers (Ref. AMM TASK 36-11-41-200-001).

a If nothing is found:
- replace the Hydromechanical Unit (HMU) (Ref. AMM TASK 73-21-10-000-002) and (Ref. AMM TASK 73-21-10-400-002).

(4) If no failure message was found and if at the time of the event, the crew did not report symptoms such as stall, high EGT, sudden power loss, high vibrations:
- examine the fuel filter cartridge, do a contamination check of the fuel filter (Ref. AMM TASK 73-11-10-000-003) and (Ref. AMM TASK 73-11-10-400-003) ,
R - do a check of the Master Magnetic Chip Detector for particles (Ref.
R AMM TASK 79-00-00-281-002).

(a) If nothing is found:
- do a detailed visual inspection of the PS3 sense line (Ref. AMM TASK 72-00-00-200-026).

1 If nothing is found:
- remove and check the IP bleed check valve for correct condition (Ref. AMM TASK 36-11-41-200-001).

a If nothing is found:
- replace the Hydromechanical Unit (HMU) (Ref. AMM TASK 73-21-10-000-002) and (Ref. AMM TASK 73-21-10-400-002) and the fuel pump (Ref. AMM TASK 73-11-10-000-003) and (Ref. AMM TASK 73-11-10-400-003).

(b) If the fault occurred during engine operation in gravity feeding (boost pump off):
- inspect the VALVE-AIR RELEASE, L WING TK (86QM) and fuel supply tubes in the wing fuel tank for condition,
- repair or replace if necessary.

(5) Do the operational test of the FADEC 1A and 1B (with the engine
R motoring) (Ref. AMM TASK 73-29-00-710-040).

B. Do a minimum idle check (Ref. AMM TASK 71-00-00-710-006).

(1) No additional maintenance action is required if the fault is not confirmed.

(2) Repeat the fault isolation procedure if the fault continues.

TASK 72-00-00-810-804

Roll Back on Engine 2

1. Possible Causes

- VALVE-AIR RELEASE, R WING TK (87QM)
- engine
- ECU
- low pressure fuel shut-off valve
- IP bleed check valve
- PS3 sense line
- Hydromechanical Unit (HMU)
- fuel pump

2. Job Set-up Information

A. Referenced Information

REFERENCE	DESIGNATION
AMM 28-24-00-720-001	Functional Test of the LP Fuel Shut Off Valves
AMM 36-11-41-200-001	Inspection/Check of the IP Bleed Check Valve
AMM 71-00-00-710-006	Minimum Idle Check
AMM 72-00-00-200-026	Inspection/Check of the PS3 Line
AMM 72-21-00-290-003	Borescope Inspection of the Booster Rotor Blades, Stages 2,3,4 and 5 through the Booster Inlet and Borescope Ports S03 and S05
AMM 72-31-00-290-002	Inspection of the High Pressure Compressor Rotor Assembly
AMM 72-32-00-210-002	Inspection/Check of the HPC Front Stator Assembly
R AMM 72-41-00-290-001 R	Borescope Inspection of the Combustion Chamber Liners, Dome Areas,HPT Nozzle Vanes and Shrouds (as far as visible through two opposite ports)
AMM 72-51-00-290-004	Borescope Inspection of High-Pressure Turbine Nozzle Assembly
AMM 72-54-00-210-005	Inspection of the Turbine Case
AMM 72-54-00-290-005	Inspection of the Stage 1-3 Blades
AMM 72-54-00-290-006	Inspection of the Stage 4 Blades
AMM 72-54-00-290-007	Inspection of the Stage 2-4 Nozzle Segments
AMM 72-54-00-290-008	Inspection of the Stage 1-4 Stationary Air Seals
AMM 73-11-10-000-003	Removal of the Fuel Pump and Filter Assembly
AMM 73-11-10-210-003	Visual Inspection of the Fuel Filter Cartridge
AMM 73-11-10-400-003	Installation of the Fuel Pump and Filter Assembly
AMM 73-21-10-000-002	Removal of the Hydromechanical Unit (HMU)
AMM 73-21-10-400-002	Installation of the Hydromechanical Unit (HMU)
AMM 73-29-00-710-040	Operational Test of the FADEC on the Ground (with Engine Motoring)
AMM 73-29-00-710-040	Operational Test of the FADEC on the Ground (with Engine Non motoring)

REFERENCE	DESIGNATION
R AMM 79-00-00-281-002	Check of the Electrical Master Chip Detector for Particles

3. Fault Confirmation

R A. Test

R CAUTION : IF THE ENGINE WAS NOT RESTARTED AFTER THE EVENT OR WITHIN 24 HRS, DO THE ENGINE DRY OUT PROCEDURE, OR FURTHER DAMAGE TO ENGINE MAY OCCUR.

R (1) If the engine was successfully restarted after the event:
- do the operational test of the FADEC 2A and 2B (with the engine non motoring) (Ref. AMM TASK 73-29-00-710-040).

R (2) If the engine could not restart after the event or no start attempt was done:
- not applicable. No test must be attempted.

4. Fault Isolation

A. This ECAM warning is shown if the engine is running below minimum idle and N2 is less than 50% with the Master Lever set to ON.

CAUTION : WHEN THE "ENG/MASTER" LEVER IS IN THE "ON" POSITION, BE VERY CAREFUL NOT TO SET THE "ENG/MODE" SELECTOR SWITCH TO "CRANK" OR "IGN/START".
IF YOU DO SET THE SELECTOR SWITCH TO ONE OF THESE POSITIONS, THE ENGINE WILL START. THERE IS THUS A RISK OF INJURY TO PERSONS AND OF DAMAGE TO EQUIPMENT.

- Do the trouble shooting related to the failure message(s) triggered (if any) during the fault confirmation test referred to in Para. 3.A.
- Do a check of the Post Flight Report (PFR), of the FADEC Last Leg Report and SMR/Class 3 Report for ECU, HMU, ALT, FMV, VSV, PS3 failure messages.

(1) If any failure message is shown:
- do the trouble shooting related to the failure message(s).

(2) If the fault occurred just after the engine start sequence or during taxi out or at first engine acceleration:
- do a check of correct operation of the low pressure fuel shut-off valve (Ref. AMM TASK 28-24-00-720-001),
- check that the drive mechanism of the valve is not broken.

(3) If no failure message is found, or if at the time of the event, the crew reported symptoms such as stall, high EGT, sudden power loss, high vibration:
- make sure the fan rotates freely and smoothly,
- do a visual inspection of the LPT stage 4 rotor blades,
R - do a check of the Master Magnetic Chip Detector for particles (Ref.
R AMM TASK 79-00-00-281-002),
- examine the fuel filter cartridge, do a contamination check of the
R fuel filter (Ref. AMM TASK 73-11-10-210-003),
- visually inspect the PS3 sense line to make sure that there is no leakage or blockage (Ref. AMM TASK 72-00-00-200-026),
- visually examine the VSV actuation system hardware, look for broken, loose or damaged hardware (Ref. AMM TASK 72-32-00-210-002).

(a) If nothing is found:

1 do the following inspection as necessary:
- do a borescope inspection of the high-pressure compressor-rotor assembly (Ref. AMM TASK 72-31-00-290-002),
- do a borescope inspection of the high-pressure turbine blades/nozzles (Ref. AMM TASK 72-51-00-290-004),
- do a borescope inspection of the low pressure turbine (Ref.
R AMM TASK 72-54-00-290-005) and (Ref. AMM TASK 72-54-00-290-
R 006) and (Ref. AMM TASK 72-54-00-290-007) and (Ref. AMM TASK
R 72-54-00-290-008) and (Ref. AMM TASK 72-54-00-210-005),
- do a borescope inspection of the combustion chamber (Ref.
R AMM TASK 72-41-00-290-001),
- do a borescope inspection of the low pressure compressor (Ref. AMM TASK 72-21-00-290-003).

2 If nothing is found:
- do an inspection of the IP bleed check valve for free operation and condition of the flappers (Ref. AMM TASK 36-11-41-200-001).

a If nothing is found:
- replace the Hydromechanical Unit (HMU) (Ref. AMM TASK 73-21-10-000-002) and (Ref. AMM TASK 73-21-10-400-002).

(4) If no failure message was found and if at the time of the event, the crew did not report symptoms such as stall, high EGT, sudden power loss, high vibrations:
- examine the fuel filter cartridge, do a contamination check of the fuel filter (Ref. AMM TASK 73-11-10-000-003) and (Ref. AMM TASK 73-11-10-400-003) ,
R - do a check of the Master Magnetic Chip Detector for particles (Ref.
R AMM TASK 79-00-00-281-002).

(a) If nothing is found:
- do a detailed visual inspection of the PS3 sense line (Ref. AMM TASK 72-00-00-200-026).

1 If nothing is found:
- remove and check the IP bleed check valve for correct condition (Ref. AMM TASK 36-11-41-200-001).

a If nothing is found:
- replace the Hydromechanical Unit (HMU) (Ref. AMM TASK 73-21-10-000-002) and (Ref. AMM TASK 73-21-10-400-002) and the fuel pump (Ref. AMM TASK 73-11-10-000-003) and (Ref. AMM TASK 73-11-10-400-003).

(b) If the fault occurred during engine operation in gravity feeding (boost pump off):
- inspect the VALVE-AIR RELEASE, R WING TK (87QM) and fuel supply tubes in the wing fuel tank for condition,
- repair or replace if necessary.

(5) Do the operational test of the FADEC 2A and 2B (with the engine
R motoring) (Ref. AMM TASK 73-29-00-710-040).

B. Do a minimum idle check (Ref. AMM TASK 71-00-00-710-006).

(1) No additional maintenance action is required if the fault is not confirmed.

(2) Repeat the fault isolation procedure if the fault continues.

TASK 72-00-00-810-805

Failure of the Two Engines

1. Possible Causes

- snow ingestion
R - Water projections to the radio altimeter antenna
R - significant presence of water or presence of snow on the runway

2. Job Set-up Information

A. Referenced Information

REFERENCE	DESIGNATION
72-00-00-810-806	Failure of Engine 1
72-00-00-810-807	Failure of Engine 2

3. Fault Confirmation

A. Test

(1) Not applicable, the confirmation can cause damage to the engine.

4. Fault Isolation

A. There is no known engine related problem that would cause the ECAM warning ENG DUAL FAILURE to come into view.

NOTE : Do the trouble shooting of individual engine per TSM procedure for ENG 1(2) FAIL ECAM warning:
- for engine 1 (Ref. TASK 72-00-00-810-806),
- for engine 2 (Ref. TASK 72-00-00-810-807).

R (1) No trouble shooting is required if the fault has occured on wet or
R snow-covered runway:

R (a) During use of the thrust reverser at low speed on snow-covered
R runway.
The engine failure was most likely caused by snow ingestion.
R - Make sure that the air intake and fan blades are free from ice
R or snow accumulation before the next flight.

R (b) During taxiing on snow-covered runway.
R The reversion of the radio-altitude to NCD (non-computed data)
R can occur and cause the removal of the inhibition of the reported ECAM warnings by the Flight Warning Computer. Refer to TFU 34-42-00-013.

R

R (c) During taxiing (or when the aircraft is stopped) on a wet or
R snow-covered runway.
R These conditions can cause disturbance of the radio altimeter
R signal:
R - Water projections to the radio altimeter antenna by main
R landing gears
R - Reflections of emitted signals due to significant presence of
R water or presence of snow on the runway.
R Refer to TFU 34-42-00-003.

R (2) If the failure occurred in any other conditions, do the trouble
R shooting of the fuel system supply and do a check of fuel samples for
R quality or presence of water.

B. No additional maintenance action is required if the fault is not confirmed.

(1) Repeat the fault isolation procedure if the fault continues.

TASK 72-00-00-810-806

Failure of Engine 1

1. Possible Causes

- VALVE-AIR RELEASE, L WING TK (86QM)
- engine
- low-pressure fuel shut-off valve
- PS3 Sense line
- IP bleed check valve
- Hydromechanical Unit (HMU)

2. Job Set-up Information

A. Referenced Information

REFERENCE	DESIGNATION
AMM 28-24-00-720-001	Functional Test of the LP Fuel Shut Off Valves
AMM 36-11-41-200-001	Inspection/Check of the IP Bleed Check Valve
AMM 71-00-00-710-006	Minimum Idle Check
AMM 72-00-00-200-026	Inspection/Check of the PS3 Line
AMM 72-21-00-290-003	Borescope Inspection of the Booster Rotor Blades, Stages 2,3,4 and 5 through the Booster Inlet and Borescope Ports S03 and S05
AMM 72-31-00-290-002	Inspection of the High Pressure Compressor Rotor Assembly
AMM 72-32-00-210-002	Inspection/Check of the HPC Front Stator Assembly
AMM 72-41-00-290-001	Borescope Inspection of the Combustion Chamber Liners, Dome Areas,HPT Nozzle Vanes and Shrouds (as far as visible through two opposite ports)
AMM 72-51-00-290-004	Borescope Inspection of High-Pressure Turbine Nozzle Assembly
AMM 72-54-00-210-005	Inspection of the Turbine Case
AMM 72-54-00-290-005	Inspection of the Stage 1-3 Blades
AMM 72-54-00-290-006	Inspection of the Stage 4 Blades
AMM 72-54-00-290-007	Inspection of the Stage 2-4 Nozzle Segments
AMM 72-54-00-290-008	Inspection of the Stage 1-4 Stationary Air Seals
AMM 72-63-00-000-003	Removal of the Accessory Gearbox Assembly
AMM 72-63-00-400-003	Installation of the Accessory Gearbox Assembly
AMM 73-11-10-000-003	Removal of the Fuel Pump and Filter Assembly
AMM 73-11-10-400-003	Installation of the Fuel Pump and Filter Assembly
AMM 73-21-10-000-002	Removal of the Hydromechanical Unit (HMU)
AMM 73-21-10-400-002	Installation of the Hydromechanical Unit (HMU)
AMM 73-29-00-710-040	Operational Test of the FADEC on the Ground (with Engine Motoring)
AMM 73-29-00-710-040	Operational Test of the FADEC on the Ground (with Engine Non motoring)

REFERENCE	DESIGNATION
AMM 79-00-00-281-002	Check of the Electrical Master Chip Detector for Particles

3. Fault Confirmation

A. Test

CAUTION : IF THE ENGINE WAS NOT RESTARTED AFTER THE EVENT OR WITHIN 24 HRS, DO THE ENGINE DRY OUT PROCEDURE, OR FURTHER DAMAGE TO ENGINE MAY OCCUR.

CAUTION : WHEN THE "ENG/MASTER" LEVER IS IN THE "ON" POSITION, BE VERY CAREFUL NOT TO SET THE "ENG/MODE" SELECTOR SWITCH TO "CRANK" OR "IGN/START".
IF YOU DO SET THE SELECTOR SWITCH TO ONE OF THESE POSITIONS, THE ENGINE WILL START. THERE IS THUS A RISK OF INJURY TO PERSONS AND OF DAMAGE TO EQUIPMENT.

NOTE : The ENG1(2) FAIL ECAM warning is shown if the engine rolls back sub idle below 50% N2 and the Master Lever is still set to ON. If the ENG1(2) FAIL ECAM warning message comes into view with the engine not running and the master lever set to OFF, consider the warning as a spurious.

(1) If the engine was successfully restarted after the event:
- do the operational test of the FADEC 1A and 1B (with the engine motoring) (Ref. AMM TASK 73-29-00-710-040).

(2) If the engine could not restart after the event or no start attempt was done:
- do the operational test of the FADEC 1A and 1B (with the engine non motoring) (Ref. AMM TASK 73-29-00-710-040).

4. Fault Isolation

A. Do the trouble shooting related to the failure message(s):

(1) Triggered (if any) during the fault confirmation test referred in Para. 3.A.

(2) Available (if any) in the Post Flight Report (PFR), the FADEC Last Leg Report and SMR/Class 3 Report for ECU, HMU, FMV, VSV, PS3 failure messages.

(3) If no failure message and the fault (**ECAM WARNING**) occurred just after the engine start sequence or during taxi out or at first engine acceleration with no other symptom than the engine spooling down sub idle:
- do a check for correct operation of the low-pressure fuel shut-off valve (Ref. **AMM TASK 28-24-00-720-001**),
- check that the drive mechanism of the valve is not broken.

(4) If no failure message is found and if the fault occurred during engine operation in gravity feeding (boost pump off):
- inspect the **VALVE-AIR RELEASE, L WING TK (86QM)** and fuel supply tubes in the wing fuel tank for condition,
- repair or replace as necessary.

(5) If no failure message is found, and if at the time of the event, the Crew reported symptoms such as Stall, high **EGT**, sudden power loss, high vibration ,do the following:
- make sure the fan rotates freely and smoothly,
- do a visual inspection of the LPT stage 4 rotor blades,
- do a check of the Master Magnetic Chip Detector for particles (Ref. **AMM TASK 79-00-00-281-002**),
- examine the fuel filter cartridge, do a contamination check of the fuel filter (Ref. **AMM TASK 73-11-10-000-003**) and (Ref. **AMM TASK 73-11-10-400-003**),
- visually examine the **VSV** actuation system hardware for abnormal condition (Ref. **AMM TASK 72-32-00-210-002**).

(a) If nothing is found:
- do an inspection check of the **PS3** Sense line (Ref. **AMM TASK 72-00-00-200-026**).

(b) If nothing is found:
- do an inspection of the **IP** bleed check valve for free operation and condition of the flappers (Ref. **AMM TASK 36-11-41-200-001**).

(c) If nothing is found:
- visually examine the alternator stator and rotor for evidence of contact.

1 if evidence of contact is found:
- do a check for correct installation of the rotor and the stator,
- repair as required.

2 If any play is noticed in the drive shaft assembly:
- replace the **AGB** (Ref. **AMM TASK 72-63-00-000-003**) and (Ref. **AMM TASK 72-63-00-400-003**).

B. If nothing is found:

(1) do the following inspection as necessary:

(a) do a borescope inspection of the high-pressure compressor-rotor assembly (Ref. AMM TASK 72-31-00-290-002),

(b) do a borescope inspection of the high-pressure turbine blades/nozzles (Ref. AMM TASK 72-51-00-290-004),

(c) do a borescope inspection of the low pressure turbine (Ref. AMM TASK 72-54-00-290-005) and (Ref. AMM TASK 72-54-00-290-006) and (Ref. AMM TASK 72-54-00-290-007) and (Ref. AMM TASK 72-54-00-290-008) and (Ref. AMM TASK 72-54-00-210-005),

(d) do a borescope inspection of the combustor chamber (Ref. AMM TASK 72-41-00-290-001),

(e) do a borescope inspection of the low pressure compressor (Ref. AMM TASK 72-21-00-290-003).

(f) If nothing is found:
- replace the Hydromechanical Unit (HMU) (Ref. AMM TASK 73-21-10-000-002) and (Ref. AMM TASK 73-21-10-400-002).

R (g) If nothing is found:
R - replace the fuel pump and filter assy (Ref. AMM TASK 73-11-10-
R 000-003) (Ref. AMM TASK 73-11-10-400-003).

C. Do a minimum idle check (Ref. AMM TASK 71-00-00-710-006).

(1) No additional maintenance action is required if the fault is not confirmed.

(2) Repeat the fault isolation procedure if the fault continues.

TASK 72-00-00-810-807

Failure of Engine 2

1. Possible Causes

- VALVE-AIR RELEASE, R WING TK (87QM)
- engine
- low-pressure fuel shut-off valve
- PS3 Sense line
- IP bleed check valve
- Hydromechanical Unit (HMU)

2. Job Set-up Information

A. Referenced Information

REFERENCE	DESIGNATION
AMM 28-24-00-720-001	Functional Test of the LP Fuel Shut Off Valves
AMM 36-11-41-200-001	Inspection/Check of the IP Bleed Check Valve
AMM 71-00-00-710-006	Minimum Idle Check
AMM 72-00-00-200-026	Inspection/Check of the PS3 Line
AMM 72-21-00-290-003	Borescope Inspection of the Booster Rotor Blades, Stages 2,3,4 and 5 through the Booster Inlet and Borescope Ports S03 and S05
AMM 72-31-00-290-002	Inspection of the High Pressure Compressor Rotor Assembly
AMM 72-32-00-210-002	Inspection/Check of the HPC Front Stator Assembly
R AMM 72-41-00-290-001 R	Borescope Inspection of the Combustion Chamber Liners, Dome Areas,HPT Nozzle Vanes and Shrouds (as far as visible through two opposite ports)
AMM 72-51-00-290-004	Borescope Inspection of High-Pressure Turbine Nozzle Assembly
AMM 72-54-00-210-005	Inspection of the Turbine Case
AMM 72-54-00-290-005	Inspection of the Stage 1-3 Blades
AMM 72-54-00-290-006	Inspection of the Stage 4 Blades
AMM 72-54-00-290-007	Inspection of the Stage 2-4 Nozzle Segments
AMM 72-54-00-290-008	Inspection of the Stage 1-4 Stationary Air Seals
AMM 72-63-00-000-003	Removal of the Accessory Gearbox Assembly
AMM 72-63-00-400-003	Installation of the Accessory Gearbox Assembly
AMM 73-11-10-000-003	Removal of the Fuel Pump and Filter Assembly
AMM 73-11-10-400-003	Installation of the Fuel Pump and Filter Assembly
AMM 73-21-10-000-002	Removal of the Hydromechanical Unit (HMU)
AMM 73-21-10-400-002	Installation of the Hydromechanical Unit (HMU)
AMM 73-29-00-710-040	Operational Test of the FADEC on the Ground (with Engine Motoring)
AMM 73-29-00-710-040	Operational Test of the FADEC on the Ground (with Engine Non motoring)

REFERENCE	DESIGNATION
AMM 79-00-00-281-002	Check of the Electrical Master Chip Detector for Particles

3. Fault Confirmation

A. Test

CAUTION : IF THE ENGINE WAS NOT RESTARTED AFTER THE EVENT OR WITHIN 24 HRS, DO THE ENGINE DRY OUT PROCEDURE, OR FURTHER DAMAGE TO ENGINE MAY OCCUR.

CAUTION : WHEN THE "ENG/MASTER" LEVER IS IN THE "ON" POSITION, BE VERY CAREFUL NOT TO SET THE "ENG/MODE" SELECTOR SWITCH TO "CRANK" OR "IGN/START".
IF YOU DO SET THE SELECTOR SWITCH TO ONE OF THESE POSITIONS, THE ENGINE WILL START. THERE IS THUS A RISK OF INJURY TO PERSONS AND OF DAMAGE TO EQUIPMENT.

NOTE : The ENG1(2) FAIL ECAM warning is shown if the engine rolls back sub idle below 50% N2 and the Master Lever is still set to ON. If the ENG1(2) FAIL ECAM warning message comes into view with the engine not running and the master lever set to OFF, consider the warning as a spurious.

(1) If the engine was successfully restarted after the event:
- do the operational test of the FADEC 2A and 2B (with the engine motoring) (Ref. AMM TASK 73-29-00-710-040).

(2) If the engine could not restart after the event or no start attempt was done:
- do the operational test of the FADEC 2A and 2B (with the engine non motoring) (Ref. AMM TASK 73-29-00-710-040).

4. Fault Isolation

A. Do the trouble shooting related to the failure message(s):

(1) Triggered (if any) during the fault confirmation test referred in Para. 3.A.

(2) Available (if any) in the Post Flight Report (PFR), the FADEC Last Leg Report and SMR/Class 3 Report for ECU, HMU, FMV, VSV, PS3 failure messages.

(3) If no failure message and the fault (ECAM WARNING) occurred just after the engine start sequence or during taxi out or at first engine acceleration with no other symptom than the engine spooling down sub idle:
- do a check for correct operation of the low-pressure fuel shut-off valve (Ref. AMM TASK 28-24-00-720-001),
- check that the drive mechanism of the valve is not broken.

(4) If no failure message is found and if the fault occurred during engine operation in gravity feeding (boost pump off):
- inspect the VALVE-AIR RELEASE, R WING TK (87QM) and fuel supply tubes in the wing fuel tank for condition,
- repair or replace as necessary.

(5) If no failure message is found, and if at the time of the event, the Crew reported symptoms such as Stall, high EGT, sudden power loss, high vibration ,do the following:
- make sure the fan rotates freely and smoothly,
- do a visual inspection of the LPT stage 4 rotor blades,
- do a check of the Master Magnetic Chip Detector for particles (Ref. AMM TASK 79-00-00-281-002),
- examine the fuel filter cartridge, do a contamination check of the fuel filter (Ref. AMM TASK 73-11-10-000-003) and (Ref. AMM TASK 73-11-10-400-003),
- visually examine the VSV actuation system hardware for abnormal condition (Ref. AMM TASK 72-32-00-210-002).

(a) If nothing is found:
- do an inspection check of the PS3 Sense line (Ref. AMM TASK 72-00-00-200-026).

(b) If nothing is found:
- do an inspection of the IP bleed check valve for free operation and condition of the flappers (Ref. AMM TASK 36-11-41-200-001).

(c) If nothing is found:
- visually examine the alternator stator and rotor for evidence of contact.

1 if evidence of contact is found:
- do a check for correct installation of the rotor and the stator,
- repair as required.

2 If any play is noticed in the drive shaft assembly:
- replace the AGB (Ref. AMM TASK 72-63-00-000-003) and (Ref. AMM TASK 72-63-00-400-003).

B. If nothing is found:

(1) do the following inspection as necessary:

(a) do a borescope inspection of the high-pressure compressor-rotor assembly (Ref. AMM TASK 72-31-00-290-002),

(b) do a borescope inspection of the high-pressure turbine blades/nozzles (Ref. AMM TASK 72-51-00-290-004),

(c) do a borescope inspection of the low pressure turbine (Ref. AMM TASK 72-54-00-290-005) and (Ref. AMM TASK 72-54-00-290-006) and (Ref. AMM TASK 72-54-00-290-007) and (Ref. AMM TASK 72-54-00-290-008) and (Ref. AMM TASK 72-54-00-210-005),

(d) do a borescope inspection of the combustor chamber (Ref. AMM TASK 72-41-00-290-001),

(e) do a borescope inspection of the low pressure compressor (Ref. AMM TASK 72-21-00-290-003).

(f) If nothing is found:
- replace the Hydromechanical Unit (HMU) (Ref. AMM TASK 73-21-10-000-002) and (Ref. AMM TASK 73-21-10-400-002).

C. Do a minimum idle check (Ref. AMM TASK 71-00-00-710-006).

(1) No additional maintenance action is required if the fault is not confirmed.

(2) Repeat the fault isolation procedure if the fault continues.

TASK 72-00-00-810-808

EGT at or above the HPC Operating Line Limit on Engine 1

1. Possible Causes

- engine

2. Job Set-up Information

A. Referenced Information

REFERENCE	DESIGNATION
77-00-00-810-849	EGT Overlimit on Engine 1 or 2
77-00-00-810-854	Loss of the EGT Indication on Engine 1 or 2
77-20-00-810-830	The EGT indication fluctuates while other parameters are stable
AMM 71-00-00-000-042	Removal of the Power Plant
AMM 71-00-00-400-042	Installation of the Power Plant
R AMM 72-00-00-200-006	Inspection/Check of Foreign Object Damage (FOD) (Bird Strike Included)
AMM 75-31-00-210-002	Visual Inspection of the Variable Bleed Valve System

3. Fault Confirmation

A. Get the engine take off EGT data, with the use of the MCDU or DAR/QAR data. Check for previous history logged on this engine of CFDS message "HPC (OPERT.LINE)".

4. Fault Isolation

A. Do this trouble shooting if the SB CFMI 72-182 has not been incorporated. If POST SB CFMI 72-182, fault message must be ignored.

(1) Check for the presence of the following CFDS messages in the Post Flight Report (PFR) and do trouble shooting as required.
- VBV ACT, HMU
- T495 SNSR, J13, ECU
- CHECK HOT AIR LEAKS ENG1
- HPTCC VLV (POS), HMU
- BSV, HMU

(2) Do a visual inspection of all the VBV doors actuators and flexible shafts through the fan duct panels. Check for offset of position between all VBV doors (Ref. AMM TASK 75-31-00-210-002).

(3) If an EGT fluctuation/loss has been reported by the crew, do trouble shooting for the EGT indication (Ref. TASK 77-00-00-810-854) and (Ref. TASK 77-20-00-810-830).

(4) Check if the Engine Serial Number (ESN) of the engine was entered through the LRU IDENTIFICATION menu of the MCDU before the flight.
- if yes, no further action is required.

(5) Do an inspection of the engine for Foreign Object Damage (FOD or bird strike) (Ref. AMM TASK 72-00-00-200-006).

(6) Check if an EGT deterioration greater than 62 deg. C (using EGT value recorded in the take off report) is consistant with the EGT trend monitoring data (GEM or ADEPT):
- if no, do trouble shooting of the EGT system (Ref. TASK 77-00-00-810-849)
- if yes, the engine must be replaced within five (5) cycles (Ref. AMM TASK 71-00-00-000-042) and (Ref. AMM TASK 71-00-00-400-042).

TASK 72-00-00-810-810

EGT at or above the HPC Operating Line Limit on Engine 2

1. Possible Causes

- engine

2. Job Set-up Information

A. Referenced Information

REFERENCE	DESIGNATION
77-00-00-810-849	EGT Overlimit on Engine 1 or 2
77-00-00-810-854	Loss of the EGT Indication on Engine 1 or 2
77-20-00-810-831	The EGT indication fluctuates while other parameters are stable
AMM 71-00-00-000-042	Removal of the Power Plant
AMM 71-00-00-400-042	Installation of the Power Plant
R AMM 72-00-00-200-006	Inspection/Check of Foreign Object Damage (FOD) (Bird Strike Included)
AMM 75-31-00-210-002	Visual Inspection of the Variable Bleed Valve System

3. Fault Confirmation

A. Get the engine take off EGT data, with the use of the MCDU or DAR/QAR data. Check for previous history logged on this engine of CFDS message "HPC (OPERT.LINE)".

4. Fault Isolation

A. Do this trouble shooting if the SB CFMI 72-182 has not been incorporated. If POST SB CFMI 72-182, fault message must be ignored.

(1) Check for the presence of the following CFDS messages in the Post Flight Report (PFR) and do trouble shooting as required.
- VBV ACT, HMU
- T495 SNSR, J13, ECU
- CHECK HOT AIR LEAKS ENG2
- HPTCC VLV (POS), HMU
- BSV, HMU

(2) Do a visual inspection of all the VBV doors actuators and flexible shafts through the fan duct panels. Check for offset of position between all VBV doors (Ref. AMM TASK 75-31-00-210-002).

(3) If an EGT fluctuation/loss has been reported by the crew, do trouble shooting for the EGT indication (Ref. TASK 77-00-00-810-854) and (Ref. TASK 77-20-00-810-831).

(4) Check if the Engine Serial Number (ESN) of the engine was entered through the LRU IDENTIFICATION menu of the MCDU before the flight.
- if yes, no further action is required.

(5) Do an inspection of the engine for Foreign Object Damage (FOD or bird strike) (Ref. AMM TASK 72-00-00-200-006).

(6) Check if an EGT deterioration greater than 62 deg. C (using EGT value recorded in the take off report) is consistant with the EGT trend monitoring data (GEM or ADEPT):
- if no, do trouble shooting of the EGT system (Ref. TASK 77-00-00-810-849)
- if yes, the engine must be replaced within five (5) cycles (Ref. AMM TASK 71-00-00-000-042) and (Ref. AMM TASK 71-00-00-400-042).

TASK 72-00-00-810-812

EGT near the HPC Operating Line Limit on Engine 1

1. Possible Causes

2. Job Set-up Information

A. Referenced Information

REFERENCE	DESIGNATION
77-00-00-810-849	EGT Overlimit on Engine 1 or 2
77-00-00-810-854	Loss of the EGT Indication on Engine 1 or 2
77-20-00-810-830	The EGT indication fluctuates while other parameters are stable
R AMM 72-00-00-200-006	Inspection/Check of Foreign Object Damage (FOD) (Bird Strike Included)
AMM 75-31-00-210-002	Visual Inspection of the Variable Bleed Valve System

3. Fault Confirmation

A. Get the engine take off EGT data, with the use of the MCDU or DAR/QAR data.

4. Fault Isolation

A. Do this trouble shooting if the SB CFMI 72-182 has not been incorporated. If POST SB CFMI 72-182, fault message must be ignored.

(1) Check for the presence of the following CFDS messages in the Post Flight Report (PFR) and do trouble shooting as required.
- VBV ACT, HMU
- T495 SNSR, J13, ECU
- CHECK HOT AIR LEAKS ENG1
- HPTCC VLV (POS), HMU
- BSV, HMU

(2) Do a visual inspection of all the VBV doors actuators and flexible shafts through the fan duct panels. Check for offset of position between all VBV doors (Ref. AMM TASK 75-31-00-210-002).

(3) If an EGT fluctuation/loss has been reported by the crew, do trouble shooting for the EGT indication (Ref. TASK 77-00-00-810-854) and (Ref. TASK 77-20-00-810-830).

(4) Check if the Engine Serial Number (ESN) of the engine was entered through the LRU IDENTIFICATION menu of the MCDU before the flight.
- if yes, no further action is required.

(5) Do an inspection of the engine for Foreign Object Damage (FOD or bird strike) (Ref. AMM TASK 72-00-00-200-006).

(6) Check if an EGT deterioration greater than 50 deg. C (using EGT value recorded in the take off report) is consistant with the EGT trend monitoring data (GEM or ADEPT):
- if no, do trouble shooting of the EGT system (Ref. TASK 77-00-00-810-849)
- if yes, no action is required. Further re-occurences of the same CFDS message can be expected during following flights. This is indicative that the remaining EGT margin left on this engine is equal or less than 12 deg. C.

TASK 72-00-00-810-813

EGT near the HPC Operating Line Limit on Engine 2

1. Possible Causes

2. Job Set-up Information

A. Referenced Information

REFERENCE	DESIGNATION
77-00-00-810-849	EGT Overlimit on Engine 1 or 2
77-00-00-810-854	Loss of the EGT Indication on Engine 1 or 2
77-20-00-810-831	The EGT indication fluctuates while other parameters are stable
R AMM 72-00-00-200-006	Inspection/Check of Foreign Object Damage (FOD) (Bird Strike Included)
AMM 75-31-00-210-002	Visual Inspection of the Variable Bleed Valve System

3. Fault Confirmation

A. Get the engine take off EGT data, with the use of the MCDU or DAR/QAR data.

4. Fault Isolation

A. Do this trouble shooting if the SB CFMI 72-182 has not been incorporated. If POST SB CFMI 72-182, fault message must be ignored.

(1) Check for the presence of the following CFDS messages in the Post Flight Report (PFR) and do trouble shooting as required.
- VBV ACT, HMU
- T495 SNSR, J13, ECU
- CHECK HOT AIR LEAKS ENG2
- HPTCC VLV (POS), HMU
- BSV, HMU

(2) Do a visual inspection of all the VBV doors actuators and flexible shafts through the fan duct panels. Check for offset of position between all VBV doors (Ref. AMM TASK 75-31-00-210-002).

(3) If an EGT fluctuation/loss has been reported by the crew, do trouble shooting for the EGT indication (Ref. TASK 77-00-00-810-854) and (Ref. TASK 77-20-00-810-831).

(4) Check if the Engine Serial Number (ESN) of the engine was entered through the LRU IDENTIFICATION menu of the MCDU before the flight.
- if yes, no further action is required.

(5) Do an inspection of the engine for Foreign Object Damage (FOD or bird strike) (Ref. AMM TASK 72-00-00-200-006).

(6) Check if an EGT deterioration greater than 50 deg. C (using EGT value recorded in the take off report) is consistant with the EGT trend monitoring data (GEM or ADEPT):
- if no, do trouble shooting of the EGT system (Ref. TASK 77-00-00-810-849)
- if yes, no action is required. Further re-occurences of the same CFDS message can be expected during following flights. This is indicative that the remaining EGT margin left on this engine is equal or less than 12 deg. C.