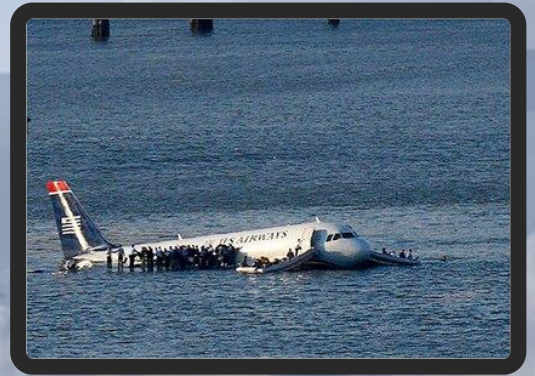


# Emergency Landing

## All Engine Failure



**Please check notes below the slide**

# Contents

1

Background

2

When to apply the different procedures

3

Emergency Landing - Procedure

4

Questions?

# Background

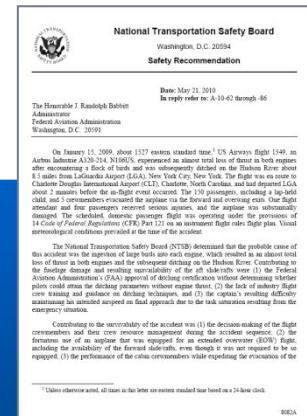


## Hudson event:

- Bird strike
- Thrust Loss at 3000 ft AGL
- Touchdown 3 minutes later
- All 155 persons on-board safely evacuated

## NTSB Safety Recommendation :

Require manufacturer of turbine powered aircraft to develop checklist and procedure for dual engine failure occurring at low altitude.



# New Procedure

Airbus Answer

Create new procedure

Require manufacturer of turbine powered aircraft to develop checklist and procedure for dual engine failure occurring at low altitude.

# ALL ENGINE FAILURE procedure

## ENG ALL ENG FAILURE

### Main Steps



Initial Descent

Windmilling Relight

Starter Assisted Relight

Descent at Green Dot

Approach  
Forced landing - Ditching



# Creation “EMERGENCY LANDING”

## EMERGENCY LANDING ALL ENG FAILURE

### Scope

- **Total thrust loss very close to the ground - No time to relight**
- **Remaining time to touchdown must be used to configure the aircraft for touchdown.**



# When to apply the different procedures

Current procedures



Engine Operative

THRUST LOSS

ABN 80

DITCHING



ABN 80

FORCED  
LANDING



ABN 70

ALL ENGINE  
FAILURE

if no relight:

Ditching



Forced  
Landing





# When to apply the different procedures

Enhanced procedures



Engine Operative

THRUST LOSS

ABN 80

DITCHING



ABN 80

FORCED LANDING



ABN 70

ALL ENGINE FAILURE

if no relight:

Ditching



Forced Landing



Cover

**EMER LANDING**

ALL ENG FAILURE

**Ditching** | **Forced Landing**





# When to apply the different procedures





Which QRH procedure?





**Engine Operative**

**THRUST LOSS**

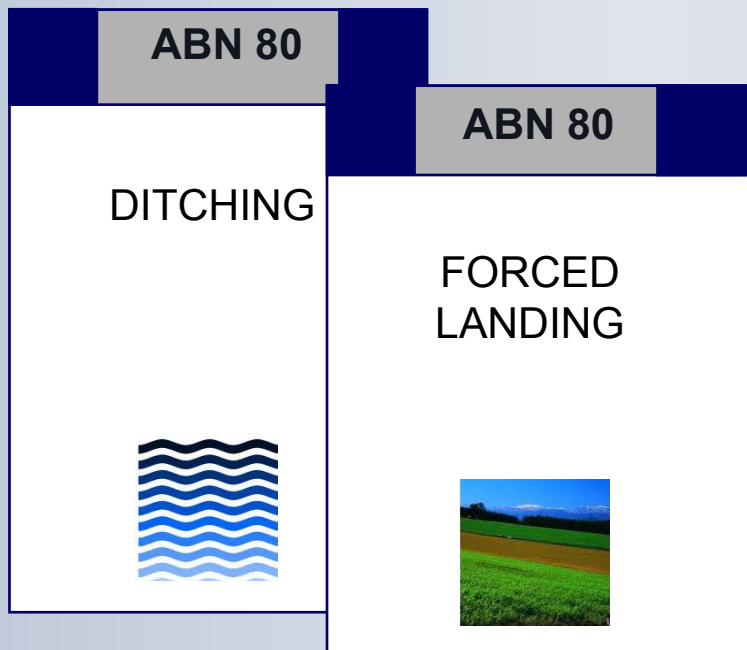
ABN 80	ABN 80
DITCHING 	FORCED LANDING 

ABN 70
ALL ENGINE FAILURE  if no relight: Ditching   Forced Landing    

Cover
EMER LANDING ALL ENG FAILURE Ditching   Forced Landing    

# When to apply the different procedures

Engine Operative



## Scenario example:

SMOKE/FUMES/AVNCS SMOKE

SMOKE/FUMES/AVNCS SMOKE

LAND ASAP

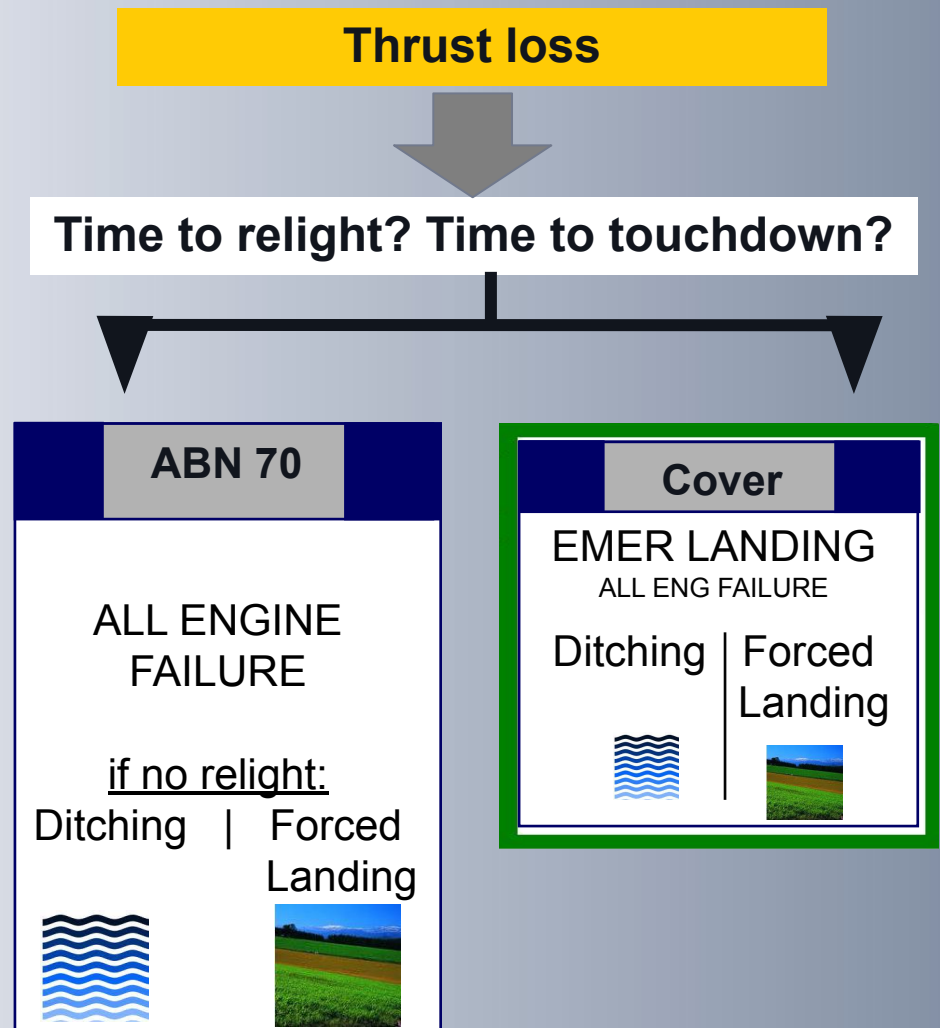
IF PERCEPTIBLE SMOKE APPLY IMMEDIATELY:

BLOWER..... OVRD  
 EXTRACT..... OVRD  
 CAB FANS..... OFF  
 GALY & CAB..... OFF  
 SIGNS..... ON  
 CKPT/CAB COM..... ESTABLISH

- **IF REQUIRED:**  
 CREW OXY MASKS..... ON/100%EMERG
- **IF SMOKE SOURCE IMMEDIATELY OBVIOUS, ACCESSIBLE, AND EXTINGUISHABLE:**  
 FAULTY EQPT..... ISOLATE
- **IF SMOKE SOURCE NOT IMMEDIATELY ISOLATE:**  
 DIVERSION..... INITIATE  
 DESCENT (FL 100, or MEA, or minimum obstacle clearance altitude)..... INITIATE
- **AT ANY TIME of the procedure, if SMOKE/FUMES becomes the GREATEST THREAT :**  
 SMOKE/FUMES REMOVAL..... CONSIDER  
 ELEC EMER CONFIG..... CONSIDER  
*Refer to the end of the procedure to Set ELEC EMER CONFIG*
- **At ANY TIME of the procedure, if situation becomes UNMANAGEABLE :**  
 IMMEDIATE LANDING..... CONSIDER

● **At ANY TIME of the procedure, if situation becomes UNMANAGEABLE :**  
 IMMEDIATE LANDING..... CONSIDER

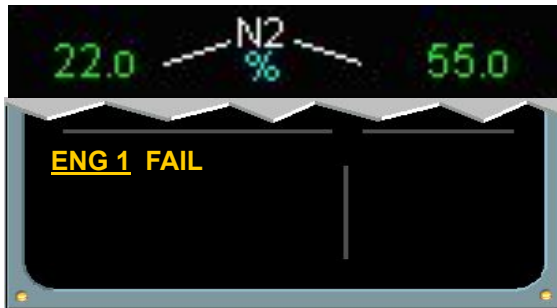
# When to apply the different procedures



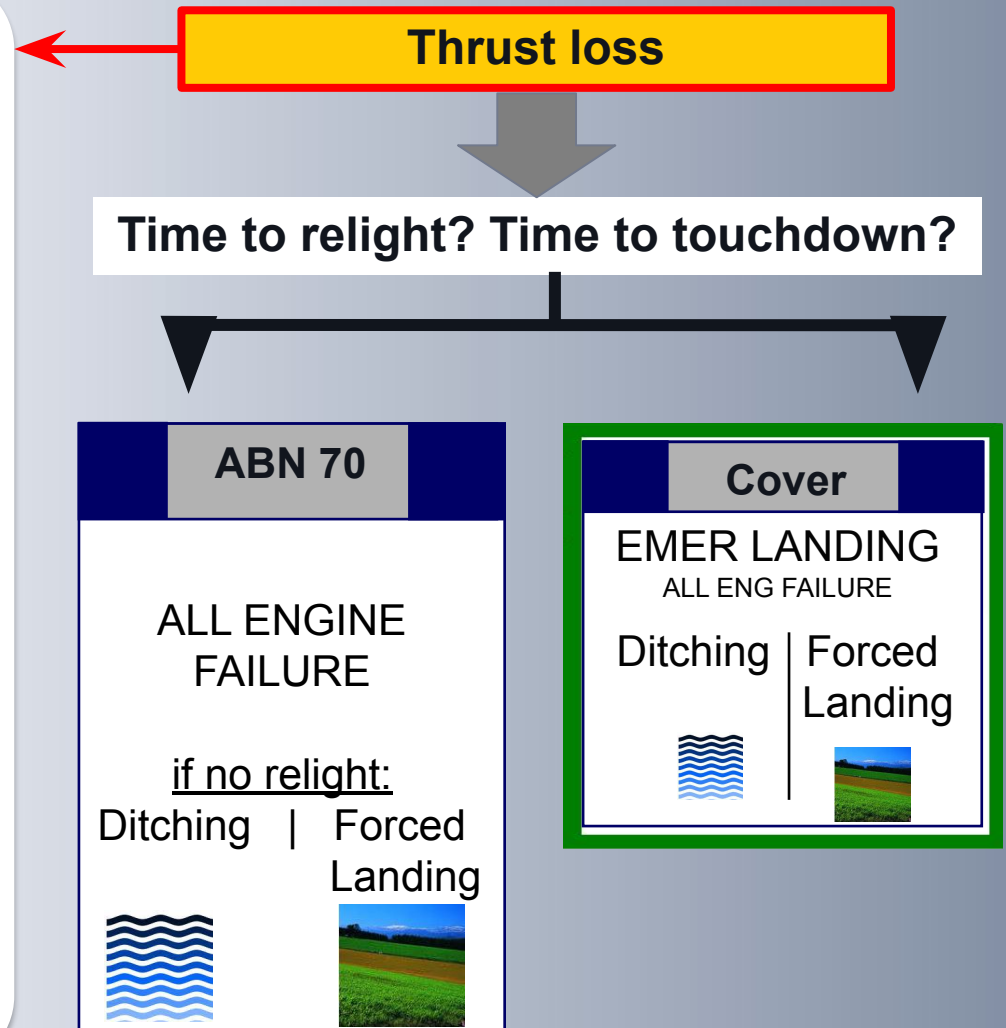
# When to apply the different procedures

- ❑ No longer possible to maintain level flight
- ❑ Not always associated with the ECAM Alert:  
ENG DUAL FAILURE

## Illustration:

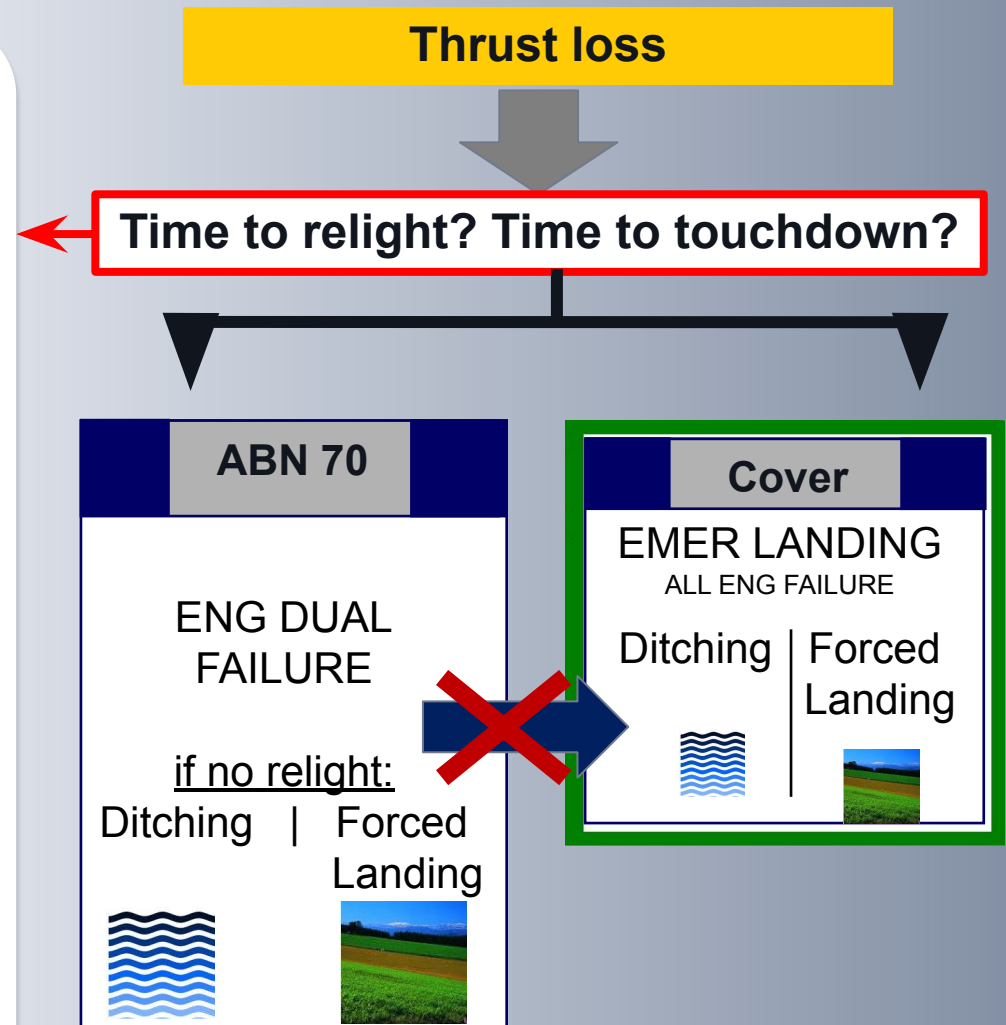


- ❑ Apply QRH proc even if not prompted by ECAM



# When to apply the different procedures

- ❑ Close to the ground ?
- ❑ Is touchdown imminent ?
- ❑ Time to relight ?
  
- ❑ Not only a matter of altitude but rather a matter of:
  - ❑ Time to touchdown
  - ❑ Flight crew workload: Pilot judgment will determine what can be attempted to recover
  - ❑ Environmental conditions (weather, day/night, terrain, ...)



# When to apply the different procedures

## Scenario example:

We have no more fuel !  
We need to drift down as far as possible

We lost both engines!



**Thrust loss**

**Time to relight? Time to touchdown?**

**ABN 70**

**ALL ENGINE FAILURE**

if no relight:

Ditching | Forced Landing



**Cover**

**EMER LANDING**  
ALL ENG FAILURE

Ditching | Forced Landing



# When to apply the different procedures

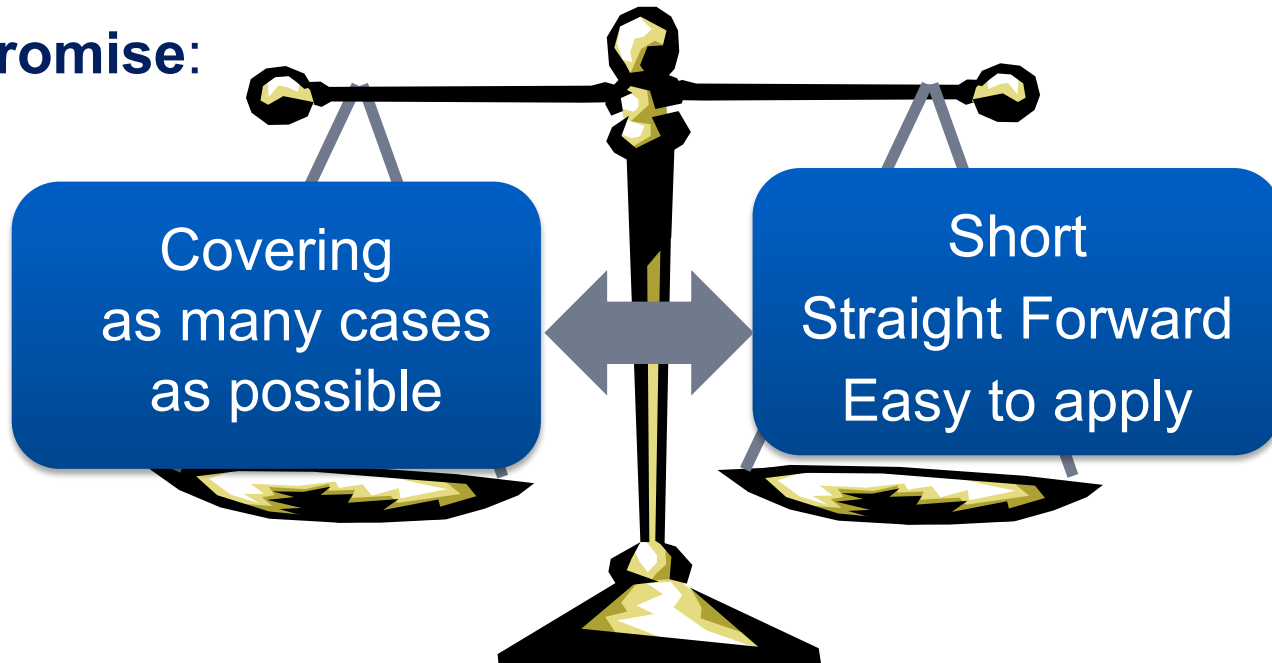




# Emergency Landing - Procedure



- Provides the **minimum steps** to land:
  - APU Start / Landing Gear / Flaps / Speed target
  - Main steps of “Forced landing” or “Ditching” procedure of the All Engine Failure procedure.
- **Compromise:**



# Emergency Landing - Procedure

Cover

## EMER LANDING


ALL ENG FAILURE

### Ditching



### Forced Landing





**A318/A319/A320/A321**  
QUICK REFERENCE HANDBOOK

**ABNORMAL AND  
EMERGENCY PROCEDURES**

**C2**  
02 APR 14

**EMERGENCY LANDING**  
**ALL ENG FAILURE**

Apply the following if it is not possible to maintain altitude after the loss of thrust near to the ground.

DITCHING	FORCED LANDING
APU..... START	APU..... START
LANDING GEAR..... UP	LANDING GEAR..... UP
FLAPS LEVER..... 2	FLAPS LEVER..... 2
VAPP..... DETERMINE	VAPP..... DETERMINE

GW	40 t	50 t	60 t	70 t	80 t	90 t	95 t
VAPP	150 kt	150 kt	163 kt	173 kt	183 kt	193 kt	198 kt

DITCHING PB..... ON	SPLRS..... ARM
<b>AT 500 FT AGL OR BELOW:</b> BRACE FOR IMPACT	<b>AT 1000 FT AGL AT THE LATEST:</b> LANDING GEAR..... DOWN by GRVTY
<b>FOR FLARE:</b> TOUCH DOWN AT MIN V/S TARGET PITCH ATT 11°	<b>AT 500 FT AGL OR BELOW:</b> BRACE FOR IMPACT
<b>FOR FLARE:</b> TOUCH DOWN AT MIN V/S	<b>FOR FLARE:</b> TOUCH DOWN AT MIN V/S
<b>AT TOUCHDOWN:</b> ENG MASTERS (ALL)..... OFF APU MASTER SW..... OFF EMER EVAC PROC..... APPLY	<b>AT TOUCHDOWN:</b> ENG MASTERS (ALL)..... OFF APU MASTER SW..... OFF EMER EVAC PROC..... APPLY

**EMERGENCY EVACUATION**

AIRCRAFT/PARKING BRK..... STOP/ON

ATC (VHF 1)..... NOTIFY

CABIN CREW (PA)..... ALERT

ΔP (only if MAN CAB PR has been used)..... CHECK ZERO

*if not zero, MODE selector on MAN, V/S CTL FULL UP.*

ENG MASTERS (ALL)..... OFF

FIRE Pushbuttons (ALL ; ENG and APU)..... PUSH

AGENTS (ENG and APU)..... AS RQRD

- If evacuation required:  
EVACUATION..... INITIATE
- If evacuation not required:  
CABIN CREW and PASSENGERS (PA)..... NOTIFY

# Emergency Landing - Procedure

## EMERGENCY LANDING ALL ENG FAILURE

Electrical Power Supply

Gear - Flaps - Speed

“Brace for Impact”

Pitch - minimize Vertical Speed

Securing the Aircraft  
EMER EVAC PROC APPLY



# Emergency Landing - Procedure



EMERGENCY LANDING ALL ENG FAILURE							
Apply the following if it is not possible to maintain altitude after the loss of thrust near to the ground.							
<b>DITCHING</b>				<b>FORCED LANDING</b>			
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# Emergency Landing - Procedure



<b>EMERGENCY LANDING</b>							
<b>ALL ENG FAILURE</b>							
Apply the following if it is not possible to maintain altitude after the loss of thrust near to the ground.							
<b>DITCHING</b>				<b>FORCED LANDING</b>			
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# Emergency Landing - Procedure

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**Cover**

EMER LANDING

ALL ENG FAILURE

Ditching



Forced Landing



Elec

# Emergency Landing - Procedure

EMERGENCY LANDING ALL ENG FAILURE							
Apply the following if it is not possible to maintain altitude after the loss of thrust near to the ground.							
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Gear  
Flaps  
Speed



# Emergency Landing - Procedure

**Cover**

**EMER LANDING**  
ALL ENG FAILURE

Ditching



Forced Landing



<b>EMERGENCY LANDING</b>							
ALL ENG FAILURE							
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Cabin

# Emergency Landing - Procedure

EMERGENCY LANDING ALL ENG FAILURE							
Apply the following if it is not possible to maintain altitude after the loss of thrust near to the ground.							
<b>DITCHING</b>				<b>FORCED LANDING</b>			
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FLAPS LEVER..... 2				FLAPS LEVER..... 2			
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**Cover**

EMER LANDING

ALL ENG FAILURE

Ditching



Forced Landing



Mini V/S  
Pitch

# Emergency Landing - Procedure

EMERGENCY LANDING ALL ENG FAILURE							
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Cover	
EMER LANDING ALL ENG FAILURE	
Ditching	Forced Landing
	

Secure A/C  
EMER EVAC  
Procedure

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Questions?

# Conclusion



New Procedure

AIRBUS		ABNORMAL AND EMERGENCY PROCEDURES		C2
Apply the following if it is not possible to maintain altitude after the loss of thrust near to the ground.				
<b>DITCHING</b>		<b>FORCED LANDING</b>		
APU	START	APU	START	
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VAPP	150 kt	150 kt	163 kt	173 kt
DITCHING PB:		ON	SPLRS	AFM
AT 1000 FT AGL OR BELOW:		AT 1000 FT AGL AT THE LATEST:		
BRACE FOR IMPACT		LANDING GEAR DOWN BY GRVTY		
FOR FLARE:		FOR FLARE:		
TOUCH DOWN AT MIN VIS		TOUCH DOWN AT MIN VIS		
TARGET PITCH ATT 1°				
AT TOUCHDOWN:		AT TOUCHDOWN:		
ENG MASTERS (ALL)	OFF	ENG MASTERS (ALL)	OFF	
APU MASTER SW	OFF	APU MASTER SW	OFF	
EMER EVAC PROC	APPLY	EMER EVAC PROC	APPLY	
<b>EMERGENCY EVACUATION</b>				
AIRCRAFT PARKING BRK		STOPION		
ATC (WH 1)		NOTIFY		
CABIN CREW (PA)		ALERT		
JP (only if MAN CAB PR has been used)		CHECK ZERO		
ENG MASTERS (ALL)		OFF		
FIRE Publications (ALL - ENG and APU)		FLDN		
AGENTS (ENG and APU)		AS REQD		
■ If evacuation required:		EVALUATION		
■ If evacuation not required:		INITIATE		
CABIN CREW and PASSENGERS (PA)		NOTIFY		

## EMERGENCY LANDING ALL ENG FAILURE

- Immediately accessible
- To configure the aircraft
- When no time to relight





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