

MEMO AIRBUS A319/A320/A321

SOP / Flow Pattern

F/O side only (PF or PNF)



**A320 Flow Pattern SOP
Visual Pattern
Engine Out
Memory Items
Emergency procedures**

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Note

This document is for personal use only and must not be used for real fly. Airbus FCOM and QRH must be considered as the only reference. This document allows First Officer on A320 to have a quick refresh of Standard Airbus Procedures. It includes abnormal procedures and some memory items. All flow patterns are displayed from First Officer side (as PNF on the left and PF on the right hand side).

MEMO AIRBUS A320 FLOW PATTERN

1. STANDARD OPERATIONAL PROCEDURES

1.1. **COCKPIT PREPARATION:** Cockpit crew get on board : PNF walk around / PF cockpit checks

PNF



PF



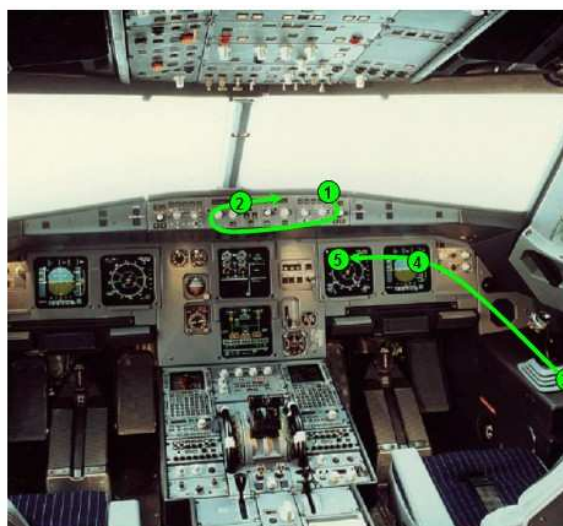
		1-2-3	OVERHEAD left, central, right part check
		4	ISIS check
		5-6-7	PEDESTAL left, central, right part check
		8	FMGS initialization

1.2. **COMMON CHECKS:** PNF come back from walk around for common checks (FMS crosscheck included)

PNF



PF



		1-2	FCU check
		3	OXY check
		4	PFD check Alt
		5	ND check no flag

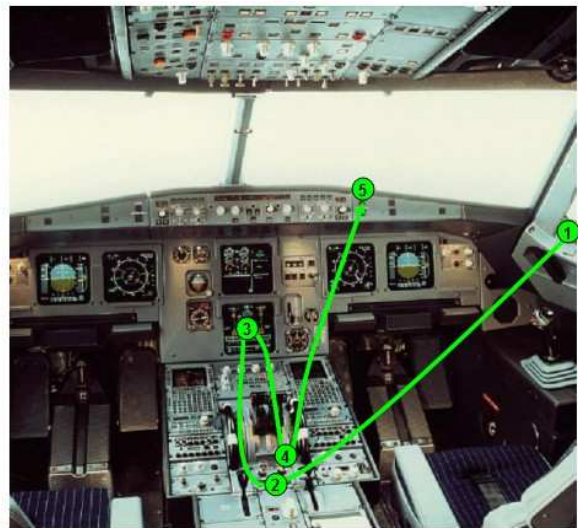
- 1.3. **ENGINE START:** After ATC Clearance received from delivery and push and start clearance from ground, PF calls ground engineer to check if engine start is safe than orders engine start (ENG number 2 first then ENG 1)

PNF



1	EXTERIOR Check
2	CHRONO

PF



1	EXTERIOR Check
2	ENG MODE SEL : IGN
3	PRESSU check on SD
4	ENG MASTER SWITCH ON
5	CHRONO

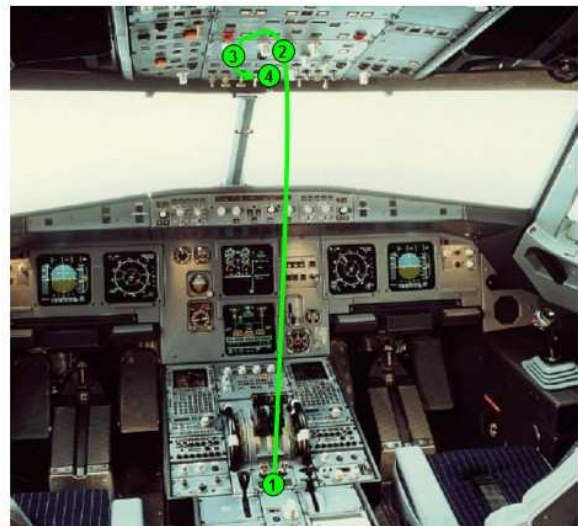
- 1.4. **AFTER START :** When engine start is OK

PNF



1	SPOILER armed
2	RUDDER trim reset
3	FLAPS TO
4	TO CG adjusted
5	DOOR page checked
6	STS checked

PF

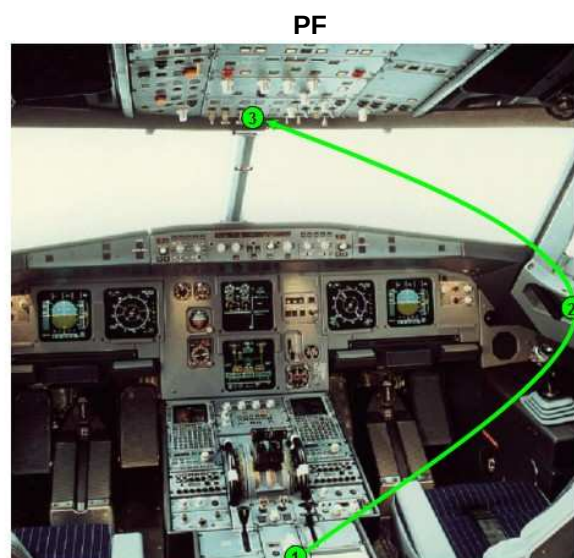


1	ENG MODE SEL : NORMAL
2	APU BLEED OFF
3	ENG ANTI-ICE as required
4	APU OFF

1.5. **BEFORE TAXI** : After Taxi clearance received from ground : external checks

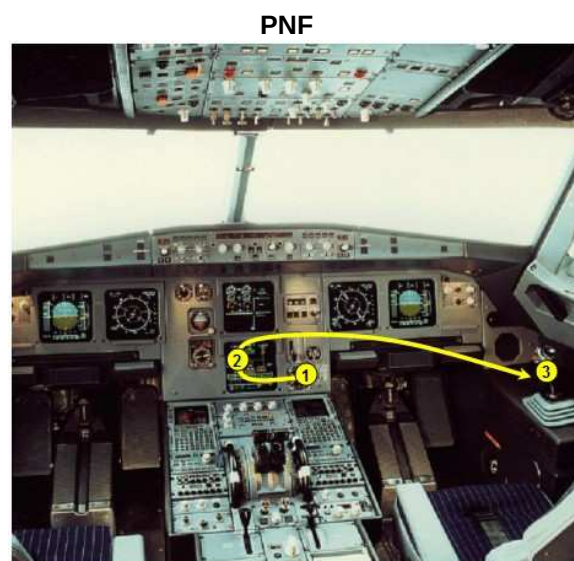


1	EXTERIOR Check

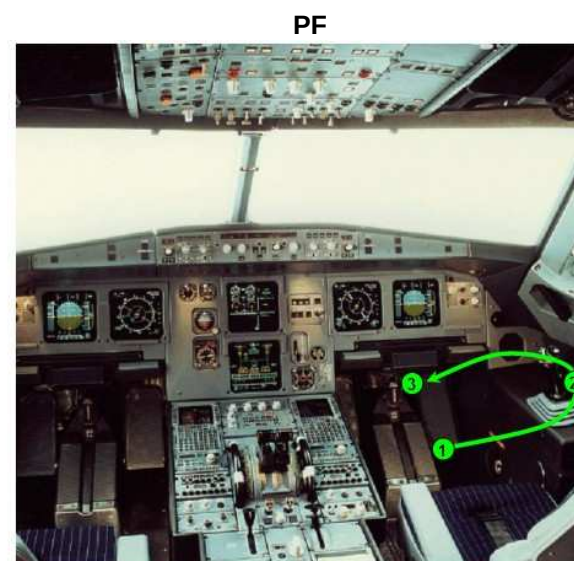


1	BRAKES RELEASED (wait GND Engineer)
2	EXTERIOR Check
3	TAXI LIGHTS

1.6. **TAXI** : During taxi : brake check, flight control check, rudder check



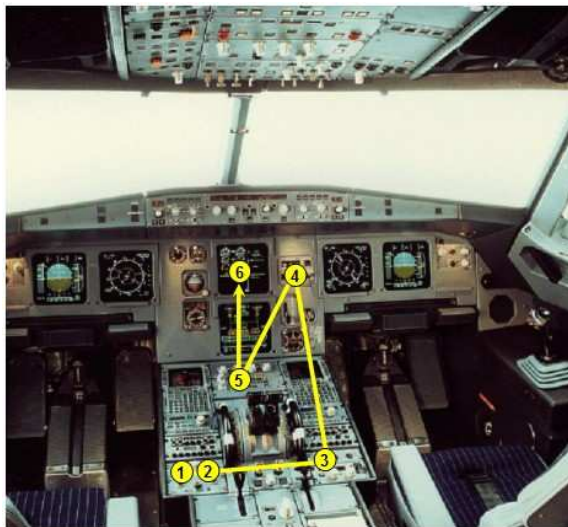
1	Pressure zero (for brake)
2	READ SD (System Display info)
3	READ SD
4	FLIGHT CONTROL check (PNF)



1	BRAKE CHECK
2	FLIGHT CONTROL CHECK (PF)
3	RUDDER
4	Check your side

1.7. **TAXI ACTION** : During taxi, just before Takeoff briefing confirmation

PNF



PF



1	WEATHER Radar ON		
2	PREDICTIVE Windshear ON		
3	ATC code set		
4	AUTO BRAKE set		
5	TO Configuration test		
6	TO no blue		

1.8. **TAKEOFF BRIEFING** : During taxi, before holding point

PNF

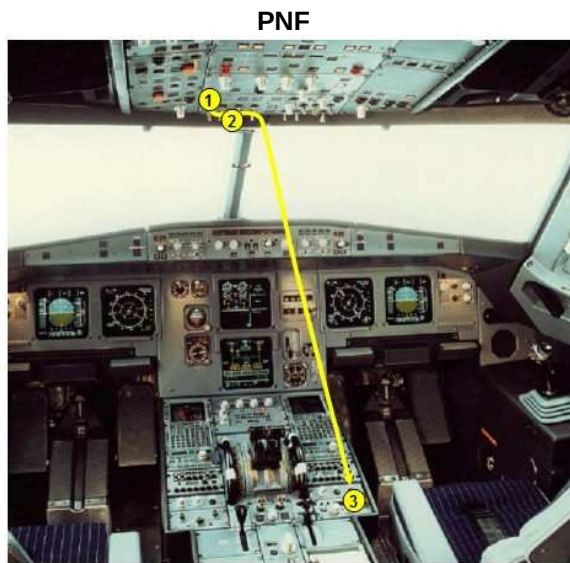


PF



		1	RWY
		2	GW
		3	FLAPS
		4	FLEX
		5	7000ft blue
		6	V1, VR, V2,

1.9. **BEFORE TAKEOFF** : When cleared to line up on runway (Lights ON, TCAS, CABIN ANNOUNCE)



1	STROBE ON	1	CABIN CREW (be seated for TO)
2	LIGHTS ON		
3	TCAS TA/RA		

1.10. **TAKEOFF** : When cleared for take off (100kts, V1, Rotate, Positive Climb, Gear up...)



1	PACS 1 OFF	1	TAKEOFF (THRUST)
2	PACS 2 OFF		
Standard callout			
3	THRUST SET		
4	ONE HUNDRED KNOTS		
5	V1	2	CHECKED
6	ROTATE		
7	POSITIVE CLIMB		
		3	GEAR UP

1.11. **1500 FT AGL:** When passing 1500ft above ground level : LVR CLB + (PACS ON)

PNF



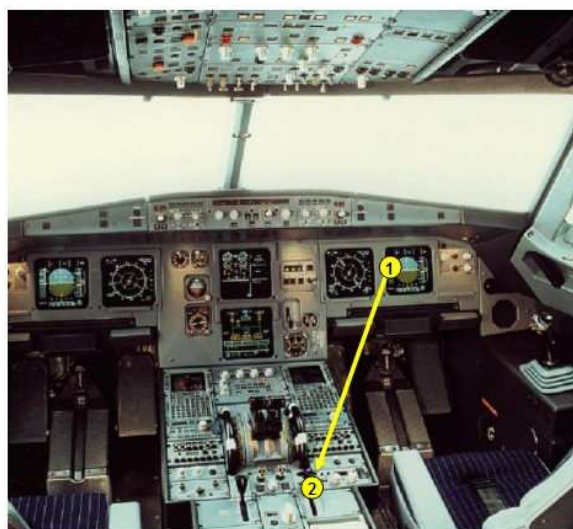
PF



1	PACS 1 ON (then 10s later)	1	LVR CLB
2	PACS 2 ON		

1.12. **3000FT AGL F-SPEED:** When passing 1500ft above ground level : Acceleration + clean aircraft

PNF



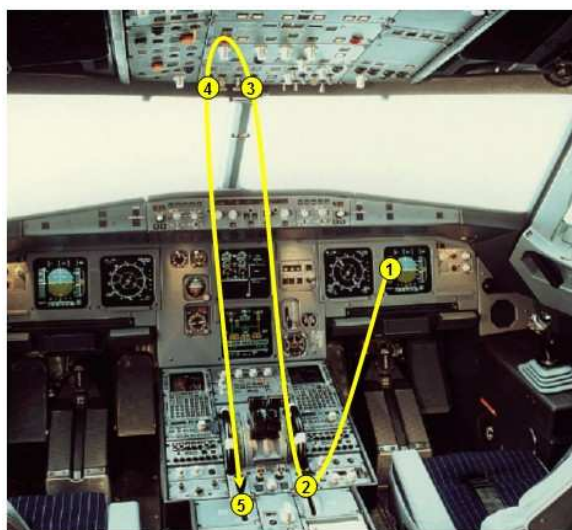
PF



1	SPEED Check	1	F-SPEED, FLAPS 1
2	FLAPS 1		

1.13. **S-SPEED** : At S-Speed, Flaps 0 + PNF Flow (EXT LIGHTS OFF + SPOILER Desarmed)

PNF



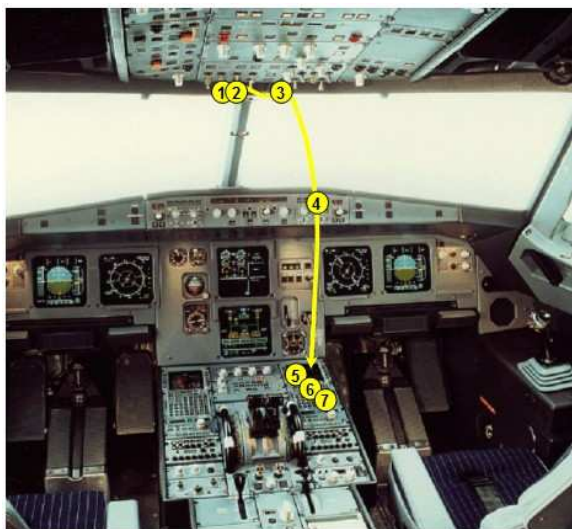
PF



1	SPEED Check	1	S-SPEED, FLAPS 0
2	FLAPS 0		
3	EXT R LIGHT OFF		
4	EXT L LIGHT OFF		
5	SPOILER Desarmed		

1.14. **CLIMB FL100** : When passing FL100

PNF

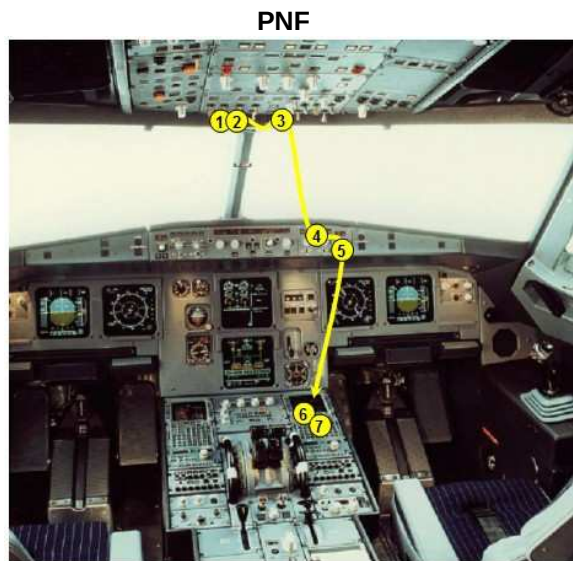


PF



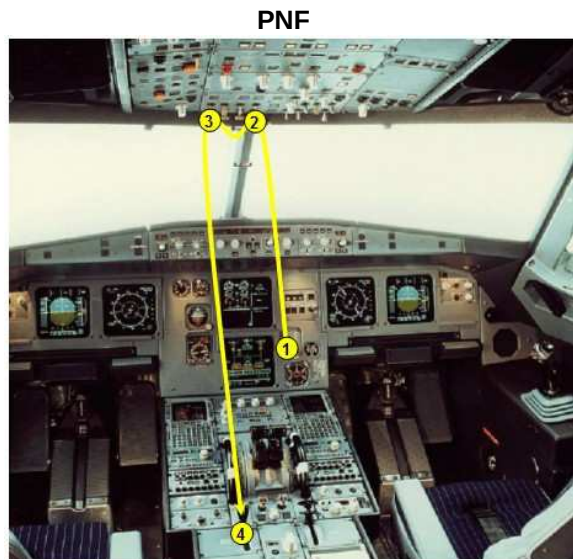
1	L LAND LIGHT OFF	1	EFIS OPTION (CSTR)
2	R LAND LIGHT OFF	2	EFIS Range
3	SEATBELT OFF		
4	EFIS OPTION (APT)		
5	SEC F-PLN Copy		
6	RAD NAV de hard tune		
7	OPT FL CRZ		

1.15. **DESCENT FL100** : When passing FL100



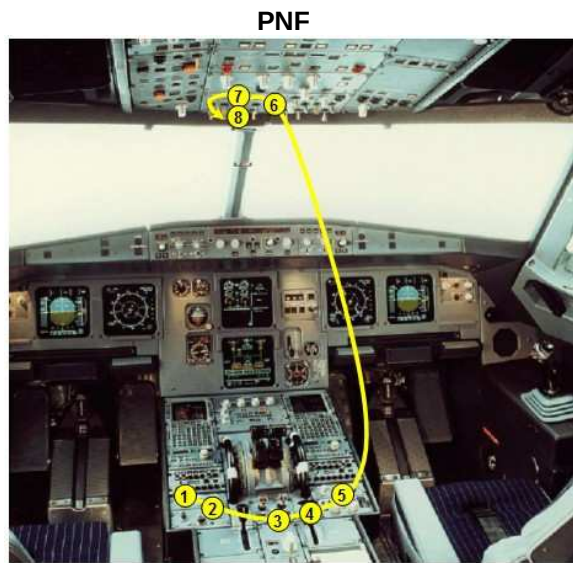
1	L LAND LIGHT ON	1	EFIS OPTION (CSTR)
2	R LAND LIGHT ON	2	LS KEYS ON
3	SEATBELT ON	3	FMS ACCURACY check
4	EFIS OPTION (Airport)		
5	LS KEYS ON		
6	FMS ACCURACY check		
7	MONITOR ACCURACY		

1.16. **GEAR DOWN** : During approach : FLAPS 1, FLAPS 2, Gear DN, FLAPS 3, FLAPS Full...



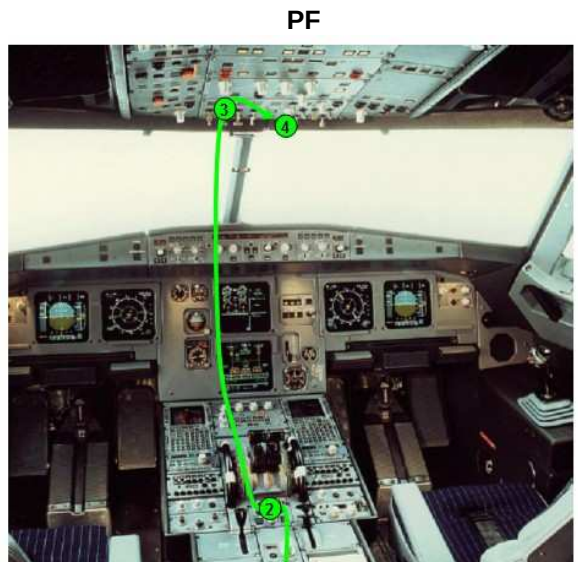
1	LANDING GEAR Down		
2	EXT R Light ON		
3	EXT L Light ON		
4	SPOILER Armed		

1.17. **AFTER LANDING:** When runway vacated, PF retract spoiler as a signal for PNF to perform actions



1	WEATHER Radar OFF	1	SPOILER Desarmed
2	PREDICTIVE Windshear OFF		
3	ENG MODE SEL : NORMAL		
4	FLAPS 0		
5	TCAS Stdby		
6	APU ON		
7	ENG ANTI-ICE as required		
8	LANDING LIGHT retract		

1.18. **PARKING :** On gate



1	APU BLEED OFF	1	PARKING BRAKE ON
2	L FUEL pump 1 OFF	2	ENG MASTER SWITCH OFF
3	L FUEL pump 2 OFF	3	BEACON OFF (when <10% N1)
4	CENTER FUEL pump OFF	4	SEAT BELT OFF
5	R FUEL pump 1 OFF		
6	R FUEL pump 2 OFF		

2. SUPPLEMENTARY TECHNICS

2.1. **VISUAL PATTERN** : As soon as ALT* is displayed on FMA

PNF



PF



1	Flashing Alt*		Flashing Alt*
2	FLAPS 1	1	LVR CLB
3	APPROACH PHASE ACTIVATED	2	Call Flaps 1
		3	Call Activate Approach phase

2.2. **DOWNWIND** : When ready to join downwind

PNF



PF



1	FD OFF		
2	TRACK FPA		
3	DOWNWIND Track		

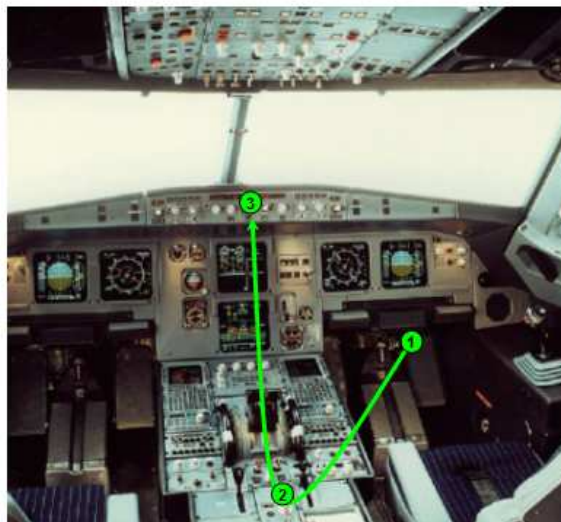
3. ABNORMAL PROCEDURES

3.1. ENGINE OUT : During take off, if an engine out occurs

PNF



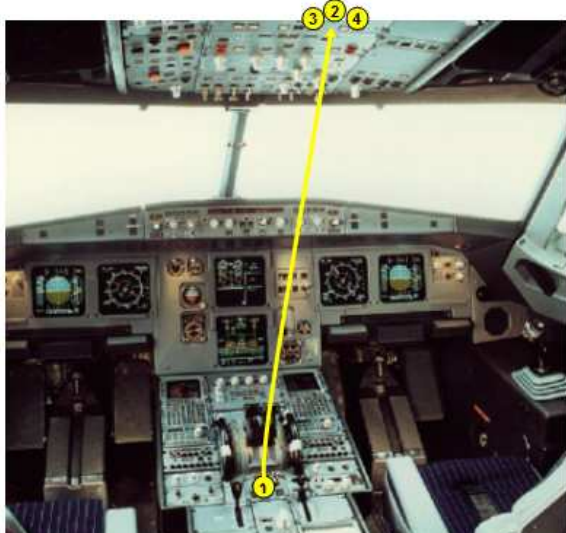
PF



1	ENG MODE SEL : IGN	1	RUDDER PEDALS adjusted
		2	RUDDER TRIM adjusted
		3	AUTOPILOT ON
			LVR MCT or TOGA (if necessary)
			At 400ft, call ECAM Actions
2	LVR 1 (or 2) IDLE		Confirm number 1 (or 2)
	Confirm number 1 (or 2)		LVR 1 (or 2) IDLE

IF DAMAGE : If some damages are declared (check N2 near 0)

PNF



PF

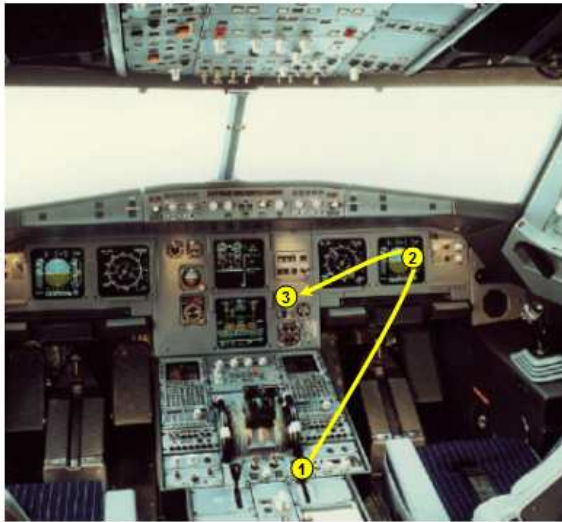


1	MASTER SWITCH ENG 1 OFF		Confirm number 1 (or ENG 2)
2	FIRE PUSHBUTTON ON		
3	DISCH 1 ON		
4	DISCH 2 ON		

Then for Non Precision Approach, **ONLY Selected Approach** is allowed

3.2. GO AROUND – ENGINE OUT :

PNF



PF



			Announce GO AROUND, FLAPS TOGA
1	FLAPS 1	1	
2	POSITIVE CLIMB		
			GEAR UP
3	GEAR UP		

Passing ACC ENG OUT :

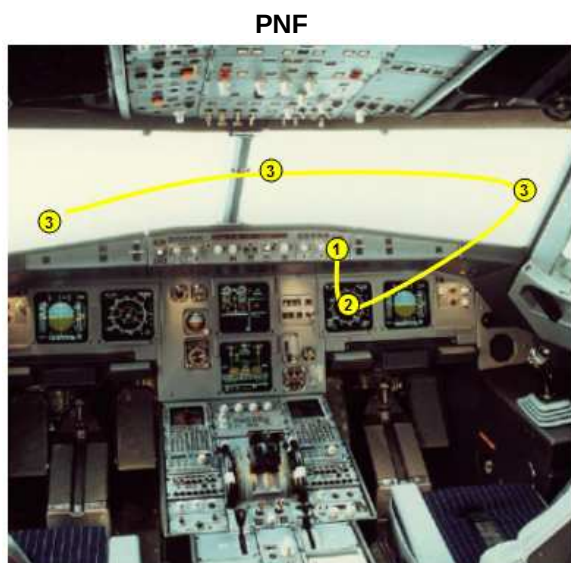
- PUSH TO LVL OFF
- Retract Flaps while A/C accelerates

At Green Dot :

- OPEN CLIMB
- LVR MCT (back to CLB then return to MCT)

4. MEMORY ITEMS

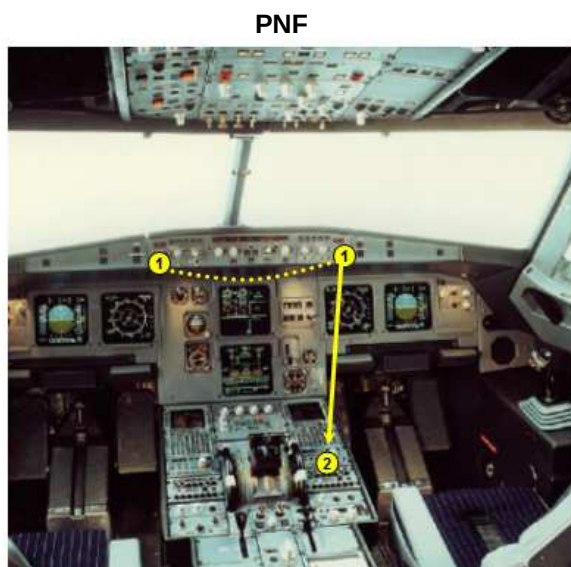
4.1. TCAS : **TRAFFIC, TRAFFIC !!!** PF announce : "TCAS, I have control"



1	EFIS OPTION : ARC 10
2	CHECK position on ND
3	CHECKOUT Traffic

1	T-CAS, I have control
2	EFIS OPTION : ARC 10
3	CHECK position on ND

4.2. TCAS : **CLIMB, CLIMB !!!** PNF inform ATC: "TCAS RA"



1	FD OFF
2	TCAS RA

1	AUTOPILOT OFF
2	ADJUST PITCH

Then when cleared of conflict, resume own navigation in accordance with ATC.

Reset SPEED, NAV, ALT, FD ON, AP ON

In HDG mode, check to cross initial NAV route to allow interception of track and arm NAV Mode (NAV blue).

4.3. WINDSHEAR : **WINDSHEAR, WINDSHEAR, WINDSHEAR !!!**

PNF



PF



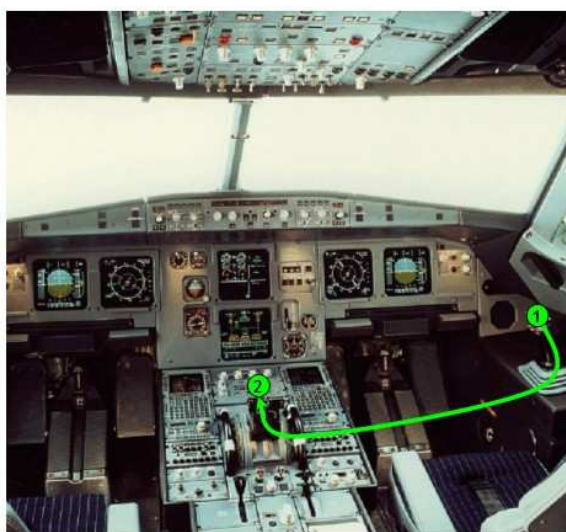
1	Monitor wind direction	1	TOGA
2	Check altitude		

4.4. GPWS : **PULL UP !!!** PF announce : “PULL UP, TOGA”

PNF

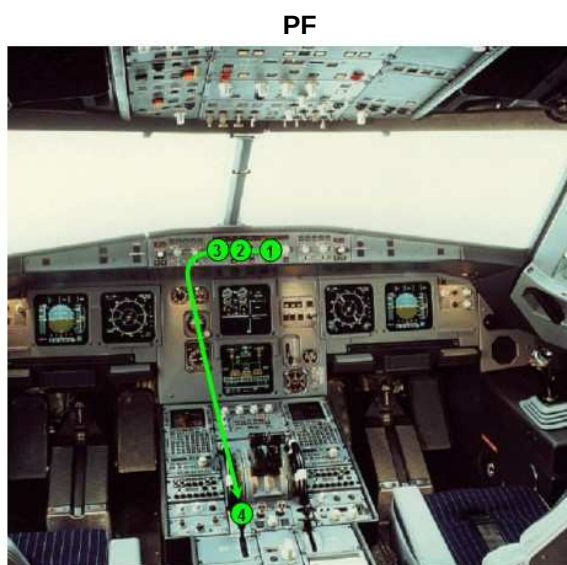
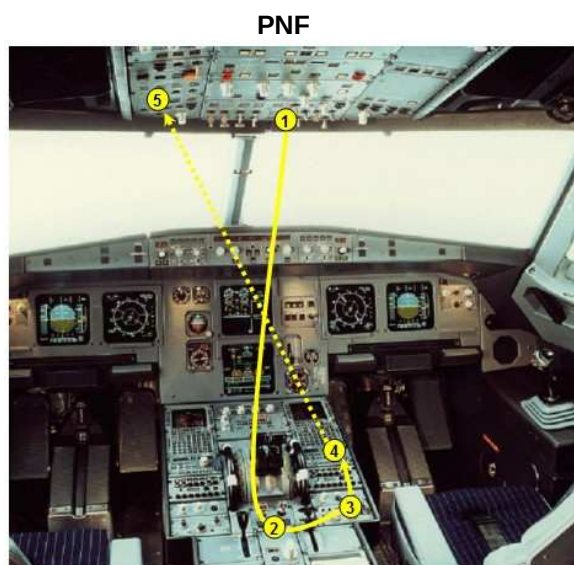


PF



		1	PULL UP
		2	TOGA

4.5. **EMERGENCY DESCENT** : As soon as a rapid depressurization occurs (Oxy masks + Flow)



1	SEATBELT ON	1	TURN ALT, PULL ALT
2	ENG MODE SEL : IGN	2	TURN HDG, PULL HDG
3	ATC code 7700	3	PULL SPEED
4	ATC Mayday, Mayday, Mayday	4	SPEED BRAKE Extend
5	PAX SYS ON (only if Atl>14000ft)		

4.6. **LOSS OF BRAKING** : In case of loss of braking during landing deceleration



2	NOSE WHELL/STEER OFF	1	RELEASE BRAKE
4	MONITOR 1000 PSI max	3	ADJUST BRAKE

2. SUPPLEMENTARY ITEMS

During cockpit preparation : IRS Align

- 1) Fast align -> OFF => NAV 1, 3, 2
- 2) If no GPS => enter LAT / LONG in FMS
- 3) Croscheck LAT/LONG entered like this

PNF		PF	
		1	Set LAT
		2	Read value
3	Check LAT on Jeppesen		
		4	Set LONG
		5	Read value
6	Check LONG on Jeppesen		

Message on FMS

- 1) Identify MSG
- 2) Interpret MSG
- 3) Clear MSG

During Start: Use of Anti Ice ON

On ground: SAT >-40°C and <10°C
In flight: TAT >-40°C and <10°C

During Approach: VOR Approach

Preparation	F-PLN RAD NAV PROG PERF	Select VOR Hard Tune Check Nav Accuracy HIGH (Dist/Bearing ⇔ Raw Data ND) Enter param
Arrival Briefing	Do not forget to detail level of automation Selected with Track/FPA Managed	
MDA	AP OFF FD OFF RWY Track	

During approach : ILS Approach

Preparation	Idem + Verify LS Keys Briefing APPR ARM (if no LOC)
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Management of Failure

- 1) I have Control and communications
- 2) ECAM Actions ECAM Action complete
- 3) No OEB, No computer Reset, No C/L
- 4) READ STATUS.....CLEAR STATUS
- 5) FORD