

18th Flight safety conference

Berlin, 19-22 March 2012



AIRBUS Smoke Procedures

Procedures and Philosophy

Presented by
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Content

- Introduction
- Smoke/Fumes Philosophy
- Coordination with Cabin Crew
- Conclusion

Introduction

A319



A340



A300



Introduction

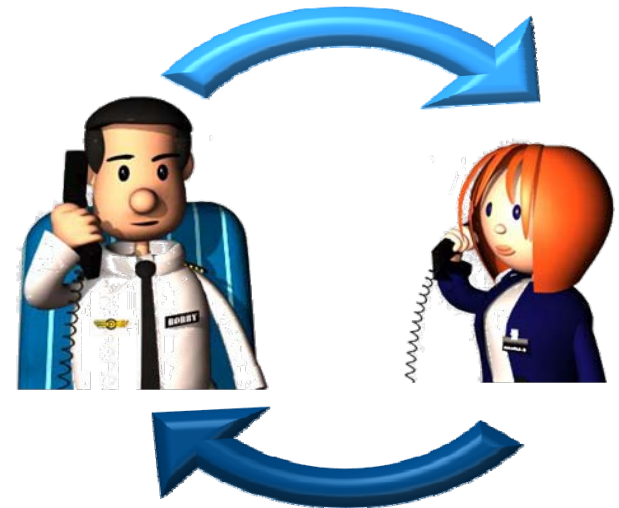
What are the 3 main challenges of smoke events?



Location of Source



Time



Communication

Introduction

TIME: The facts

1. A fire may become uncontrollable in 8 minutes.
2. Crew may have as little as 15 minutes to get the aircraft on the ground...
3. How fast can a fire grow?



Introduction

TIME: The facts

- Paper procedures and ECAM procedure start with **LAND ASAP**:

- **LAND ASAP**

Advice to the flight crew to consider landing at the nearest suitable airport.

- **LAND ASAP**

Land as soon as possible at the nearest suitable airport at which a safe approach and landing can be made.

- **IMMEDIATE LANDING** (Paper procedure ONLY)



Introduction

Identify the source:



Ease
of
Locating

■ CARGO

■ LAVATORY

■ CREW REST COMPARTMENT

■ AVIONICS

■ AIR COND

■ CABIN EQUIPMENT



- Covered by ECAM and/or local warning

- Available means to treat the fire/smoke

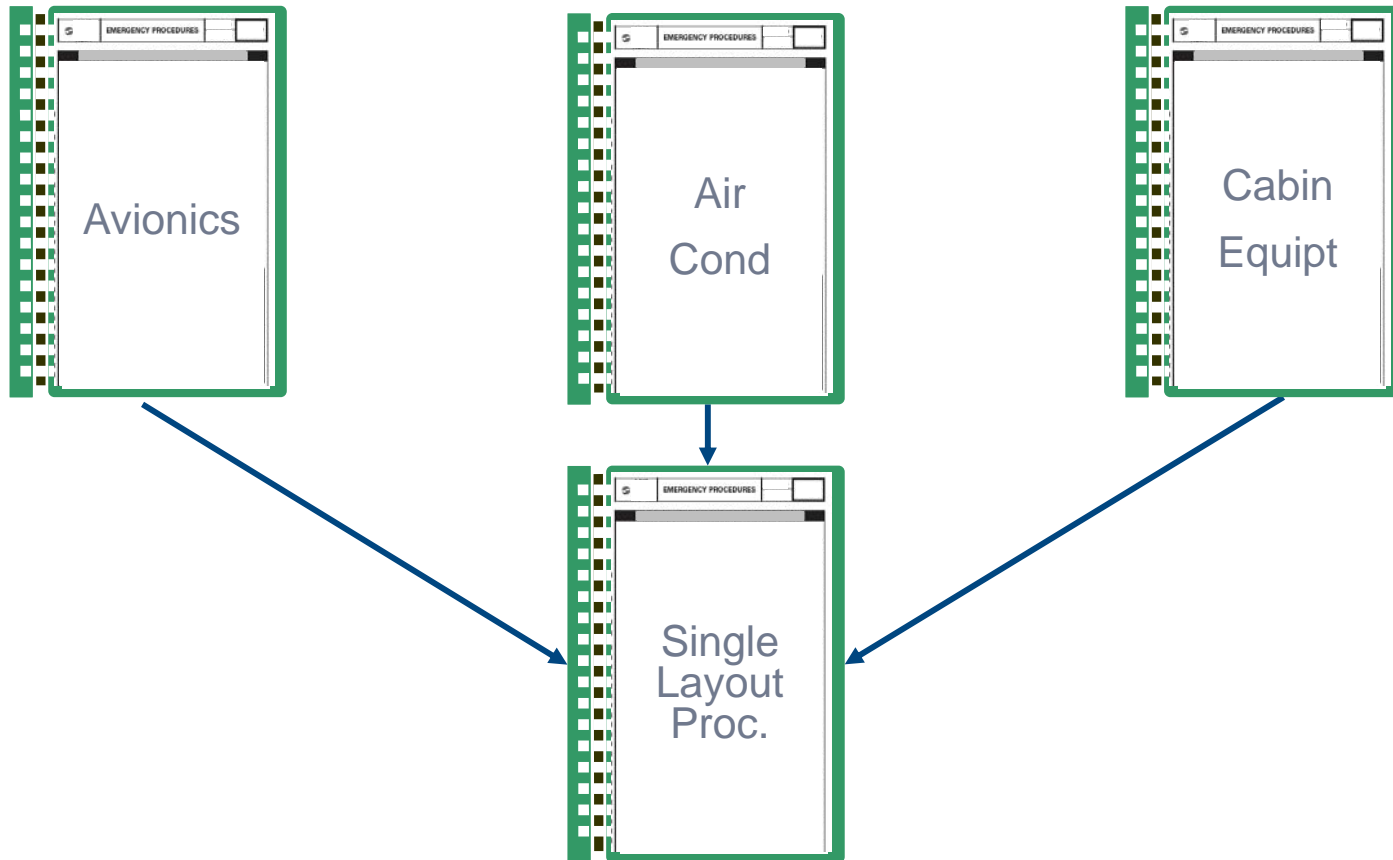
- May be covered by ECAM warning

- More difficult to locate and deal with

Introduction

Identify the source:

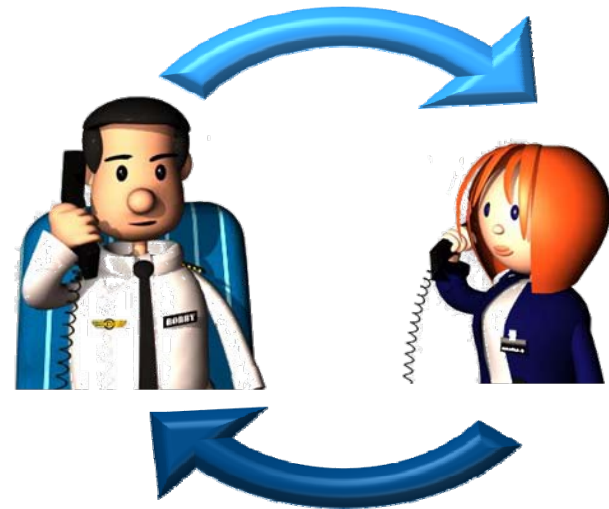
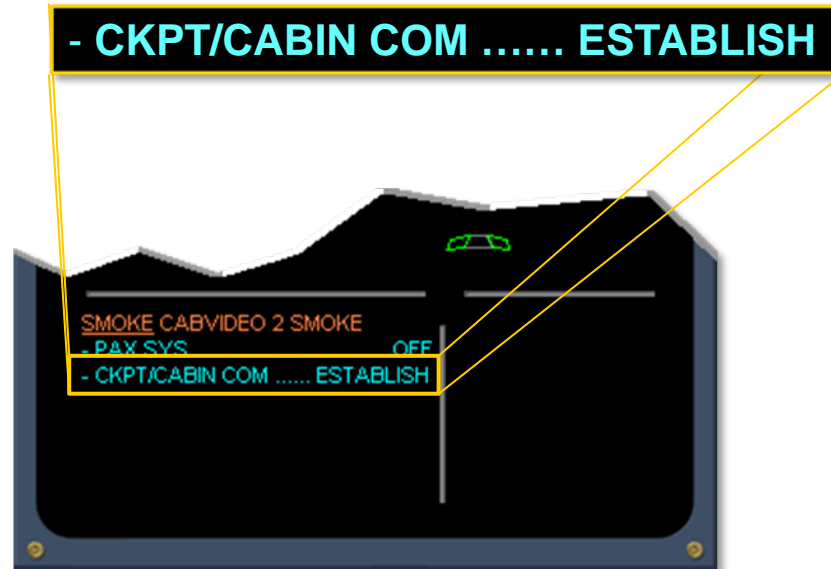
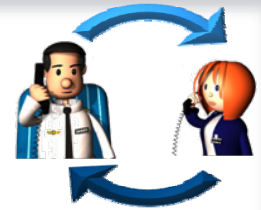
Sources merged into *one single layout*.



Introduction

Communication:

Action step in both *Cockpit* and *Cabin* Smoke procedures:



Content

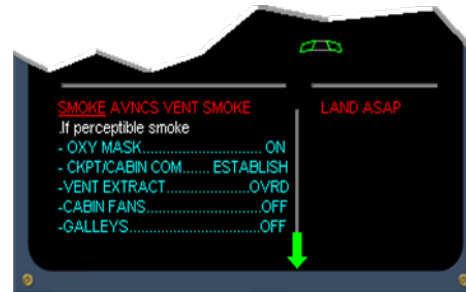
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Smoke/Fumes Philosophy

The alert can come from :

- The ECAM



or

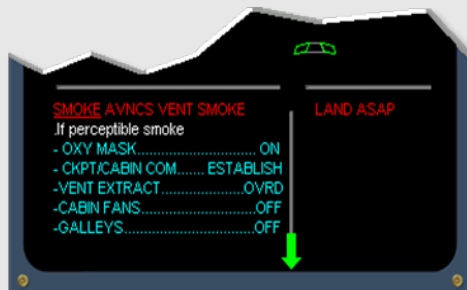
- The Cabin or Cockpit crew



Procedure must be applied without delay.

Smoke/Fumes Philosophy

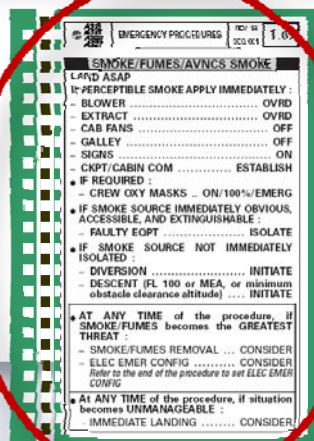
When supported by ECAM:
Carry out **ECAM** actions



Crew (cockpit or cabin)
perception without **ECAM** Alert



At any time the **SMOKE/FUMES**
QRH paper procedure could be applied



Smoke/Fumes Philosophy

SMOKE/FUMES/AVNCS SMOKE	
LAND ASAP	
APPLY IMMEDIATELY	
VENT EXTRACT.....	OVRD
CAB FANS.....	OFF
GALLEYS.....	OFF
SIGNS.....	ON
CKPT/CAB COM.....	ESTABLISH
● IF REQUIRED:	
CREW OXY MASKS.....	ON/100%/EMERG

LAND ASAP

Immediate Actions

**ANTICIPATE
DIVERSION**



SMOKE/FUMES/AVNCS SMOKE	
LAND ASAP	
APPLY IMMEDIATELY	
VENT EXTRACT.....	OVRD
CAB FANS.....	OFF
GALLEYS.....	OFF
SIGNS.....	ON
CKPT/CAB COM.....	ESTABLISH
● IF REQUIRED:	
CREW OXY MASKS.....	ON/100%/EMERG

● IF SMOKE SOURCE IMMEDIATELY OBVIOUS, ACCESSIBLE FAULTY EQUIPMENT	
● IF SMOKE SOURCE IMMEDIATELY OBVIOUS, ISOLATED: DIVERSION DESCENT (Refer to the altitude)	
● At ANY TIME becomes the SMOKE/FUMES/AVNCS SMOKE ELEC EMERGENCY Refer to the EMERGENCY CONFERENCE	
● At ANY TIME becomes UNMANAGEABLE: IMMEDIATE LANDING.....	CONSIDER

Immediate actions before analysis:

- Quick / simple / reversible
- Prevent smoke recirculation
- Crew Protection
- Communication
- Do not make the situation worse

Smoke/Fumes Philosophy

“AT ANY TIME” items

● 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



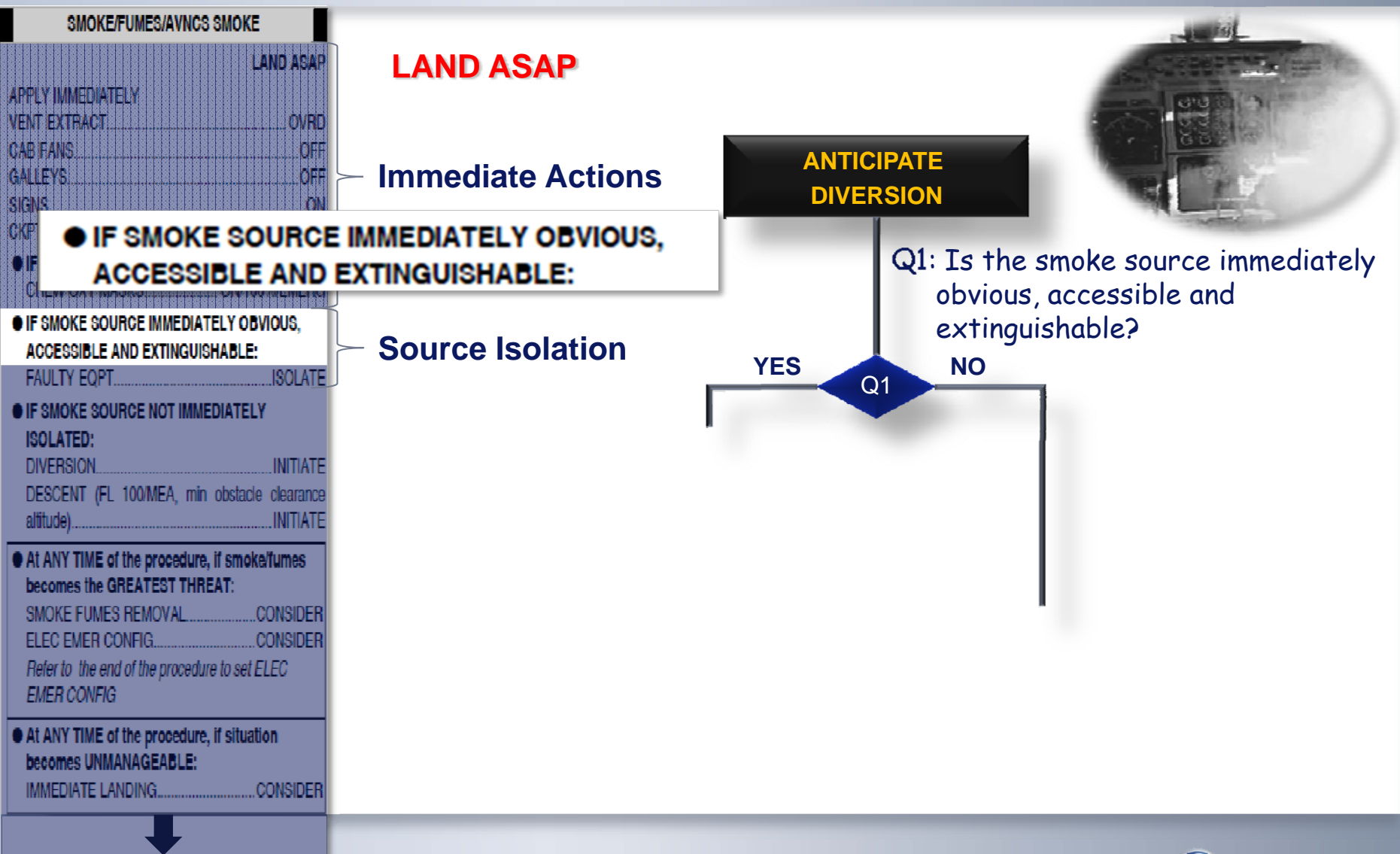
IMMEDIATE LANDING.....CONSIDER:

- Tail wind landing
- Overweight landing
- Off airport landing
- Ditching
- ...

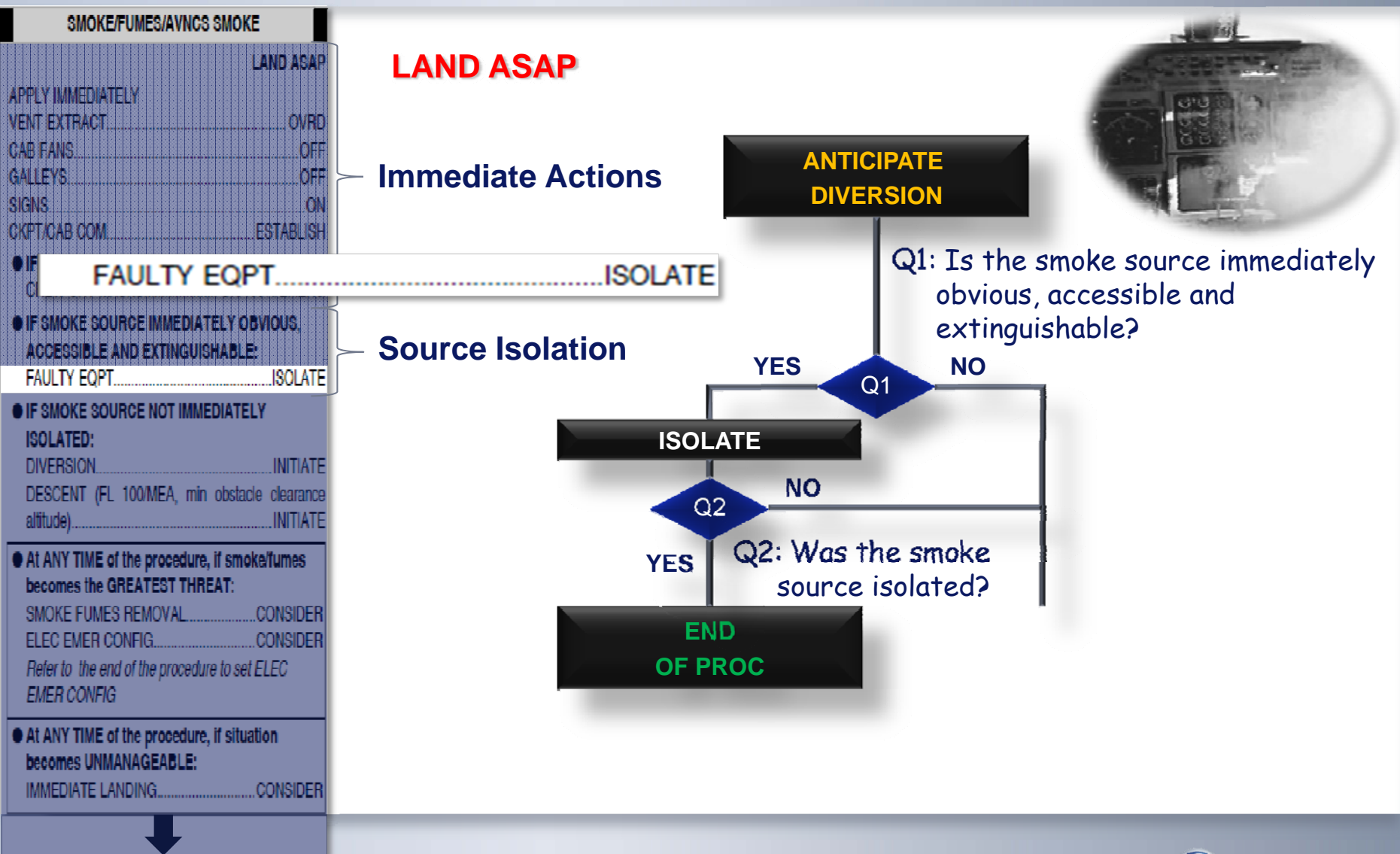
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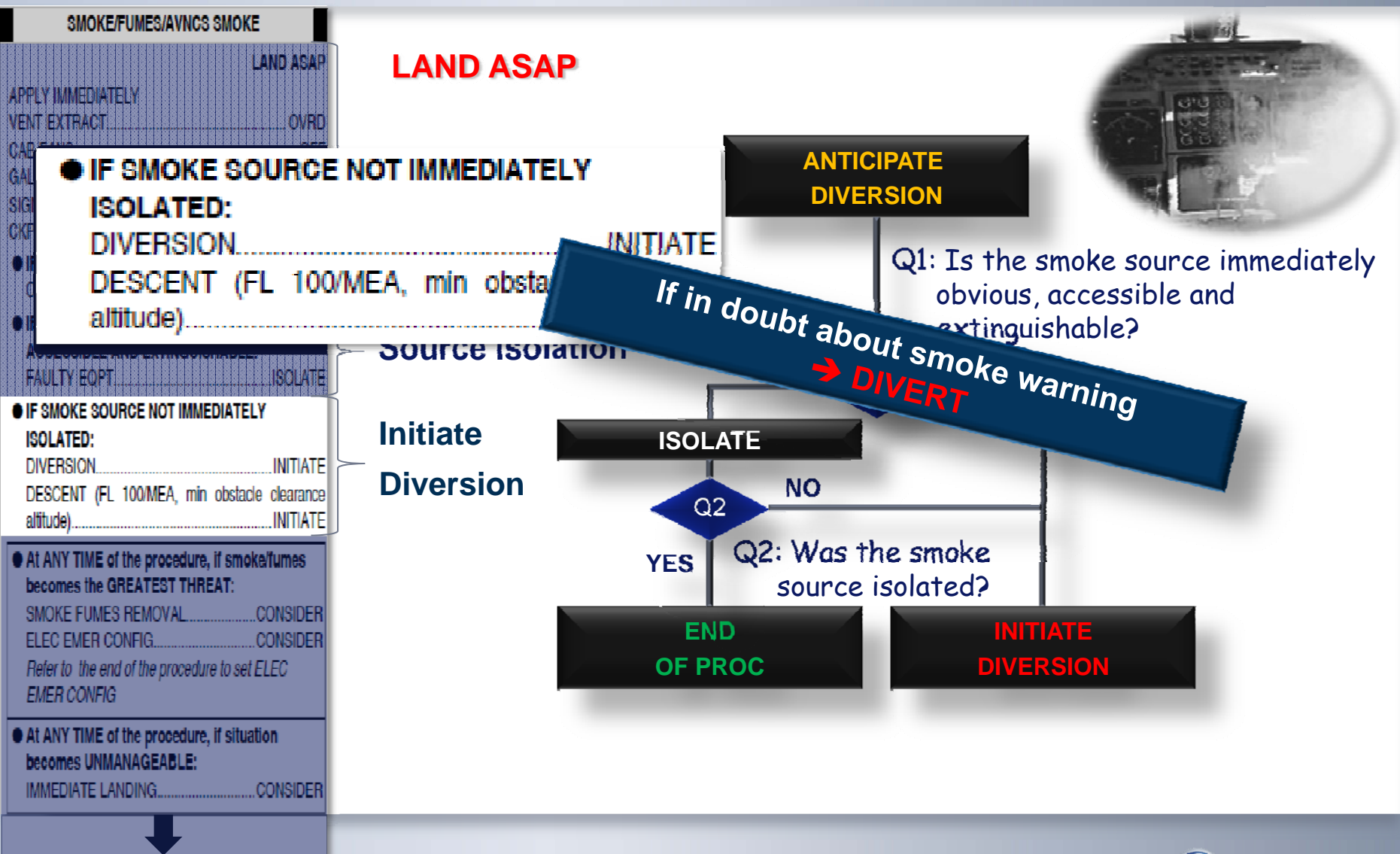
Smoke/Fumes Philosophy



Smoke/Fumes Philosophy



Smoke/Fumes Philosophy



Smoke/Fumes Philosophy

SMOKE/FUMES/AVNCS SMOKE

LAND ASAP

LAND ASAP

Immediate Actions

Source Isolation

Initiate Diversion

Troubleshoot

**ANTICIPATE
DIVERSION**

Q1: Is the smoke source immediately obvious, accessible and extinguishable?

**If in doubt about smoke warning
→ DIVERT**

ISOLATE

Q2

NO

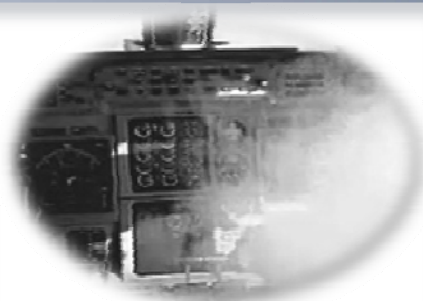
YES

Q2: Was the smoke source isolated?

**END
OF PROC**

**INITIATE
DIVERSION**

**ACTION SPECIFIC TO
EACH SMOKE SOURCE**



Smoke/Fumes Philosophy

SMOKE/FUMES/AVNCS SMOKE	
APPLY IMMEDIATELY	LAND ASAP
VENT EXTRACT	OVRD
● IF AIR COND SMOKE SUSPECTED:	
APU BLEED	OFF
VENT EXTRACT	AUTO
ALL CARGO ISOL VALVES	OFF
PACK 1	OFF
AIR COND SMOKE/CAB EQUIPMENT SMOKE	
● IF AIR COND SMOKE SUSPECTED:	
● IF CAB EQUIPMENT SMOKE SUSPECTED:	
UNDETERMINED/AVNCS/ELECTRICAL SMOKE	
● IF SMOKE SOURCE CAN NOT BE DETERMINED AND STILL CONTINUES OR AVNCS/ELECTRICAL SMOKE SUSPECTED:	
ELEC EMER CONFIG	CONSIDER
TO SET ELEC EMER CONFIG	
EMER ELEC GEN 1 LINE	OFF
EMER ELEC PWR	MAN ON
● WHEN EMER GEN AVAIL:	
APU GEN	OFF
GEN 2	OFF
ELEC EMER CONFIG	
APPLY ECAM PROCEDURE, BUT DO NOT RESET GEN, EVEN IF REQUESTED BY ECAM.	
● JUST BEFORE L/G EXTENSION:	
GEN 2	ON
EMER ELEC GEN 1 LINE	ON
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

ACTION SPECIFIC TO EACH SMOKE SOURCE



Troubleshoot

- ▶ AIR COND smoke
- ▶ CAB EQUIPMENT smoke
- ▶ AVNCS/ELECTRICAL smoke or Smoke source not detected and still continues.
- ▶ How to set ELEC EMER CONFIG

The order of SMOKE Sources, from most probable to the least probable, has been derived from historic data and analysis

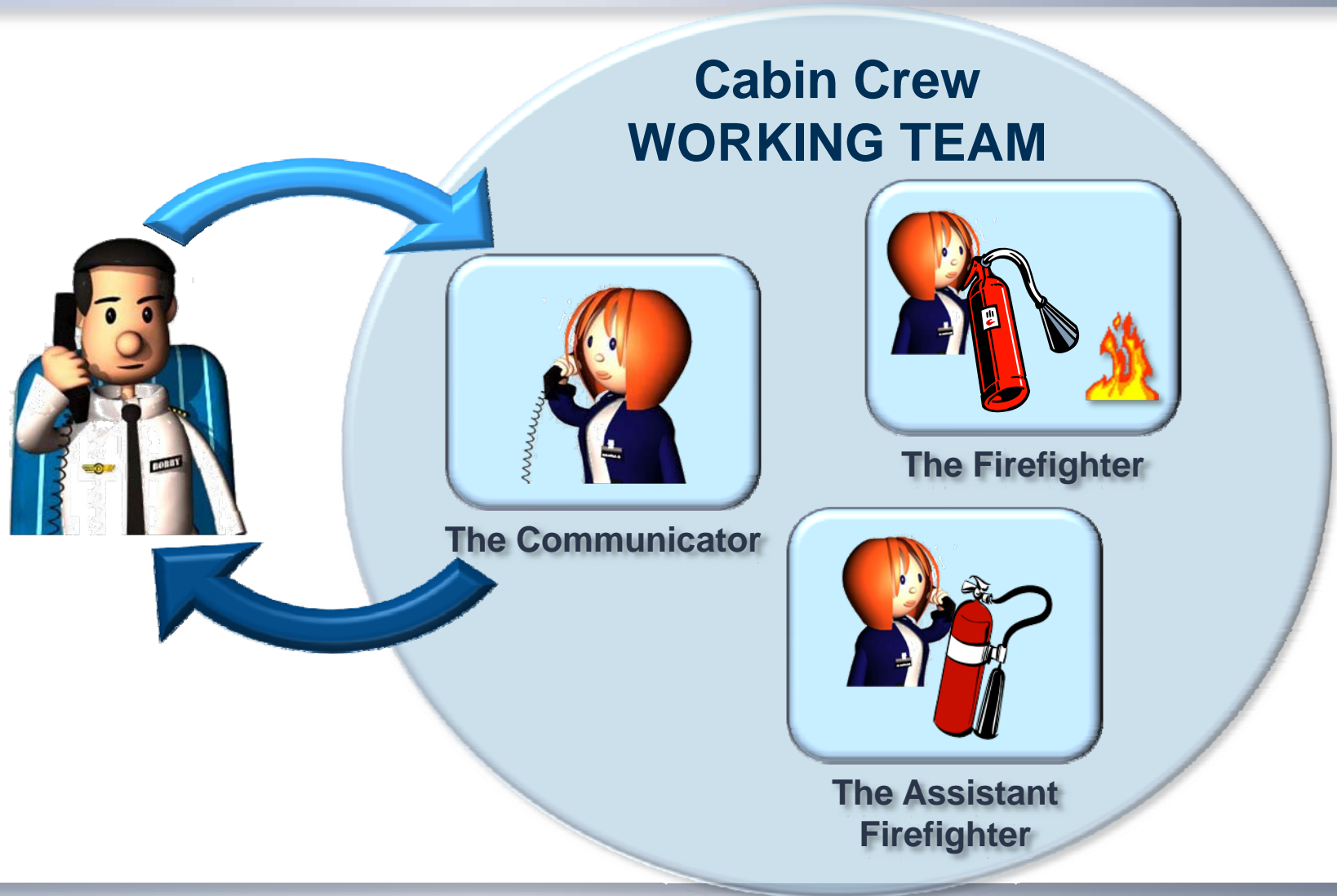
Troubleshoot

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Coordination with Cabin Crew



Coordination with Cabin Crew



Cabin crew reporting to the cockpit is essential:

- Report the location
- Identify the source
- Assess the severity of situation
- Report the action taken
- *Do it accurately!*



Coordinated, immediate and decisive action is necessary to prevent any escalation of the event...

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Conclusion

- Smoke event: many threats and challenges...
 - No two events are the same.
- Train for it:
 - Immediate actions / diversion / troubleshoot...
- React to the situation...
 - The entire crew is part of the solution



Train the entire crew as a crew!





Questions ?

