

## WHEN FAILURE OCCURS:

CM1 is **PF**

CM2 is **PNF**

### **i** 1 - Fly the aircraft

Maintain optimum speed (ECAM)

### 2 - ATC notify “Mayday” VHF1

Consider: MSA, MORA, closest airport

### 3 - When situation under control...

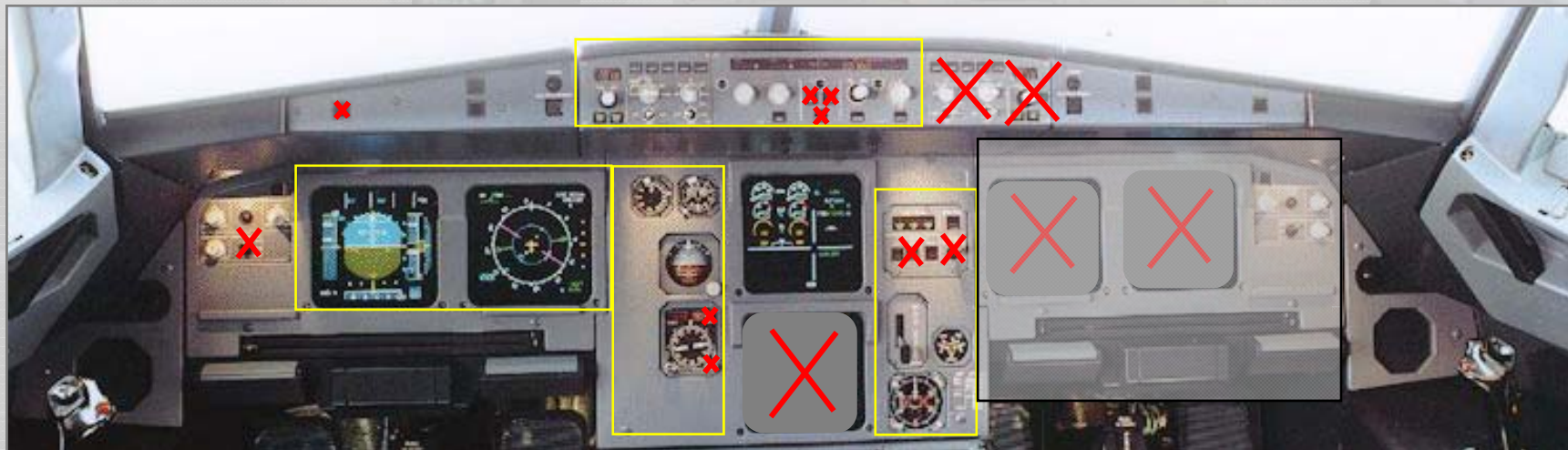
**ECAM actions**

# FLY THE AIRCRAFT

- RAT is extended - EMER GEN is available
- The crew can operate the aircraft with...

Flight controls: Manual flight - ALTN law until L/G down

Instruments: PFD (remove FD flag, use FPV) - Stby instruments



# RELIGHT

## ENG DUAL FAILURE – FUEL REMAINING

The flight crew should apply this paper procedure and then, if time permits, clear ECAM warnings and check the ECAM STATUS page.

### LAND ASAP

- ENG MODE SEL ..... IGN
- THRUST LEVERS ..... IDLE
- OPTIMUM RELIGHT SPD ..... 280 KT

Prepares for relight attempt with wind milling

In the case of a speed indication failure (volcanic ash), Pitch attitude for optimum relight speed is :

WEIGHT	Pitch (°)
At or below 50 000 kg/110 000 lb	- 2.5
60 000 kg/132 000 lb	- 1.5
70 000 kg/154 000 lb	- 0.5

At 280 knots, the aircraft can fly up to about 2.2 NM per 1000 feet (with no wind).

- LANDING STRATEGY ..... DETERMINE  
*Determine whether a runway can be reached, or the most appropriate place for a forced landing/ditching.*
- EMER ELEC PWR ..... MAN ON
- VHF1/HF1 (◀)/ATC1 ..... USE
- ATC ..... NOTIFY
- FAC1 ..... OFF THEN ON  
*Resetting FAC 1 also enables rudder trim recovery, even if no indication is available.*

### ● IF NO RELIGHT AFTER 30 SEC :

- ENG MASTERS ..... OFF 30 S/ON

*Unassisted start attempts can be repeated until successful, or until APU bleed is available.*

Relight sequence can be repeated until successful or APU bleed available

### ● IF UNSUCCESSFUL :

- CREW OXY MASKS (Above FL 100) ..... ON

### ● WHEN BELOW FL 250

- APU (IF AVAIL) ..... START

### ● WHEN BELOW FL 200

- WING ANTI ICE ..... OFF
- APU BLEED ..... ON
- ENG MASTERS (one at a time) ..... OFF 30 S/ON

Relight with APU bleed

# RELIGHT SEQUENCE ABOVE APU BLEED LIMIT

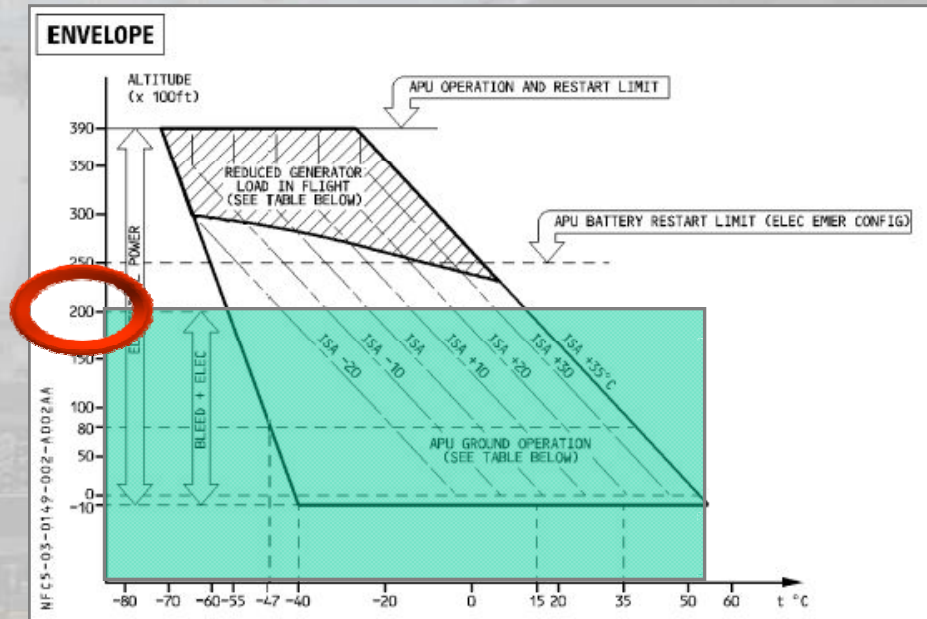
No relight, ENG master OFF - Start time



30 sec later



30 sec later



# RELIGHT SEQUENCE **BELOW** APU BLEED LIMIT

From ENG master OFF - 1 ENG at a time



30 sec later



# RELIGHT SEQUENCE **BELOW** APU BLEED LIMIT

From ENG master OFF - 1 ENG at a time



30 sec later



30 sec later and if relight unsuccessful



# RELIGHT SEQUENCE **BELOW** APU BLEED LIMIT

From ENG master OFF - 1 ENG at a time



30 sec later



30 sec later and if relight unsuccessful



# RELIGHT SEQUENCE **BELOW** APU BLEED LIMIT

From ENG master OFF - 1 ENG at a time



30 sec later



30 sec later and if relight unsuccessful



After a successful start, use the restored engine **ASAP!**

# Recall of the new philosophy – Current situation

**DUAL ENG  
FAILURE  
/  
ALL ENG  
FLAMEOUT**

**FORCED  
LANDING**

**DITCHING**

**SPEEDS**

**L/G  
GRAVITY  
EXTENSION**

↓ ECAM procedure  
was kept

**DUAL ENG  
FAILURE  
/  
ALL ENG  
FLAMEOUT**

**DUAL ENG  
FAILURE  
/  
ALL ENG  
FLAMEOUT**

**FUEL  
REMAINING**

**DUAL ENG  
FAILURE  
/  
ALL ENG  
FLAMEOUT**

**NO FUEL  
REMAINING**

## Implementation of this approach in the FWC

- The flight crew is first asked to perform actions common to both cases (Fuel remaining – No fuel remaining)

Common actions

No fuel remaining

Fuel remaining

### ENG DUAL FAILURE

- EMER ELEC PWR ..... MAN ON
- THR LEVERS ..... IDLE
- FAC ..... OFF THEN ON
- . IF NO FUEL:
- OPT SPEED ..... G DOT
- ENG NO FUEL PROC ..... APPLY
- . IF FUEL REMAINS:
- ENG MODE SEL ..... IGN
- OPT RELIGHT SPD ..... 300
- ENG FUEL PROC ..... APPLY

### ENG DUAL FAILURE

- EMER ELEC PWR ..... MAN ON
- . IDLE
- EN ON
- G DOT
- APPLY

### LAND ASAP

Single aisle example

# ATA 70: ENG DUAL FAILURE / ALL ENG FLAME OUT

 A318 A319 A320 A321	EMERGENCY PROCEDURES	REV 39	<b>1.16</b>
		SEQ 115	

## ENG DUAL FAILURE – FUEL REMAINING

 A318 A319 A320 A321	EMERGENCY PROCEDURES	REV 39	<b>1.16</b>
		SEQ 115	

**ENG DUAL FAILURE – FUEL REMAINING**

*This paper procedure is applicable in case of all engine flameout, when there is fuel remaining on board. It includes all the necessary and sufficient ECAM steps and additional information to manage the situation. Therefore, the flight crew should apply this paper procedure and then, if time permits, clear ECAM warnings and check the ECAM STATUS page.*

**LAND ASAP**

- ENG MODE SEL ..... IGN
- THRUST LEVERS ..... IDLE
- OPTIMUM RELIGHT SPD ..... 280 KT

*In the case of a speed indication failure (volcanic ash), the pitch attitude for optimum relight speed is 2.5 degrees down. For weight above 60 000 kg/132 000 lb, raise the nose by 1 degree for every additional 10 000 kg/22 000 lb (e.g. if weight is 70 000 kg/154 000 lb pitch is 1.5 degrees down).*

*At 280 knots, the aircraft can fly up to about:*

- 2.4 NM/1000 feet at 60 000 kg/132 000 lb
- 2.6 NM/1000 feet at 70 000 kg/154 000 lb
- 2.8 NM/1000 feet at 80 000 kg/176 000 lb

- LANDING STRATEGY ..... DETERMINE

*Determine whether a runway can be reached, or the most appropriate place for a forced landing/ditching.*

- EMER ELEC PWR (if not automatically coupled) ..... MAN ON
- VHF1/HF1 (-)/ATC1 ..... USE

*Notify air traffic control of the nature of the emergency, and state intentions. If there is no contact with air traffic control, switch to code A7700, or transmit a distress message on one of the following frequencies : VHF frequency 121.5 MHz, HF 2182 KHz or 5364 KHz.*

- FAC 1 ..... OFF THEN ON

*Resetting FAC 1 enables the recovery of characteristics speed displayed on the PFD. Resetting FAC 1 also enables rudder trim recovery, even if no indication is available. When the hydraulic power is lost, the right aileron is lost, and is in the uplock position. Rudder trim may be used to compensate for this uplocking aileron.*

- IF NO RELIGHT AFTER 30 SEC :
  - ENG MASTERS ..... OFF 30 S/ON

*Unassisted start attempts can be repeated until successful, or until APU bleed is available.*

- IF UNSUCCESSFUL :
  - CREW OXY MASKS (Above FL 100) ..... ON

*Cabin altitude will increase, due to the lack of engine bleed : The EXCESS CAB ALT ECAM warning could be triggered. Depending on the situation, to gain gliding distance, the flight crew may disregard the ECAM emergency descent requirement, because passengers will be provided with oxygen for a sufficient period of time.*

- APU (IF AVAIL) ..... START

*If the APU is available, it may be started when below FL 250, and the APU BLEED may be used for engine start below FL 200 if speed > 180 knots, or below FL 150 if speed is < 150 knots.*

- WING ANTI ICE ..... OFF
- APU BLEED ..... ON
- ENG MASTERS (one at a time) ..... OFF 30 S/ON

**ENG DUAL FAILURE**

- IF NO FUEL
  - OPT SPD ..... G DOT
  - ENG NO FUEL PROC ... APPLY
- IF FUEL REMAINS
  - OPT SPD ..... 300
  - ENG FUEL PROC ..... APPLY

**LAND ASAP**

Single aisle example