

<b>Airbus Arrival Briefing/Flows Guide</b>		
<i>Updated 10-14-17</i>		
<b>Weather – Obtain ATIS</b>		
<b>Automation Flows</b>		
<b>1. MCDU "Reverse "Z"</b>	F-PLN	<ul style="list-style-type: none"> <li>• Re-do if Return or Divert (2L lateral revision)</li> <li>• Select ARRIVAL page and enter RWY, APPR, STAR, TRANS, and APPR VIA</li> <li>• Validate the approach</li> <li>• Clean up flight plan with FAF as "TO" Waypoint</li> </ul>
	RAD NAV	<ul style="list-style-type: none"> <li>• VOR: Check for proper NAVAID tuning, either auto or manual.</li> </ul>
	PROG	<ul style="list-style-type: none"> <li>• Insert runway under 4R for situational awareness</li> <li>• If RNAV approach (<u>NOT</u> VOR):                             <ul style="list-style-type: none"> <li>◦ 0.3 RNP for RNAV (GPS)</li> <li>◦ Required RNP for RNAV (RNP)</li> <li>◦ GPS PRIMARY or NAV ACCURACY HIGH must be present on both PROG pages (may be confirmed on ND)</li> </ul> </li> </ul>
	PERF APPR	<ul style="list-style-type: none"> <li>• Activate / Confirm Approach (when in SELECTED SPEED Mode, ask other pilot)</li> <li>• Enter Landing Data                             <ul style="list-style-type: none"> <li>QNH, Temp, MAG WIND</li> <li>V<sub>APP</sub> (if required)</li> <li>DH/MDA (DH/DA - CAT II/III, DA/DDA - CAT I, RNAV, VOR)</li> <li>LDG CONF (GPWS LDG FLAP 3 pb OFF if required)</li> </ul> </li> </ul>
	DATA X2 (If RNAV)	<ul style="list-style-type: none"> <li>• Deselect RADIONAV (POSITION MONITOR (1L))</li> <li>• GPS MONITOR (POSITION MONITOR (1L)) – Ensure GPS in NAV mode</li> </ul>
<b>2. ILS pb (if ILS/LOC Approach) / PM VOR sel switch to VOR (if VOR Approach); CSTR pb ON</b>		
<b>3. Seat Belt Sign - ON</b>		
<b>4. Set AUTO BRK (if desired)</b>		
<b>5. Check ECAM memos, status, and cabin rate of descent</b>		
<b>6. Changeover Report</b>		
<b>Report – Arrival Briefing</b>		
<b>1. STAR / Approach Chart</b>	<p>Use FMS and electronic displays when applicable and ensure Arrival Verification accomplished.</p> <ul style="list-style-type: none"> <li>• FMS: Arrival, arrival transition , approach (ensure NO VIA unless required)</li> <li>• Top of descent point &amp; first published altitude constraint</li> </ul>	<ul style="list-style-type: none"> <li>• Highest MSA</li> <li>• Approach name and runway *</li> <li>• Approach chart date *</li> <li>• TDZE *</li> <li>• Required visibility *</li> </ul>
<b>2. PFD</b>	<ul style="list-style-type: none"> <li>• Primary navaid Frequency *</li> <li>• Final approach course *</li> <li>• DA (DH), AH, or DDA/MAP *</li> </ul>	
<b>3. F-PLN page</b>	<ul style="list-style-type: none"> <li>• Final approach verification altitude *</li> <li>• Missed approach *</li> </ul>	
<b>4. All Approaches</b>	<ul style="list-style-type: none"> <li>• MEL items</li> <li>• Planned runway turnoff and taxi route/hot spots/runway crossings</li> <li>• Landing performance (Standard or Non-Standard Assessment)</li> <li>• Autobrakes setting</li> <li>• Landing flaps setting</li> <li>• Maximum landing pitch (A319/320 - 10°, A321 - 7.5°)</li> <li>• Any applicable special considerations such as:                             <ul style="list-style-type: none"> <li>◦ Unique Airport Ops Advisory page approach information</li> <li>◦ Unique noise abatement procedures</li> <li>◦ Unique engine failure during missed approach procedures</li> <li>◦ Significant terrain or obstacles in terminal area relative to approach routing</li> <li>◦ Significant weather conditions (windshear, icing, runway conditions)</li> <li>◦ LAHSO</li> <li>◦ ECAM status that may affect approach &amp; landing capabilities</li> <li>◦ Pertinent Special Equipment List (SEL) items</li> <li>◦ Any other known risks and intentions</li> </ul> </li> </ul>	
* If in night conditions or weather less than 2000/3 <span style="float: right;">Note: Blue colored text required for ALL briefings.</span>		
If in day conditions with weather 2000/3 or greater: Electronic/visual means to identify the runway.		
<b>Descent - Approach Checklist</b>		

## A319/320/321 Callouts

<b>Takeoff to Flap Retraction</b>		
<b>Trigger</b>	<b>PF</b>	<b>PM</b>
<b>Commencing takeoff roll</b>	<ul style="list-style-type: none"> <li>Advance thrust levers to approximately 50% N1 (CFM or 1.05 EPR (IAE)</li> <li>Advance thrust levers to FLX or TOGA</li> <li>Check <b>MAN FLX</b> or <b>MAN TOGA</b> on FMA</li> </ul>	<ul style="list-style-type: none"> <li>Verify takeoff thrust on E/WD</li> </ul>
	<ul style="list-style-type: none"> <li>Captain assumes/maintains control of thrust levers</li> </ul>	<ul style="list-style-type: none"> <li>Verify takeoff thrust on E/WD</li> </ul>
<b>80 kts</b>	<b>"CHECKED"</b>	<b>"80"</b> <ul style="list-style-type: none"> <li>Check STBY airspeed</li> </ul>
<b>V<sub>1</sub></b>		<b>"V1"</b>
		<ul style="list-style-type: none"> <li>Captain removes hand from thrust levers</li> </ul>
<b>V<sub>R</sub></b>	<ul style="list-style-type: none"> <li>Rotate at 3° / sec to 15°</li> </ul>	<b>"ROTATE"</b>
<b>After liftoff</b>	<ul style="list-style-type: none"> <li>Verify positive rate of climb</li> </ul>	<ul style="list-style-type: none"> <li>Verify positive rate of climb on VSI</li> </ul>
	<ul style="list-style-type: none"> <li>Maintain F/D commanded attitude</li> <li>Establish initial climb speed of not less than V<sub>2</sub> + 10 knots</li> </ul>	<ul style="list-style-type: none"> <li>Position gear lever UP</li> <li>Monitor speed and altitude</li> </ul>
<b>Above 100' AFL</b>	<b>"AUTOPILOT 1"</b> or <b>"AUTOPILOT 2"</b> , as appropriate	<ul style="list-style-type: none"> <li>Select autopilot ON, if requested</li> </ul>
<b>At or above 400' AFL</b>	<ul style="list-style-type: none"> <li>Select/Request <b>"HEADING _____"</b> if appropriate</li> </ul>	<ul style="list-style-type: none"> <li>Select HDG, if requested</li> </ul>
<b>At the THR RED ALT LVR CLB flashing</b>	<ul style="list-style-type: none"> <li>Move thrust levers to the CL detent</li> </ul>	
	<ul style="list-style-type: none"> <li>Verify <b>THR CLB</b> annunciations on FMA</li> </ul>	<b>"CLIMB SET"</b>
<b>At ACCEL ALT (SRS changes to CLB or OP CLB)</b>	<ul style="list-style-type: none"> <li>Follow F/D commands to reduce pitch and accelerate</li> </ul>	
<b>F speed (only displayed when FLAPS 2 or 3 were used for takeoff)</b>	<ul style="list-style-type: none"> <li>Check airspeed above <b>F</b> speed and accelerating</li> </ul>	<ul style="list-style-type: none"> <li>Check airspeed above <b>F</b> speed and accelerating</li> </ul>
	<b>"FLAPS 1"</b> , if appropriate	<ul style="list-style-type: none"> <li><b>"FLAPS 1"</b>, if requested</li> <li>Select FLAPS 1, if requested</li> </ul>
<b>S speed</b>	<ul style="list-style-type: none"> <li>Check airspeed above <b>S</b> speed and accelerating</li> </ul>	<ul style="list-style-type: none"> <li>Check airspeed above <b>S</b> speed and accelerating</li> </ul>
	<ul style="list-style-type: none"> <li>Monitor acceleration to 250 knots</li> </ul>	<ul style="list-style-type: none"> <li>Select FLAPS 0</li> <li>Disarm spoilers</li> <li>Accomplish After Takeoff Flow and Checklist</li> </ul>

<b>Loss of Thrust At or Above V<sub>1</sub></b>		
<b>Trigger</b>	<b>PF</b>	<b>PM</b>
<b>Loss of thrust</b>	<ul style="list-style-type: none"> <li>Pilot first recognizing engine failure <b>"ENGINE FAILURE"</b></li> </ul>	
	<ul style="list-style-type: none"> <li><b>"TOGA"</b>, if desired</li> <li>Advance thrust levers to TOGA, if desired</li> </ul>	<ul style="list-style-type: none"> <li>Ensure thrust levers at TOGA, if requested <b>"TOGA SET"</b>, if requested</li> </ul>
<b>V<sub>R</sub></b>	<ul style="list-style-type: none"> <li>Rotate at 3° / sec to 12.5°</li> </ul>	<b>"ROTATE"</b>
<b>After liftoff</b>	<ul style="list-style-type: none"> <li>Verify positive rate of climb <b>"GEAR UP"</b></li> <li>Maintain F/D commanded attitude</li> <li>Trim rudder to maintain a centered β target</li> </ul>	<ul style="list-style-type: none"> <li>Verify positive rate of climb on VSI <b>"POSITIVE RATE"</b></li> <li><b>"GEAR UP"</b></li> <li>Position gear lever UP</li> <li>Monitor speed and altitude</li> </ul>
<b>Above 100' AFL</b>	<ul style="list-style-type: none"> <li><b>"AUTOPILOT 1"</b> or <b>"AUTOPILOT 2"</b>, as appropriate</li> </ul>	<ul style="list-style-type: none"> <li>Select autopilot ON, as requested</li> </ul>
<b>At or above 400' AFL (or altitude as specified on applicable route manual "Engine Failure – Takeoff" procedure)</b>	<ul style="list-style-type: none"> <li>Comply with runway specific "Engine Failure - Takeoff" procedure (if published), otherwise, fly runway heading</li> </ul>	
	<ul style="list-style-type: none"> <li>Select/request <b>"HEADING _____"</b> or <b>"NAV"</b> for FMS engine failure procedure as appropriate</li> </ul>	<ul style="list-style-type: none"> <li>Select runway heading, engine failure heading, or NAV, if requested</li> <li>Advise ATC, when able</li> </ul>
<b>Climbing through Engine Out Acceleration Altitude</b>	<ul style="list-style-type: none"> <li>Push V/S knob or request <b>"VERTICAL SPEED ZERO"</b></li> </ul>	<ul style="list-style-type: none"> <li>Push V/S knob, if vertical speed zero requested</li> <li>Verify V/S 0</li> </ul>
<b>E speed (only displayed when FLAPS 2 or 3 were used for takeoff)</b>	<ul style="list-style-type: none"> <li>Check airspeed <b>"FLAPS 1"</b>, if appropriate</li> </ul>	<ul style="list-style-type: none"> <li>Check airspeed <b>"FLAPS 1"</b>, if requested</li> <li>Select FLAPS 1, if requested</li> </ul>
<b>S speed</b>	<ul style="list-style-type: none"> <li>Check airspeed <b>"FLAPS UP"</b></li> <li>Monitor acceleration to green dot speed</li> </ul>	<ul style="list-style-type: none"> <li>Check airspeed <b>"FLAPS UP"</b></li> <li>Select FLAPS 0</li> <li>Disarm spoilers</li> </ul>
<b>Green dot speed (V<sub>FTO</sub>)</b>	<ul style="list-style-type: none"> <li>Select/request <b>"OPEN CLIMB"</b>, if desired</li> <li>Select/request <b>"SPEED _____"</b>, Maintain green dot speed</li> <li>Select MCT <b>"MCT"</b></li> </ul>	<ul style="list-style-type: none"> <li>Select Open Climb, if requested</li> <li>Select green dot speed, if requested</li> <li>Verify thrust levers at MCT <b>"MCT SET"</b></li> </ul>
	<ul style="list-style-type: none"> <li>Accomplish ECAM and/or QRH procedure(s) as appropriate</li> </ul>	

<b>Rejected Takeoff</b>	
<b>Capt</b>	<b>FO</b>
<p><b>"REJECT, MY AIRCRAFT"</b></p> <ul style="list-style-type: none"> <li>Retard thrust levers to IDLE</li> <li>Use Autobrakes MAX or maximum manual braking</li> <li>Select and maintain maximum reverse thrust until it can be assured the aircraft can stop on the runway<sup>1</sup></li> <li>Maintain slight forward pressure on sidestick</li> </ul> <p><i>As soon as aircraft is stopped</i></p> <ul style="list-style-type: none"> <li>After immediately evaluating situation"                             <ul style="list-style-type: none"> <li>Make a PA announcement"                                     <ul style="list-style-type: none"> <li><b>"THIS IS THE CAPTAIN. REMAIN SEATED, REMAIN SEATED, REMAIN SEATED"</b></li> </ul> </li> <li>Advise cabin of intentions when able</li> </ul> </li> </ul>	<p><b>"YOUR AIRCRAFT"</b></p> <ul style="list-style-type: none"> <li>Monitor autobrakes</li> <li><b>"NO AUTOBRAKES"</b>, if applicable</li> <li>Monitor deceleration throughout reject</li> <li>Notify tower, when able</li> <li><b>"80"</b></li> </ul>
<p><i>Or</i></p> <ul style="list-style-type: none"> <li>Call for and accomplish QRH Evacuation checklist</li> </ul>	<ul style="list-style-type: none"> <li>Accomplish QRH Evacuation checklist, if directed</li> </ul>
<ul style="list-style-type: none"> <li>Check brake temperature indication</li> </ul>	
<p><sup>1</sup> In case of complete loss of braking, accomplish "Loss of Braking" procedure in PHB Chapter 2i</p>	

<b>Loss of Braking Procedure</b>
<p><b>IF AUTOBRAKE IS SELECTED:</b></p> <ol style="list-style-type: none"> <li>BRAKE PEDALS ... PRESS</li> </ol> <p><b>IF NO BRAKNG AVAILABLE:</b></p> <ol style="list-style-type: none"> <li>REV ... MAX</li> <li>BRAKE PEDALS ... RELEASE                             <ul style="list-style-type: none"> <li><i>Brake pedals should be released when the A/SKID &amp; N/W STRG selector is switched OFF, since pedal force produces more braking action in alternate mode than in normal mode.</i></li> </ul> </li> <li>A/SKID &amp; N/W STRG ... OFF</li> <li>BRAKE PEDALS ... PRESS                             <ul style="list-style-type: none"> <li><i>Apply brakes with care since initial pedal force or displacement produces more braking action in alternate mode than in normal mode.</i></li> </ul> </li> <li>MAX BRK PR ... 1000 PSI                             <ul style="list-style-type: none"> <li><i>Monitor brake pressure on BRAKES PRESS indicator. Limit brake pressure to approximately 1000 psi and at low ground speed adjust brake pressure as required.</i></li> </ul> </li> </ol> <p><b>IF STILL NO BRAKING:</b></p> <ol style="list-style-type: none"> <li>PARKING BRAKE ... SHORT AND SUCCESSIVE APPLICATION                             <ul style="list-style-type: none"> <li><i>Use short and successive brake applications to stop the aircraft. Brake onset asymmetry may be felt at each parking brake application. If possible delay use of parking brake until low speed to reduce the risk of tire burst and lateral control difficulties.</i></li> </ul> </li> </ol>
<p><b>CAUTION:</b> Autobrakes will not activate below 72 knots.</p>

<b>ILS CAT I</b>			
<b>Trigger</b>	<b>PF</b>	<b>PM</b>	
<b>Prior to starting the approach</b>	<ul style="list-style-type: none"> <li>Ensure waypoints are sequenced properly</li> <li>Confirm the approach phase has been activated</li> </ul>		
<b>Initial approach</b>	<ul style="list-style-type: none"> <li>Check airspeed below <math>V_{FE}</math> Next - 10 knots and not accelerating <b>"FLAPS 1"</b></li> <li>Verify <b>S</b> speed</li> </ul>	<ul style="list-style-type: none"> <li>Check airspeed below <math>V_{FE}</math> Next - 10 knots and not accelerating <b>"FLAPS 1"</b></li> <li>Select FLAPS 1</li> </ul>	
	<ul style="list-style-type: none"> <li>Check airspeed below <math>V_{FE}</math> Next - 10 knots and not accelerating <b>"FLAPS 2"</b></li> <li>Verify <b>F</b> speed</li> </ul>	<ul style="list-style-type: none"> <li>Check airspeed below <math>V_{FE}</math> Next - 10 knots and not accelerating <b>"FLAPS 2"</b></li> <li>Select FLAPS 2</li> </ul>	
<b>Cleared for the approach</b>	<ul style="list-style-type: none"> <li>Check correct LOC identifier displayed on PFD</li> </ul>		
	<ul style="list-style-type: none"> <li>Select APPR on FCU</li> </ul>	<ul style="list-style-type: none"> <li>Verify both AP1 and AP2 engaged, if an autopilot approach</li> <li>Verify <b>GS</b> and <b>LOC</b> annunciate blue on FMA</li> </ul>	
<b>LOC alive</b>	<ul style="list-style-type: none"> <li>Verify LOC deviation display</li> </ul>	<b>"COURSE ALIVE"</b>	
	<ul style="list-style-type: none"> <li>Verify <b>LOC*</b> annunciates green on FMA</li> </ul>		
<b>G/S alive</b>	<ul style="list-style-type: none"> <li>Verify G/S Deviation Display</li> </ul>	<b>"GLIDESLOPE ALIVE"</b>	
<b>1½ dots or 3 nm from FAVA</b>	<ul style="list-style-type: none"> <li>Check airspeed <b>"GEAR DOWN"</b></li> </ul>	<ul style="list-style-type: none"> <li>Check airspeed <b>"GEAR DOWN"</b></li> <li>Position gear lever DOWN</li> <li>Check Triple Indicator</li> </ul>	
	<ul style="list-style-type: none"> <li>Check airspeed below <math>V_{FE}</math> Next - 10 knots and not accelerating <b>"FLAPS 3, LANDING CHECKLIST"</b></li> <li>Spoilers Arm</li> </ul>	<ul style="list-style-type: none"> <li>Check airspeed below <math>V_{FE}</math> Next - 10 knots and not accelerating <b>"FLAPS 3"</b></li> <li>Select FLAPS 3</li> <li>Accomplish Landing Flow and Checklist</li> </ul>	
<b>On GS or 1 nm from FAVA</b>	<b>2 E N G</b>	<ul style="list-style-type: none"> <li>Check airspeed below <math>V_{FE}</math> Next - 10 knots and not accelerating <b>"FLAPS FULL"</b>, if needed</li> </ul>	<ul style="list-style-type: none"> <li>Check airspeed below <math>V_{FE}</math> Next - 10 knots and not accelerating <b>"FLAPS FULL"</b></li> <li>Select FLAPS FULL, if requested</li> <li>Complete Landing Checklist</li> <li>Monitor speed</li> </ul>
		<ul style="list-style-type: none"> <li>Verify <b>GS</b> annunciates green on FMA</li> </ul>	
	<b>1 E N G</b>	<ul style="list-style-type: none"> <li><b>"SET MISSED APPROACH ALTITUDE"</b></li> </ul>	<ul style="list-style-type: none"> <li>Set missed approach altitude on FCU</li> </ul>
		<ul style="list-style-type: none"> <li>Verify <b>GS</b> annunciates green on FMA</li> </ul>	<ul style="list-style-type: none"> <li>Set missed approach altitude on FCU</li> </ul>
<b>Final Approach Verification Altitude Fix</b>	<ul style="list-style-type: none"> <li>Verify Final Approach Verification Altitude</li> </ul>		
<b>1,000' AFL</b>	<ul style="list-style-type: none"> <li>Verify altitude <b>"STABLE"</b></li> </ul>	<b>"1000"</b> (auto callout)	
	<ul style="list-style-type: none"> <li>Verify autothrust in <b>SPEED</b> mode</li> </ul>		
<b>500' AFL</b>	<ul style="list-style-type: none"> <li>Verify altitude, speed, and sink rate</li> </ul>	<ul style="list-style-type: none"> <li><b>"500"</b> (auto callout)</li> <li><b>"STABLE, TARGET, SINK _____"</b></li> <li>or</li> <li><b>"STABLE, ± _____, SINK _____"</b></li> </ul>	

<b>ILS CAT I (Cont'd)</b>		
<b>100' above DA(H)</b>	<ul style="list-style-type: none"> <li>Verify altitude <b>"CONTINUING"</b></li> </ul>	<b>"100 ABOVE"</b> <sup>1</sup> (auto callout - if installed) <ul style="list-style-type: none"> <li>Divide time between monitoring instruments and scanning outside for runway environment</li> </ul>
<b>DA(H) Runway NOT in sight</b>	<b>"GO AROUND, TOGA"</b> <ul style="list-style-type: none"> <li>Execute go around procedure</li> </ul>	<b>"MINIMUMS"</b> (auto callout - if installed) <b>"NO CONTACT"</b>
or		
<b>DA(H) Runway in sight</b>	<b>"LANDING"</b> <ul style="list-style-type: none"> <li>Verify A/P disengaged prior to:                             <ul style="list-style-type: none"> <li>80 feet AGL if CAT 2, CAT 3 SINGLE, or CAT 3 DUAL annunciated on FMA</li> <li>160 feet AGL if CAT I annunciated on FMA</li> </ul> </li> </ul>	<b>"MINIMUMS"</b> , (auto callout - if installed) <b>"&lt;VISUAL CUES&gt; IN SIGHT"</b> <sup>1</sup> ,
<sup>1</sup> Not required if "LANDING" callout has been made by PF.		

<b>Visual Approach Callouts</b>		
<b>Trigger</b>	<b>PF</b>	<b>PM</b>
<b>1,000' AFL</b>	<ul style="list-style-type: none"> <li>Verify altitude <b>"STABLE"</b></li> </ul>	<b>"1000"</b> (auto callout - if installed)
	<ul style="list-style-type: none"> <li>Verify autothrust in <b>SPEED</b> mode</li> </ul>	
<b>500' AFL</b>	<ul style="list-style-type: none"> <li>Verify altitude, speed, and sink rate</li> </ul>	<b>"500"</b> (auto callout - if installed) <b>"STABLE, TARGET, SINK ____"</b> or <b>"STABLE, ± ____, SINK ____"</b>

<b>Communication During Manual Flight</b>	
<b>Autopilot</b>	<b>"AUTOPILOT OFF"</b> or <b>"AUTOPILOT 1(2)"</b>
<b>Flight Directors</b>	<b>"FLIGHT DIRECTORS OFF"</b> <sup>1</sup> or <b>"FLIGHT DIRECTORS ON"</b> Ensure <b>both</b> F/Ds are OFF or ON  If one FD is off then the other FD <u>must</u> be selected off in order to ensure autothrust maintains target speed.
<b>Speed</b>	<b>"SPEED ____"</b> or <b>"MANAGED SPEED"</b>
<b>Heading/Nav</b>	<b>"HEADING ____"</b> or <b>"NAV"</b>
<b>Managed/Open Climb (Descent)</b>	<b>"OPEN CLIMB (DESCENT)"</b> or <b>"MANAGED CLIMB (DESCENT)"</b>
<b>Vertical Speed</b>	<b>"VERTICAL SPEED PLUS (MINUS) ____"</b> or <b>"VERTICAL SPEED ZERO"</b>
<sup>1</sup> If the Flight Directors are selected off, the use of the Flight Path Vector (FPV) is recommended.	

<b>ILS CAT II/III</b>			
<b>Trigger</b>	<b>Captain (PF)</b>	<b>FO (PM)</b>	
<b>Prior to starting approach</b>	<ul style="list-style-type: none"> <li>Ensure waypoints are sequenced properly</li> <li>Confirm that the approach phase has been activated</li> </ul>		
<b>Initial approach</b>	<ul style="list-style-type: none"> <li>Check airspeed below <math>V_{FE}</math> Next - 10 knots and not accelerating</li> <li><b>"FLAPS 1"</b></li> <li>Verify <b>S</b> speed</li> </ul>	<ul style="list-style-type: none"> <li>Check airspeed below <math>V_{FE}</math> Next - 10 knots and not accelerating</li> <li><b>"FLAPS 1"</b></li> <li>Select FLAPS 1</li> </ul>	
	<ul style="list-style-type: none"> <li>Check airspeed below <math>V_{FE}</math> Next - 10 knots and not accelerating</li> <li><b>"FLAPS 2"</b></li> <li>Verify <b>F</b> speed</li> </ul>	<ul style="list-style-type: none"> <li>Check airspeed below <math>V_{FE}</math> Next - 10 knots and not accelerating</li> <li><b>"FLAPS 2"</b></li> <li>Select FLAPS 2</li> </ul>	
<b>Cleared for the approach</b>	<ul style="list-style-type: none"> <li>Check correct LOC identifier displayed on the PFD</li> <li>Select APPR on FCU</li> <li>Select second autopilot ON</li> <li><b>"CAT 3 DUAL"</b> or <b>"CAT 3 SINGLE"</b></li> </ul>	<ul style="list-style-type: none"> <li>Verify both AP1 and AP2 engaged</li> <li>Verify approach capability</li> </ul>	
	<ul style="list-style-type: none"> <li>Verify <b>GS</b> and <b>LOC</b> annunciate blue on FMA</li> </ul>		
<b>LOC alive</b>	<ul style="list-style-type: none"> <li>Verify LOC deviation display</li> </ul>	<b>"COURSE ALIVE"</b>	
	<ul style="list-style-type: none"> <li>Verify <b>LOC*</b> annunciates green on FMA</li> </ul>		
<b>G/S alive</b>	<ul style="list-style-type: none"> <li>Verify G/S Deviation Display</li> </ul>	<b>"GLIDESLOPE ALIVE"</b>	
<b>1 ½ dots or 3 nm from FAVA</b>	<ul style="list-style-type: none"> <li>Check airspeed</li> <li><b>"GEAR DOWN"</b></li> </ul>	<ul style="list-style-type: none"> <li>Check airspeed</li> <li><b>"GEAR DOWN"</b></li> <li>Position gear lever DOWN</li> <li>Check triple Indicator</li> </ul>	
<b>½ dot or 2 nm from FAVA</b>	<ul style="list-style-type: none"> <li>Check airspeed below <math>V_{FE}</math> Next - 10 knots and not accelerating</li> <li><b>"FLAPS 3, LANDING CHECKLIST"</b></li> <li>Spoilers Arm</li> </ul>	<ul style="list-style-type: none"> <li>Check airspeed below <math>V_{FE}</math> Next - 10 knots and not accelerating</li> <li><b>"FLAPS 3"</b></li> <li>Select FLAPS 3</li> <li>Accomplish Landing Flow and Checklist</li> </ul>	
<b>On G/S or 1 nm from FAVA</b>	<b>2</b>	<ul style="list-style-type: none"> <li>Check airspeed below <math>V_{FE}</math> Next - 10 knots and not accelerating</li> <li><b>"FLAPS FULL"</b></li> </ul>	<ul style="list-style-type: none"> <li>Check airspeed below <math>V_{FE}</math> Next - 10 knots and not accelerating</li> <li><b>"FLAPS FULL"</b></li> <li>Select FLAPS FULL, if requested</li> <li>Complete Landing Checklist</li> <li>Monitor speed</li> </ul>
		<ul style="list-style-type: none"> <li>Verify <b>GS</b> annunciates green on FMA</li> </ul>	<ul style="list-style-type: none"> <li>Set missed approach altitude on FCU</li> </ul>
	<b>1</b>	<ul style="list-style-type: none"> <li>Verify <b>GS</b> annunciates green on FMA</li> </ul>	
		<ul style="list-style-type: none"> <li><b>"SET MISSED APPROACH ALTITUDE"</b></li> </ul>	<ul style="list-style-type: none"> <li>Set missed approach altitude on FCU</li> </ul>
<b>Final Approach Verification Altitude Fix</b>	<ul style="list-style-type: none"> <li>Verify Final Approach Verification Altitude</li> </ul>		
<b>1,000' AFL</b>	<ul style="list-style-type: none"> <li>Verify altitude</li> <li><b>"STABLE"</b></li> </ul>	<b>"1000"</b> (auto callout)	
	<ul style="list-style-type: none"> <li>Verify autothrust in <b>SPEED</b> mode</li> </ul>		
<b>500' AFL</b>	<ul style="list-style-type: none"> <li>Verify altitude, speed, and sink rate</li> </ul>	<b>"500"</b> (auto callout)	
		<ul style="list-style-type: none"> <li><b>"STABLE, TARGET, SINK ____"</b> or <b>"STABLE, ± ____, SINK ____"</b></li> </ul>	

<b>ILS CAT II/III (Cont'd)</b>		
	<ul style="list-style-type: none"> <li>Verify <b>LAND</b> annunciates green on FMA</li> </ul>	
<b>Below 400' RA</b>	<ul style="list-style-type: none"> <li>Monitor the approach</li> </ul>	<b>"LAND GREEN"</b> or <b>"NO LAND GREEN"</b> , <b>"AUTOLAND WARNING"</b> , <b>"NO FLARE"</b> (as appropriate)
<b>100' above minimums</b>	<ul style="list-style-type: none"> <li>Verify altitude</li> <li><b>"CONTINUING"</b></li> <li>Divide time between monitoring auto flight system and scanning outside for runway environment</li> </ul>	<b>"100 ABOVE"</b> (auto callout) <sup>1</sup> <ul style="list-style-type: none"> <li>Verify altitude</li> </ul>
<b>DH Runway <u>not</u> in sight</b>	<b>"GO AROUND, TOGA"</b> <ul style="list-style-type: none"> <li>Execute go around procedure</li> </ul>	<b>"MINIMUMS"</b> (auto callout) <ul style="list-style-type: none"> <li>Verify altitude</li> </ul>
<b>OR ...</b>		
<b>DH Runway in sight</b>	<b>"LANDING"</b>	<b>"MINIMUMS"</b> (auto callout) <sup>1</sup> <ul style="list-style-type: none"> <li>Verify altitude</li> </ul>
<b>AH (Electronically verified aircraft will land in touchdown zone)</b>	<b>"LANDING"</b>	<b>"MINIMUMS"</b> (auto callout) <sup>1</sup> <ul style="list-style-type: none"> <li>Verify altitude</li> </ul>
<b>If Autoland RETARD (auto callout): 10 feet RA</b> or <b>If Manual landing: 20-30 feet RA</b>	<ul style="list-style-type: none"> <li>Verify thrust levers at idle</li> </ul>	<ul style="list-style-type: none"> <li>Monitor attitude on PFD</li> <li><b>"PITCH"</b>, if pitch attitude reaches 10 degrees A319/320 or 7.5 degrees A321</li> <li><b>"BANK"</b>, if bank reaches 7 degrees</li> </ul>
<b>Touchdown</b>	<ul style="list-style-type: none"> <li>Select Idle Reverse</li> <li>Select Max Reverse, as required</li> </ul>	<ul style="list-style-type: none"> <li>Verify spoiler extension and <b>REV</b> green on ECAM</li> <li><b>"SPOILERS"</b> or <b>"NO SPOILERS"</b>, if applicable</li> <li><b>"ONE REVERSE"</b> or <b>"NO REVERSE"</b>, if applicable</li> <li><b>"NO ROLLOUT"</b>, if applicable</li> </ul>
<b>Nosewheel touchdown</b>	<ul style="list-style-type: none"> <li>Apply brakes, as required</li> </ul>	<ul style="list-style-type: none"> <li>Monitor autobrakes, if selected</li> <li><b>"NO AUTOBRAKES"</b>, if applicable</li> <li>Monitor deceleration</li> </ul>
<b>80 kts</b>	<ul style="list-style-type: none"> <li>Begin to modulate toward Idle Reverse</li> </ul>	<b>"80"</b>
<b>60 kts</b>	<ul style="list-style-type: none"> <li>Ensure Idle Reverse thrust or less</li> <li>Disconnect autopilot</li> </ul>	

<b>Managed Non-ILS Approach</b>		
<b>Trigger</b>	<b>PF</b>	<b>PM</b>
<b>Prior to starting approach</b>	<ul style="list-style-type: none"> <li>Ensure waypoints are sequenced properly</li> <li>Confirm that the approach phase has been activated</li> </ul>	
<b>Initial approach</b>	<ul style="list-style-type: none"> <li>Check airspeed below <math>V_{FE}</math> Next – 10 knots and not accelerating <b>"FLAPS 1"</b></li> <li>Verify <b>S</b> speed</li> </ul>	<ul style="list-style-type: none"> <li>Check airspeed below <math>V_{FE}</math> Next – 10 knots and not accelerating <b>"FLAPS 1"</b></li> <li>Select FLAPS 1</li> </ul>
	<ul style="list-style-type: none"> <li>Check airspeed below <math>V_{FE}</math> Next – 10 knots and not accelerating <b>"FLAPS 2"</b></li> <li>Verify <b>F</b> speed</li> </ul>	<ul style="list-style-type: none"> <li>Check airspeed below <math>V_{FE}</math> Next – 10 knots and not accelerating <b>"FLAPS 2"</b></li> <li>Select FLAPS 2</li> </ul>
<b>Cleared for the approach</b>	<ul style="list-style-type: none"> <li>Select APPR on FCU</li> </ul>	
<b>Final approach course intercept</b>	<ul style="list-style-type: none"> <li>Verify <b>FINAL</b> and <b>APP NAV</b> annunciate blue on FMA</li> </ul>	
<b>Final approach course intercept</b>	<ul style="list-style-type: none"> <li>Verify <b>APP NAV</b> annunciates green on FMA</li> </ul>	
<b>Approx 3 miles prior to FAF/GP Intcpt</b>	<ul style="list-style-type: none"> <li>Check airspeed <b>"GEAR DOWN,"</b></li> </ul>	<ul style="list-style-type: none"> <li>Check airspeed <b>"GEAR DOWN"</b></li> <li>Position gear lever DOWN</li> <li>Check Triple Indicator</li> </ul>
<b>Approx 2 miles prior to FAF</b>	<ul style="list-style-type: none"> <li>Check airspeed below <math>V_{FE}</math> Next – 10 knots and not accelerating <b>"FLAPS 3, LANDING CHECKLIST"</b></li> </ul>	<ul style="list-style-type: none"> <li>Check airspeed below <math>V_{FE}</math> Next – 10 knots and not accelerating <b>"FLAPS 3"</b></li> <li>Select FLAPS 3</li> <li>Accomplish Landing Flow and Checklist</li> </ul>
<b>Approx 1 mile prior to FAF</b>	<ul style="list-style-type: none"> <li>Check airspeed below <math>V_{FE}</math> Next – 10 knots and not accelerating <b>"FLAPS FULL"</b>, if needed</li> </ul>	<ul style="list-style-type: none"> <li>Check airspeed below <math>V_{FE}</math> Next – 10 knots and not accelerating <b>"FLAPS FULL"</b></li> <li>Select FLAPS FULL, if requested</li> <li>Complete Landing Checklist</li> <li>Monitor speed</li> </ul>
	<p style="text-align: center;">No actions – maintain Flap 3 configuration &amp; airspeed</p>	
<b>Glidepath intercept/capture (FINAL APP)</b>	<ul style="list-style-type: none"> <li>Verify <b>FINAL APP</b> annunciates green on FMA</li> </ul>	
<b>1,000' AFL</b>	<ul style="list-style-type: none"> <li>Verify altitude <b>"SET MISSED APPROACH ALTITUDE"</b></li> <li>Verify altitude <b>"STABLE"</b></li> </ul>	<ul style="list-style-type: none"> <li>Set missed approach altitude on FCU <b>"1000"</b> (auto callout)</li> </ul>
<b>500' AFL</b>	<ul style="list-style-type: none"> <li>Verify altitude, speed, and sink rate</li> </ul>	<ul style="list-style-type: none"> <li><b>"500"</b><sup>1</sup> (auto callout)</li> <li><b>"STABLE, TARGET, SINK _____"</b></li> <li>Or <b>"STABLE, ± _____, SINK _____"</b></li> </ul>
<b>100' above DA or DDA</b>	<ul style="list-style-type: none"> <li>Verify altitude <b>"CONTINUING"</b><sup>2</sup></li> </ul>	<ul style="list-style-type: none"> <li><b>"100 ABOVE"</b><sup>2,3</sup></li> <li>Divide time between monitoring instruments and scanning outside for runway environment</li> </ul>
<b>DA or DDA (Runway environment <u>not</u> in sight)</b>	<ul style="list-style-type: none"> <li><b>"GO AROUND, TOGA"</b></li> <li>Execute go around procedure</li> </ul>	<ul style="list-style-type: none"> <li><b>"MINIMUMS, NO CONTACT"</b><sup>3</sup></li> </ul>
<b>DA or DDA (Runway environment <u>is</u> in sight)</b>	<ul style="list-style-type: none"> <li><b>"LANDING"</b></li> </ul>	<ul style="list-style-type: none"> <li><b>"MINIMUMS, &lt;VISUAL CUES&gt; IN SIGHT"</b><sup>2</sup></li> </ul>
	<ul style="list-style-type: none"> <li>Verify A/P disengaged no later than DA/DDA</li> </ul>	

<sup>1</sup>Callout not required when it occurs near the same time as the "Hundred Above" or "Minimums" callouts.  
<sup>2</sup>Not required if "LANDING" callout has been made by PF.  
<sup>3</sup>Some aircraft will also make an auto callout.

**RNAV (RNP) AR/SAAAR Approach Notes**

RNAV (RNP) AR/SAAAR approach plate identifiers include:

- (RNP) in the title
- SPECIAL AIRCRAFT & AIRCREW AUTHORIZATION REQUIRED in notes section
- Another possible feature is the curved segment, called an RF (radius to fix) leg.

The MCDU FLT PLAN page will have "\_\_\_ ARC" displayed between the defining waypoints of an RF leg, where the number is the radius of the arc.

Airbus aircraft have uncompensated BARO-VNAV systems. Temperature limits must be respected.

To determine approach category use VAPP on MCDU PERF page. Use approach category to determine maximum speed when on an RF leg segment (consult QRH table).

Do not accept any clearance direct to a fix unless it is outside the FAF/GP intercept and does not immediately precede an RF leg.

Do not modify waypoints. Modifying waypoints may remove an RF leg, compromising obstacle clearance.

Once inside the FAF/GP Intercept, the PM must callout deviations that equal or exceeds 1/2 dot on the V/DEV scale. If V/DEV increases to  $\geq 3/4$  dot deviation, execute a missed approach.

**MISSED APPROACH**

ESTIMATED is the measure of position accuracy. If ESTIMATED value exceeds the REQUIRED value, NAV ACCUR DOWNGRAD is displayed. FM position is reliable but not sufficient to continue. Continue use of NAV but execute a missed approach.

GPS PRIMARY and HIGH accuracy must be present on both MCDU PROG pages. If GPS PRIMARY is lost, ESTIMATED position will increase with time. FM position is reliable but not sufficient to continue. Continue use of NAV but execute Missed Approach. Monitor FMA to ensure NAV is engaged.

If a missed approach is executed above 1000 ft AGL with NAV available, either

- Stop the descent and monitor FMA to ensure NAV is engaged, or
- Accomplish the go-around maneuver and monitor the FMA to ensure NAV is engaged.

If a missed approach is executed below 1000 ft AGL, utilize the go-around procedure. Monitor FMA to ensure NAV is engaged.

Always monitor FMA to ensure NAV is engaged. GA TRK may cause the aircraft to rapidly depart a curved RF course.

<b>Missed Approach is required for:</b>	<b>Missed Approach Execution:</b>
<ul style="list-style-type: none"> <li>• GPS PRIMARY LOST or NAV ACCUR DOWNGRADE is displayed on the ND and/or MCDU</li> <li>• FM/GPS POS DISAGREE ECAM, FMS1/FMS2 POS DIFF, or MAP NOT AVAILABLE is triggered</li> <li>• Vertical deviation <math>\geq 3/4</math> dot after FAF/GP Intercept</li> <li>• Any failure or degradation of FMS, GPS, Autopilot, or Flight Director</li> <li>• At MAP and visual landing cues not in sight</li> </ul>	<ul style="list-style-type: none"> <li>• Stop descent (below 1000' RA use Go-Around procedure), maintain or climb to (whichever is higher):                         <ul style="list-style-type: none"> <li>○ Approach segment altitude, or</li> <li>○ Missed approach altitude</li> </ul> </li> <li>• Remain in NAV:                         <ul style="list-style-type: none"> <li>○ Reengage, if required</li> <li>○ Follow the lateral approach path or missed approach path</li> </ul> </li> </ul>

<b>Stabilized Approach Callouts</b>		
<b>If ...</b>	<b>and...</b>	<b>then ...</b>
At 1,000 ft AFL	Stabilized	The PF calls <b>"STABLE"</b>
	Unstabilized in IMC	The PF calls <b>"UNSTABLE"</b> and performs a go-around. <sup>1</sup>
	Unstabilized in VMC	Compliance with the flight parameters shown above (not rate of descent) may be delayed until 500 ft AFL as long as "UNSTABLE" is called out along with the deviation (e.g., "slightly high – correcting", etc.), otherwise the PF calls out "UNSTABLE" and performs a go-around <sup>1</sup> .
At 500 ft AFL	Stabilized <sup>2</sup>	The PM calls <b>"STABLE, ± _____ (from Target Speed), SINK _____"</b>
	Unstabilized	The PM calls <b>"UNSTABLE"</b> and the PF performs a go-around. <sup>1</sup>

<sup>1</sup>If non-normal conditions require deviation and are briefed the approach can be continued.  
<sup>2</sup>Callout not required during non-ILS approach when it occurs near the same time as the "Hundred Above" or "Minimums" callout.

<b>Deviation Callouts</b>	
<b>Airspeed</b>	<b>"AIRSPEED"</b> – With landing flaps, anytime IAS is: <ul style="list-style-type: none"> <li>• Less than Target -5 knots</li> <li>• More than Target +10 knots</li> </ul>
<b>Rate of Descent</b>	<b>"SINK RATE"</b> when: <ul style="list-style-type: none"> <li>• Below 2000' AFL and descent rate exceeds 2000 fpm</li> <li>• Below 1000' AFL and descent rate exceeds 1000 fpm</li> <li>• Inside FAF and descent rate exceeds 1000 fpm</li> </ul>
<b>LOC or G/S Indication</b>	<b>"LOCALIZER" / "GLIDESLOPE"</b> when: <ul style="list-style-type: none"> <li>• On final, LOC deviation greater than ½ dot on PFD LOC</li> <li>• After GS interception, ½ dot on PFD GS</li> </ul>
<b>Non-ILS Approaches</b>	Vertical deviation – <b>"PATH"</b> Cross-track error exceedance – <b>"TRACK"</b> Bearing deviation – <b>"VOR"</b> or <b>"NDB"</b>

<b>Landing</b>		
<b>Trigger</b>	<b>PF</b>	<b>PM</b>
<b>If Autoland: (RETARD auto callout) 10' RA or</b> <b>If Manual landing: 20-30 feet RA</b>	<ul style="list-style-type: none"> <li>• Verify thrust levers at idle</li> </ul>	<ul style="list-style-type: none"> <li>• Monitor attitude on PFD</li> <li>• <b>"PITCH"</b>, if pitch attitude reaches 10° (A319/320) or 7.5° (A321)</li> <li>• <b>"BANK"</b>, if bank reaches 7°</li> </ul>
<b>Touchdown</b>	<ul style="list-style-type: none"> <li>• Select Max Reverse, as required</li> </ul>	<ul style="list-style-type: none"> <li>• Verify spoiler extension and green on ECAM <b>REV</b></li> <li>• <b>"SPOILERS"</b> or <b>"NO SPOILERS"</b> if applicable</li> <li>• <b>"ONE REVERSE" or "NO REVERSE"</b> if applicable</li> <li>• <b>"NO ROLLOUT"</b> If applicable</li> </ul>
<b>Nose wheel touchdown</b>	<ul style="list-style-type: none"> <li>• Apply brakes, as required</li> </ul>	<ul style="list-style-type: none"> <li>• Monitor autobrakes if selected</li> <li>• <b>"NO AUTOBRAKES"</b>, if applicable</li> <li>• Monitor deceleration</li> </ul>
<b>80 kts</b>	<ul style="list-style-type: none"> <li>• Begin to modulate toward idle reverse</li> </ul>	<b>"80"</b>
<b>60 kts</b>	<ul style="list-style-type: none"> <li>• Ensure idle reverse thrust or less</li> <li>• If Autoland, disconnect autopilot</li> </ul>	<b>"60"</b>

<b>Soft Go-Around</b>		
<b>Trigger</b>	<b>PF</b>	<b>PM</b>
<b>Go-around</b>	<p><b>"GO-AROUND, TOGA"</b></p> <ul style="list-style-type: none"> <li>Advance thrust levers to TOGA</li> <li>Simultaneously rotate to F/D commanded attitude</li> <li>Engage/Ensure NAV<sup>1</sup></li> <li>Retard thrust levers to CL detent<sup>2</sup></li> </ul> <p><b>"CLIMB<sup>2</sup>"</b></p> <p><b>"GO-AROUND FLAPS"</b></p>	<ul style="list-style-type: none"> <li>Check MAN TOGA on FMA</li> </ul> <p><b>"TOGA SET"</b></p> <ul style="list-style-type: none"> <li>Engage/Ensure NAV<sup>1</sup></li> </ul> <p>Check THR CLB on FMA<sup>2</sup></p> <p><b>"CLIMB SET<sup>2</sup>"</b></p> <p><b>"FLAPS _____"</b></p> <ul style="list-style-type: none"> <li>Retract Flaps to the go-around setting (e.g. Flaps <b>3</b>)</li> </ul>
	<ul style="list-style-type: none"> <li>Check <b>SRS</b> announced on FMA</li> </ul>	
<b>Positive rate of climb</b>	<ul style="list-style-type: none"> <li>Verify positive rate of climb</li> </ul> <p><b>"GEAR UP"</b></p> <ul style="list-style-type: none"> <li>Execute published missed approach or proceed as instructed by ATC</li> </ul>	<ul style="list-style-type: none"> <li>Verify positive rate of climb on VSI</li> </ul> <p><b>"POSITIVE RATE"</b></p> <p><b>"GEAR UP"</b></p> <ul style="list-style-type: none"> <li>Position gear lever UP</li> <li>Advise ATC</li> </ul>
<b>Above 100' AFL</b>	<p><b>"AUTOPILOT 1"</b>, or <b>"AUTOPILOT 2"</b>, as appropriate</p>	<ul style="list-style-type: none"> <li>Select autopilot on, if requested</li> </ul>
<b>At or above 400' AFL</b>	<ul style="list-style-type: none"> <li>Select/request <b>"HEADING _____"</b> if appropriate</li> </ul>	<ul style="list-style-type: none"> <li>Select/adjust HDG, if requested</li> </ul>
<b>At the ACCEL ALT (SRS transitions to CLB) LVR CLB flashing</b>	<ul style="list-style-type: none"> <li>Follow F/D commands to reduce pitch and accelerate</li> </ul>	
<b>F speed</b>	<p>Check airspeed above <b>F</b> speed and accelerating</p> <p><b>"FLAPS 1"</b></p>	<ul style="list-style-type: none"> <li>Check airspeed above <b>F</b> speed and accelerating</li> </ul> <p><b>"FLAPS 1"</b></p> <ul style="list-style-type: none"> <li>Select FLAPS 1</li> </ul>
<b>S speed</b>	<ul style="list-style-type: none"> <li>Check airspeed above <b>S</b> speed and accelerating</li> </ul> <p><b>"FLAPS UP, AFTER TAKEOFF CHECKLIST"</b></p> <ul style="list-style-type: none"> <li>Monitor acceleration to green dot speed</li> </ul>	<ul style="list-style-type: none"> <li>Check airspeed above <b>S</b> speed and accelerating</li> </ul> <p><b>"FLAPS UP"</b></p> <ul style="list-style-type: none"> <li>Select FLAPS 0</li> <li>Disarm Spoilers</li> <li>Accomplish After Takeoff Flow and Checklist</li> </ul>

<sup>1</sup>NAV should be promptly engaged unless the desired missed approach path cannot be flown in NAV (e.g. visual approach, dual FMGC failure, etc) or ATC assigns a heading. If HDG is used, maintain the current heading until reaching 400' AFE.  
<sup>2</sup>If TOGA is required throughout the initial climb, delay setting climb thrust until the Thrust Reduction Altitude.

<b>Engine-out Go-Around</b>		
<b>Trigger</b>	<b>PF</b>	<b>PM</b>
<b>Go-around</b>	<p><b>"GO-AROUND, TOGA"</b></p> <ul style="list-style-type: none"> <li>Advance thrust lever to TOGA</li> <li>Simultaneously rotate to F/D commanded attitude</li> <li>Engage/Ensure NAV or HDG<sup>1</sup> as required</li> </ul> <p><b>"GO-AROUND FLAPS"</b></p>	<ul style="list-style-type: none"> <li>Check MAN TOGA on FMA</li> <li><b>"TOGA SET"</b></li> <li>Engage/Ensure NAV or HDG<sup>1</sup> as required</li> </ul> <p><b>"FLAPS ____"</b></p> <ul style="list-style-type: none"> <li>Retract Flaps to the go-around setting (e.g. Flaps <b>2</b>)</li> </ul>
	<ul style="list-style-type: none"> <li>Check <b>MAN TOGA</b>   <b>SRS</b>   annunciated on FMA</li> </ul>	
<b>Positive rate of climb</b>	<ul style="list-style-type: none"> <li>Verify positive rate of climb</li> </ul> <p><b>"GEAR UP"</b></p> <ul style="list-style-type: none"> <li>Maintain F/D commanded attitude</li> </ul>	<ul style="list-style-type: none"> <li>Verify positive rate of climb on VSI</li> <li><b>"POSITIVE RATE"</b></li> </ul> <p><b>"GEAR UP"</b></p> <ul style="list-style-type: none"> <li>Position gear lever UP</li> <li>Advise ATC</li> <li>Monitor speed and altitude</li> </ul>
<b>Above 100' AFL</b>	<p><b>"AUTOPILOT 1"</b>, or <b>"AUTOPILOT 2"</b>, if appropriate</p>	<ul style="list-style-type: none"> <li>Select autopilot on, if requested</li> </ul>
<b>At or above 400' AFL</b>	<ul style="list-style-type: none"> <li>Comply with runway specific "Engine Failure – Missed Approach procedure (if published); otherwise, fly runway heading</li> <li>Select/request <b>"HEADING ____"</b>, if appropriate</li> </ul>	<ul style="list-style-type: none"> <li>Select runway heading, engine failure heading, if requested</li> <li>Monitor missed approach procedure</li> </ul>
<b>At or above 1000' AFL (or altitude as specified on published "Engine Failure – Missed Approach")</b>	<ul style="list-style-type: none"> <li>Push V/S knob or request <b>"VERTICAL SPEED ZERO"</b></li> </ul>	<ul style="list-style-type: none"> <li>Push V/S knob, if vertical speed zero requested</li> <li>Verify V/S 0</li> </ul>
<b>F speed</b>	<ul style="list-style-type: none"> <li>Check airspeed</li> </ul> <p><b>"FLAPS 1"</b></p>	<ul style="list-style-type: none"> <li>Check airspeed</li> <li><b>"FLAPS 1"</b></li> <li>Select FLAPS 1</li> </ul>
<b>S speed</b>	<ul style="list-style-type: none"> <li>Check airspeed</li> </ul> <p><b>"FLAPS UP, AFTER TAKEOFF CHECKLIST"</b></p> <ul style="list-style-type: none"> <li>Monitor acceleration to green dot speed</li> </ul>	<ul style="list-style-type: none"> <li>Check airspeed</li> <li><b>"FLAPS UP"</b></li> <li>Select FLAPS 0</li> <li>Disarm Spoilers</li> <li>Accomplish After Takeoff Flow and Checklist</li> </ul>
<b>Green dot speed</b>	<ul style="list-style-type: none"> <li>Select/request Open Climb, if desired</li> <li>Select/request Speed ____</li> <li>Maintain green dot speed</li> <li>Select MCT</li> </ul> <p><b>"MCT"</b></p>	<ul style="list-style-type: none"> <li>Select Open Climb, if requested</li> <li>Select green dot speed, if requested</li> <li>Verify thrust levers at MCT</li> <li><b>"MCT SET"</b></li> </ul>
	<ul style="list-style-type: none"> <li>If necessary, accomplish ECAM and/or QRH procedure(s) as appropriate</li> </ul>	

<sup>1</sup>NAV should be promptly engaged unless the desired MAP path cannot be flown in NAV (e.g. visual approach, dual FMGC failure, etc) or ATC assigns a heading. If HDG is used, maintain the current heading until reaching 400' AFE.

<b>Windshear Escape Maneuver</b>	
PF	PM
<b>When encountering a windshear</b>	
<b>Call "ESCAPE, TOGA"</b>	
<b>Simultaneously:</b> <ul style="list-style-type: none"> <li>Advance thrust levers to TOGA</li> <li>Roll wings level and rotate at normal takeoff rotation rate (2-3°/second) to follow SRS commanded pitch. <b>Note:</b> If SRS is <u>not</u> available, use 17.5° with full back sidestick, if required</li> <li>Utilize autopilot if engaged <b>Note:</b> Automatic disengagement may occur if alpha &gt; alpha prot</li> </ul>	<ul style="list-style-type: none"> <li>Ensure all required actions are completed</li> </ul> Call out: <ul style="list-style-type: none"> <li>Any omissions</li> <li>Altitude and trend information based on radio altimeter (e.g., <b>"300 FEET DESCENDING, 400 FEET CLIMBING"</b>)</li> </ul>
<b>Do not:</b> <ul style="list-style-type: none"> <li>Change gear/flap configuration</li> <li>Attempt to regain lost airspeed</li> </ul> <i>Until windshear is no longer a factor</i>	
<b>After escape is successful</b>	
<ul style="list-style-type: none"> <li>Resume normal flight</li> <li>Retract gear/flaps as required</li> </ul>	<ul style="list-style-type: none"> <li>Issue PIREP to ATC</li> </ul>

<b>Windshear Alerts: Takeoff</b>		
Alert	Prior to V <sub>1</sub>	At or Above V <sub>1</sub>
<b>Advisory</b> <sup>1</sup> Windshear icon on ND only	<ul style="list-style-type: none"> <li>TOGA</li> <li>Continue the takeoff<sup>2</sup></li> </ul>	<ul style="list-style-type: none"> <li>TOGA</li> <li>Maneuver as required to avoid the windshear</li> </ul>
<b>Caution</b> <sup>1</sup> "Monitor radar display"	<ul style="list-style-type: none"> <li>Delay/reject the takeoff</li> </ul>	
<b>Warning</b> "Windshear ahead, Windshear ahead" <sup>1</sup> or "Windshear. Windshear. Windshear" <sup>3</sup>	<ul style="list-style-type: none"> <li>Delay/reject the takeoff</li> </ul>	<ul style="list-style-type: none"> <li>Perform the Windshear Escape Maneuver</li> </ul>
<b>Unacceptable Airspeed Deviations</b>	<ul style="list-style-type: none"> <li>Reject the takeoff</li> </ul>	<ul style="list-style-type: none"> <li>Perform the Windshear Escape Maneuver</li> <li>At V<sub>R</sub>, rotate normally to 15° no later than 2000 feet runway remaining</li> </ul>
<sup>1</sup> Inhibited from 100 knots to 50 feet RA. <sup>2</sup> Prior to the start of the takeoff roll, delay the takeoff and refer to Severe Weather/Windshear decision tree in the QRH OD pages. <sup>3</sup> Inhibited on the ground until 3 seconds after liftoff.		

<b>Windshear Alerts: During Approach</b>	
Alert/Aural	During Approach
<b>Advisory</b> <sup>1</sup> Windshear icon on ND only	<ul style="list-style-type: none"> <li>Continue the approach if able to avoid windshear</li> <li>Otherwise, execute a normal go-around and maneuver as required to avoid the windshear</li> </ul>
<b>Caution</b> <sup>1</sup> "Monitor radar display"	
<b>Warning</b> <sup>2</sup> "Go around. Windshear ahead"	<ul style="list-style-type: none"> <li>Perform either:               <ul style="list-style-type: none"> <li>a normal go-around, or</li> <li>the windshear escape maneuver</li> </ul> </li> </ul>
<b>Warning</b> <sup>3</sup> "Windshear. Windshear. Windshear"	<ul style="list-style-type: none"> <li>Perform the windshear escape maneuver</li> </ul>
<b>Unacceptable Flight Deviations</b>	
<sup>1</sup> Inhibited above 1500 feet and below 50 feet RA <sup>2</sup> Inhibited above 1200 feet and below 50 feet RA <sup>3</sup> Inhibited above 1300 feet and below 50 feet RA	

<b>ILS/LDA PRM Climbing Breakout</b>		
<b>Trigger</b>	<b>Capt (PF)</b>	<b>FO (PM)</b>
<b>Alert</b>	Simultaneously: <b>"BREAKOUT, TOGA"</b> <ul style="list-style-type: none"> <li>• Disconnect Autopilot</li> <li>• Advance thrust levers to TOGA</li> <li>• Turn to heading</li> <li>• Establish climb (follow RA, if received)</li> <li>• Select thrust levers to CL when able</li> </ul> <b>"CLIMB"</b>	<ul style="list-style-type: none"> <li>• If RA procedure, turn both FDs OFF</li> <li><b>"TOGA SET"</b></li> <li>• Set and select heading on FCU</li> <li>• Set (do <u>not</u> select) altitude on FCU</li> <li>• Verify CL limit on E/WD</li> <li><b>"CLIMB SET"</b></li> <li>• Monitor flight path and speed; call out deviations</li> </ul>
<b>Established on heading</b>	<ul style="list-style-type: none"> <li>• Reestablish automation</li> <li>• Reconfigure aircraft, as desired</li> </ul>	<ul style="list-style-type: none"> <li>• Reconfigure aircraft, as desired</li> </ul>
<b>ILS/LDA PRM Descending Breakout</b>		
<b>Trigger</b>	<b>Capt (PF)</b>	<b>FO (PM)</b>
<b>Alert</b>	Simultaneously: <b>"BREAKOUT"</b> <ul style="list-style-type: none"> <li>• Verify thrust levers remain in CL detent</li> <li>• Disconnect autopilot</li> <li>• Turn to heading</li> <li>• Establish descent (follow RA, if received), not exceed 1,000 FPM (unless directed by RA)</li> </ul>	<ul style="list-style-type: none"> <li>• If RA procedure, turn both FDs OFF</li> <li>• Set and select heading on FCU</li> <li>• Set (do <u>not</u> SELECT) altitude on FCU</li> <li>• Monitor flight path and speed; call out deviations</li> </ul>
<b>Leveled off and established on heading</b>	<ul style="list-style-type: none"> <li>• Reestablish automation</li> <li>• Reconfigure aircraft, as desired<sup>1</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Reconfigure aircraft, as desired</li> </ul>

<sup>1</sup>After a descending breakout, the GA phase will not have been automatically sequenced. Unless TOGA is subsequently selected, it will be necessary to re-insert the anticipated approach into the flight plan.

<b>EGPWS Warning Escape Maneuver</b>		
<b>Step</b>	<b>PF</b>	<b>PM</b>
<b>1 Accomplished Simultaneously</b>	<b>THRUST "TOGA"</b> <ul style="list-style-type: none"> <li>• Set TOGA thrust</li> </ul>	<ul style="list-style-type: none"> <li>• Verify all actions have been completed and call out any omissions</li> <li>• Monitor <i>radio altimeter</i> and call out information on flight path<sup>1</sup> (e.g., <b>"300 FEET DESCENDING, 400 FEET CLIMBING"</b>)</li> <li>• Monitor attitude, airspeed, and altitude</li> <li>• Call out the safe altitude (e.g., <b>"MSA IS 3,400 FEET"</b>)</li> <li>• Advise ATC</li> </ul>
	<b>PITCH</b> <ul style="list-style-type: none"> <li>• Autopilot – disconnect</li> <li>• Roll wings level</li> <li>• Rotate to full back sidestick</li> </ul>	
<b>2</b>	<b>CONFIGURATION</b> <ul style="list-style-type: none"> <li>• Speedbrakes - retract</li> <li>• Do <u>not</u> alter gear/flap configuration until terrain clearance is assured</li> </ul>	
<b>3</b>	<ul style="list-style-type: none"> <li>• Climb to safe altitude</li> </ul>	
<b>4</b>	<b>AFTER RECOVERY</b> <ul style="list-style-type: none"> <li>• Resume normal flight</li> <li>• Retract gear/flaps as required</li> </ul>	

<sup>1</sup> Radio altimeter is primary flight path indicator. In some cases barometric instruments (altimeter/VSI) can indicate a climb even though terrain elevation may be increasing faster than the climb rate of the airplane. In these cases it is critical to call out the trend "Descending" as determined from the radio altimeter.

<b>Nose Low Recovery Actions and Callouts</b>		
Nose Low Recognition: A nose-low pitch attitude is recognized by low pitch attitude, high rate of descent, increasing airspeed, and possibly excessive bank angle.		
<b>Step</b>	<b>PF</b>	<b>PM</b>
<b>1</b>	<b>Recognize and confirm the situation</b>	
<b>2</b>	<b>Autopilot - Disconnect</b>	<ul style="list-style-type: none"> <li>• Verify all actions have been completed and call out any omissions</li> <li>• Monitor attitude, airspeed and altitude</li> <li>• Monitor radio altimeter, and call out information on flight path (e.g., "300 Feet Descending; 400 Feet Climbing", etc.)</li> </ul>
	<b>Pitch</b> • Apply nose down elevator if necessary to recover from stall and to aid in rolling wings level.	
	<b>Roll</b> • Roll in the shortest direction toward wings-level attitude <sup>1</sup>	
	<b>Thrust</b> • Reduce thrust and extend SPEED BRAKE as needed	
<b>3</b>	<ul style="list-style-type: none"> <li>• Apply nose up elevator when bank has been reduced to wings-level and raise nose to horizon<sup>2</sup></li> <li>• Check airspeed and adjust thrust</li> </ul>	<ul style="list-style-type: none"> <li>• Advise ATC if required</li> </ul>
<sup>1</sup> During recovery from nose-low, high bank angle attitudes, focus on the sky pointer (bank pointer) of the attitude indicator. Roll the aircraft in the direction of the bank indicator. This is the shortest direction toward an upright wings-level attitude.		
<sup>2</sup> The primary concern is to decrease bank angle (if present) to prevent overloading the aircraft when the pitch is raised to the horizon.		

<b>Nose High Recovery Actions and Callouts</b>		
Nose High Recognition: A nose high pitch attitude is recognized by a pitch attitude unintentionally greater than 25°, airspeed decreasing rapidly, and possibly excessive bank.		
<b>Step</b>	<b>PF</b>	<b>PM</b>
<b>1</b>	<b>Recognize and confirm the situation</b>	
<b>2</b>	<b>Autopilot - Disconnect</b>	<ul style="list-style-type: none"> <li>• Verify all actions have been completed and call out any omissions</li> <li>• Monitor attitude, airspeed and altitude</li> <li>• Monitor radio altimeter, and call out information on flight path (e.g., "300 Feet Descending; 400 Feet Climbing", etc.)</li> </ul>
	<b>Pitch</b> • Apply as much as full nose down elevator to reduce pitch	
	<b>Roll</b> • Roll to obtain a nose down pitch <sup>1</sup>	
	<b>Thrust</b> • Apply thrust proportional to airspeed degradation <sup>2</sup>	
<b>3</b>	• SPEED BRAKE - retract	
<b>4</b>	<ul style="list-style-type: none"> <li>• Roll to wings-level when approaching the horizon</li> <li>• Check airspeed and adjust thrust</li> <li>• Establish pitch attitude</li> </ul>	<ul style="list-style-type: none"> <li>• Advise ATC if required</li> </ul>
<sup>1</sup> Bank aids in lowering pitch while maintaining a positive load factor to avoid zero or negative G-forces. Depending upon the degree and rate of pitch change, bank angles from 35° to 60° (in the direction of any initial roll) may be required. For bank angles exceeding 90° focus on the sky pointer (bank pointer) of the attitude indicator. Roll the aircraft in the direction of the bank indicator. This is the shortest direction toward an upright wings-level attitude.		
<sup>2</sup> It may be necessary to reduce thrust to prevent the angle of attack from continuing to increase.		

<b>Wake Turbulence Recovery Actions and Callouts</b>		
Recognition: An encounter with wake vortices is associated with abrupt roll and aerodynamic loads similar to turbulence encounters. Prompt initiation of recovery procedures is necessary to preclude an unusual attitude.		
<b>Step</b>	<b>PF</b>	<b>PM</b>
<b>1</b>	<b>Recognize and confirm the situation</b>	
<b>2</b>	<b>Autopilot - Disconnect</b> <b>Pitch</b> <ul style="list-style-type: none"> <li>Apply nose down elevator if necessary to recover from stall and to aid in rolling wings level.</li> </ul>	<ul style="list-style-type: none"> <li>Verify all actions have been completed and call out any omissions</li> <li>Monitor attitude, airspeed and altitude</li> <li>Monitor radio altimeter, and call out information on flight path (e.g., "300 Feet Descending; 400 Feet Climbing", etc.)</li> </ul>
	<b>Roll</b> <ul style="list-style-type: none"> <li>Roll in the shortest direction toward wings level attitude<sup>1</sup></li> </ul>	
	<b>Thrust</b> <ul style="list-style-type: none"> <li>Add thrust as necessary</li> </ul>	
<b>3</b>	<ul style="list-style-type: none"> <li>Adjust pitch to horizon</li> <li>Check airspeed and adjust thrust</li> <li>Initiate go-around if on approach with probability of further encounter</li> </ul>	<ul style="list-style-type: none"> <li>Advise ATC if required</li> </ul>
<sup>1</sup> During recovery, focus on the sky pointer (bank pointer) of the attitude indicator. Roll the aircraft in the direction of the bank indicator. This is the shortest direction toward an upright wings-level attitude.		

<b>Stall Recovery</b>		
<b>Step</b>	<b>PF</b>	<b>PM</b>
<b>1</b>	<b>Recognize and confirm the situation</b>	
<b>2</b>	<b>Autopilot - Disconnect</b> <b>Pitch</b> <ul style="list-style-type: none"> <li>Apply nose down elevator with the sidestick to reduce the angle of attack until buffet and/or aural stall warning stops</li> <li>Nose down stabilizer trim may be needed<sup>1</sup></li> <li>In case of insufficient pitch down authority, reducing thrust may be necessary</li> </ul>	<ul style="list-style-type: none"> <li>Verify all actions have been completed and call out any omissions</li> <li>Monitor attitude, airspeed, and altitude</li> <li>Monitor <i>radio altimeter</i> and call out information on flight path (e.g., "300 FEET DESCENDING, 400 FEET CLIMBING" etc.)</li> <li>Select FLAPS 1 if requested</li> </ul>
	<b>Roll</b> <ul style="list-style-type: none"> <li>Roll in the shortest direction to wings level if needed<sup>2</sup></li> </ul>	
	<b>Thrust</b> <ul style="list-style-type: none"> <li>Adjust as needed</li> </ul>	
<b>Configuration</b> <ul style="list-style-type: none"> <li>SPEED BRAKE – retract</li> <li>Do not alter gear/flap configuration</li> </ul>		
<b>3</b>		
<b>4</b>	<b>After Stall Recovery</b> <ul style="list-style-type: none"> <li>Resume normal flight</li> <li>If below 20,000 feet and in clean configuration request FLAPS 1</li> </ul>	
<sup>1</sup> If the sidestick does not provide the needed response, stabilizer trim may be necessary. Excessive use of pitch trim may aggravate the condition, or may result in loss of control or in high structural loads.		
<sup>2</sup> Excessive use of pitch trim or rudder may aggravate the condition, or may result in loss of control or in high structural loads.		

<b>Emergency Descent</b>	
<ul style="list-style-type: none"> <li>This maneuver is designed to provide a smooth descent to a safe altitude, in minimum time, with the lowest possible passenger discomfort.</li> <li>The captain will assume PF duties for all emergency descents.</li> <li>If structural damage is suspected, limit airspeed as much as possible, and avoid high maneuvering loads.</li> <li>The autopilot and A/THR should remain engaged and used to accomplish the descent. If the autopilot is not available manually fly the maneuver.</li> </ul>	
Left Seat	Right Seat
<p><b>"Emergency Descent. My Aircraft"</b></p> <p><b>Altitude:</b></p> <ul style="list-style-type: none"> <li>Descend to 10,000 ft or minimum safe altitude<sup>1</sup> (whichever is higher)</li> <li>Continue descent to 10,000 ft when able</li> </ul> <p><b>Heading:</b></p> <ul style="list-style-type: none"> <li>Select a turn or proceed straight ahead.</li> </ul> <p><b>Airspeed:</b></p> <ul style="list-style-type: none"> <li>SPD ... V<sub>mo</sub>/M<sub>mo</sub> (limit speed and avoid G load if damage suspected)</li> </ul> <p><i>Wait minimum of 10 seconds then slowly:</i></p> <ul style="list-style-type: none"> <li>Speedbrakes ... Extend (ensure V<sub>ls</sub> does not exceed indicated airspeed)</li> </ul> <hr/> <p><i>1000 feet prior to Level Off:</i></p> <ul style="list-style-type: none"> <li>Speedbrakes ... Retract</li> <li>SPD ... LRC (CI 0) or as appropriate</li> </ul>	<p><b>"Your Aircraft"</b></p> <ul style="list-style-type: none"> <li>PA – <b>"Emergency descent, be seated"</b></li> <li>Notify ATC and obtain descent clearance</li> <li>Cabin Signs ... ON</li> <li>Engine Mode ... IGN</li> <li>Obtain altimeter setting</li> <li>Check safe altitude (MEA, MOCA, MORA, MSA)</li> </ul> <p><i>If not in contact with ATC, also:</i></p> <ul style="list-style-type: none"> <li>External Lights – All ON</li> <li>TCAS Selector – BELOW</li> <li>Transmit on 121.5                             <ul style="list-style-type: none"> <li><b>"PAN-PAN" or "MAYDAY"</b> (3 times)</li> <li>present position</li> <li>intentions</li> </ul> </li> </ul> <hr/> <p>When cabin has descended below 14,000 feet:</p> <ul style="list-style-type: none"> <li>Notify flight attendants</li> </ul>
<p><sup>1</sup>Minimum Safe altitude is:</p> <ul style="list-style-type: none"> <li>On airway: Minimum Enroute Altitude (MEA), or Minimum Obstacle Clearance Altitude (MOCA), whichever is higher, or</li> <li>Off airway: Minimum Off-Route Altitude (MORA), or any other altitude based on terrain clearance, navigation aid reception, or</li> <li>Within terminal area: Highest Minimum Safe Altitude (MSA)</li> </ul>	
<b>Expanded Discussion</b>	
<p>Don oxygen masks and establish crew communications, if required. If CAB ALT &gt; 14,000 ft, select PAX OXY MASKS to MAN ON.</p> <p>Select OP DES and VMO/MMO if appropriate. If A/THR is not available retard thrust levers to idle. Initiate a turn, if necessary. Smoothly extend the speedbrakes, and lower the nose to initial descent attitude (approximately 10° nose-down).</p> <p>Wait at least 10 seconds after the aircraft starts descent before fully extending the speedbrakes. Rapid deployment of the speedbrakes at high altitude/slow speed will cause VLS to be greater than the existing speed and may cause autopilot disconnection and speedbrakes auto retraction if angle of attack protection is activated.</p> <p>About 10 knots before reaching target speed (VMO/MMO) slowly reduce the pitch attitude to maintain target speed. If VMO/MMO is inadvertently exceeded, change pitch smoothly to decrease speed.</p> <p>Approaching level off altitude, smoothly adjust pitch attitude to reduce rate of descent. The speedbrake lever should be retracted approximately 1000 feet above the desired altitude. After reaching level flight, add thrust to maintain desired speed.</p> <p>When turbulent air is encountered or expected, reduce to turbulent air penetration speed. Rapid descent is normally made with the landing gear up and speedbrakes FULL.</p> <p>Level off at 10,000 feet or safe altitude, whichever is higher.</p> <p>Approximately 1000 feet above the desired altitude, smoothly return the speedbrake to CLOSE during the level off maneuver. When approaching the selected altitude, the altitude capture will engage automatically. Adjusting the command speed to approximately LRC or 300 knots prior to level off minimizes thrust lever activity at altitude capture. The pitch mode will then control altitude and the thrust levers will increase to hold speed.</p>	

<b>TCAS Warnings</b>		
Avoid excessive maneuvers while aiming to keep the vertical speed outside the red area of the VSI and within the green area (if applicable). If necessary, use the full speed range between Alpha max and Vmax. Resolution Advisories are inhibited below 900 ft.		
<b>Trigger</b>	<b>PF</b>	<b>PM</b>
<b>Traffic Advisory - All</b>		
<b>"TRAFFIC, TRAFFIC"</b> <i>Announcement</i>	<ul style="list-style-type: none"> <li>Do <u>not</u> maneuver based on TA alone.</li> </ul>	<ul style="list-style-type: none"> <li>Attempt to see the reported traffic<sup>1</sup></li> </ul>
<b>Preventative Resolution Advisory - All</b>		
<b>"MONITOR VERTICAL SPEED"</b> <i>Announcement</i>	<ul style="list-style-type: none"> <li><b>"AUTOPILOT - OFF"</b></li> <li><b>"FLIGHT DIRECTORS - OFF"</b></li> <li>Maintain or adjust the vertical speed as required to avoid the red area of the vertical speed scale</li> </ul>	<ul style="list-style-type: none"> <li>Select both FDs OFF</li> <li>Verify all actions have been completed and coordinate with PF to accomplish omitted items.</li> </ul>
<b>Corrective Resolution Advisory - All</b>		
<b>RA</b> <i>(See Announcement list below)</i>	<ul style="list-style-type: none"> <li>Respond promptly and smoothly to an RA.</li> <li><b>"AUTOPILOT - OFF"</b></li> <li><b>"FLIGHT DIRECTORS - OFF"</b></li> <li>Adjust the vertical speed as required to remain within the green area of the vertical speed scale.</li> <li>Respect the stall, GPWS, or Windshear warning.</li> </ul>	<ul style="list-style-type: none"> <li>Select both FDs OFF</li> <li>Notify ATC</li> <li>Verify all actions have been completed and coordinate with PF to accomplish omitted items.</li> </ul>
<b>Corrective Resolution Advisory - Approach</b>		
<b>"CLIMB" or "INCREASE CLIMB"</b> <i>Announcement</i>	<ul style="list-style-type: none"> <li>Go Around - Execute</li> </ul>	<ul style="list-style-type: none"> <li>Notify ATC</li> </ul>
<b>Clear of Conflict Advisory - All</b>		
<b>"CLEAR OF CONFLICT"</b>	<ul style="list-style-type: none"> <li>Expediently return to the previously assigned ATC clearance when the traffic conflict is resolved and resume normal navigation.</li> <li>AP and/or FD can be reengaged as desired.</li> <li>Attempt to see the reported traffic.</li> </ul>	
Note 1: The traffic acquired visually may not be the same traffic causing the RA. When an RA occurs, the PF should respond immediately to RA displays and maneuver as indicated, unless doing so would jeopardize the safe operation of the flight or the flight crew can assure separation with help of definitive visual acquisition of the aircraft causing the RA.		
<b>Corrective Resolution Advisories Announcements (RAs)</b>		
<b>RA Category</b>	<b>TCAS II Version 7</b>	
Climb	<b>"CLIMB, CLIMB"</b>	
Descend	<b>"DESCEND, DESCEND"</b>	
Altitude Crossing Climb	<b>"CLIMB, CROSSING CLIMB"</b> (twice)	
Altitude Crossing Descend	<b>"DESCEND, CROSSING DESCEND"</b> (twice)	
Reduce Climb	<b>"ADJUST VERTICAL SPEED, ADJUST"</b>	
Reduce Decent	<b>"ADJUST VERTICAL SPEED, ADJUST"</b>	
RA Reversal to a Climb RA	<b>"CLIMB, CLIMB NOW"</b> (twice)	
RA Reversal to a Descend RA	<b>"DESCEND, DESCEND NOW"</b> (twice)	
Increase Climb	<b>"INCREASE CLIMB"</b> (twice)	
Increase Descent	<b>"INCREASE DESCENT"</b> (twice)	
Maintain Rate	<b>"MAINTAIN VERTICAL SPEED, MAINTAIN"</b>	
Altitude Crossing, Maintain Rate (Climb and Descend)	<b>"MAINTAIN VERTICAL SPEED, CROSSING MAINTAIN"</b>	
Weakening of Initial RA	<b>"ADJUST VERTICAL SPEED, ADJUST"</b>	
Note: If an initial RA is changed to a less aggressive advisory, pilots should respond to the changed RA and adjust the airplane's vertical speed accordingly, while keeping the pitch guidance symbol in the green arc, and/or out of the red arc.		

**Non-Normal Procedures**

**1. PF – Maintain Aircraft Control**

The PF will devote total awareness to the control and navigation of the airplane and use automation as appropriate to help reduce workload.

**2. Identify the Non-Normal**

**PM – Cancels the Warning or Caution, if applicable**

The first crewmember recognizing the non-normal situation will clearly announce it (e.g., "Engine Fire"). In the case of an engine problem, do not identify which engine has malfunctioned at this time. The PM should review the overhead panel and/or associated system page (lower ECAM) to check that the system indications are not in conflict with the ECAM warning or caution, prior to taking any action. If not immediately obvious which procedure to use, additional analysis may be necessary. The captain will determine which procedure is appropriate.

**3. PM - Determine if Immediate Action or ECAM Exception**

Once:

- the airplane flight path and configuration are properly established, and
- the airplane is not in a critical phase of flight (e.g., takeoff, landing) ...

the PM determines and verbalizes whether the non-normal is an Immediate Action Item or an ECAM Exception. The Immediate Action Index and ECAM Exception Index are available on the back of the QRH.

**4. PM - Accomplish Immediate Action Items, if applicable.**

Accomplish any red items from memory, and then use the QRH to complete Immediate Action items without delay as follows:

PF	PM
Accomplish each non-normal checklist item using "Challenge-Response-Response Concept"	
Maintain aircraft control	Read aloud the appropriate QRH or electronic checklist items: <ul style="list-style-type: none"> <li>• checklist title</li> <li>• challenge and response for all numbered items (left margin items on an electronic checklist)</li> <li>• indented items, if necessary, and</li> <li>• notes, cautions, and warnings</li> </ul>
Perform/request all items directly related to flying the aircraft (e.g., flight path control, autopilot, thrust management, etc.)	Position controls <u>not</u> directly related to flying the aircraft and items requested by the PF

Note: Refined guidance has been created in an effort to putting the most standardized methodology into practice when handling non-normal procedures. In review, it is now preferred to consult the index on the back of the QRH to determine whether a non-normal situation is an Immediate Action or an ECAM Exception prior to the captain assigning PF duties. If the non-normal is an Immediate Action item, its associated checklist should be conducted prior to any transfer of control. If the non-normal is an ECAM Exception, transfer of control should occur prior to conducting its associated checklist.

**5. Captain - Assigns PF**

In-flight, the captain should normally assign the flying duties to the first officer while non-normal checklists are completed unless conditions dictate otherwise. This allows the captain to direct full attention to the accomplishment of non-normal procedures and conduct communications with external resources. The captain should verbalize who will assume ATC communications.

**6. Accomplish Non-normal procedure**

The PF calls for the appropriate non-normal procedure as follows:

PF calls for the QRH (e.g. "QRH procedure") in case of:

- ECAM Exception. PM refers to the ECAM Exceptions Index on the back cover of the QRH for page reference.
- Non-Normal procedure that is not indicated by ECAM. PM refers to the Alphabetic Index for the page reference.

PF calls "ECAM Action" in case of:

- ECAM procedures that are not ECAM Exceptions. PM refers to the electronic checklist.

**7. PM - Accomplish ECAM Follow-Up procedures, if applicable**

ECAM cautions and warnings requiring QRH follow up are contained in a QRH index on yellow pages following the Immediate Action Items. After completing the ECAM checklist, complete the associated QRH Follow-Up checklist if the ECAM caution or warning is listed in this index. If the ECAM checklist returns the system to normal, the associated Follow-Up procedures are not accomplished.

**Additional Resources:** If the non-normal is not an ECAM Exception, the ECAM Non-Normal Supplemental Manual is available for reference, time permitting.

**Crew Awareness ECAMs:** In the event of a Crew Awareness ECAM (e.g., COND AFT CRG ISO VALVE) on the ground, dispatch may not be permitted or an MEL/CDL may apply. Comply with After Gate Departure procedure.

<b>ECAM Procedures</b>	
When performing ECAM Actions always start in <b>Box 1</b> , then 2,3,4. Complete <u>ALL</u> items before proceeding to the next box	
<b>UPPER ECAM</b> (Warning Display)	
Primary Failures <b>Box 1</b>	Secondary Failures <b>Box 2</b>
<b>LOWER ECAM</b> (Status Display)	
Procedures <b>Box 3</b>	Inop Systems <b>Box 4</b>

<b>Example ECAM Procedures</b>			
<b>ECAM SCREEN</b>		<b>PROCEDURES / CALLOUTS</b>	
<b>WARNING DISPLAY (Upper)</b>		<b>PF</b>	<b>PM</b>
<b>Box 1</b>	<b>Box 2</b>		
<b>HYD B RSVR OVHT</b> <b>BLUE ELEC PUMP ...</b> <b>OFF</b>		Pilot first noting non-normal read ECAM action (e.g., <b>"HYDRAULIC B RESERVOIR OVERHEAT"</b> )	
		<b>"ECAM ACTION"<sup>1</sup></b>	<ul style="list-style-type: none"> <li>Confirm fault on SD</li> <li>Read full line of ECAM action (e.g., <b>"BLUE ELECTRIC PUMP OFF"</b>) <b>Box 1</b></li> <li>Perform ECAM action(s)<sup>2</sup> or request execution by the PF</li> <li>Repeat the response IAW the FOM (e.g. <b>"OFF"</b>)</li> <li>Review all affected equipment shown in amber on <b>HYD</b> page.</li> </ul>
<b>HYD B RSVR OVHT</b> <b>B SYS LO PR</b>	* F/CTL	<ul style="list-style-type: none"> <li>Check ECAM action(s) completed</li> <li><b>"CLEAR ECAM"</b></li> </ul>	<b>"CLEAR ECAM?"</b>
<b>SEAT BELTS</b>	* F/CTL	<b>"CLEAR FLIGHT CONTROL"</b>	<ul style="list-style-type: none"> <li>Review all affected equipment shown in amber on <b>F/CTL</b> page <b>Box 2</b></li> <li><b>"CLEAR FLIGHT CONTROL?"</b></li> </ul>
<b>STATUS DISPLAY (Lower)</b>			
<b>Box 3</b>	<b>Box 4</b>		
<b>STATUS</b> <b>APPR PROC</b> <b>IF BLUE OVHT OUT:</b> <b>BLUE ELEC PUMP ...</b> <b>ON</b>  <b>CAT 2 ONLY</b> <b>SLATS SLOW</b>	<b>INOP SYS</b> <b>CAT 3</b> <b>BLUE HYD</b> <b>SPLR 3</b>	<b>"CLEAR STATUS"</b>	<ul style="list-style-type: none"> <li>Read STATUS line by line <b>Box 3</b> then <b>Box 4</b></li> <li><b>"CLEAR STATUS?"</b></li> </ul>

<b>ECAM Procedure Notes</b>	
1. Unless conditions dictate otherwise, the captain should assign the flying duties to the F/O in accordance with the FOM. 2. Confirm correct <b>Thrust Lever, Engine Master, Engine Fire pb, Cargo Smoke DISCH pb, IR pbs/selectors, and/or IDGs</b> before performing ECAM action.	
Procedures will be initiated on command of PF. No action will be taken (except cancelling the audio warning through MASTER WARN light until: <ul style="list-style-type: none"> <li>• Flight path is stabilized</li> <li>• The airplane is at least 1,000' AFE or obstacle clearance altitude.</li> </ul>	
If an emergency or abnormal procedure calls for <b>LAND ASAP</b> written in red or amber on ECAM, comply with FM procedures and land at nearest suitable airport.	
Primary Failure – Failure of an item of equipment or system causing loss of others in the airplane. On the ECAM their title is boxed: <b>B SYS LO PR</b>	
Crew Coordination – When carrying out a procedure displayed on the ECAM, it is essential that both pilots are aware of the present display. Before any CLEAR action, crosscheck that no cyan message remains (except in case of no action feedback), that can be eliminated by a direct action. <b>*** NO CLEAR ACTION BEFORE CROSS EXAMINATION ***</b>	
Should it be necessary to stop ECAM actions for any reason, the PF will state: <b>"HOLD ECAM"</b> . ECAM actions will continue when the PF states <b>"CONTINUE ECAM"</b> .	
ECAM Procedures, STATUS information, and a check of PFD/ND are sufficient for handling the fault. However, when ECAM actions have been performed, and ECAM STATUS has been reviewed, if time permits, the crew may refer to the ECAM Non-Normal Supplemental manual.	
Common sense must be applied when using ECAM. For example, if the last remaining hydraulic system overheats, ECAM will indicate shutting the system OFF. For obvious reasons, don't.	
Note: Anytime the aircraft is unable to maintain current altitude due to an engine failure or an ECAM/QRH-directed thrust reduction, the crew will immediately apply the QRH procedure "Loss of Thrust-Unable to Maintain Altitude" Immediate Action procedure. Ensure the aircraft is stable before initiating or resuming any other applicable ECAM/QRH procedures.	

<b>ECAM Challenge-Response-Response Concept</b>	
<b>Confirm (In Flight only).</b> The action is accomplished by the PM but not until the PF verbally confirms the PM has identified and is touching the correct control. Note: For the Thrust Lever only, see example below. Confirm items include: <b>Thrust Levers, Engine Masters, Engine Fire pbs, Cargo Smoke DISCH pbs, IR pbs/selectors, and/or IDGs.</b> The passenger door disarming lever is a confirm item on the ground. QRH Confirm items have "Confirm" printed between the challenge and response while ECAM Confirm items do not.	
<b>ECAM Confirm Example (Thrust lever only):</b>	
<b>THR LEVER 1 .....IDLE</b>	
PF	PM
<ul style="list-style-type: none"> <li>• Fly the aircraft</li> <li>• Touch, but do not move thrust lever 1</li> </ul>	<ul style="list-style-type: none"> <li>• Read aloud <b>"THRUST LEVER 1 IDLE"</b></li> <li>• Ensure the PF is touching the correct thrust lever</li> <li>• State <b>"CONFIRMED"</b></li> </ul>
<ul style="list-style-type: none"> <li>• Position thrust lever 1 to IDLE</li> <li>• Repeat aloud <b>"IDLE"</b></li> </ul>	
<b>ECAM Confirm Example (Engine Masters, Engine Fire pbs, Cargo Smoke DISCH pbs, IR pbs/selectors, IDGs.):</b>	
<b>ENG MASTER 1 ..... OFF</b>	
<ul style="list-style-type: none"> <li>• Fly the aircraft</li> </ul>	<ul style="list-style-type: none"> <li>• Read aloud <b>"ENGINE MASTER 1 OFF"</b></li> <li>• Touch, but do <u>not</u> move Engine Master 1</li> </ul>
<ul style="list-style-type: none"> <li>• Ensure the PM is touching the correct engine master</li> <li>• State <b>"CONFIRMED"</b> when ready for action</li> </ul>	
	<ul style="list-style-type: none"> <li>• Position Engine Master 1 OFF</li> <li>• Repeat aloud, <b>"OFF"</b></li> </ul>
<b>Non-normal checklist notes:</b>	
<b>Standard:</b> PM reads aloud the checklist challenge and response, selects the proper control, accomplishes the action, then repeats the response aloud.	
<b>Confirm:</b> Accomplished the same as standard non-normal checklist items except the action is accomplished by the PM but not until the PF verbally confirms the PM has identified and is touching the correct control. Note: For the Thrust Lever only, see example below.	
<b>Verify:</b> Accomplished the same as standard non-normal checklist items except the response is repeated by the PF.	

<b>QRH Memory Items</b>
Refer to QRH <b>Undue Activation of Alpha Protection</b> Immediate Action

**ADDITIONAL MEMORY LIMITATIONS (In Bold)**

**OPERATION LIMITS**

Maximum wind for takeoff and landing: **50 knots**  
 Maximum crosswind for takeoff and landing: **35 knots (including gusts)**  
 Maximum crosswind (including gusts) for Autoland (Vis ≥ 4000 or 3/4: **20 knots**  
 Maximum crosswind for landing Vis < 4000 or 3/4: **15 knots**  
 Maximum tailwind component for takeoff (A320 and A321 with IAE engines): **10 knots**  
 Maximum tailwind component for takeoff (All A319/321 and A320 with CFM engines): **15 knots**  
 Maximum tailwind component for landing (non-Sharklet): **10 knots**  
 Maximum tailwind component for landing (Sharklet): **15 knots**  
 Maximum operating altitude: **39,000 feet**

**SPEED LIMITS**

Maximum operating airspeed (V<sub>MO</sub>): **350 KIAS**  
 Maximum operating Mach number (M<sub>MO</sub>): **0.82M**  
 Maximum taxi speed: 30 knots  
 Maximum taxi speed for 90 degree turn: 10 knots  
 Maximum gear extension speed (V<sub>LO</sub>): 250 KIAS  
 Maximum gear retraction speed (V<sub>LO</sub>): 220 KIAS  
 Maximum gear extended speed (V<sub>LE</sub>): 280 KIAS/0.67M

Turbulence Penetration Speeds	A319/320	A321
At or above 20,000 feet	275 KIAS/.76M	300 KIAS/.76M
Below 20,000 feet	250 KIAS	270 KIAS

**ICE & RAIN PROTECTION**

Engine Anti-ice ON when OAT (Ground) / TAT (Flight): **10° C or below**  
 (except during climb and cruise when the temperature is **below -40° C SAT**)  
 Engine anti-ice must be ON prior to and during descent in icing conditions  
 (including temperatures **below -40° C SAT**)

**HYDRAULICS, BRAKES, & LANDING GEAR**

Maximum landing gear extension altitude: **25,000 feet**

**FLIGHT CONTROLS**

Maximum operating altitude with flaps and/or slats extended: **20,000 feet**

**AUTO FLIGHT SYSTEM**

Autopilot Engaged – Minimum Height: **100 feet AGL** After Takeoff in SRS mode.

<b>Maximum Winds for Automatic Approach, Landing, and Rollout (including gusts)</b>		
Wind Component	Visibility	Limitation
A319		
Headwind	Any	<b>20 knots (two engines)</b> <b>15 knots (single engine)</b>
Tailwind	Any	<b>10 knots</b> if LDG ELEV below 5,750' MSL and in CONF FULL. Otherwise <b>5 knots</b>
Crosswind	≥ 4000 or 3/4	<b>20 knots (two engines)</b> <b>10 knots (single engine)</b>
	< 4000 or 3/4	<b>15 knots (two engines)</b> <b>10 knots (single engine)</b>
A320/321		
Headwind	Any	<b>30 knots</b>
Tailwind	Any	<b>10 knots</b>
Crosswind	≥ 4000 or 3/4	<b>20 knots</b>
	< 4000 or 3/4	<b>15 knots</b>

**RSVM**

The maximum allowable in-flight difference between captain and first officer PFD altitude displays for RVSM operations is **200 feet**.

**POWERPLANT**

Minimum oil quantity for dispatch: 13 quarts  
**Reverse thrust is for ground use only.**

Send corrections/comments to Bob Sanford, Email: [busdriver@hky.com](mailto:busdriver@hky.com)  
Unofficial Airbus Study Site: [www.airbusdriver.net](http://www.airbusdriver.net)