ENGINE FAILURE IN CRUISE (WITH DAMAGE)
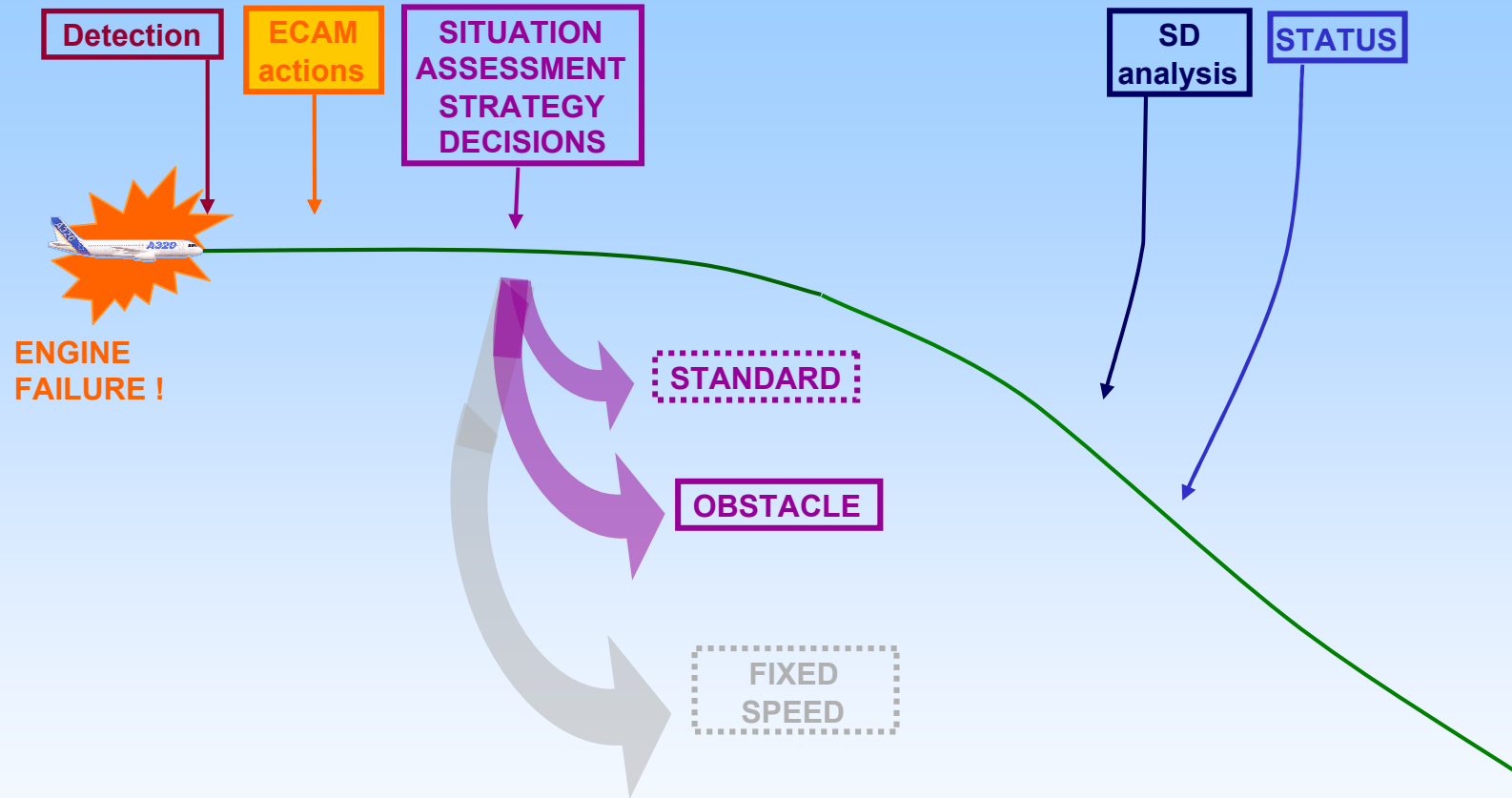
Detection

ECAM actions

SITUATION ASSESSMENT STRATEGY DECISIONS

SD analysis

STATUS

ENGINE FAILURE !

STANDARD

OBSTACLE

FIXED SPEED

1. <u>ENG 1</u> FAIL

DETECTION

FLIES THE AIRCRAFT

NAVIGATES ⇒ **LAND ASAP**…**Short term decision**

CONSIDER AUTOMATION USE

THRUST LEVERS………………………….MCT

A/THR…………………………………...OFF ⓘ

ECAM ACTIONS

ECAM PROCEDURE

STOP ECAM actions when :

([thrust lever] **And** [mode selector]) **Or** [display]

PF

COMMUNICATES

Deceleration <u>Not below</u> Green Dot

PF	PNF

For descent :

GREEN DOT………………………SET AND PULL

DRIFT DOWN CEILING ALT…….SET AND PULL

During descent to Drift Down Ceiling ...

➢ **Thrust MCT**

➢ **Speed controlled by the elevator**

MCT

Check GREEN DOT GROSS CEILING

QRH
4.00

ⓘ

REC MAX = EO LRC Ceiling

➢ *EO CLR Prompt* ⓘ

EO
REC MAX
FL263

PROG

DRIFT DCWN
TO FL278

PERF

PF	PNF

3. ECAM ACTIONS… DAMAGE

ORDER…………………….…..……"CONTINUE ECAM"   ECAM ACTIONS………………….……………CONTINUE

ECAM ACTIONS

    ECAM PROCEDURE   DAMAGE ? ⓘ

    SYSTEM DISPLAY

    STATUS

RETURN TO NORMAL TASK SHARING

DECISION
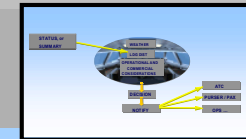
➢**Consider APU Start**

APU normal flight envelope :

FCOM
3.01.49

➢**DIST & FUEL computations to Landing**
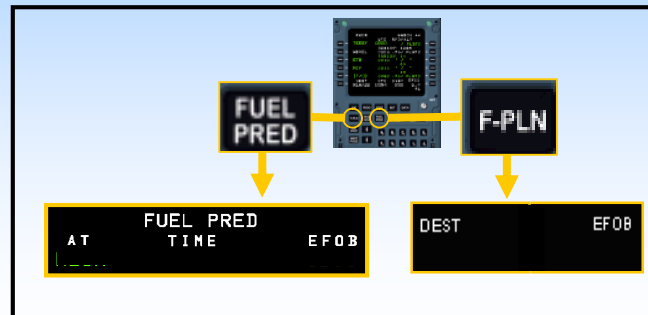
PF	PNF

4. OBSTACLE STRATEGY

When obstacles are cleared :

LR CEILING………………………...SET AND PULL
LR SPEED…………………………………….SET

Reaching LR Ceiling
A/THR…………………………………….……...ON

Descent to landing
RESUME MANAGED MODES

If obstacle : Continue Drift Down Procedure

Drift Down Ceiling

QRH

4.00

LONG
RANGE
CRUISE

LR SPEED

LRC ceiling

A/THR

T/D

➤ **Thrust is IDLE**
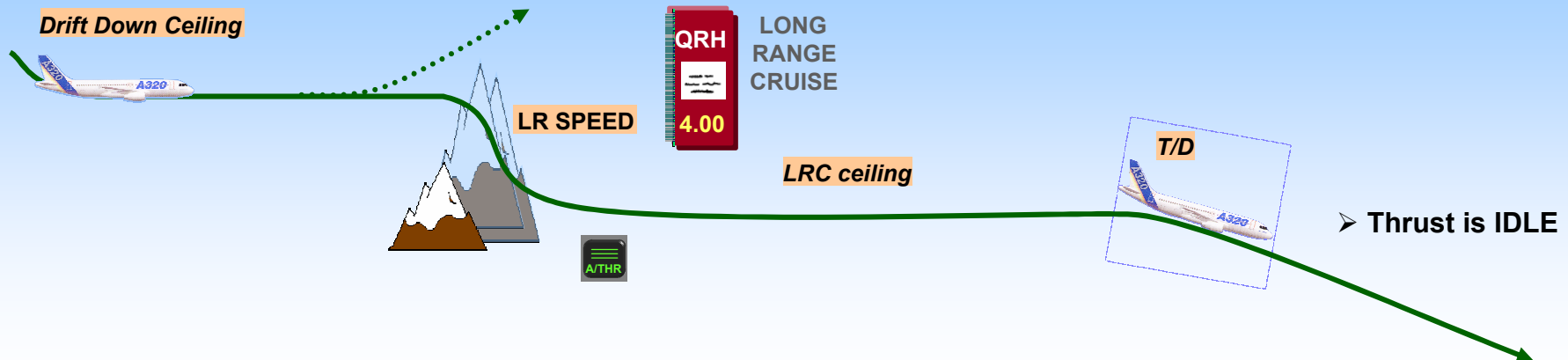
PF	PNF

1. __ENG 1__ FAIL

DETECTION

FLIES THE AIRCRAFT

NAVIGATES ⇒ **LAND ASAP…Short term decision**

CONSIDER AUTOMATION USE

THRUST LEVERS…………………………MCT

A/THR……………………………………...OFF 🟨ℹ️

A/THR is set to OFF immediately to avoid thrust reduction to IDLE

ECAM ACTIONS

ECAM PROCEDURE

STOP ECAM actions when :

(**And**) **Or**

PF

COMMUNICATES

Deceleration __Not below__ Green Dot

STRATEGY ℹ️

STANDARD

No obstacle and time constraint
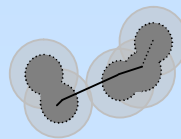
OBSTACLE

To ensure the margins over obstacles

FIXED SPEED

ETOPS constraint

As established before dispatch, use:

M.82 / 330 KT

Or

M.82 / 310 KT

LRC and Green Dot Gross Ceiling quick check

ONE ENGINE OUT MAX ALTITUDE

GROSS CEILING at LONG RANGE and GREEN DOT SPEEDS

Pack Flow Hi – Anti ice OFF

Green Dot Gross Ceiling

LRC Ceiling

External Temperature

GW at ENG FAIL

Green Dot Gross Ceiling precise check

GROSS FLIGHT PATH DESCENT AT GREEN DOT SPEED - 1 ENGINE OUT

MAX. CONTINUOUS THRUST	ISA	DISTANCE (NM)	TIME (MIN)
PACK FLOW HI	CG=33.0%	INITIAL SPEED(KT)	FUEL(1000KG)
ANTI-ICING OFF			LEVEL OFF (FT)
INIT. GW (1000KG)	INITIAL FLIGHT LEVEL		

CRZ FL at fail

GW at ENG FAIL

DIST   TIME
INITIAL SPEED   FUEL
LEVEL OFF

2. OBSTACLE STRATEGY ⓘ

For descent :

GREEN DOT…………………….SET AND PULL

DRIFT DOWN CEILING ALT…….SET AND PULL

During descent to Drift Down Ceiling ...

➤ **Thrust MCT**

➤ **Speed controlled by the elevator**

MCT

QRH
4.00

Check GREEN DOT GROSS CEILING ⓘ

REC MAX = EO LRC Ceiling

➤ *EO CLR Prompt* ⓘ

REC MAX
FL263
EO
PROG

DEST EO
CLR*
PERF

⚠ *if pressed, predictions revert to dual engine predictions*

DAMAGE OR NO DAMAGE ?

CONSIDER ENGINE DAMAGE IF YOU NOTICE :

➤ **High vibration prior to engine stopped, loud noise**

➤ **Stall**

➤ **Any Abnormal Indication on ENG Page (such as N1 or N2 ~ 0)**

⇒**No attempt of RELIGHT**