A320Type Rating Oral Study Guide

Updated 28/11/2011 (Ver. 1.2)

Emergency Equipment

Will the slides deploy if the over wing emergency doors were opened?
Yes, the slides are always armed.

ADIRS Panel

What does the amber ON BAT light indicate?
The aircraft batteries are powering one or more IR(s). Also comes on for 5 seconds at the beginning of a complete IRS alignment.

How do you fast align an IR?
Turn the NAV selectors OFF momentarily (not more than 5 seconds) and then back on.

What does steady illumination of the amber IR FAULT light indicate?
The respective IR is lost.

What does flashing of the amber IR FAULT light indicate?
Attitude and Heading information may be recovered in ATT mode (you have lost the navigation portion).

What does the amber ADR FAULT light indicate?
A fault is detected in the Air Data Reference system.

What Info does the IR supplies?
Heading, Attitude, Angular rate, Flight path vector, Track, Acceleration, Ground speed, Aircraft position.

What Info does the ADR supplies?
Altitude, airspeed, mach, over speed warning, angle of attack, temperature,

What would be missing on the Captain's PFD if IR 1 failed or was turned OFF?
Attitude and navigation information

What action would recover the attitude and navigation information?
Selecting CAPT 3 on the EIS switching panel ATT/HDG selector

When do we need to select ATT and what must be done after selecting it?
We can select ATT If the IR system loses its ability to navigate (indicated by flashing fault light).
AFTER selecting ATT (A/C must be level with constant speed for 30 seconds) the heading must be entered through the MCDU and has to be reset frequently (about every 10 minutes). Check QRH ABNORMAL PROCEDURES (IR ALIGHNMENT IN ATT).

With the loss of ADR 1, what would be lost on the Captains PFD?
Airspeed and Altitude

What would restore the lost altitude and airspeed information?
Selecting CAPT 3 on the EIS Switching Panel AIR DATA Selector

FLT CTL Panel

What does ELAC stand for?
Elevator Aileron Computer

How many ELAC's on the Airbus? And what do they control?

2 ELAC's they control elevator, aileron and stabilizer.

What are the functions of the ELAC?

- Normal pitch, Alternate pitch, direct pitch.
- Normal roll, direct roll
- Abnormal attitude
- Aileron droop
- Acquisition of autopilot orders

Under Normal Law, what does ELAC 1 control?

- Primary - Aileron control (roll)
- Standby - Elevator / Stabilizer control (backs up ELAC 2)
- Provides 5° aileron droop

Under Normal Law, what does ELAC 2 control?

- Primary - Elevator / Stabilizer (pitch)
- Standby - Aileron control (backs up ELAC 1)

What backs up ELAC 2?
ELAC 1 -> SEC 2 -> SEC 1

What does happen to the ELACs if all ADIRS Where lost?
We loss ELAC functions

What does SEC stand for?
Spoiler Elevator Computer

How many SEC's are installed?
3

What functions are performed by the SEC's?

- Normal roll, Direct roll (by controlling the spoilers).
- Alternate pitch, Direct pitch (SEC 1 & 2 only)
- Speed brakes and ground spoilers (SEC 1 & 3 only).
- Abnormal attitude.

Under Normal Law, what do the 3 SEC's control?

- Primary – Spoiler control (roll)
- Standby – Elevator / Stabilizer control (SEC 1 & 2 back up the ELAC's)

What is the sole purpose of SEC 3?
Spoiler control

What does FAC mean?
Flight Augmentation Computer

How many FAC's are installed?
2

Under Normal Law, what functions do the FAC's provide (FLY-W)?

- **F**light envelope function (PFD speed scale, Min & Max speed, maneuvering speed computation, Alpha floor).
- **L**ow Energy Warning Protection ("Speed, speed, speed")
- **Y**aw function – (Yaw damping and turn coordination, rudder trim, rudder limiter)
- **W**indshear detection function.

If both FAC's fail, is rudder available?
Yes by rudder pedals.

If both FAC's fail, is maximum rudder deflection available?
Yes, after slat extension.

What is the computer and priority for the Ailerons?
ELAC 1 -> ELAC 2

What is the computer and priority for the Elevator and Stabilizer?
ELAC 2 -> ELAC 1 -> SEC 2 -> SEC 1

How are the flight control surfaces controlled and actuated?
All surfaces are controlled electrically and actuated hydraulically.

When is the automatic pitch trim available?
In flight under Normal law with bank angle less than 33° with or without autopilot engaged.

If the active elevator actuator fails, what occurs?
Control is transferred the other actuator.

How roll control is normally achieved?
1 aileron and 4 spoilers on each wing

What items will degrade if we loss ELAC 1 and SEC 2?
Nothing, ELAC 2 and sec 1 will back them up.

In case of an elevator fault (left or right) what happen to the spoilers?
Spoilers 3 and 4 are inhibited.

What happen to spoilers if electric is lost?
Spoilers retract to zero.

When do the ailerons go to the damping mode?
Failure of ELAC 1 & 2

In alternate law, when does the aircraft go to flare mode?
With landing gear down

How many motors in the vertical stabilizer?
3 motors

When does the stab trim go to zero?
Aircraft on ground and pitch below 2.5 degrees' for 5 seconds

When do we get 1+F configuration?
In takeoff and go-around, (Speed 210)

EVAC Panel

What is the function of the CAPT and (CAPT&PUR) SWITCH?

- CAPT position (the alert may only be activated from cockpit)
- CAPT & PURS position (alert may be activated from cockpit or cabin)

  Note**:** EVAC indications are (EVAC light flashes red in cockpit and flight attendant panels-evacuation tone sounds).

If CAPT&PUR switch was set to CAPT and a CMD pb was pressed in the cabin, what indications do we have?

Only the cockpit horn sounds for 3 sec.

EMER ELEC PWR Panel

What buses are powered by the emergency generator?

- AC ESS BUS
- DC ESS BUS
- AC SHED ESS
- DC SHED ESS
- ESS TR

What does the red FAULT light on the RAT & EMER GEN pb indicate?
Emergency generator is not supplying power when AC bus 1&2 are not powered, also during the 8 second RAT
Extraction

What is the function of the RAT & EMER GEN pb?

- AUTO – RAT will automatically extend if AC BUS 1 & 2 are not powered and airspeed > 100 knots and landing gear is up.
- MAN - extend the RAT at any time

What powers the emergency generator?
Blue hydraulic power from the RAT

Is there another way to deploy the RAT?
Yes, from the HYD panel.

What is different about this deployment?
Blue HYD pressure only – NO generator.

Do pilots ever use the EMER GEN TEST pb?
No – maintenance function only.

What happens when you push the GEN 1 LINE pb?

- The GEN 1 Line Contactor opens and the white OFF light illuminates
- AC BUS 1 is powered by GEN 2 through the BUS TIE CONTACTOR
- GEN 1 powers #1 fuel pump in each wing tank

When is this procedure used?
Smoke procedures

What does the SMOKE light in the GEN 1 LINE pb indicates?
Smoke detected in the avionics ventilation ducting.

Will there be any other indications of avionics smoke?
ECAM warning and amber FAULT lights in the EXTRACT and BLOWER pbs on the VENTILATION panel.

GPWS Panel

Pressing the SYS pb does what?
Inhibits all basic GPWS alerts (mode 1 to 5), the predictive mode (TERR) want be effected.

What does an amber FAULT light in the SYS pb indicate on the GPWS panel? Is the terrain mode affected?
Any failure of GPWS mode 1 through 5, NO terrain mode is not affected.

What does an amber FAULT light in the TERR pb indicate on the GPWS panel?
Predictive mode fail, terrain is not shown on the ND.

What does LDG FLAP 3 ON light indicate?
Mode 4 "Too Low Flaps" inhibited for a Flap 3 landing, land MEMO displays FLAP 3 instead of full.

What does FLAP MODE OFF light indicate?
Mode 4 "Too Low Flaps" is inhibited when landing with less than Flap 3.

What are the 5 basic GPWS modes?

1- Excessive rate of decent (sink rate)
2- Excessive terrain closure (terrain terrain)
3- Altitude loss after T/O (Don't sink)
4- Unsafe terrain clearance (too low flap ,,too low gear)
5- Excessive GS deviation (Glide slop)

What are the predictive functions of GPWS based on?
The predictive functions are based on a worldwide terrain database, and on the modeling of the clime performance capability of the aircraft.

What do they provide more over the normal GPWS 5 basic functions?

- Terrain clearance floor (TCF)
- Terrain awareness display (TAD)

Note**:** the predictive functions give additional time for the crew to respond

What is inhibited if the GPWS predictive functions are operative?
GPWS Mode 2 is inhibited.

RCDR Panel

When do the RCDR and CVR normally operate in AUTO?

- On the ground, for 5 minutes after electrical power is supplied to the aircraft
- When at least 1 engine is operating
- In flight
- Stops 5 minutes after the last engine is shut down

What does the CVR record?
ACP's and cockpit area microphone, PA announcements if PA reception is selected on the 3rd ACP

How do you erase the RCDR tape?

- RCDR ON
- Aircraft on the ground
- Parking Brake ON
- Press the CVR ERASE pb (2 seconds)

OXYGEN Panel

What does the PASSENGER SYS ON light mean?
The signal to release the oxygen mask doors has been sent.

When do the masks automatically deploy?
When cabin altitude exceeds 14,000 feet (+250,-750)

What method is used to supply passenger cabin supplemental oxygen?

Chemical generators supply pure oxygen under positive pressure for about 22 minutes.

Above what cabin altitude will the crew oxygen masks provide 100% oxygen regardless of the position of the N/100% selector?
35,000 feet, also over pressure supply is automatically started at 35,000 cabin altitude.

What happens during the preflight when you push to extinguish the CREW SUPPLY OFF light?
It opens a valve to supply low-pressure oxygen to the masks (normal position in flight).

What would you notice on the DOOR ECAM?
The"CKPT OXY" would change from amber to green.

What indication would you have of a crew oxygen cylinder thermal discharge?
The green disk on the lower left side of the forward fuselage would be missing.

When amber half frame box appears on ECAM DOOR page, what does that mean?
Oxygen pressure is less than 1000 psi.(refer to OPERATING LIMITATIONS to check if the remaining quantity is not below MINMUM).

CALLS Panel

What happens when you press the EMER pb?

- Pink light flashes at all area Call Panels
- EMERGENCY CALL appears on all attendant indication panels
- High-low chime (repeated 3 times) sounds throughout the cabin loudspeakers

What happens when the F/A's initiate an emergency call?

- The white EMER ON light and amber CALL lights flash
- The amber ATT lights flash on all ACP's
- 3 long buzzers sound in the cockpit
- System resets when the attendant hangs up the relevant systems

RAIN Panel

What is the maximum windshield wiper operation speed?
230 knots

When the rain repellent is inhibited?
On the ground and engines are stopped.

EXT LTS Panel

If the RWY TURN OFF, LAND, and NOSE switches are all in the ON position, which lights automatically extinguish after takeoff?
The NOSE and RWY TURN OFF lights extinguish after landing gear retraction.

Why do we have 2 positions for the NAV & LOGO switch?
We have 2 sets of navigation lights (2 bulbs) on each wing tip and at the tail cone.

When does the LOGO light illuminate with the switch is in 2 or 1 position?
Main landing gear strut compressed or flaps extended at least 15 degrees.

What position should the STROBE switch be in during preflight?
AUTO

When do the strobes flash in AUTO?

When the main landing gear strut is not compressed

APU Panel

What does the green AVAIL light on the APU START pb indicate?
The APU is available to provide electrical power and/or bleed air.

With the APU green AVAIL light ON and the EXT PWR green AVAIL light on, which system is powering the aircraft?
APU

During the cool down cycle can you still use the APU?
Yes, press the APU MASTER SW pb.

The APU generator can supply 100% load to what altitude?
25,000 feet

The APU can supply bleed air to what altitude?
20,000 feet

What does an amber FAULT light in the APU MASTER SW pb indicates?
An APU auto shutdown has occurred.

What would normally cause an APU shut down? List some failures

Fire (**on ground only**)	over speed
No acceleration	slow start
Low oil pressure	high oil temperature
Air inlet flap not open	

DC power loss (BAT OFF when air craft on batteries only)

What does an amber FAULT light in the APU BLEED pb mean?
APU bleed leak.

Does APU air or electric have priority?
Electric

SIGNS Panel

When will the (FASTEN SEAT BELT & NO SMOKING) signs illuminate with the respective switches set to auto?

- Slats (17 degrees') **OR** landing gear is extended.
- If cabin altitude goes above 11300 feet (+,-350) the cabin will illuminate and the SEAT BELT,NO SMOKING signs come on regardless of the switches positions.

When will the Exit markers automatically illuminate?

With the EMER EXIT LT switch in ARM, and

- Normal AC power is lost or
- DC SHED ESS BUS power is lost

When will the EXIT signs automatically illuminate?

With the EMER EXIT LT switch in ARM, and

- Normal AC power is lost or
- DC SHED ESS BUS power is lost
- the cabin alt is high (11300+_350)
- When NO SMOKING signs come on.

When will the overhead emergency lights and proximity emergency escape path marking come on automatically?

With the EMER EXIT LT switch in ARM, and

- Normal AC power is lost or
- DC SHED ESS BUS power is lost or
- AC BUS 1 failed.

What lights illuminate when the EMER EXIT LT switch is placed to ON?

- Overhead emergency lighting
- Floor proximity marking system
- EXIT signs

What occurs when the EMER EXIT LT switch is placed to OFF?

- All lights OFF
- Amber EMER EXIT LT OFF light illuminates

What is the power source of the overhead emergency light and the EXIT signs?
DC SHED ESS BUS and if failed emergency internal batteries for 12 minutes.

Why do we keep NO SMOKING sign in auto?
To allow permanent charge of the emergency batteries from DC SHED ESS BUS.

INT LTS Panel

What flight deck lighting is available if normal electrical power is lost?

- Captain's Instrument Panel
- Right Dome Light (provided DOME switch set in DIM or BRT)
- Standby Compass

ANTI ICE Panel

Is the engine anti-ice part of the normal pneumatic system?
No – it is a separate system independent of the pneumatic ducting.

What does a FAULT light in the ENG ANTI ICE pb indicate?
Switch- valve disagreement

With ENG ANTI ICE ON what indications will you see?

- Blue ENG ANTI ICE light ON
- ECAM: ENG ANTI ICE
- N1 limit is reduced (amber tick on N1 indicator)
- N1 idle is increased.

What should you do if there is significant engine vibration due to ice?
Increase N1 to 70% for a minimum of 15 seconds prior to selecting a higher thrust.

With engine anti-ice ON, is your descent affected?
Yes, because idle thrust is increased.

Can you use the wing anti-ice on the ground?
No

What happens if you turn the switch on the ground?
The wing anti-icing valves will open for a 30 second test.

What part of the wing is heated?
Out board 3 slats.

When do the wing anti-ice valves automatically close?

- On landing
- Bleed leak detected
- Loss of electrical power

Can you use the APU bleed for wing anti-ice?
No

What does the amber FAULT light in the WING ANTI ICE pb indicate?

- Low pressure is detected
- Switch- valve disagreement

In what position do the Wing and Engine Anti-Ice valves fail if electrical power is lost?

- Wing – valves CLOSE
- Engine – valves OPEN

PROBE/WINDOW HEAT Panel

With the PROBE/WINDOW HEAT pb in AUTO, when will the probes and windows heated?
In flight OR
On ground with one engine running (except TAT probes)
Note: Windshield and pitot heat operate at low power on ground and normal on flight.

What does the PROBE/WINDOW HEAT pb do in the ON position? When do we normally do that?
Probes and windows are heated permanently; blue light comes on (windshield, side windows, Pitot tube, static port, TAT)
We set the switch to on after preliminary cockpit preparation in cold weather operation.

CABIN PRESS Panel

What does the DITCHING pb do?
Closes all valves below the flotation line

Which valves are below the floating line? (ROPA)

- **R**am air inlet (1)
- **O**utflow valve (only if in AUTO mode)(1)
- **P**ack Flow Control valves (2)
- **A**vionics ventilation Inlet and Extract valves (2)

Will the DITCHING pb always close the outflow valve?
No, the outflow valve will not close if it's under manual control.

Can the pilot control the outflow valve?
Yes, select MAN on the MODE SEL and use the MAN V/S CTL switch.

How many controllers are in the pressurization system?
2, only one is used at a time, and they swap roles 70 second after landing or when the active system fails.

How do you manually switch between controllers?
Switch MODE SEL to MAN for 10 seconds, then back to AUTO

What does an amber FAULT light in the MODE SEL pb indicate?

Both automatic pressure controllers are faulty.

The LDG ELEV selector is in the AUTO position, what is the data source for pressurization schedule?
The pressurization system uses the FMGS data to construct an optimized pressurization schedule.

When out of the AUTO position, what is different?
The pressurization system uses the manually selected landing elevation.

What depressurizes the aircraft in case of residual pressure after landing? How does it work?
Residual pressure control unit, it automatically opens outflow valve when**:**

- Valve not fully open
- Both pressurization controllers failed
- Aircraft on ground
- All engines are shutdown or all ADIRS indicate airspeed below 100 kts.

What protects the airframe from excessive cabin differential pressure?
2 pressure safety valves.

How many motors does the outflow valve have?
3 – One for each automatic controller and one for manual control.

What is the ABORT mode in auto cabin pressurization and what does it do?
It will prevent cabin from climbing in case you need to return to your departure point, conditions for this mode are**:** ALT <8000 feet **OR** a change of altitude <5000 feet
A/C rate of decent >200 feet per minutes for 30 seconds

AIR CONDITION Panel

What monitors and controls the pneumatic system?
2 Bleed Monitoring Computers (BMC), Each BMC receives info about bleed pressure, temperature and valve position.
Each system selects the proper compressor stage to be used as a source of air
Regulates the bleed air pressure
Regulates the bleed air temperature

If one BMC fails, can the other take over?
Yes, they are interconnected. **But** If BMC 1 fails:

- APU and ENG 1 leak detection are not monitored
- ECAM APU BLEED LEAK warning is lost

On the ECAM Bleed page, how do you tell if GND HP air supply is connected?
The GND unit temperature and pressure are indicated on the ECAM BLEED PRECOOLER #1

When HI flow rate is automatically selected regardless of the pack flow switch position?

- Single pack operation
- APU bleed supply
  Note: If LO is selected, the pack flow can be automatically selected up to 100% (normal) when the cooling demand cannot be satisfied.

What would cause amber PACK FAULT light to illuminate (PCS)?

- **P**ack outlet overheat
- **C**ompressor outlet overheat
- **S**witch position disagreement with pack flow control valve

Note: FAULT light will be illuminated during preflight as no bleed air is supplied.

What does the amber FAULT light in the APU BLEED pb indicate?

Bleed leak (APU bleed valve closes)

What causes the amber FAULT light on the ENG BLEED pb? (BBOOL)

- **B**leed valve is not closed during Engine **s**tart
- **B**leed valve is not closed with APU bleed on
- **O**verpressure downstream of the bleed valve.
- **O**verheat
- **L**eak (wing or engine leak on the related side)

What are the two functions of the engine bleed valves?

- Pressure regulation
- Shut off valves

What is the RAM AIR pb used for?

- Smoke removal from cabin
- Ventilation of cockpit and cabin with a dual pack failure

When will the RAM AIR valve open if selected ON?

- ΔP IS less than 1 PSI.
- Ditching is not selected.

What logic controls the X-bleed valve when the X-BLEED switch is in AUTO?

- The X-Bleed valve is open when APU bleed valve is OPEN.
- the X-Bleed valve is closed when APU bleed valve is CLOSED,
- the X-Bleed valve is closed when a leak is detected in **wing** or **pylon** or **APU** (except during engine start)

How many motor drives the x bleed valve?

2 electric motors

What causes the Pack Flow Control valve to automatically close?

- Upstream pressure below minimum
- Compressor outlet overheat
- Engine start sequence
- Engine FIRE pb on the related side pressed.
- DITCH pb is selected

What does the amber HOT AIR FAULT light indicate?

- Duct overheat is detected (The Hot Air and Trim Air valves will close automatically).
- Valve disagreement

When will the hot air valve close?

- No air
- duct over heat
- Cockpit trim air valve fail
- Cabin trim air valves fail (both)
- 2 lane of one ACSC fail.

What is the function of the HOT AIR pb?

It controls the hot air pressure regulator valve which controls the flow of hot air to the trim air valves. This hot air is mixed with the pack-conditioned air for zone temperature control.

How many Air-conditioning system Controllers (ACSC) are there?

2 ACS controllers to monitor the temperature of 3 zones (cockpit, forward cabin, aft cabin)

How many lanes on each ACS Controllers? And how do they operate?

2 lanes (one active and one standby) if both fails the related pack is lost.

Describe how the air conditioning system controls the temperature in each zone.

- Pack output temperature regulation is determined by the zone requiring the coldest air
- Hot air is added to the individual zones by the trim air valves to maintain the desired zone temperatures

If an air cycle machine (ACM) fails, what occurs?
The affected pack will operate in heat exchanger cooling mode.

What happens to the pack flow control valves during engine start? (Normal engine start using APU)
The pack flow control valves (for both engines if x-bleed is open) will close automatically when engine mode selector is set to ignition (to allow **ALL** of the APU bleed to start the engines)-if the master switch is not selected to ON within 30 second they will open again-they close when ever master switch in ON
After the start sequence is completed **OR** the engine mode selector is set back to NORM the pack control valve opens.

After engine start with the APU BLEED pb ON, what source is supplying bleed air to the packs?
APU Bleed, it has priority over the engines bleed.

When does the Lavatory/Galley Extract Fan operate?
Continuously when electrical power is available

ELECTRIC Panel

Will the batteries completely drain if you leave the BAT switches in AUTO after AC power is removed?
No. Battery cut-off logic prevents complete discharge when the aircraft is on the ground and unpowered.

How the BATTERY BUS is normally powered?
DC BUS 1 through a DC tie contactor

What does the amber FAULT light in the (GALY &CAB) pb indicate?
The load on any generator is more than 100% of rated output.

How does the GALLEY pb work in AUTO?
Main galley, secondary galley buses are powered.
The main galleys are automatically shed:

- **IN FLIGHT :** when only one generator is operating
- **ON GROUND:** Only 1 ENGINE generator is operating (All galleys are available when APU GEN or EXT PWR is supplying power).

When galley SHED is displayed on ECAM?

- When only one GEN supply the aircraft
- When galley switch is off.

What does a FAULT on the ENG GEN pb indicate?

- The associated generator control unit (GCU) trips it.
- The generator line contactor is open (switch is not selected off).

When is it normal to see the ENG GEN FAULT light illuminated?
Prior to engine start

What does the APU GEN FAULT light indicate?

- The associated generator control unit (GCU) trips it.
- The generator line contactor is open (switch is not selected off).

When is the APU GEN FAULT light inhibited?

- APU speed too low
- Line contactor OPEN after EXT PWR or ENG Generator takes over

What is the function of the BUS TIE pb in the AUTO position?

The bus tie contactors (BTCs) automatically open or close to maintain power supply to both AC BUS 1 & 2

One contactor is closed when **:**

One engine generator supplies the associated AC BUS, and APU GEN or EXTERNAL power supplies the other side.

Both contactors are closed when **:**

During single-engine operation or operation on APU or external power

In emergency configuration and the emergency generator failed, can we start the APU in flight?

No, only on ground and speed below 100 knots (only then the batteries will be connected to the DC BAT BUS).

In emergency configuration with the emergency generator online can you start the APU on flight?

Yes, below FL250 when the APU MASTER pb switch is set to ON the batteries are connected to DC BAT BUS for 3 minutes. (DC BAT BUS must be powered to start APU).

What happen below 100 & 50 Knots when EMRG GEN power the aircraft?

Below 100 Knots DC BAT BUS is automatically connected to the battery.
Below 50 Knots AC ESS BUS is automatically shed leading to loss of CRT, s.

What will happen if we have a failure in TR1?

The DC bus 2 will power all DC buses.

If TR1 and TR2 where lost, what buses will be un-powered?

DC bus 1 and 2 and DC bat bus will be unpowered and DC ESS BUS will be powered by ESS TR.

Do we have to push BUS TIE pb to keep AC BUS 1&2 powered?

NO it's an automatic function.

What does IDG stand for?

Integrated Drive Generator

What is the function of the IDG?

Converts variable engine speed to constant speed for optimum generator operation

What does an IDG FAULT light indicate? When is it inhibited?

- Oil pressure low (inhibited when N2 < 14%)
- Oil outlet temperature overheat
- Light is inhibited when IDG is disconnected

What precautions must you take when disconnecting an IDG?

- Do not disconnect when the engine is not operating or wind-milling
- Do not hold button longer than 3 seconds

Note**:** Only maintenance personnel can reconnect the IDG

What is the function of the AC ESS FEED pb in the normal position? When do we need to push it?

If AC BUS 1 is lost AC BUS 2 automatically feeds the AC ESS BUS. Only when asked by a checklist.

What does the AC ESS FEED pb white (ALTN) light indicate? What does FAULT light indicate?

The AC ESS BUS is supplied by AC BUS 2 (Manually selected) **/** fault light comes on when AC ESS BUS is not powered.

What is the purpose of the static inverter? What powers it?
To provide AC power to a part of the AC ESS bus from the battery number 1 if only the batteries are supplying electrical power to the aircraft.

When is static inverter activated?
When the aircraft is only powered by the batteries (Speed <50 kts BAT1&BAT2 switches must be in auto) (Speed >50 kts regardless of the BAT1&BAT2 switches position)

How is the Battery check accomplished?
- Select ECAM ELEC page
- Switch BAT 1 & 2 OFF, then ON
- Check charging current below 60 amps and decreasing within 10 seconds

What does a BAT FAULT light indicate?
Battery charging current is outside limits (An indication that battery is faulty).

When are the batteries connected to the BATTERY BUS?
- APU start
- Battery charging (less than 26.5 v)
- AC BUS 1 & 2 not powered and airspeed below 100 knots

What is the priority sequence for electrical power?
- 1. Engine Generators
- 2. EXT PWR
- 3. APU Generator
- 4. RAT Emergency Generator
- 5. Batteries

With the APU green "AVAIL" light on <u>and</u> the EXT PWR" AVAIL" light on , which system is powering the aircraft?
APU

What is the significance of the green collared circuit breakers on the flight deck?
- Green – Monitored by ECAM system
- Red – Wing tip brake C/B (Don't reset)
- black – Not monitored by ECAM

<u>FUEL Panel</u>

What is the normal in-flight fuel management scheme?
Use center tank first, then the wing tanks.

How many fuel pumps are installed?
- 2 in each wing tank
- 2 in center tank
- 1 APU pump to provide fuel to the APU when the tank pumps are off
-

When the center tank fuel pumps operate in auto mode when do they come on? When do they stop?
- On For 2 minutes after BOTH engines are started (if slats are UP will continue to run)
- After slat retraction
- They stop 5 minutes after center tank low level is reached
- They stop when inner tank overfill from fuel returned from IDG cooling SYS until 500 kg is burned from inner tank

What will cause a FUEL MODE SEL PB FAULT light?

- Failure of the AUTO mode
- Center tank has more than 250 kg and either wing tank has less than 5000 kg.

When do the main tank outer cells drain into the inner tanks?
When the inner tank quantity reaches 750 kg

If only one inner tank reaches 750 kg, what happens to the other transfer valve?
All 4 transfer valves open.

Once opened to transfer fuel, how are the fuel transfer valves closed?
Automatically at the next refueling operation

How is the IDG cooled?
By fuel from the HP fuel pump drawn in from the fuel manifold and then returned to its respective outer tank. When full the outer tank spills over to the inner tank.

If the IDG return fuel fills the wing tanks, what occurs?
The center tank pumps turn off until the wing tank quantity reduces by 500 kg.

What does an amber FAULT light in the FUEL PUMP pb indicate?
Fuel delivery pressure drops.

If the wing tank pumps fail, is suction feeding possible?
Yes – only from the **inner** wing tank.

Can fuel be transferred from one tank to another?
Only during ground refueling.

With full wing fuel what prevents the IDG fuel from overflowing the wings?
Separate full level switches.

Why does the fuel system keeps fuel in the outer wing tanks and drain them last?
For wing bending and flutter relief

What feeds the APU if all fuel pumps are off?
Special pump feeds APU start if fuel pressure low.

What does the REFUEL message on the ECAM indicate?
The refueling control panel door is not closed.

What does amber half boxed ECAM FOB indicates?
Some fuel is unusable.

HYDRAULIC Panel

Can the aircraft be flown with a loss of all hydraulic systems?
No – you must have at least one.

What occurs when you press the RAT MAN ON pb?
The RAT extends providing pressure to the BLUE hydraulic system.

Does the PTU transfer hydraulic fluid?
No

How many hydraulic pumps are in the GREEN system?

- 1 Engine
- 1 PTU

How many hydraulic pumps are in the BLUE system?

- 1 Electric
- 1 RAT

How many hydraulic pumps are in the YELLOW system?

- 1 Engine
- 1 Electric
- 1 PTU
- 1 Hand pump

When does the BLUE ELEC PUMP operate when set to auto?
If AC power is available the electric pump operates on**:**

- In flight
- On ground if one engine is running
- If the BLUE PUMP OVRD pb on maintenance panel was pushed.

What is normal system hydraulic pressure?
3000 PSI +-(200)

Does the RAT automatically deploy with the loss of BLUE pressure?
No, it must be deployed manually by the RAT MAN ON pb.

If the ACCU PRESS indicator is low, what should you do?
Obtain ground clearance, and then turn ON the YELLOW ELEC PUMP to pressurize the accumulator.

When does the PTU operate with pb in AUTO?

- With a difference of 500 PSI between GREEN and YELLOW pressure
- During the second engine start for an automatic test.

When is the PTU inhibited?
On ground:

- PTU pb OFF
- First Engine start
- One engine is running and Parking brake is ON or NWS deactivation pin installed.
- Cargo door operation

If the ECAM actions lead you to turn OFF the PTU for a Reservoir Overheat, will the FAULT light go out?
No, not until the overheat subsides.

If the FAULT light in the PTU pb is ON, are there any other indications on the HYD Panel?
Yes – also a FAULT light illuminated in the respective ENG PUMP pb.

When is the blue pump inhibited?
On ground with both engines shutdown

Name several items that run from only the GREEN system?

- Landing gear
- Normal Brakes
- #1 Thrust reverser

Name several items that run from only the YELLOW system?

- Alternate Brake
- Break accumulator
- Cargo doors
- #2 Thrust reverser
- Nose wheel steering

What does an amber FAULT light in the PTU pb indicate (OLL)?

- **O**ver temp in reservoir
- **L**ow air pressure in the reservoir
- **L**ow quantity in the reservoir

What does an amber FAULT light in the ENG PUMP pb indicate (POLL)?

- **P**ump pressure low
- **O**ver temp in reservoir
- **L**ow air pressure in the reservoir
- **L**ow quantity in the reservoir

What does a FAULT light in the BLUE or YELLOW ELEC PUMP pb indicate (POLLO)?

- **P**ump pressure low
- **O**ver temp in reservoir
- **L**ow air pressure in the reservoir
- **L**ow quantity in the reservoir
- **O**verheat in the pump

With the switch set to off, when does the yellow electric pump comes on automatically? And what does it power?

When the cargo door lever is set to open or close, this inhibits the operation of all system components except ALT braking and engine #2 reverser.

What is the function of the hydraulic priority valves?

Hydraulic power to the flaps, slats, landing gear, NW steering, and emergency generator is cut off if pressure drops below a predetermined value.

What is the purpose of the hand pump?

To provide Yellow hydraulic pressure for cargo door operation.

FIRE Panel

Where the engine fire loops are installed?

- Pylon nacelle
- Engine core
- Fan section

What happens if both fire loops fail?

If the failure of both loops occurs within **5 seconds** of each other, a FIRE warning will be issued.

What does amber DISCH light mean?

The fire extinguisher bottle has lost its pressure.

How many fire extinguishers are provided for each engine?

2

List the actions that occur when an ENGINE FIRE pb is pressed.

- 1 - Silences the aural fire warning
- 2 - Arms the fire extinguisher squibs
- 3 - Closes the hydraulic fire shut off valve

- 4 - Closes the LP fuel valve
- 5 - Closes the engine bleed valve
- 6 - Closes the pack flow control valve
- 7 - Cuts off the FADEC power supply
- 8 - Deactivates the IDG

What occurs when you press the TEST pb on the ENGINE FIRE panel?

- CRC sounds
- MASTER WARN lights flash (2)
- ENG FIRE pb illuminates red (1)
- SQUIB and DISCH lights illuminate (2)
- ECAM FIRE WARNING (1)
- FIRE light on the ENG panel illuminates (1)

How many fire extinguishers are provided for the APU?

1

List the actions that occur when the APU FIRE pb is pressed.

- 1 – Silences the aural fire warning
- 2 – Shuts down the APU
- 3 – Arms the APU fire extinguisher squib
- 4 - Closes the LP fuel valve and shuts OFF the APU fuel pump
- 5 – Deactivates the APU generator
- 6 - Closes the APU bleed and crossfeed valves

What occurs when you press the APU FIRE TEST pb?

- CRC sounds
- MASTER WARN lights flash (2)
- APU FIRE pb illuminates red (1)
- SQUIB and DISCH lights illuminate (1)
- ECAM FIRE WARNING (1)

Does the APU fire extinguisher automatically discharge if a fire is detected in ground?

Yes. The APU will automatically shut down and the APU fire extinguisher will discharge.

Does the APU fire extinguisher automatically discharge if a fire is detected in flight?

No

AUDIO MGMT Panel

What is the AUDIO SWITCHING PANEL used for?

Allows for switching to ACP 3 if ACP 1 or 2 fails

MAINTENANCE Panel

Do the pilots use the Maintenance panel?

No

If a mechanic pressed the APU AUTO EXTING TEST pb what would occur?

The APU will shut down.

CARGO HEAT Panel

What does the CARGO HEAT HOT AIR amber FAULT light indicate?.

Duct overheat

What does the CARGO HEAT AFT ISOL VALVE amber FAULT light indicate?
Valve disagreement of inlet or outlet valve

CARGO SMOKE Panel

How many fire extinguishers are provided for the cargo compartments?
1 bottle, which can be discharged within 60 seconds to either compartment

Do we do the CARGO fire test? Why?
- NO, because it is self test.

What does the red SMOKE light in the FWD or AFT pb indicate?
- Both channels detect smoke, or
- One channel detects smoke and the other is faulty

How many smoke detectors are there (cavities)?
- 1 cavity fwd, 2 cavity aft (each cavity is dual loop A+B)
- One fir bottle with 3 nozzles (1 FWD 2 for AFT cargo)

With a CARGO SMOKE warning what happens to the Isolation Valve and Extract Fan?
- Isolation Valve closes
- Extract Fan stops

VENTILATION Panel

What is the function of the cabin fans? When do we select them off?
2 Cabin fans are installed to recycle cabin air into the mixing unit and back and therefore save fuel, selected off only in respond to an ECAM procedure.

With BLOWER and EXTRACT pbs in AUTO, how does the system operate?
- Ground -system is in OPEN configuration
- Flight – system is in CLOSED configuration
- Intermediate – Closed except Extract Valve is partially open

How is the equipment cooled in each configuration?
Open circuit : the equipment is cooled by blown outside air.
Closed circuit: the equipment is cooled by blown air through a skin heat exchanger
Intermediate : the equipment is cooled by blown air through a skin heat exchanger plus partially exhausted overboard.

With both BLOWER and EXTRACT pbs in OVRD, what are the positions of the INLET and EXTRACT valves?
- INLET valve CLOSED
- EXTRACT valve partially OPEN

What fan is OFF in the above situation?
- BLOWER fan OFF
- EXTRACT fan ON

Note**:** all valves are closed (except extract valve) and air from air-conditioning system is added to ventilation air and directed over board through the skin air extract valve

Is Air Conditioning ever introduced into the Avionics Compartment?
Yes – In the SMOKE configuration or abnormal configuration.

Is the skin heat exchanger ever bypassed in flight?
Yes – during SMOKE configuration, skin heat exchanger isolation valve is closed

What does a FAULT light on the BLOWER pb indicate?

- SMOKE Warning is activated
- Computer power supply failure
- Low Blower pressure
- Duct overheat

What does a FAULT light on the EXTRACT pb indicate?

- SMOKE Warning is activated
- Computer power supply failure
- Low Extract pressure

With 2 FAULT lights on the VENTILATION panel are there any other indications?
Yes – The SMOKE light in the GEN 1 LINE pb.

ENG Panel

What are the primary differences between a manual and a normal automatic start?

- Automatic start interruption and auto-crank are not available during manual start.
- In manual start the FADEC will only abort the start if on ground and EGT limit is exceeded before N2 =50%

What is the FADEC authority during manual start?
FADEC has a limited authority**:**

- Opening and closing of the start valve (if ENG MODE is set to IGN/SART and MAN START switch is pressed)
- HP fuel valve
- Operating and cutting of both igniters

Will the start valve then automatically close?
Yes, at 50% N2.

When a manual ENG start is recommended?
1-After aborting a start because of:

- Engine stall
- Engine EGT over limit
- Low start air pressure

2-When expecting a start abort, because of:

- Degraded bleed performance (hot conditions or high elevation airports)
- An engine with reduced EGT margin (hot conditions or high elevation airports)
- Marginal performance of external pneumatic power.

GLARESHIELD/FCU

What does the red AUTO LAND light indicate?
Below 200 feet RA:

- Excessive deviation (LOC or G/S)
- Loss of both autopilots
- Loss of LOC or G/S signals
- Difference of 15 feet between the RA's

What does the red arrow in the SIDE STICK PRIORITY light mean?
It illuminates in front of the pilot losing authority.

How would you regain control?

- The last pilot to press the pb on the sidestick will have authority
- An aural “Priority Left” or “Priority Right” will sound

What do the flashing green CAPT and F/O SIDESTICK PRIORITY lights indicate?
Both sidesticks have been moved simultaneously and neither pilot has taken priority.

What happens when both pilots make an input simultaneously on both side-sticks?

- The inputs are algebraically summed up to the normal limits
- An aural “Dual Input” will sound
- Green CAPT and F/O lights will illuminate

What is the function of the LOC pb?
Arms, engages, or disengages the LOC mode

When do you press the APPR button?
When cleared for the approach.

After pressing the APPR button, what do you check for?

- ILS – Blue LOC and GS in FMA
- RNAV – APP NAV and FINAL

What is the function of the Flight Control Unit (FCU)?

- Permits short term interface between the pilot and FMGS
- Allows temporary modification of any flight parameter (HDG, SPD, ALT, V/S)
- Used to select operational modes of the autopilots, flight directors, and A/THR system

What do dashes in the FCU display windows along with the adjacent white dot indicate?
FMGS Managed Guidance is in use

How is Selected Guidance engaged?
Pull the appropriate selector knob.

How do you confirm all autopilot, FD, and A/THR inputs?
Confirm all mode inputs by reference to the FMA

Will the FCU Altitude window ever display dashes?
No. Pilot selected altitude will always be displayed.

When is the FCU inhibited?
Land mode and the aircraft below 400RA, LOC&GS locked.

Primary Flight Display

What does each column mean on the PFD?
A/THR | VERTICAL | LATERAL | APPROACH CAPABILIY, DH/MDA | AP, FD, A/THR ENGAGEMENT STATUS

How are the crew made aware of mode changes on the FMA?
A white box is temporarily displayed around the new indication.

How are armed modes displayed on the FMA?

- Blue – armed
- Magenta – armed because of a constraint
- Green – engaged (active)

When is the side stick position indication icon (white cross) displayed?

- Displayed when the first engine is started
- Disappears at liftoff

What would the large red arrowheads indicate?
Pitch attitude of +30°

After you input the destination and ILS information into the MCDU, what do you check for?

- After the ILS pb is pressed, green light
- ILS frequency and course on PFD
- ILS identifier once identified
- LOC and GS scales displayed on PFD

What does the MAN PITCH TRIM ONLY in red mean?
You are in Mechanical Backup.

What does USE MANUAL PITCH TRIM in amber mean?
You are in Direct Law

What are the pitch and roll angle limits indicated by the green = signs?

- Pitch: +30° up/-15° down
- Roll: +/- 67°

How can you determine you are in Alternate Law?

- Amber X's at the pitch (30° UP/15° DN) and bank (67°) limits
- Only VLS and VSW is displayed on the airspeed scale

When would the sideslip index change from yellow to blue?
In case of an engine failure during takeoff/go-around, it is now a blue beta target.

What does the yellow speed trend line on the airspeed display indicate?
The speed the aircraft will reach in 10 seconds if acceleration/deceleration remains constant.

What is the difference between the magenta and blue target airspeeds?

- Magenta – Managed speed computed by the FMGC
- Blue – Selected speed on the FCU

What is V_{LS} and how is it displayed?

- Represents lowest selectable speed providing an appropriate margin to the stall speed
- Defined by the top of the amber strip along the airspeed scale
- In approach mode is equivalent to V_{REF}

What speed does VMAX represent and how is it displayed?

- It is the lowest of V_{MO}/M_{MO}, V_{LE}, or V_{FE}
- Defined by the bottom of a red and black strip along the speed scale

What is Green Dot speed?

- Engine out operating speed in clean configuration
- Appears when the aircraft is in the clean configuration
- Corresponds to the best lift-to-drag ratio

What is Ground Speed Mini?
It's a computed target speed during the approach that maintains the aircraft energy above a minimum level ensuring standard aerodynamic margins versus stall, this **ground speed mini is:**

- Based on a calculated groundspeed at the runway
- It will protect against actual groundspeed dropping below this calculated groundspeed due to wind.

What is SRS, When does it appear on the PFD? What speed does it maintain?
Speed reference system, in takeoff and go-around
[It maintains V2+10(2 ENG), V2- (V2+15) 1ENG, or speed that insures at least a vertical path of 120feet/minute], it also provides pitch attitude protection during takeoff (18° max or 22° max in wind-shear)

What are the SRS engagement conditions?
In ground for take off**:**

- thrust levers set to TOGA or FELX
- V2 set in the PERF page MCDU
- The slats extended
- A/C on ground for at least 30 seconds

Go-around**:**

- Flap lever is at least in position 1, and
- The A/C is in flight, or
- The A/C is on the ground for less than 30 seconds (rejected landing), AP disengages and can be re-engaged 5 sec after lift off

What are the disengagement conditions?

- Automatically at acceleration ALT(ACC ALT)(ALT*)(ALT CST*) above 400 feet
- If crew engages another vertical mode
- If crew selects a speed (click*click*click) is heard

What are the 2 sub-modes of the runway mode (RWY) and what do they provide?

- RWY mode: lateral guidance during TO roll up to 30 feet RA if LOC signal is available
- RWY TRK mode: gives lateral guidance to same track during the engagement (at 30 feet)

What are the (RWY) engagement conditions?

- thrust levers set to TOGA or FELX
- V2 set in the PERF page MCDU
- The slats extended
- A/C on ground for at least 30 seconds
- A/C receiving a LOC signal and LOC deviation is less than ½ dot
- A/C heading is within 20° of the ILS course
- The ILS course is identical to the runway heading.

How can you disengage the LAND mode?

- When in go-around
- When both AP/FDs are disengaged

Which of the speeds displayed on the PFD are an actual flap/slat position and which ones are flaps lever position?
VLS, over speed warning are based on the actual flap/slat position
VFE, VFE NEXT based on the flap **lever** position

What does it mean when you see the magenta target airspeed triangle above VAPP on approach?
Ground Speed Mini has increased speed due to a higher headwind component at your present location than what was calculated at the runway.

Is this protection available in selected speed?
No – Managed speed only

What would be indicated if the altitude window changed from yellow to amber?
The aircraft has deviated from the FCU selected altitude or flight level.

When is altitude alerting automatically inhibited in flight?

- When slats are extended with the landing gear down
- On approach after glide slope capture

What does it mean when the altitude digits change from green to amber?
The aircraft has descended below the MDA/DH entered into the FMGC.

When is Radio Height displayed on the PFD?
Below 2,500 feet

Information from ILS receiver 1 is displayed where?
- Captain's PFD
- F/O's ND

What would a flashing amber ILS indicate on the bottom of the PFD?
Flashes amber when APPR mode is armed and the ILS display is not selected.

NAVIGATION DISPLAY

What displays or modes are available on the ND?
- Rose ILS
- Rose VOR
- Rose NAV
- ARC
- PLAN

What colors are used to represent the various displayed flight plans?
- Active – continuous green line
- Secondary – continuous white line
- Temporary – dashed yellow line
- Alternate – dashed blue line
- Missed approach – continuous blue line

Top of Descent and Continue Descent arrows are displayed in blue or white. What is the difference?
- Top of Descent – Always white (never armed)
- Continue Descent – Blue indicates armed, white indicates NOT armed

What color does each altitude constraint circle represent?
- White – constraint is not taken into account
- Magenta – constraint is predicted to be satisfied
- Amber – constraint is predicted to be missed

If modes range data fails what should you expect to see on the ND?
ROSE NAV and 80 nm range.

Where is VOR data displayed?
Both ND's and the DDRMI

ENGINE/WARNING DISPLAY

What are the 3 levels of ECAM Malfunction Notifications?
- WARNINGS – Associated with the red MASTER WARN light, CRC, and require immediate action
- CAUTIONS – Associated with the amber MASTER CAUT light, single chime, and require crew awareness

- ALERTS – Associated with amber E/WD message, no aural signal, and requires crew monitoring

If simultaneous failures occur, how will they be presented to the crew?
A level 3 Warning has priority over a level 2 Caution which has priority over a level 1 Alert.

What types of failures are presented to the crew?
- Independent – Failure affecting an isolated system/item without degrading other systems/items
- Primary – Failure of a system/item that affects the use of other systems/items
- Secondary – Loss of a system/item resulting from a primary failure

Which part of the E/WD would the crew find indication of Primary failures?
On the lower left portion of the screen.

What indication does the E/WD provide for secondary failures?
Secondary failures are displayed on the lower right portion of the E/WD and are preceded by an *.

What does the appearance of a green arrow indicate at the bottom of the E/WD screen indicate?
Information has overflowed off the screen and the pilot must scroll down using the CLR pb on the ECAM panel.

What does the display of T.O. INHIBIT or LDG INHIBIT indicate?
Most warnings and cautions are inhibited to avoid unnecessary distractions during critical phases of flight.

What types of warnings are NOT inhibited during takeoff?
- ENGINE FIRE
- APU FIRE
- ENG FAIL (ENG SHUT DOWN)
- ENG OIL LO PR
- L+R EVEV FAULT
- A/P OFF
- CONFIG
- FWC 1+2 FAULT

What are the Takeoff Configuration Warnings/Cautions?
- SLATS/FLAPS NOT IN T.O. RANGE
- PITCH TRIM NOT IN T.O. RANGE
- SPEED BRAKES NOT RETRACTED
- SIDESTICK FAULT
- HOT BRAKES
- DOOR NOT CLOSED
- PARK BRAKE ON
- FLEX TEMP NOT SET (unless thrust levers in TOGA detent)

When does the Takeoff Memo appear?
- 2 minutes after the 2nd engine is started or when the T.O. CONFIG TEST pb is pressed with one engine
- Memo is removed when takeoff power is applied

When does the Landing Memo appear?
- Below 2,000’ RA with gear down or 800’ RA with gear up.
- Below 2,000 feet RA regardless of gear position (aircraft with new FWC)
- Memo disappears after touchdown (80 knots)

SYSTEM DISPLAY

In general, when are the system pages automatically displayed on the SD?

- Relative to the current phase of flight, or
- When a system malfunction is detected

When is a STATUS page displayed?

- After a failure is displayed on the SD and all failure items have been cleared
- Display will reappear when the slats are extended

What do the boxed STS indicate when displayed on the SD?

- The STATUS page holds messages other than CANCELLED CAUTIONS
- Flashes after engine shutdown to alert maintenance of any other applicable messages

FORWARD INSTRUMENT PANEL

With a total loss of electrical power, does the ISIS losses its power?
No, it will be powered by internal battery for 5 minutes

What is the function of the 2 Landing Gear Control and Interface Units (LGCIU)?

- Provide sequencing, operation, monitoring, and indications for the landing gear
- Provide aircraft "In Flight" or "On the Ground" signals to other aircraft systems

What hydraulic system powers the landing gear and doors?
Green

What 3 things occur when you turn the Manual Gear Extension Handle?

- Removes Green hydraulic pressure
- Opens gear doors
- Unlocks the up locks

How many cranks does it take to lower the gear manually?
1 crank (but 3 clock-wise turns)

In what occasions is green hydraulic power not available to the landing gear?

- after Emergency Landing Gear Gravity Extension
- speed is above 260 kts (safety valve automatically shuts it off)

When does the red arrow in the LND panel illuminate?
When the aircraft is in the landing configuration and the landing gear is not locked down.

What do the red UNLK lights indicate?
The landing gear is not locked in the selected position.

What controls the LDG GEAR lights?
LGCIU 1

If LGCIU 1 fails will the lights still work?
Yes, as long as it is still powered.

What controls and manages all braking functions?
The Brake and Steering Control Unit (BSCU)

What happens when you switch the A/SKID & N/W STRG to OFF?

- Lose Nosewheel steering
- Braking is powered by the Yellow system
- Anti-skid is deactivated

Which hydraulic systems provide pressure to the brakes?

- Normal brakes – Green
- Alternate brakes – Yellow backed up by a hydraulic accumulator

When do the Autobrakes activate on landing if armed?
When the ground spoilers deploy

What is the difference between LOW and MED AUTO BRK?

- LOW – progressive pressure applied to brakes 4 seconds after ground spoilers deploy to decelerate at 1.7 MPS.
- MED - progressive pressure applied to brakes 2 seconds after ground spoilers deploy to decelerate at 3 MPS

What does the AUTO BRK green DECEL light indicate?
Actual rate of deceleration is within 80% of the selected rate.

If you don't see DESEL after landing , will you call DESEL?
Yes, if deceleration is felt by the crew and confirmed by speed trend on the PFD.

What is the Takeoff setting for Auto Brakes?
MAX

What will cause the MAX AUTO BRK to activate on a RTO?

- Airspeed above 72 knots, and
- Thrust Levers at IDLE, and
- Ground spoiler extension

If you lose Green hydraulic pressure will you have Auto Brakes?
No, not with the Alternate Brake system

Is Anti-skid available with Alternate Brakes?
Yes, if certain conditions are met

With spoilers <u>not</u> armed will the spoilers deploy for an RTO?
Yes – when at least one engine is in reverse AND the other engine is in idle

How many brake applications are available with accumulator pressure?
Approximately 7 full applications

What is the maximum brake temperature for takeoff?
300° C (break fan off), 150° C (break fan on)

When should the brake fans be selected to ON?
ON when brake temperature exceeds 300° C (amber HOT pb on) for takeoff.
5 minutes after landing or just before stopping at the gate whichever occurs first
Short turnaround time or break temp is likely to exceed 500° C.

What does the BRAKES & ACCU PRESS triple indicator indicate?

- Yellow hydraulic pressure delivered to the left and right brakes
- Yellow system brake accumulator pressure

How do you perform the brake check during initial taxi?
Press the brake pedals to ensure the aircraft slows, and check the brake pressure on the triple indicator is zero, indicating the Green hydraulic system has taken over.

<u>EIS SWITCHING PANEL</u>

What computers feed data to the six display units?
3 Display Management Computers (DMC)

What does each of the DMC's normally supply?
- DMC 1 – Captain PFD, ND, upper ECAM DU
- DMC 2 – F/O PFD, ND, lower ECAM DU
- DMC 3 – Backup

How can you tell if a DMC has failed?
A diagonal line will be displayed in the respective EFIS/ECAM display unit.

What happens when the upper ECAM display fails?
The E/WD automatically replaces the SD on the lower ECAM display.

If both the E/WD and SD display units fail, how can you display E/WD information?
Select the ECAM/ND switch to CAPT or F/O to transfer the SD to either ND.

ECAM SWITCHING PANEL

If the UPPER DISPLAY knob was switched to OFF what would occur?
The E/WD display would automatically transfer to the lower display.

With the E/WD displayed on the lower screen, how else can you view SD information?
Press and hold the appropriate system button on the ECAM CONTROL panel you wish to view.

How long will this information be available?
30 seconds

What does the ALL pb do?
- Displays ALL the system pages successively in 1-second intervals when held down
- Release the pb to maintain display of the selected page

What does pressing the RCL pb?
- Allows you to recall any warning or caution messages that the activation of the CLR pb or flight phase inhibition may have suppressed
- If held longer than 3 seconds, the E/WD will show any caution messages suppressed by the EMER CANC pb

If you press the STS pb and the system has no STATUS messages what will be displayed?
"NORMAL" for 5 seconds

If power fails to the ECAM CONTROL panel which buttons are still functional?
- EMER CANC
- ALL
- CLR
- STS
- RCL

What does the EMER CANC do?
- Cancels the current Level 1 or 2 warning for the remainder of the flight
- Cancels the current Level 3 warning for that occurrence

What do you look for on the FHED check?
- **F**uel – fuel quantity, configuration, and balance
- **H**yd – hydraulic quantity
- **E**ng – oil quantity above 9.5 quarts + estimated consumption(max .5quarts/hour)

- **D**oor – doors closed, slides armed, crew oxygen pressure

What occurs during the Before Takeoff Checklist when the T.O. CONFIG pb is pressed?
- The system simulates the application of T.O. power and checks certain systems for proper configuration
- A warning is displayed if and system is not configured properly
- "TO CONFIG NORMAL" is displayed in the TO MEMO section if the configuration is correct

TRIMMABLE HORIZONTAL STABILIZER

How the THS is normally operated in flight?
The flight control computers control trim functions automatically

If NO hydraulic power is available can the THS be positioned?
No. The THS requires hydraulic power from the Green or Yellow systems.

If a complete flight control computer failure occurs can the THS be positioned?
Yes, mechanical trimming is possible by manually positioning the Pitch Trim Wheel.

Can you move the PITCH trim wheel if all systems are working normally?
Manual inputs have priority over computer inputs. The autopilot will disconnect.

What happens to the THS after landing?
The trim automatically resets to zero.

ENGINES / THRUST LEVERS

What controls the engines in all operating regimes?
FADEC's (Full Authority Digital Engine Controls)

What functions does the FADEC control?
- Fuel metering
- Engine limits based on thrust lever angle
- Start sequencing
- Provides engine indications and thrust limit displays on the E/WD

What redundancy does the FADEC have?
Dual channel redundancy – one channel is active while the other is standby.

What is the power source for the FADEC?
- The system has its own alternator making it independent of the aircraft electrical system when N2 is above a set value
- If this alternator fails the FADEC automatically switches to aircraft electrical power

When will the FADEC abort a start?
- Hot start
- Hung start
- Stalled start
- No light up

If the FADEC detects a fault during automatic start, is any crew intervention required?
No. The FADEC will discontinue the start, clear the engine, and attempt a restart (if warranted) automatically.

When does the FADEC command a higher engine idle speed?

- Bleed demands
- Approach Configuration
- High engine or IDG temperatures

How many igniters fire during a Normal automatic ground start sequence?

- One igniter with the other serving as a backup
- The FADEC automatically alternates the igniters (A and B) at each start

How many igniters fire on manual or In-flight starts?
Both A and B

When does continuous ignition automatically operate?

- Engine flameout detection
- Failure of the EIU

What are the 5 detent positions of the thrust levers?

- TOGA
- FLX MCT
- CL
- IDLE
- MAX REV

On the ground, how do you arm the A/THR?

- By setting the thrust levers in the TOGA or FLEX gate (with a FLEX temperature inserted in the MCDU)
- At least one FD must be ON for A/THR to arm during takeoff

What is the active range of the A/THR?

- Just above IDLE to the CL detent (2 engines)
- Just above IDLE to the MCT detent (1 engine)

What is the normal operational position of the thrust levers when A/THR is active?
The CL detent

What determines the maximum thrust the A/THR system will be able to command?
The position detent of the thrust lever

What are 3 ways to disconnect the A/THR?

- A/THR pb
- Instinctive Disconnect buttons
- Thrust Levers to IDLE

What is the preferred method of disconnecting A/THR?
Set the thrust levers to match the TLA to the existing N1 and disconnect using the instinctive disconnect pb.

How do you disconnect the A/THR for the remainder of the flight?
Press and hold the Instinctive Disconnect button for 15 seconds.

Will you be able to restore A/THR?
No

What else will you lose?
Alpha Floor Protection

What happens to thrust and what annunciates on the FMA when you reach Alpha Floor?

- Thrust – TOGA

- FMA – A.FLOOR

What occurs during Alpha Floor protection after speed increases above V_{LS}?
FMA changes to TOGA LK

How do you then regain normal A/THR?
- Move Thrust Levers to the TOGA detent
- Press the Instinctive Disconnect button
- Return Thrust Levers to CL detent
- Push the A/THR pb to engage A/THR

When is Alpha Floor Protection active?
From lift-off through 100 feet RA on approach

When would Thrust Lock occur?
- Thrust levers in CL detent and A/THR pb on the FCU is pushed, or
- A/THR disconnects due to a failure

Explain the Normal start sequence.
- ENG MODE to IGN/START, FADEC is powered, ECAM displays ENG page (start valve +bleed pressure), pack valve close
- ENG MASTER to ON,LP fuel valve opens, start valve opens, fuel used rest,N2 increases, oil pressure increases
- N2 > 16% Ignition (A or B) on
- N2 > 22% HP fuel valve opens
- 15 seconds (MAX), EGT increase, N1 increase
- N2 > 50% start valve closes, igniter off
- Approximately 58% gray N2 background disappears
- Pack valve reopens with 30 sec delay (remains closed , if the other engine is started)

Explain the Manual start sequence.
- ENG MODE to IGN/START, FADEC is powered, ECAM displays ENG page, pack valve closes
- ENG MAN START pb ON, start valve opens
- At maximum N2 motoring speed (min 20%), ENG MASTER ON
- Observe both A+B Ignition, LP and HP fuel valves open , fuel flow increase, EGT and N1 increase in 15 seconds
- N2 > 50% start valve closes, igniters off
- ENG MAN START pb – OFF
- Pack valve reopens with 30 sec delay (remains closed , if the other engine is started)

What controls the engine LP fuel valves?
- Engine MASTER switch
- ENGINE FIRE pb

What does a fault light on the ENG panel indicate?
- Auto Start Abort
- Switch disagreement between HP valve and it's commanded position

TRANSPONDER

How many transponders are installed?
2

Does illumination of the ATC FAIL light indicate loss of all transponder capability?
No – only the selected transponder has failed

FLAPS/SLATS

With only Green hydraulic system pressure available, will both the flaps and slats operate?
Yes, at ½ speed

What system prevents Flap or Slat asymmetry?
Wing Tip Brakes (WTB)

What causes the WTB's to activate (ROAM)?

- **R**unaway
- **O**verspeed (flaps)
- **A**symmetry
- **M**ovement (un-commanded)

If the WTB activates due to a flap asymmetry can the slats still operate?
Yes, only flap operation is inhibited

How may Slat/Flap Control Computers (SFCC) are installed?
2

What would occur if one SFCC failed?
The slats and flaps would continue to operate, but at half speed.

What flap/slat configurations correspond to position 1 on the FLAPS lever and how do they differ?

- CONF 1+F is used for takeoff and provides both slats (position 1) + flaps
- CONF 1 is used in-flight and is slats only

When will the Automatic Retraction System (ARS) operate?
During acceleration in CONF 1+F the FLAPS (not slats) will automatically retract to 0 at 210 knots.

What is Alpha Lock?
This function inhibits retracting flaps/slats from 1 to 0 at a high angle of attack or low airspeed.

When the FLAP legend appears in cyan on the upper ECAM display what is indicated?
Flaps/slats in transit

What happens to the ailerons when the flaps are extended?
The ailerons droop 5°

SPEED BRAKE/SPOILERS

Is there any landing configuration when speed brake extension is inhibited?
When Flaps FULL

When do the Ground Spoilers automatically extend during landing?
When armed**:**

- Both thrust levers IDLE.
- Both main landing gear touched down

When not armed**:**

- Both main landing gear touched down
- One reverse is selected and the other engine is IDLE.

When do the Ground Spoilers automatically extend during rejected T/O ?
If ground spoilers armed with airspeed above 72 knots:

When BOTH thrust levers at IDLE

If ground spoilers NOT armed with airspeed above 72 knots:
When reverse thrust is selected on at least one engine with the other thrust lever at IDLE.

Will the ground spoilers extend if Touchdown with reverse selected and only one landing GEAR is compressed?
Partially – Full extension is limited until both main gears are compressed.

When will the ground spoilers automatically retract?
- Thrust levers at idle and speed brake lever is down
- When at least one thrust lever is advanced above IDLE

When do the speed brakes inhibit?
Speed brakes (2-3-4) are inhibited when:
- SEC1 and SEC3, both have fault.
- A.O.A protection is active.
- Alpha floor activation.
- Thrust levers above MCT.
- Flap full.
- One elevator fault. (Spoiler 3, 4 inhibited).
- When speed brake fails on one wing, the symmetric one on the other wing is inhibited.

In flight, what happens if a spoiler fault is detected or electrical power is lost?
The spoiler automatically retracts.

RADAR

What capabilities does the RADAR system have?
- Weather avoidance
- Turbulence detection
- Terrain mapping
- Predictive windshear detection

What would prevent the weather display on the ND?
- Mode selector in PLAN
- TERR selected ON

When is WX/TURB mode available?
At ranges of 40 nm or less

Does predictive windshear detection work when the RADAR system is switched OFF?
Yes, if the Windshear switch is in AUTO

What is the scanned area of the predictive wind-shear detection feature?
Up to 5 nm ahead of the aircraft when the aircraft is below 1,500 feet AGL

When are predictive wind-shear alerts inhibited?
- When on the ground above 100 knots until reaching 50 feet AGL
- When landing below 50 feet AGL

How many RADAR systems are installed?
2

RADIO MGMT Panel

How are the communications radios controlled?
From any one of the 3 RMP's

Which RMP is powered in the Emergency Electrical Configuration?
RMP 1

Which communication radios are powered in the Emergency Electrical Configuration?
VHF COM 1, HF 1

What would cause the SEL indicator to illuminate on both RMP's?
When a communication radio normally associated with one RMP is tuned by another RMP.

If the NAV key is selected on either RMP, can the FMGC still auto tune navaids?

- No - RMP now controls the VOR/ILS receivers
- NAV key on RMP 3 has no effect
- Normal radio communication is still available

AUDIO CONTROL Panel

With the INT/RAD switch on the ACP in the INT position and the side stick transmit switch keyed, what will you transmit on?
The radio selected by its transmission key on the ACP.

What methods would the crew utilize to make a PA announcement?

- Pressing the PA switch on the ACP and using the boom, hand, or mask microphone, or
- The flight deck handset dedicated to the PA system only

What does the illumination of the CALL light on the VHF or HF transmission keys indicate?
The SELCAL system detects a call.

Will the loudspeaker control knob control the loudness of the aural alert and voice messages?
No

MCDU/FLIGHT MANAGEMENT GUIDANCE SYSTEM

What are the main components of the FMGS?

- 2 FMGC's
- 2 MCDU's
- 1 FCU
- 2 FAC's

What are the functions of the Flight Management Guidance Computers?

- Flight Guidance
- Flight Management

What are the 3 modes of FMGC operation?

- Independent
- Single
- Dual

What are the 2 modes of flight guidance?

- Managed Guidance
- Selected Guidance

What is the Managed mode of flight guidance used for?
Long-term lateral, vertical, and speed profiles as determined by the FMGS.

What is the selected mode of flight guidance used for?
Temporary lateral, vertical, and speed commands as selected with the FCU.

Does Selected or Managed Guidance have priority?
Selected Guidance

What type of database is periodically updated in the FMGS?
Navigation database

Can the crew modify data in the navigation database?
The crew has limited ability to create pilot stored navigational data.

How do you determine the validity of the navigation database?
On the Aircraft Status page

What input does each FMGC use for position determination?
A hybrid IRS/GPS position

What is the normal operational mode of the FMGS?
Dual mode, with one FMGS as master and the other FMGS as slave

How does autopilot selection influence master FMGS logic?
- If one autopilot is engaged, the respective FMGS is master
- If both autopilots are engaged, FMGS 1 will be the master

If amber OFF SIDE FM CONTROL message is displayed on the ND what action should the crew take?
An FMGS has failed and both ND's must be set to the same mode and range.

Can both autopilots be engaged during any phase of flight?
No, only during an ILS approach

What is the difference between the large and small fonts utilized in the MCDU?
- Large – Pilot entries and modifiable data
- Small – Default/computed non-modifiable data

When would a Takeoff Shift be entered on the PERF TO page?
When takeoff begins at a runway intersection.

If the FLEX TEMP is not entered on the TAKEOFF page of the MCDU, and the thrust levers are positioned in the FLEX detent, what will occur?
- A warning will be generated
- Continue to move the thrust levers to the TOGA detent and execute a max thrust takeoff

What occurs when managed NAV mode is engaged and the aircraft flies into a flight plan discontinuity?
NAV mode will be lost and the HDG/TRK mode engages.

PARKING BRAKE

What effect does setting the Parking Brake has on other braking modes?
All other braking modes and anti-skid are deactivated.

When brake accumulator pressure is low, how is it re-charged?
With the Yellow system electric pump.

By what means is the parking brake activated when you turn ON the Parking Brake switch?
Electrically

Is it required to depress the brake pedals while setting the Parking Brake?
No

How do you verify the Parking Brake is set?
- ECAM PARKING BRK memo
- Triple indicator brake pressure

If during an engine start with the parking brake ON, the aircraft starts to move due to a parking brake failure, what must you quickly do?
Release the PARKING BRAKE handle to restore Normal braking with the pedals.

AFT PEDESTAL MISC

When hand flying the aircraft can we trim the rudder?
Yes, by using the RUDDER TRIM rotary switch

What happens if you turn the Rudder Trim with the autopilot engaged?
Nothing

What is the RUD TRIM button used for?
To reset the rudder trim to 0°

Does the rudder RESET button work with the autopilot engaged?
No

Is there any feedback in the rudder pedals from the yaw damping or turn coordination functions?
No

NOSE WHEEL STEERING

What hydraulic system supplies nose wheel steering?
Yellow

The steering hand wheels can steer the nose wheel up to how much in each direction?
+/- 75°

When using the rudder pedals for steering, when does the steering angle begin to reduce?
Starts reduction at 40 knots and progressively reduces to zero degrees at 130 knots.

What does the rudder PEDAL DISC button on the steering hand wheel do?
Pressing the button removes control of nose wheel steering from the rudder pedals until released.

What would occur if the A/SKID & N/W STRG switch were selected to OFF?
- Nose wheel steering is lost
- Anti-skid is deactivated
- Yellow hydraulic system would supply the brakes

FLIGHT CONTROL LAWS

How many flight control law do we have? 5

- Normal law
- Alternate law(with protection-without protection)
- Direct law
- Mechanical backup
- Abnormal attitude law

What protections do you have in Normal Law?

- High Speed
- High Angle of Attack (AOA alpha protection)
- Load Factor Limitation (+2.5 / -1.0)
- Pitch Attitude (30°- 25°- UP/15° DN)
- Bank Angle (67° max)

In alternate law, what happen to pitch and roll and yaw?
Pitch **:** load factor demand with auto trim.
Roll **:** direct law (no bank angle protection)
Yaw **:** yaw damping only

When do we expect the flight controls to refer to direct law? What protection or warnings are available?
Most likely when selecting gear down with alternate law, it's a direct stick to elevator relationship that varies with CG (pitch) and also a direct stick to surfaces relation (aileron or spoilers) that varies with configuration (roll)
Aircraft handles like conventional A/C. No protection is available, you have manual trim, stall and over speed warning are also available.

If angle of attack (AOA) is active, what is the bank angle limit?
Maximum 45 degrees' and if released it goes back to 33 degrees'

If high speed protection is active, what is the bank angle limit?
Maximum bank is 40 degrees'.

How does the High Speed Protection operate?
If V_{MO}/M_{MO} plus a predetermined factor is exceeded, the system induces a pitch-up input to limit aircraft speed.

Can the pilot override this pitch-up?
No

What is Alpha Max?
The maximum angle of attack allowed in Normal Law, indicated by the top of the red strip on the airspeed scale.

How does High Angle of Attack Protection operate?
This protection has priority above all other protections because it prevent A/C from stalling and ensure optimum performance in extreme maneuvers like winds-hear and EGPW recovery.
When the angle of attack exceeds α prot, pitch trim ceases and angle of attack is now proportional to sidestick deflection, not to exceed α max even with full aft side-stick deflection.

How many type of Alternate law, what protection is available for each one?
1- Alternate law with protection**:**

- Load factor
- High speed stability
- Low speed stability

2- Alternate law without protection**:**

- Load factor

Can you override the high or low stabilities in Alternate Law?
Yes

What protections do you have in Direct Law?
None

If you are in Pitch Alternate Law, what law would Roll be?
Direct Law

When the landing gear is extended, what happens to Pitch Alternate Law?
Degrades to Pitch Direct Law

How would you get into Abnormal Law?
By exceeding approximately double the Normal Law limits.

Can you stall the aircraft in Normal Law?
Not in Normal Law, but the aircraft can be stalled in all other laws.

What is the purpose of Abnormal Alternate Law?
Allows the aircraft to be recovered from an unusual attitude

After recovery from an unusual attitude, what law will you be in?
Abnormal

In abnormal attitude law, do we refer to direct law when selecting landing gear down?
No, this mode last until landing

What PFD indications indicate Normal Law?

- Green = for pitch, bank, and overspeed limits
- Amber/black (alpha prot) airspeed tape

What is indicated if the PFD pitch and bank limits are amber X's?
You are not in Normal Law

What would cause you to revert to another law?
Multiple failures of redundant systems

What law are you in when you perform the flight control check on the ground?
Normal Law, Ground Mode

Can the aircraft be flown with a loss of all flight control computers?
Yes, with Mechanical Backup

How is the airplane controlled in Mechanical Backup?

- Pitch – Trim wheel (horizontal stabilizer)
- Yaw – Rudder pedals (rudder)
- Speed – Thrust levers

IR 1-2-3 fault light steady and flash?
Steady the IR is lost. Flash AT&HD maybe recovered in ATT mode.

ADIRS on BAT light?
Comes amber when aircraft battery supplies at least one IR and comes few seconds at beginning of IR alignment.

When aircraft degrade to ALT low, what happen to the ROLL?
The roll go to direct low.

What is ELAC controlling?
1- normal pitch and roll. 2- alternate pitch. 3- direct pitch and roll. 4- abnormal attitude. 5- aileron droop. 6- acquisition of autopilot orders.

What is SEC controlling?
1- normal roll by controlling the spoilers. 2- speed brake and ground spoilers. 3- alternate pitch sec 1 & 2. 4- direct pitch sec 1 & 2. 5- direct roll. 6- abnormal attitude.

What is FAC controlling?
1- yaw function – yaw dumber, ruder trim, ruder travel limit, turn coordination.
2- flight envelop function - speed scale management, max & min speed computation, maneuver speed, and floor protection.
3- low energy warning function.
4- wind shear detection function.

If we lose both FAC, are we going to have rudder?
Yes, by the rudder pedals.

When can we have max deflection on rudder?
When slat extend.

When are spoilers inhibit?
1- Sec 1 & 3 have fault. 2- A.O.A protection is active. 3- flaps conf full. 4- thrust lever above met. 5- A floor activation. (when spoilers in one wing fail the symmetric one in the other wing is inhibit).

What protective we have?
5 protection. 1- load factor 2- pitch attitude protection 3- hi angle of attack protection 4- hi speed protection 5- bank angle protection.

If we are in alternate low, in which condition if we extend the landing gear the system won't go to direct low?
In abnormal attitude low.

How do you know we have jammed stabilizer?
In Ecam sys page F/CTL pitch trim comes in amber instead of white.

What are the basic mode GPWS?
1- excessive rate of descent 2- excessive terrain closure rate 3- altitude loss after t/o or go/ around 4- unsafe terrain clearance when not in landing configuration 5- too far below glide slope (all this happen between 10 and 2450 radio altitude)

What does the sys (ter) fault light in GPWS mean?
It comes on with Ecam caution if the predictive mode fails. The terrain is not shown in the ND the basic 5 mode still operative.

If you open the emergency door over the wing the slide will deploy?
Yes the slide always armed.

Why we keep no smoking sign in auto?
Because in auto position the emergency exit sign battery will be charged.

If the pack flow in "LO" position when it will provide maximum and normal cooling?
Max. cool provided if 1- single pack ops 2- apu supplying bleed air normal cool provided when temp demand can not be satisfied in "LO".

How many motor in the x bleed valve?
2 electrical motors

What does pack fault light mean?
1- pack flow control valve disagree with selected position
2- compressor outlet overheat
3- pack outlet over heat

APU fault light what does it mean?
APU auto shut down.

Does APU shutdown in case of fire?
Yes on ground only.

Does APU auto shutdown in flight in case of APU fire?
No it will not.

When the fault light in the fuel mode selector switch comes on?
When center tank has more than 250kg and R/L wing tank has less than 5000 kg.

When the center tank will work when the mode selector switch in auto position?
1- they run at engine start for 2 minutes
2- run if slat are retracted
Note: pump stop after 5 minutes center tank low level reach

Why we don't have gravity from the center tank?
Center tank does not have suction valves

What item will work with cargo yellow hydraulic manual pump?
1- alternate break
2- no. 2 reverse thrust

What item only powered by yellow hydraulic system?
1- alternate brake and brake accumulator
2- n.w. steering
3- cargo door
4- eng. reverse no. 2

What item only powered by green hydraulic system?
1- normal brake
2- no. 1 eng reverse
3- landing gear

What does the fault light in the eng hyd pump mean?
1- reservoir level is low
2- reservoir over heat
3- reservoir air pressure is low pump pressure is low (the same for elec + pump over heat)

When the blue pump inhibit?
On ground with both engines shutdown

Is it possible to have eng fire indication if both eng fire detection loops failed?
Yes if brake in both loops occurred within 5 secs of each other (flame effect)

When the FCU inhibited?
Land mode and aircraft below 400 RA Loc & GS locked.

The VLS speed in the PFD is it flaps position or handle position?
It is flap position.

When loss of electric power is ISIS lost?
No, it will be powered by internal battery for 5 minutes

When amber box come in OXY in door ECAM page, what does it mean?
When oxygen pressure less than 1000 psi

When "CKPT OXY" come in amber in door ECAM page, what does it mean?
The crew supply switch in the over head panel is switch to off.

How do you disconnect the auto thrust in flight?
By pressing the auto thrust instinctive disconnect pb (in the thrust lever).

Fly to med and at 6000 feet decide to return back to jed, where does cabin altitude go to without changing the FMS?

It go back to Jeddah (once the a/c does not fly above 8000 ft or a/c has changed altitude less than 5075 ft since t/o and the a/c rate of descent is greater than 200 ft for 30 seconds the cabin altitude go to departure airport).

When PTU work?
When deferential pressure between yellow and green more than 500 psi.

Do we have pressure by the RAT if blue hyd sys overheat?
No, the RAT will not pressurize the blue in case of fluid overheat.

Which pump has more pressure the center tank fuel pump or main tank pump? And how the center pumps feed the engines?
They have the same pressure. The main tank has relief sequence vale allow center pump feed the engine first.

When does static inverter activated?
When aircraft only power by battery.

What power the static inverter?
Battery no. 1

If we have a failure in TR 1, what will happen?
The DC bus 2 will power all dc buses.

If we lost TR 1 & 2 what buses will be not powered and what buses will be powered?
DC bus 1 & 2 and DC BAT bus will be unpowered and DC ESS BUS will be powered by ESS TR.

What happen below 100 & 50 knts when Emrg generator power the a/c?
Below 100 knts DC BAT BUS is automatically connected to the battery.
Below 50 knts AC ESS BUS is automatically shed leading to loss of all CRTs.

What does emerg gen fault light mean?
Loss of AC BUS 1 & 2 and EMRG generator not powering the a/c.

What does IDG fault light mean and when it inhibits?
IDG oil outlet overheat above 185 degrees C or oil press is low and inhibit when N2 below 14%.

When battery connected to DC battery BUS?
1- APU starting and APU N less than 95%
2- battery voltage less than 26.5 V
3- loss of AC BUS 1 & 2 and speed less than 100KNTS

Do we have to push bus tie pb to keep AC BUS 1 & 2 powered?
No, it is automatically functioned.

When do we have galley fault light on?
One of the generator loads exceeds 100%.

When do we have fault light in AC ESS FEED?
When AC ESS BUS not powered.

In case of AC ESS FEED fault, do we have to push the AC ESS FEED S/W?
No, we don't have to do so (only when asked by checklist).

When ADR2 lost in taxi, what do you do?
Reset the ADR2 by selecting switch off and on.

If we lost TR 1&2 what buses will be not powered and what buses will be powered?
Dc bus 1&2 and DC Bat bus will be un powered and DC ESS BUS
will be powered by ESS TR.

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Loss of **AC BUS** 1&2 and **EMRG** generator not powering the a/c.

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When AC ESS BUS not powered.

In Case of AC ESS FEED fault, do we have to push the AC ESS FEED S/W?
No we don't have to do so (only when asked by checklist)

When ADR2 lost in taxi what do you do?
Reset the ADR2 by selecting switch off and on.

When galley shed display in ECAM?
1:when only one generator supply the a/c. 2: when galley switch is off.

If we lose both pressurization control sys, does the sys transfer to manual automatically?
No, we have to select manually.

How the pressurization sys transfer from one to the other?
1:by selecting the mode s/w to off 10 seconds then on.
2:70 sec. After landing. 3:when other system fail.

When the landing gear handle inhibit?
When a/c speed more than 260 KNTS.

When we select RAD NAV in MCDU and we found all page show (----) what does it mean?
The nav pb is selected on Radio Management panel.

How money level in alt low?
2 levels with reduced protection (low and hi speed stability). And without reduced protection.

What item degrade when loss of ELACl and SEC2?
Nothing.

If we lose all ADIRs what happen to ELACs?
We loss ELAC functions.

In ALT low what happen to pitch and roll?
Yaw only provides yaw dumping. Roll has only 1 aileron and 2 spoilers in each wing (if aileron lost you got 4 spoilers to control the roll)

When hi angle of attack what happen to the bank limit?
Bank limited to 45 degrees and when side stick released bank go to 33 degrees.

When hi speed protection active what happen to the bank?
Bank limited to 40 degrees and when side stick released bank go to 0 degrees.

How money motor in the VERTICAL stabilizer?
3 motors.

When we have elevator L or R fault what happen to Spoilers?
Spoilers 3&4 inhibited.

When the ailerons go to dumping mode?
With loss of ELAC 1&2.

What happen to spoilers when we loss electric?
Spoilers retracted to zero.

Which control service are affected when SEC1&3 lost?
Speed brake spoilers and roll access (2&3&4 spoilers are lost)

When You get beta target?
With engine failure in take off and go around.

What is the difference between (USE MANUAL TRIM) & (MANUAL PITCH TRIM ONLY)?
Use manual trim aircraft in direct law… manual pitch trim only aircraft in mechanical pack up low.

When aircraft go to flare mode in ALT low?
With landing gear down.

When stab trim go to zero?
When aircraft in Ground and pitch below 2.5 degrees for 5 seconds.

When you got 1+F?
For take off and in go around.

What is side Stick priority logic?
1: when both ss operate opposite direction nothing happen to flight control. when in the same direction the system add both ss input together in both cases 2 green side stick priority light on glare shield and " dual input " vise msg activated.
2: pressing the take over pb for seconds will de activate the other side stick and to activate the deactivated one press in the deactivated pb again. (a red light come on in front off the deactivated side stick)

Explain a port !

Do we do cargo fire test?why?
No because it self test.

When eng mode selector inhibited?

Which of the speed is flaps handle position speed and which is flap position speed?
Flap handle position speed (VMO/MMO VFE VFENXT) flap position (VLS & OVER SPEED WARNING)

What is the max alt can be set in alt windows?
49000

Will apu auto shutdown during apu fire test
no

how do you do an obstacle strategy descend?

What are the ECAM component?

Explain a Protection.

What will happen to rudder if both fac lost?

Can PUT pressurize blue system?
No

When IDG fault light inhibited?
Low Eng SPD : N2 below 14%

If emerge lights are armed, when the emerg lights come on?

On ground with windows & props PB in on position, what will be heated?

Is it ok to push back using main gear push back truk?
Yes pushback procedure

If we have only one good batt and the other one depleted can we start APU sing the good bat?
Yes we can

How many FD required to engauge A/T?
None

How many FD required to enguge SRS?
Only 1fd is required

What item only powered by yellow hydraulic?
1: alternate brake and brake accumulator.
2:n.w.steering
.3:cargo door
.4:eng.reverse no.2.

What item only powered by green hydraulic system?
1: normal brake 2:no.1 eng reverse.3:landing gear

What does the fault light in the eng hyd pump mean?
1:reservoir level is low. 2:reservoir over heat.3: reservoir air pressure is low pump pressure is now.(the same for elec.+pump over heat)

When the blue pump inhibits?
On ground with both engines shutdown.

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What dose it mean?
When oxygen pressure less than 1000 psi.

When "CKPT OXY" come in amber in door ECAM page what dose it mean?

When speed BRK inhibit

When you have Auto Transfer Fuel

How may HYO pump

Anti SKD NWS SW to off What you lose

Blower fult light

Auto BRK when it is operative

A 320 GACA ORAL

1. **Flex t/o JED. What is flex temp and V speeds?**

2. **Landing with Sec 1 + SEC 2 fault. What is landing distance required and Vapp?**

3. **When and why do you see the ADIRS battery light?**

4. **ADIRS "FAULT". What does it mean?**

5. **ADIRS. What is the procedure for selecting “ATT”?**

6. **What is “Normal Law”?**

7. **Can you exceed normal law limits?**

8. **EVAC switch is in CAPT position and cabin crew wants to evacuate. What will you see and hear?**

9. **Emergency call from cabin. What will you see and hear?**

10. **What is the meaning of “SMOKE” in GEN 1 LINE pb?**

11. **What happens when you select it “OFF”?**

12. **What is the meaning of “FAULT” in RAT & EMER GEN pb?**

13. **GPWS panel. What is purpose of and the difference between “FLAP MODE” and “LDG FLAP 3”?**

14. **RCDR panel. When is CVR active?**

15. **What will you see and hear when cabin crew makes emergency call to the cockpit?**

16. **How many fire extinguisher bottles does the APU have?**

17. **When does PTU operate?**

18. **What is the meaning of PTU pb “FAULT”?**

19. **How many pumps in the Y system?**

20. **When do you see “ FAULT” in G engine pump pb?**

21. **What is the hydraulic system operating pressure?**

22. **When will you see “FAULT” IN Fuel “MODE SEL” pb?**

23. **With reference to Q. 22, which tank(s) does the 5000kg fuel refer to?**

24. **When will the center tank fuel not be used? (2 occasions)**

25. **What is minimum battery voltage?**

26. **When do you see “FAULT” in APU generator pb?**

27. **What are the requirements for disconnecting the IDG?**

28. **Air conditioning panel. When does flow go to HI regardless of Pack Flow switch position?**

29. **When can you activate ram air and why?**

30. **What does the ditching pb do?**

31. What will happen to wing anti ice and engine anti ice valves when electrical power is lost?

32. On what occasions will the wing anti ice valve close automatically?

33. When is the LDG ELEV Auto position not used?

34. With the pressurization MODEL SEL pb in "MAN", what does the LDG ELEV selector do?

35. EXT PWR pb and APU START pb both are displaying "AVAIL" . What source is powering the aircraft?

36. How many fire extinguishers for the cargo holds?

37. How long after firing the cargo fire extinguisher will you see "DISCH"?

38. How many "DISCH" lights will you see?

39. When will you see "FAULT" in the engine Fire/Fault light on the pedestal?

40. With AP engaged, can you manually move the pitch trim wheel?

41. What trims faster-manual trimming or AP trimming?

42. With AP on can you manually trim rudder?