厦门航空XIAMENAIR

Standard Operation Procedure
B737

Revision Number: 1

Approved by: _____

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Chief Pilot of Xiamen Airlines

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XIAMEN AIRLINES

Preface

Based on the previous version, this updated version of "Standard Operation Procedure" manual is revised according to requirements from advisory circulars AC-121-22 issued by CAAC on March 16th, 2007.

This manual only provides rules, regulations, operation specifications and CRM, but not all the normal and supplementary procedures for all aircraft types. As a result, flight crew should use this manual on the basis that the first volume of "Flight Crew Operations Manual", which is considered portion of "Standard Operation Procedure", is mastered.

All contents related to rules and regulations introduced in this manual are only for normal line operations. If necessary, flight crew could refer to other company regulations such as "Operation Manual". If this manual disagrees with rules or regulations, the rules or regulations take precedence over what's described in this manual.

Comprehensive evaluation is made for discrepancies between procedures from "Flight Crew Operations Manual" and procedures being used currently. Procedures introduced in this manual are taken either from procedures being used currently, e.g. use of preflight checklist, or "Flight Crew Operations Manual", e.g. timing for after takeoff checklist completion. If there is any discrepancy between "Flight Crew Operations Manual" and this manual, follow this manual.

For the benefit of currency, this manual will be continuously revised according to CAAC or company policies, and all the updates and changes should be logged in "Revision Record".

This manual is controlled by the holder. The holder should update and fill in "revision record" prior to signing in the "holder record" to keep this manual valid.

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Revision Highlights

3.5 Revised "The runway end identifier lights" to "The runway end identifier lights or runway threshold identifier lights;

Revised "The touchdown zone lights" to "The runway touchdown lights (RTZL);

Revised "The runway lights" to "The runway edge lights";

Added "Other visual references approved by the Regulatory Authority"

3.6 Revised "IFR Landing Weather Minimum for Newly Nominated captain";

3.8 According to Operations Manual, revised lighting requirement for night flight to "During night ,the approach and landing runway shall at least be equipped with runway edge lights,runway threshold lights and runway ending lights.Under conditions of inward displaced runway threshold with threshold bar lights, the runway threshold lights are not required, but then precision approach and landing shall not be conducted at night on such runway"

7.1 Revised "Fuel Requirements for International (Regional) Flights"to "Fuel Requirements for International Flights", because the fuel requirements for regional flights is same to the domestic flights.

10.2 Revised " For the first flight on that day, flight crew should check PA functioning well before flight so that flight deck instructions can be heard in passenger cabin" to "For the first flight of each aircraft on that day, flight crew should check PA functioning well before flight so that flight deck instructions can be heard in passenger cabin"

15.1 Deleted "Flight crew shall arrive at flight deck and prepare for flight not later than 50 minutes before scheduled departure time" .The time requirement for flight crew pre-flight is included in Operations Manual.

17.5 Revised " If on fire, accomplish related fire checklist" to "If on fire or other circumstances which may cause further aircraft damage or passenger injury, accomplish memorized items of related checklist";

19.1 Revised airplane approach category according to Operation Manual.

23.3. Use of Non-normal Checklist: Revised “Moving start lever and/or pulling the fire switch should activated by pilot monitoring after be verified and commanded by pilot flying.” To “Moving start lever and/or pulling the fire switch should activated by pilot monitoring after be verified by pilot flying”.

Revision Record

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R1	May 6, 2017		

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Crew Resource Management

During the flight, good communication and harmonious atmosphere should be established and maintained.

In critical phase of flight, all crew members should not do anything which is not directly related to safe operation.

The critical phases of flight include all ground operations involving taxi, takeoff and landing, and all other flight operations conducted below 10,000 feet except cruise, and for airport elevations at or above 5,000 feet MSL, that means the airport elevation plus 10,000 feet.

Authority and Responsibility of PIC

- Before each flight, the PIC has the right to refuse a flight, if he or she thinks any item related to airplane, weather or airport couldn't meet the dispatch requirements, or the flight crew doesn't have the confidence for a safe flight.
- During the flight, the PIC could execute the following rights according to CCAR-332 to take any necessary action to ensure a safe flight, if there is any sabotage, unlawful interference, or any action that endangers persons and possessions on board or to jeopardize flight safety:
  - Refuse to take off if the PIC discovers that there isn't enough necessary security measures taken for the airplane;
  - For any interference on the airplane, the PIC could request the Air Marshal or other crew members to restrain or disembark the misfeasor;
  - For any unlawful interference on the airplane which could seriously endanger flight safety, the PIC could request the Air Marshal or other crew members to take applicable disposal procedures to get the situation under control;
  - If necessary, ask for the help from passengers to stop the disturbing or unlawful interference on the airplane which could seriously

endanger flight safety

- If necessary, diversion from the original flight plan or proper disposal actions may be taken when experiencing the disturbing or unlawful interference which could seriously endanger flight safety.

- Under special circumstances in flight, the PIC has the right of final disposal of the airplane with the purpose of guaranteeing safety of the airplane and everyone on board.
- In the interests of safety, the PIC has the right to request a replacement of any crew member who is not fit for the flight task.
- When in distress, without the PIC's permission, none of the flight crew could leave the flight deck and none of the crew members could leave the airplane.
- The PIC has the final decision right for fuel loaded.
- The PIC shall make the final confirmation of the content and revision of the load sheet before takeoff of each flight.
- The PIC has the final decision right for anti-icing/de-icing operations.

Pilot's Incapacitation

Judgment of Incapacitation

- Incapacitation may occur in all age groups and during all phases of flight. The key for perceiving incapacitation is to utilize CRM techniques and strictly follow SOP and standard flight profile.
- Suspicion of some degree of incapacitation should be considered when a crewmember cannot perform according to the Standard Operations Procedures or standard flight profile with no responding to doubting from other crew members.
- Failure of any crewmember to respond to a second request or a checklist response is cause for investigation.

- Any crew member should tell the rest of the crew members that he/she doesn't feel good enough to continue without switching control of the airplane.

Crew Action upon Confirming Pilot Incapacitation

Stage 1: Maintaining control of flight path

- The other pilot should immediately take over the control of the airplane with calling out: "**I have control**".
- Engage autopilot and auto throttle.
- Check and confirm the airplane status and flight path are normal.
- Declare an emergency to ATC and request level flight or holding if needed.
- Get all necessary help from cabin crew to restrain the incapacitated pilot with the seatbelt and shoulder harness lock and slide the seat to the full-aft position to avoid interfering flight controls, or move the incapacitated pilot to cabin.

Stage 2: Planning for the rest of the flight

- Principles for Succession of command in the event of flight crew incapacitation
  - In the event of incapacitation of the PIC during the flight, the succession of command shall be determined by the flight qualifications held by the remaining flight crewmembers.
  - In the event of the incapacitation of the co-pilot during the flight, the PIC shall designate a pilot on flight deck duty or deadhead as the co-pilot.
- Command cabin crew to get medical assistance for the incapacitated pilot from doctors onboard.

Note: Even if the incapacitated pilot partially recovered, he/she could not perform any duty position as required crew member.

- Land at the nearest suitable airport. Consider following items for choosing landing airport:
  - Weather and type of approach available at the airport
  - Medical service and health condition of the incapacitated pilot
  - Familiarity of the airport.
- Contact ATC with intention and request landing priority and assistance.
- Inform cabin crew the planning for the rest of the flight.

Stage 3: Approach and landing

- Request radar vectoring and monitoring if possible.
- Use auto landing if requirements meet and inform ATC of the intention.
- Make sure there is sufficient time for preparation and checks for all phases of flight.
- Continuing taxiing is prohibited after landing if captain is incapacitated.

Areas of Responsibility

Purpose of assigning areas of responsibility is to clarify the different operating zones designated for the captain and the first officer. First officer flying on the left seat should conduct the procedures designated to the captain in normal checklist and responsibility areas, accordingly, the right-seat pilot should finish the first officer procedures.

On the ground, areas of responsibility are assigned between the captain and first officer. In the air, areas of responsibility are assigned between the Pilot Flying (PF) and the Pilot Monitoring (PM).

Flight crew should follow areas of responsibility which are strictly outlined in Flight Crew Operation Manual volume 1 for corresponding type of airplane. If actions outside of crew members' areas of responsibility the Captain may direct the actions but check and make sure that all required operations are finished.

Switch-over of Airplane Control

When transferring control of the aircraft, the terminology of "**you have control**" and "**I have control**" must be used to clarify the transfer of the Pilot Flying duties.

If the right-seat pilot is conducting the takeoff, at the time of the calling "**you have control**" received, he or she takes over the control of the airplane; the left- seat pilot should maintain throttle control until V1 reached otherwise.

If the right-seat pilot is making the takeoff, announcement of "Reject" from the captain means the captain is taking over the control of the airplane and starting the rejected takeoff maneuver.

If the right-seat pilot is making the landing, he or she should hand over the airplane control when approaching taxi speed; however, the left-seat pilot could take over the control of airplane in advance if needed by stating "I have control".

Under non-normal or emergency situations, transferring control of the airplane control should be conducted according to procedures.

Under any circumstance, the captain has the right to take over the flight control or reassign responsibility for each flight crew.

Communication between Flight Deck & Passenger Cabin

The Captain must give permission for passenger boarding and must also give permission for the main cabin door to be closed prior to departure.

Cabin reports are made by cabin crew through interphone system, and confirmed by flight crew's silent consent. If "cabin slides armed" report was not received or confirmed, flight crew should not commence pushback or start engines.

Takeoff or landing could not be conducted unless the "cabin preparation completed" report for 737.

Takeoff and landing preparation notice is made by flight crew cycling the fasten belts switch once for 737.

If any crew member in the cabin requests to enter the flight deck, he or she must notify the flight crew in the flight deck through the interphone system. The flight crew in the flight deck should use the camera monitor to view the area outside the flight deck door in order to identify the person, or any suspicious activity or potential risks. The crew in the flight deck can open the flight deck door only after the person requesting entry has been identified to be authorized personnel.

Under any non-normal situations, flight crew and cabin crew should promptly communicate and coordinate.

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Flight Deck Management

Flight Deck Cleaning and Orderliness

During the whole process of operations, the flight crew should keep the flight deck clean and in good order.

Anything that might affect safety of operation is not allowed to be brought into the flight deck.

Smoking in flight deck is prohibited for operations conducted at altitude lower than **10,000 feet** which include ground operations.

All manuals and files, charts and navigation documents should be placed and well-fixed at designated locations.

Nothing could be placed on the aft electrical panel.

At the completion of the flight, the flight deck should be cleaned and all manuals and documents should be put back to designated places.

Beverage & Meals

At the critical phase of the flight, none of the flight crew is allowed to eat meals.

During the flight, the PF and the PM should not leave their seat to have meals and also they are not allowed to have meals at the same time.

Beverage could only be located in the bracket. Locating any beverage or food on the glare shield panel or after electrical panel is prohibited.

Passing any beverage or food directly over any electrical panel should be avoided.

Weather Minimums

Company flight plan and dispatch release are made strictly based on IFR. Only Non All Weather or non Low Visibility Operations are approved as operating minima for Xiamen Airlines.

Unless approved in "operations specifications", flight crew must comply with the published takeoff, approach and landing weather minimums.

Weather Minimums for VFR

At altitude less than **6,000 meters,** only the following requirements are meet, could VFR be conducted:

At altitude no lower than **3,000 meters** QNH, visibility is no less than **8,000 meters**.

At altitude lower than **3,000 meters** QNH, visibility is no less than **5,000 meters**, lateral distance to clouds is no less than **1,500 meters**, and vertical distance to clouds is no less than **300 meters**.

Outside the Airport Control Area, at the condition of less than 900 meters QNH or less than 300 meters above the surface (whichever is greater) and clear of cloud, the VFR weather minimum shall be 1600 meters when the following conditions are met:

- The airspeed shall be low enough to allow enough time for pilots to observe and avoid other aircraft and obstacles;
- Traffic are scarce in the area provided little collision possibility.

Within the Airport Control Area, below 3000 QNH meters, and visible under clouds, the weather minimum for VFR flights is 1600 meters with the permission of the ATC.

For visual flight, the flight crew should keep flight in VMC and obtain ATC approval.

For international or regional operations, refer to the local AIP.

Weather Minimums for IFR

Takeoff Weather Minimums

No person could conduct takeoff if applicable weather reports show that the weather is under standard takeoff minimums. For airports without published takeoff weather minimums, the visibility should be no less than **1,600 meters**.

When the visibility is lower than 800 meters, the minimum visibility shall be based on the RVR value.

If takeoff minimum is RVR 400 meters, required touchdown zone RVR should be controlling RVR. If takeoff minimum is less than RVR 400 meters, both touchdown zone and mid-point RVR are required for category C airplane; while touchdown zone, mid-point and rollout are all required for category D airplane.

For runway without RVR report, the visibility may be evaluated through manual observation or through pilot judgment by calculating the numbers of the centerline lights or edge lights that can be seen.

Operations with RVR less than 400 meters are classified as low visibility operation which could only be operated by personnel who have successfully received training for low visibility operation.

If the actual weather at the takeoff airport does not meet the corresponding landing weather minimums, takeoff could not be conducted unless a qualified takeoff alternate airport is ensured.

Landing Minimums

CAT II precision approach minimums could only be applied to personnel who has successfully received low visibility operation training and certified.

Xiamen Airlines is not operating CAT Ⅲ precision approach. Except when specially permitted, in CAT I precision approach (DA), DH shall not be lower than 60m (200ft), and RVR shall not be lower than 550m. If RVR report is not available, the visibility shall not be lower than 800 meters.

For runway with RVR report, RVR is used as the minimum approach standard, but not VIS.

For runway without RVR report, the visibility of the intended runway direction shall be used. When RVR is used as the minimum standard, the touchdown zone RVR is the controlled RVR. When touchdown zone RVR is not available, the pilots may use mid RVR instead.

Landing minima represented as MDA/MDH and RVR/VIS for non-precision approach and circling approach .

Landing minima are available in approach chart of NAIP or Jeppesen Airway Manual.

For runways with RVR report, CAT I precision approach minimums are required in terms of DA/DH and RVR.

When the visibility is lower than 800 meters, the minimum visibility shall be based on the RVR value.

For CAT I precision approach, touchdown zone RVR is the controlling RVR which could be substituted by mid-point RVR in case of malfunction.

For CAT II ILS approach, both touchdown zone and mid-point RVR are controlling RVR.

In CAT I precision approach when DH is no higher than 75m and the following conditions are satisfied, can RVR lower than 800m be used:

1) The runway is equipped with FLAS, RTAL and RCLL;

2) The runway is equipped with FALS, and the pilots use approved HUD or autopilot or flight director system to commence approach..

Minimums for starting final approach

No pilot may continue an approach past the final approach fix, or where a final approach fix is not used, to begin the final approach segment of an instrument approach procedure if the reported visibility/rvr is below the minima.

If a pilot has begun the final approach segment of an instrument approach procedure, and after that receives a later weather report indicating below-minimum conditions, the pilot may continue the approach to DA/DH or MDA/MDH.

Conditions for Continuing the Approach below DA/DH or MDA/MDH and Land:

- The aircraft is continuously in a position from which a descent to a landing on the intended runway can be made at a normal rate of descent using normal maneuvers, and where that descent rate will allow touchdown to occur within the touchdown zone of the runway of intended landing;
- The flight visibility is not less than the VIS/RVR published in the standard instrument approach procedure being used;
- When an instrument approach transfers to visual approach (except for Category II approaches), at least one of the following visual references for the intended runway is distinctly visible and identifiable to the flight crew so that they may positively determine the aircraft position and height relative to the landing track:
  - The approach light system

    If the approach lighting system is used as reference, the red horizontal lights/ the red side row bars shall be distinctly visible and distinguished, otherwise it is prohibited to descend to below 30m (100ft) above the elevation of the touchdown zone;.

- the threshold;
- the threshold markings;
- the threshold lights;
- the runway end identifier lights or runway threshold identifier lights;;
- the visual approach slope indicator;
- the touchdown zone or touchdown zone markings;
- the runway touchdown zone lights(RTZL);
- the runway or runway markings;
- the runway edge lights;
- Other visual references approved by the Regulatory Authority.

✈ When the aircraft is on a straight-in non-precision approach procedure which incorporates a visual descent point, the aircraft has reached the visual descent point, and a descent and land to the runway could be made using normal procedures or rates of descent.

IFR Landing Weather Minimum for Newly Nominated captain

If the captain has not served **100 hours** as pilot-in-command under CCAR-121 in the type of airplane he or she is operating, the published MDH or DH and landing minimums of the normal airports, temporary airports or refueling airports shall be increased by **30 meters (100 feet)** and **800 meters (1/2 mile)** or the RVR equivalent respectively. When landing at an airport with published RVR minimums, the new captain shall use the corresponding RVR minimums for new captains as listed in the following table. (Note: Interpolation is not permitted. When the published minimum landing RVR cannot be found in the table, refer to the nearest bigger value and use the corresponding minimum landing RVR for new captains.)

Published RVR Minimums	RVR Minimums for New Captains
RVR 550 meters(1800 feet)	RVR 1400 meters(4500 feet)
RVR 600 meters(2000 feet)	RVR 1400 meters(4500 feet)
RVR 750 meters(2400 feet)	RVR 1500 meters(5000 feet)
RVR 1000 meters(3000 feet)	RVR 1500 meters(5000 feet)
RVR 1200 meters(4000 feet)	RVR 1800 meters(6000 feet)
RVR 1500 meters(5000 feet)	RVR 1800 meters(6000 feet)

The MDA(H) or DA(H) and visibility minimums need not be increased above those data applicable to alternate airports, but in no event may the landing minimums be less than **90 meters (300 feet)** and **1,600 meters (1 mile)**.

If the newly nominated captain has performed as a PIC on another aircraft type for flight operations under CCAR-121 for at least **100 hours**, each landing that the new captain conducts on the new aircraft type for flight operations under CCAR-121 is deemed as equal to 1 hour, which can be used to reduce the total 100 PIC flight hours required (the converted time cannot be greater than 50%).

Effect of Lighting System Failure on Weather Minimum

CAT I approach and non-precision approach could only be conducted at day time with landing standards for using basic facilities if the whole runway lighting system is inoperative.

For runways equipped with runway edge lights but not center line lights, all approaches could only be conducted at day time if runway edge lights inoperative.

If the runway center light system is inoperative, Except when using HUD, autopilot or flight director the minimum runway visibility or RVR for CAT I precision approach and landing should be 800 meters; however, there is no affect for non-precision approach.

Weather Minimums for Alternate Airports

If an airport is used as an alternate airport, the following data should be added to the weather minima above the published minimum operation standard for that airport:

- For airports with only one approach facility and procedure system, DA/DH or MDA/MDH should be increased by **120 meters (400feet)** and the visibility should be increased by **1,600 meters**.
- For airports with at least two sets of non-precision approach facility and procedure systems, which could supply approaches for different runways, MDA/MDH should be increased by **60 meters (200feet)** and the visibility should be increased by **800 meters**, whichever the higher of the two runway minima should be selected.
- For airports with at least two sets of precision approach facility and procedure systems, which could supply approaches for different runways, DA/DH should be increased by **60 meters (200feet)** and the visibility should be increased by **800 meters,** whichever the higher of the two runway minima should be selected.

Weather Minimums for Night Flights

During night , the approach and landing runway shall at least be equipped with runway edge lights,runway threshold lights and runway ending lights. Under conditions of inward displaced runway threshold with threshold bar lights, the runway threshold lights are not required, but then precision approach and landing shall not be conducted at night on such runway.

For night takeoff, the runway shall at least be equipped with edge lights and runway ending lights .

Weather minima for takeoff and landing at night are the same with published operation minima of that airport.

Altitude and Altimeter Setting

For any altitude change, both pilot should cross check Altitude Conversion Table and then set MCP ALTITUDE. When autopilot is engaged, setting MCP ALTITUDE should be made by PF, or when PF is controlling the airplane manually, setting the MCP ALTITUDE is made by PM. In order to confirm the MCP ALTITUDE window is correctly set, both PF and PM should call out the altitude in both meters and feet.

Passing **1,000 feet** to the target altitude during climbing or descending, PM should call out "**1,000 feet** to level off". Both pilots should monitor the vertical speed change.

If there is any traffic in the vicinity, the vertical speed should be limited to **1,500 fpm** when approaching **1,000 feet** to target altitude.

In RVSM airspace, the vertical speed should be limited between **500 fpm** to **1,000 fpm** when approaching **1,000 feet** to target altitude.

Altimeter Setting

- At airport with transition altitude and transition level, set QNH on barometric altimeter beforetakeoff. When the aircraft climbs above transition altitude or flies over the lateral boundary of area usingQNH, set QNE on the barometric altimeter; if the aircraft prepares to land or fly over the airport, the pilotshall set QNH on barometric altimeter when the aircraft descends below transition flight level or passesthrough the lateral boundary of the area with QNH.

- At airport with transition height and transition level, set QFE on barometric altimeter beforetakeoff. When the aircraft climbs above altitude or flies over the lateral boundary of area usingQFE, set QNE on the barometric altimeter; if the aircraft prepares to land or fly over the airport, the pilotshall set QFE on barometric altimeter when the aircraft descends below transition flight level or passesthrough the lateral boundary of the area with QFE.

- At the airport without transition altitude/height and transition level, set

QFE on barometricaltimeter before takeoff. When the aircraft climbs to 600 meters or according to ATC instructions, setQNE on the barometric altimeter. When the aircraft enters the airport area boundary or according toATC instructions, set QFE on barometric altimeter before landing.

Minimum Safe Altitude

En route

For flights using CAAC Enroute Charts (ERC), which provides minimum Enroute Altitude (MEA) and grid Minimum Off Route Altitude (MORA), considering designated flight levels for various flying course and effective navigation range, the minimum flying altitude is determined according to the following different situations:

- For flights on course or within **25 KMs** off the course, the minimum flying altitude is determined by the published MEA for that segment and the safety of following enroute segments.
- For flights off course more than **25KMs,** the minimum flying altitude is determined by the published MORA for that grid and the safety of following enroute segments.

For flights using Jeppesen Enroute charts, which provides MEA or minimum IFR altitude, minimum obstacle clearance altitude, MORA and grid MORA, the minimum flying altitude is determined considering designated flight levels for various flying course and effective navigation range, the minimum flying altitude is determined according to the following different situations:

- For flights on course, the minimum flying altitude is determined by the published minimum altitude or minimum IFR altitude, or minimum obstacle clearance altitude for that segment with further consideration of the safety of following segments.
- For flights off course with **10 NMs,** the minimum flying altitude is determined based on the MORA if published, with further consideration of the safety of following enroute segments. However, if there isn't any published MORA, the minimum flying altitude is determined based on the grid MORA with further consideration of the

safety of following enroute segments.

- ✈ For flights off course beyond 10 NMs, the minimum flying altitude is determined by the published MORA for that grid with further consideration of the safety of following enroute segments.

Airport Area

The following minimum altitudes should be obeyed except for takeoff and landing:

When flying within the airport area, published arrival and departure procedures should be followed and minimum flying altitude should be no lower than the minimum IFR altitude required by instrument approach charts, or in any emergency situation, no lower than minimum safe altitude for airplane present position or the minimum safe sector altitude.

For airports without published arrival and departure procedure or minimum safe sector altitude, the flight altitude should be no lower than **300m** in plain area or **600m** in plateau or mountain area above the highest obstacle within airport area.

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Stabilized Approach

A stabilized approach means maintaining a stable airspeed, descent rate, and vertical/lateral flight path in landing configuration. All approaches should be stabilized by **1,000 feet** above field elevation (AFE) in instrument meteorological conditions (IMC) and by **500 feet** AFE in visual meteorological conditions (VMC). Landing configuration should be established by **1,000 feet** AFE for all approaches

Factors for Stabilized Approach

- the airplane is in the correct landing configuration
- all briefings and checklists have been accomplished
- the airplane is on the correct flight path
- only small changes in heading and pitch are required to maintain the correct flight path
- the airplane should be at approach speed.If the indicated airspeed is approaching approach speed, deviation within +10 kts and -5 kts are acceptable
- rate of descent is no greater than **1,000 fpm**; if an approach requires a rate of descent greater than **1,000 fpm**, clarify it in approach briefing
- thrust setting is appropriate for the airplane configuration
- ILS approaches should be flown within one dot of the glide slope and localizer, or within the expanded localizer scale.
- during a circling approach, wings should be level on final when the airplane reaches 300 feet AFE.

Intentionally

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Meteorological Wind

The wind direction and wind speed are according to the latest data reported by local aeronautical weather service or ATC. Whenever the wind direction shift occurs, the most adverse wind direction data among the reported direction range shall be used. If the wind is gusty, highest gust shall be used to check wind limitation.

Approach Speed Correction for Wind Component

If a manual landing is planned, the recommended method of approach speed correction is to add one half of reported steady headwind component plus the full gust increment above the steady wind to the reference speed.

The corrected approach speed should not exceed $\mathbf{V_{REF}}$**+20 knots**.

The corrected approach speed should not exceed landing flap placard speed minus **5 knots**.

For auto landing, the approach speed should be set to $\mathbf{V_{REF}}$ **+5 knots**.

The approach speed should never be set to less than $\mathbf{V_{REF}}$ **+5 knots**.

For non-normal conditions under which VREF has been adjusted by the non-normal procedure, wind correction is still needed for the already adjusted $\mathbf{V_{REF}}$. (Minimum **5kts**, maximum **20 kts**)

If a flaps 15 landing is performed and $\mathbf{V_{REF}}$ ICE is required, the wind correction should not exceed **10 knots**.

B737-700 crosswind restriction（nautical miles/hour）

RWY Conditions		Crosswind Restriction for Takeoff	Crosswind Restriction for Landing	Tailwind Restriction for Takeoff and Landing	Headwind Restriction for Takeoff and Landing
Dry Rwy		36/34*	36	10	52
Wet Rwy		25	30		
Contaminated RWY	Standing water / Slush	15	16		
	Snow-No melt	25	26		
	Ice-No melt	15	16		
	Snow, Ice -Begin to melt	NO TAKEOFF/LANDING			

Note *: For aircraft without winglet, the side wind limitation for takeoff at dry runway is 36 nm/h; for aircraft with winglet, the side wind limitation for takeoff at dry runway is 34 nm/h.

Fuel Management

The total fuel quantity for the flight should be based on the flight plan. If the captain thinks a change of the quantity is necessary, he or she should negotiate and decide jointly with dispatcher.

For all aircrafts, the unusable fuel is already included in the basic empty weight. So the Indicated value on fuel quantity indicator is usable fuel.

The minimum takeoff fuel should be no less than **4,500 KGs**.

Fuel Requirements for International Flights

In consideration of wind and other weather conditions expected, no person may dispatch or take off an airplane unless it has enough fuel

- To fly to and land at the dispatched destination airport;
- After that, to fly for a period of **10 percent** of the total time required to fly from the airport of departure to, and land at, the dispatched destination airport;
- After that, to fly to and land at the most distant alternate airport specified in the flight release, if an alternate is required; and
- After that, to fly for **30 minutes** at holding speed at **450 meters (1,500feet)** above the alternate airport under standard temperature conditions.

Fuel Requirements for Domestic Flights

In consideration of wind and other weather conditions expected, no person may dispatch or take off an airplane unless it has enough fuel

- To fly to and land at the airport to which it is released;
- Thereafter, to fly to and land at the most distant alternate airport specified in the flight release;
- thereafter, to fly for **45 minutes** at normal cruising fuel consumption.

Refueling

- Before refueling, surrounding conditions should be assured safe and proper for the operation. Refueling is prohibited if the following conditions occur:
- The quality of the fuel is not approved by the flight crew or maintenance personnel;
- The aircraft is parking at the hangar;
- The fueling airplane does not shutoff the engine;
- There is an operating engine, heater and easy arcing electric equipment within 25 meters around an airplane;
- Sand storm, heavy rain or thunderstorm at airport area or electrical storms within 8 km of visual range;
- Visibility at apron is less than 50 meters

During refueling operation, pilots assigned should monitor the whole refueling progress.

If refueling operation should be conducted with passengers in cabin, corresponding airport policy and safety measures published in <<operation procedures manual>> should be complied with. The cabin crew must be notified and the seat belt sign remains in the OFF position during the refueling operation.

Any operation of weather radar or HF communication device is prohibited.

Fuel Balancing

Maximum fuel imbalance between main tank 1 and 2 must not exceed **453 KGs**.

In-flight fuel balancing operations should be conducted by PM. The beginning and ending of the balancing procedures should be confirmed by both pilots.

Unless required by checklist, the fuel balancing procedures should not be conducted during the critical phase of flight.

When fuel balancing is in progress, pilots should not leave their duty station.

The center tank should not be used for fuel balancing.

Fuel Monitoring

During cruise flight, flight crew should make record of fuel quantity remaining for corresponding waypoints on the flight plan (normally the record intervals should be no longer than 30 minutes).

With fuel monitoring record, flight crew should evaluate fuel for flight based on but not limited to the following items:

- Check actual fuel consumption consistent with flight plan;
- Check the remaining fuel could meet the flight requirement ;
- Verify fuel quantity remaining for destination airport.

If actual fuel quantity is not consistent with flight plan, possible reasons could be but not limited to the following items:

- Fuel leakage;
- APU is running but the fuel consumption is not calculated into total fuel consumption;
- Fuel quantity indication failure;
- Calculation error for fuel used;
- Fuel used calculation and Fuel quantity indication errors are affected by water and other foreign substance or due to water in fuel icing in flight.

When cruise at high altitude for long time, crew members should monitor the fuel temperature, to prevent fuel temperature from approaching the minimum.

If the fuel temperature is too low, the flight crew should:

- climb or descend to warmer flight level;
- divert to warmer air mass;
- fly at a higher Mach number.

Minimum Fuel and Fuel emergency

Minimum Fuel

In consideration of fuel quantity indicator system error, minimum fuel is the amount of fuel that could at the most allow the airplane to fly to the landing airport and then hold for **30 minutes** at holding speed at **450 meters (1,500feet)** above the airport elevation.

When reaching the minimum fuel condition, the PIC shall:

- immediately declare "Minimum Fuel" to ATC;
- inform ATC of the usable fuel remaining and duration; In case of VFR flight or flight in non-radar area, report ATC of present position and ETA;
- make decision to continue to destination airport, or divert to suitable alternate airport, taking consideration of the air traffic conditions, weather tendency and navigation equipment of the destination airport, diversion airport and alternate airport;
- continue to fly along the ATC assigned route, applying for direct flight as possible;
- notify the flight dispatcher that "Minimum Fuel" has been declared.
- When returning to the main operational base, the flight crew shall submit a PIC report in accordance with the requirements of "PIC Report System".

Fuel emergency

"Fuel emergency" refers to one of the follows:

- The remaining fuel onboard is not enough for the aircraft to maintain 30 minutes with a holding airspeed at an altitude of 450m (1500ft) above the elevation of the arriving nearest suitable airport, after taking consideration of possible error of fuel quantity indication.

- Other emergency situations that the flight crew determines as air safety is affected by the state of the remaining usable fuel supply.

In case of fuel emergency situation, the PIC shall:

- Declare of fuel emergency to ATC and request priority handling. Use standard terms: "MAYDAY MAYDAY MAYDAY,FUEL MF×× declares fuel emergency, remaining fuel ×××(quantity), estimated usable time ×× minutes";
- Request priority handling by ATC;
- If time permits, inform the flight dispatcher of declaration of fuel emergency;
- Implement emergency landing at nearest airport, using most fuel saving methods until the aircraft lands.

When returning to the main operational base, the flight crew shall submit a PIC report in accordance with the requirements of "PIC Report System".

Comparison of "minimum fuel" and "emergency fuel"**:**

- "Minimum fuel" refers to the situation in which the aircraft is able to fly 30 minutes at holding speed at the flight level 450m(1500ft)above the airport elevation upon reaching the destination airport taking into consideration of prescribed fuel quantity indication errors. If further delay occurs after the flight crew choose to divert to the nearest suitable airport (or there is no nearest suitable airport at all), the remaining fuel will be inadequate for holding 30 minutes above the alternate airport. In such case, the flight crew shall declare "fuel emergency".
- The major difference between "minimum fuel" and "emergency fuel" lies in the requirement of request for ATC traffic priority. In time of air traffic flow control or other similar situations, the ATC will not use planned air route or standard approach procedures, on which the ATC traffic priority is based. In such case, flights use planned air route and standard approach procedures will not acquire traffic priority by the ATC.

- During flight operations, the PIC shall take full consideration of the weather tendency of the destination airport and possible delay en-route. These operational environment factors play an important role in fuel consumption and can lead to a situation in which the aircraft's remaining fuel is more than minimum fuel when implementing approach to the destination airport and thus the chance of declaration of "minimum fuel" is missed. In such case, once some of the operational environments change and diversion to alternate airport is needed, the aircraft will possibly get directly into fuel emergency.

Auto-Flight

Auto-flight systems can reduce the workloads of the flight crew; the flight crew shall use the higher level of the automation during the flight.

The pilot shall keep monitoring the safety and the efficiency of the automatic system. When the automatic systems do not perform as expected, the pilot should reduce the level of automation as far as manual flight to achieve proper control of path and performance.

AFS (Auto Flight System) Monitoring

When the A/P is engaged, the PF shall make the callouts for the flight mode which he is going to change or select, such as “level change”, “heading select”. The PM shall make the callouts based on the FMA changes. Such as “retard”, “MCP SPD”.

The pilot should not only verify the status from the FMA but also monitor the flight path, speed and the change of the thrust when select or change the mode of the auto flight system.

A/P (Auto Pilot) Use

Autopilot engagement should only be attempted when the airplane is in trim, F/D commands (if the F/D is on) are satisfied and the airplane flight path is under control.

The autopilot should be engaged or disengaged by PF.

Do not engage the autopilot for takeoff or missed approach below **1000 ft** AFE.

When conducting RNP departure or go-around with RNP procedures (RNP APCH orRNP AR), do not engage the autopilot below 120m (400 feet) AGL. When conducting takeoff andgo-around with other procedures, do not engage the autopilot below 300m (1,000 feet) AGL..

For ILS approach and manual landing, the autopilot should be disengaged not below **100 ft** AGL.

For non-ILS approaches, the autopilot should be disengaged not below the required minimums.

In the condition of the low cloud, low visibility and non-precision approach, the autopilot should not be disengaged until the stable approach has been established. Early disengagement of autopilot is not recommended.

Left-seat pilot as the PF, **CMD A** should be engaged, and the right-seat pilot as the PF, **CMD B** should be engaged. In **RVSM area**, autopilot should be used to maintain the altitude.

The Altitude source of the transponder should be consistent with the selected autopilot Altitude source.

Do not use **LNAV/VNAV** when using **QFE** for altimeter setting.

F/D (Flight Director) Use

The AFDS should be engaged when autopilot is in use.

When fly manually, the PM should operate the MCP at the command of PF. Ensure the proper flight director modes and status comply with the desired maneuver, or it should be turned off.

A/T (Auto Throttle) use

A/T should remain engaged and monitored during flight with autopilot engaged.

Auto throttle shall be disengaged in manual flight phases except takeoff and climb.

MCP use

When the autopilot is in use, the PF makes MCP mode selections.

When flying manually, the PM should make MCP mode selections at the command of the PF. Heading and altitude changes from ATC clearance and speed selections associated with flap position changes may be made without specific directions. However, these selections should be announced and confirmed by the PF.

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FMC/CDU

During pre-flight, all flight plan or performance related FMC/CDU entries made by one pilot must be verified by the other pilot.

In flight FMC/CDU changes should be made by PM and executed only after confirmation by both pilot. In the cruise phase, minor FMC/CDU could be done by PF.

During the flight, the crew shall use LNAV/VNAV to reduce workload.

If flight plan changes occur during periods of high workload or in areas of high traffic density, or any confusion of the flight path in LNAV/VNAV mode, the crew should not hesitate to revert to modes other than LNAV/VNAV.

Pre-flight IRS Position Entering

Enter the present position on the SET IRS POS line. Use the most

accurate latitude and longitude.（Position coordinates provided by GPS should be checked according to the published on the airport chart.)

A full IRS alignment is recommended before each flight. If time does not allow a full alignment, accomplish the Fast realignment supplementary procedure.

Computer Flight Plan

The airways and waypoints entered on the route page should be matched with the filed flight plan.

Input waypoint wind direction, wind speed as well as outside air temperature at cruising level provided by computer flight plan into FMC. The FMC-calculated total distance to destination and the fuel remaining at destination on the progress page should be matched with the total distance and estimated fuel remaining on the computer flight plan.

Use EFIS Plan mode to check map display and verify flight plan.

Departure and arrive airport's ATIS/ATC clearance/flyover time/fuel remaining at way points should be recorded at computer flight plan.

CDU Page Selection

The PF shall select CDU page according to the current or intended phase of flight. If climbing then the PF shall have the CLB page selected. The PM shall select the appropriate page for monitoring depending on the phase of flight.

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Communication

The flight crew should establish two-way communication with the ATC for the whole period from the first contact with ATCat preflight till engine shut-down after landing.

The captain should be responsible for all the communication.

VHF1 is the primary for communicating with the ATC, VHF2 is the secondary, for monitoring **121.5**, listening to ATIS, communicating with the dispatch, ground service, and military activity, etc.

The first-officer/PM should normally perform the communication such as listening to ATIS, with dispatch, ATC, and ground service. When the first officer/PM is conducting the communication required by the operation procedure, other communication should be taken over by the captain/PF.

During flight, PM should conduct the communication between air and ground. All flight crew members should monitor the content of communication between flight crew and ATC, cabin, ground service, ect and have commend understanding. With any doubt from anyone of the flight crew, immediately confirm with ATC or other communicating units to avoid misunderstanding or ambiguity. At all phases of flight, at least one pilot (normally PM) should monitor relevant ATC frequency.

For flight with foreign pilot designated as captain, when captain have any doubt about communication with ATC、dispatch、cabin crew、ground-staff, first officer should verify it in Chinese after authorized by captain, and report the information to captain.

Flight crew should keep monitoring **121.5** through-out the flight.

At critical phases of flight, all the other communications should be avoided as possible except for with ATC.

All the communication shall be performed in standard terminology, use mandarin for communication in Chinese. Use ICAO English for communication in English.

For the first flight of each aircraft on that day, flight crew should check PA functioning well before flight so that flight deck instructions can be heard in passenger cabin.

The pilot should test the HF if intend to use it.

Listening ATIS

Both pilots should confirm the ATIS, but not simultaneously. This provides a cross-check of the content in the ATIS.

The flight crew shall verify that the D-ATIS altimeter setting numeric value and alpha value are identical. If the D-ATIS altimeter setting numeric value and alpha value are not provided simultaneously,the flight crew shall confirm the altimeter setting with ATC.

At the first contact with the ATC the pilot shall advise the ATIS code.

Interphone System

The left-seat pilot shall establish the two-way communication with the ground-crew before the airplane pushback or after the engine shut-down.

For flight with foreign pilot designated as captain, first office should accomplish the communication with ground-staff if ground-staff is unable to speak English, and report the information to captain.

If interphone system inoperative, the pilot shall use the standard gesture to contact with the ground crew.

The interphone system shall be monitored during the flight.

Communication with ATC

The pilot should read-back the instructions related to safety from ATC. Always use the flight number for each transmission to ATC. Read back key instructions including voice clearance, runways in use, taxi ways altitudes, headings, radio frequencies, routes ,changes of waypoints,etc.Flight crew should report cleared flight level on first contact with ATC.

The flight crew should comply with all instructions restrictions from ATC, if unable, advise ATC as soon as practicable.

PM should readback ATC instructions to PF. PM should not execute any ATC instructions without being confirmed by PF

If the crew has a non-normal or emergency situation, fly the aircraft first and maintain situational awareness. Communication with ATC is important but is not the highest priority. Pilots should inform ATC about the present situation and crew intentions as soon as practicable, and request assistant when necessary. Advice ATC to “standby” after declaring a Mayday while the situation is being managed.

Headphone & Speakers

During cruise, at least one pilot shall wear the headphones or boom microphone/headset, in all the other phases of flight all pilots shall wear the headphones or boom microphone/headset.

Flight deck speakers may be used in flight. Speaker volume should be kept at the minimum usable level adequate to avoid interference with normal crew flight deck conversation, but still ensure reception of relevant communications.

It should be aware of that the speaker will be inhibited when any communication device is transmitting (this includes the intercom).

Format of Position Report

The position report to ATC should be made in standard format (phraseology and sequence), same in Chinese as in English. The pilot should also report the wind component, OAT (outside air temperature), icing condition and turbulence, if requested by ATC.

Procedure control area

Flight No.	WPT	time	Flight Level	ETA of the next WPT	the following WPT

For example: Hong Kong Radio, Xiamenair 857,position DOTMI time 1857, flight level 310, Estimate MONTA 1905, EPDOS next.

Radar control area

Flight No.	WPT	Flight Level	transponder code

For example: Hong Kong Radar, Xiamenair 857, position DOTMI, flight level 310, and squawk 1234.

Report of Adverse Weather

The pilot shall inform the ATC about the moderate turbulence , windshear, wake turbulence, volcanic ash, severe icing and other adverse weather conditions that is considered as a possible threat of the flight safety, as soon as practicable.

Passenger announcement

Content and timing of the PIC announcement (including co-pilot as a substitute)

PIC announcements consist of four types: welcoming speech information announcement for delays after boarding, for flight conditions and instructive announcement.

- ✈ Welcoming speech: In the normal operating airports, when all doors have been closed, captain should broadcast the welcoming speech after the report from cabin crew that the slides have been armed. In the short taxi route airports, considering the short time after doors closed, captain can choose a fine time to broadcast.

- ✈ Information announcement for delays after boarding: after passengers have boarded, if the departure is delayed for the reasons such as aircraft malfunction, holding or start-up delays by ATC or dispatch; and, after landing at the arrival airport, flight passengers cannot disembark and are required to wait on-board due to heavy rain, Q.I.C personnel have not arrived for international/regional flight, and other support equipment and instructive requirements.

- ✈ Information announcement for flight conditions: aircraft is encountering or will encounter turbulence、divert、holding.

- ✈ Instructive announcement: PIC requirements and instructions that call for passengers' cooperation.

In order to avoid distractions when the flight crew is making an announcement, announcement shall be simplified and conducted at an appropriate time. During critical flight phases (including taxiing, take-off, landing and flight below 3,000 meters (10,000 feet except cruise), the PIC shall not make announcement except in emergency.

When flight is delayed or held on the ground, the PIC may make an information announcement regarding the reasons for the delay. However, the announcement is always made by right-seat pilot and shall not affect the

normal operation of aircraft and ATC communication.

When flight is encountering or will encounter turbulence, is returning to the airport, is diverting to an alternate airport or is holding, the PIC may make information announcement for specific flight conditions. However, the announcement shall be made by the pilot monitoring (PM) and shall not affect the normal operation of aircraft and ATC communication.

During an emergency which requires cabin passengers to immediately take appropriate action for safety reasons, under the conditions of accomplishing appropriate checklist and not affecting flight control and ATC communication, instructive announcement may be made by PM.

Other requirements for PIC announcement

PIC (including co-pilot as a substitute) shall make passenger announcement in the name of PIC.

Before announcement, PM shall remind PF to monitor ATC communication channel.

Before announcement, PM shall continue monitoring the ATC communication channel. The communication between flight crew and ATC has priority. When ATC is calling, passenger announcement may be suspended.

When flight conditions do not allow a PIC announcement, flight crew may instruct cabin crew to make an appropriate announcement.

PIC announcement phrase

Announcement phrases shall be precise and specific, using uniform terms and straight and plain words.

The announcement shall be made at least in two languages: Chinese mandarin and English.

For flight with foreign pilot designated as captain, under emergency conditions, the first officer shall make passenger announcement in the name of PIC with the approval of the captain.

Frequency Set for Communication

The flight crew shall verify the frequency setting for the current communication and any change of the frequency.

The PM shall accomplish the change of frequency.

With radio operator onboard, the change of the communication frequency should be made by him/her. With a second officer operating the communication, the change of the frequency should be under the supervision of the captain or the first officer.

SELCAL (Selective Call)

The flight crew must request SELCAL check and confirm its functioning when it is needed during the flight.

The PM should respond to the SELCAL while the PF keep monitoring the current frequency for ATC.

Use of ACARS

VHF3 shall be kept in DATA mode.

The communication shall be done in the standard terminology and format stipulated by company.

Equipment Use

On the ground, flight crew should notify the ground personnel and obtain the permission or make sure that the ground staff and facilities are clear when conducting the following operation:

- Reset Circuit breakers
- Pressurization of the hydraulic system
- Flap lever movement
- Reverse lever movement
- Flight control system check

Crew Oxygen

As long as the cabin Alt. exceeds **10,000ft**, the flight crew should use oxygen continuously.

When operating above **25,000ft**, if for any reason, at any time, the PF/PM needs to leave the work station, the PM/PF should wear the oxygen mask until the PF/PM back to the work station.

The pilot should wear the oxygen mask when smoke or peculiar smell appears in the cabin.

Navigation Devices

The frequency of the navigation equipments should be tuned as published.

Both of the pilots should identify the Navaids and verify any change of NAVAIDS.

Navigation frequency tuning should be in accordance with the area of responsibility, The NAVAIDS could be changed under the command of PF.

The captain makes the final decision of the NAVAIDS selection.

Departure

Tune the frequency or course of NAVAIDS according to the SID.

For the airport that has special departure procedures for one engine inoperative, the required NAVAIDS should also be tuned.

The remaining navigation devices can be set to VOR and NDB for the departure airport as the NAVAIDS required for return to land.

Cruise

The applicable VOR should be tuned to check the navigation accuracy.

Descent and approach

Tune the frequency or course of NAVAIDS according to the arrival procedure,

The remaining navigation devices can be set to the NAVAIDS for the missed-approach or an alternate airport.

Clock and FMC Time

For all the operations, the FMC time should be set to the UTC.

For International and regional flights, both left and right clocks should be set to UTC.

During the preflight, ensure both left and right clocks as well as FMC time are correctly set.

Crew Seat-belt and Shoulder Harness

Flight crew should keep the seatbelt fastened when at their duty station.

Flight crew should secure the shoulder harness when:

- ✈ Airplane move on the ground on own power
- ✈ Below **10,000ft**（plus **10,000ft** for high elevation airport）.
- ✈ Moderate to severe Turbulence is expected
- ✈ Required by the non-normal checklist

Fasten Seat-belt Switch

The fasten-belts switch should be on when operating on the ground or flight below **10,000ft** (plus **10,000ft** for high elevation airport).

When turbulence is anticipated, the Fasten Seat-belt Switch shall be turned on before entering. If unexpected turbulence encountered suddenly, the Fasten Seat-belt Switch shall be turned on immediately. Flight crew shall cycle the switch off/on again; to notify the cabin crew and passengers.

The fasten-belts switch should be on during the emergency descent or any other condition that captain considers as necessary. Before line up the runway, cycle the switch off then on once to notify the cabin for takeoff.

When landing gear is down for the landing, cycle the switch off then on once to notify the cabin for the landing.

When the refueling is in progress and the passengers are onboard, the fasten seatbelt switch shall remain off.

Circuit breakers

In flight, reset of a tripped circuit breaker is not recommended. However, a tripped circuit breaker may be reset once, after a short cooling period(approximately **2 minutes**), if in the judgment of the captain, the situation resulting from the circuit breaker trip has a significant adverse effect on safety.

On the ground, flight crew reset of a tripped circuit breaker should only be done after maintenance has determined that it is safe to reset the circuit breaker.

Flight crew cycling (pulling and resetting) of a circuit breaker to clear a non-normal condition is not recommended, unless directed by a non-normal checklist.

Reset of fuel pump circuit breaker is prohibited.

Engine Start Switches

For Takeoff and landing, heavier than moderate (including moderate) precipitation or engine anti-ice on, the engine start switches should be set to "CONT".

When Fly into or expect to fly into severe turbulence the engine start switches should be set to "FLT".

Auto Brake

In normal condition, the autobrake should be used for landing and takeoff.

The autobrake should be set to RTO for takeoff.

The proper position of the autobrake for landing should be chosen according to the runway surface condition, performance requirement and expected vacating route.

PM should keep monitoring the status of the auto brake during rejected takeoff or landing roll，and make the proper call out.

Parking Brake

The flight crew should verify the parking brake been set when carrying out the preflight checklist.

The flight crew should set the parking brake under the instruction of the ground staff during push-back.

The flight crew should release the parking brake under the instruction of the ground staff after the engine shut down.

Radio Altimeter

Radio altimeter should not be used as the altitude reference of the CAT Ⅰ ILS approach or non-precision approach.

At terminal area of known terrain condition the radio altimeter could be used to cross check the main altimeter.

Weather Radar and Terrain Display

Do not turn on weather radar with vehicles or personnel in front of the aircraft or when the airplane is on apron.

Do not operate weather radar during refueling.

Turn on the weather radar when adverse weather in flight is anticipated.

The terrain display must be used in all the operations.

- In QNH airports: Before takeoff, turn on terrain display, when climbing approaching transition altitude, turn off terrain display; when descending approaching transition level, turn on terrain display, after landing,turn off terrain display.
- In QFE airports: Before takeoff, turn on terrain display, when climbing approaching 10000 ft, turn off terrain display; when descending approaching 10000 ft, turn on terrain display, after landing,turn off terrain display .
- For the high elevation airport operation, at least one pilot remains the terrain display for the entire flight.
- Whenever the possibility exists for adverse weather and terrain/obstacles, the captain will decide at least one of the pilots monitor the weather radar display and the other pilot should monitor the terrain display.
- For the RNP operation, the PF should monitor the terrain display.

Transponder and TCAS

Before pushing back or taxiing out, set the transponder reply selector in AUTO and transponder mode selector in XPDR. When entering runway, set the transponder mode selector in TA/RA. After landing and runway vacated, set the transponder mode selector in XPDR. After engines shut down, set the transponder reply selector in STBY.

Follow the ATC instructions when there's any special requirement for the transponder.

Center Fuel Pump

When fuel quantity is less than 1000 KG in the center tank, turn both center fuel tank pump switches off before start, turn them on after climbing through 10000 feet and level off In flight, when any of the center tank fuel pump low pressure light illuminates, and the center tank fuel is about to run out, turn both center tank fuel pump switches off.

Flaps

The speed limit of flap operation must be complied with strictly.

Maximum altitude of the flap operation should not exceed **20,000 ft**.

The altitude for flap retraction should refer to the performance calculation, noise abatement departure procedure(NADP), engine out departure procedure(EOSID) and not lower than 1,000ft AFE.

Flight crew should use the take off data provided by EFB performance calculation.

Normallyselect flap **5.**If performance requires, flight crew could use other take-off flap settings..

Normally, select landing flap **30/40**During flap extension, MCP speed should be selected to corresponding maneuvering speed as needles of flap indication start to move.

Both pilots should monitor and confirm flaps are set to commended positions.

The following factors should be considered for landing flap setting:

- ✈ Runway length--available stop distance
- ✈ Gross weight--approach speed
- ✈ Weather condition--stop distance requirement for low visibility
- ✈ Go around capability--additional thrust requirement
- ✈ Noise abatement requirement--airport restriction
- ✈ Aircraft economical efficiency and controllability--wind correction and fuel consumption

Non normal landing flap setting should comply with the requirement of the non normal checklist.

Landing Gear

The speed limit for landing gear operation must be complied with.

Additional drag from landing gear extension should not be used as method of deceleration.

Speed Brake

PF should keep a hand on the speed brake lever when the speed brake is used in flight.

The use of speed brake with flaps extended should be avoided, if possible.

Do not use speed brake below **1,000ft** AGL in flight.

With flaps greater than **5**, the speed brake should be retracted.

In the event of auto extension fails after touchdown, the speed brake should be manually extended immediately.

The speed brake should be extended manually before use of reverse thrust during rejected takeoff.

For Rejected takeoff or during landing roll, PM should monitor the speed brake status, and call out promptly.

Exterior Lights

Exterior lights are operated by PM under the command of PF.

Navigation light: turn on the navigation light throughout the flight.

Anti-collision light: turn on the anti-collision light from the push and start up clearance receipt from ATC till engine shut-down after landing.

Taxi light: turn on the taxi light when taxiing, turn it off before entering the parking station.

After takeoff, when all the flaps retracted, turn off the taxi light during approaching, turn on the taxi light above 800ft AGL.

It is strictly prohibited to turn on the taxi light during push-back or with ground personnel in front of the nose gear.

Strobe light: turn on the strobe light from line-up to the takeoff runway till runway vacation after landing.

It may be turned off when pilot's vision is affected by the light reflection in cloud.

Landing light: turn on the fixed landing light from takeoff clearance till climbing through **10,000ft** and from descending through **10,000ft** till landing (add **10,000ft onAFE** for the high elevation airport). When crossing runway, turn on the fixed landing light/ landing light.

Turn on all the landing lights not lower than **800ft** AFE when approach at night ,turn off the landing light as required when pilot's vision is affected by the light reflection in cloud.

Turn off the landing light after runway vacated as required.

Runway turn off light: turn on the runway turn off light when taxi, takeoff and landing at night; turn off the runway turn off light before entering the parking station and after takeoff, when all the flaps retracted.

Logo light: turn on the logo light bellow 10,000ft at night. (Add **10,000ft on**

AFE for the high elevation airport).

Wing illumination light: turn on the wing illumination light when wings inspection or inspection for icing of the wings is necessary at night.

EFB Operations

Normal Operations

To ensure normal Class I EFB operations, the flight crew shall maintain the currency, effectivity and integrity of EFB databases. EFB shall be on during all phases of flight and be used in accordance with the following procedures:

Preflight operations:

- ✈ Before conducting an international or regional flight, claim the IPADs (installed with Jeppesen chart software) from the IPADs management department;
- ✈ Check and verify that the IPADs are secured and that the charging equipment is in place. For the first flight of the day, the crew shall ensure that the battery level of the IPAD is at least 80%;
- ✈ The WiFi and 3G/4G functions of the IPADs shall be turned off before engine start;
- ✈ When the EFB is used for aircraft performance calculations, both pilots shall get the performance data respectively and crosscheck the data before inputting into FMC.

In-flight operations:

- ✈ Monitor the battery level of the IPADs and charge as needed. Ensure that the battery level is at least 30% for the subsequent critical phase of flight. Do not charge the IPADs during any critical phase of flight;
- ✈ Ensure that at least one IPAD is properly secured for possible use in flight. During the critical phases of flight, both IPADs should be secured with the angle and brightness properly adjusted;
- ✈ During a non-critical phase of flight, when EFB use is unnecessary, the IPAD display should be turned off so as to save the battery power.

The flight crew shall not upgrade the EFB software or download the database throughout the flight (from engine start to shutdown).

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Standard Call-outs and Terminology

Standard call out is an essential element of a well-managed flight deck, and also is applicable for all flight phases. Use the standard call outs as outlined in the FCTM for setting headings, altitudes, speeds, and flaps.

Standard call outs shall be used consistently during every flight.

The PM makes callouts based on instrument indication or observations for the appropriate conditions. Unless a more specific callout is required, the PF should verify the condition from the flight instruments and acknowledge by saying “check” or “set” as appropriate.

During normal, non-normal and emergency operations, the flight crew should always make standard callouts and crosscheck for any change of FMA mode, NAV and COMM frequencies, airplane configuration changes (landing gears, flaps, speedbrakes, etc.), MCP operation altimeter setting and flight control or operation of other equipment, and.

If the PM does not make the required callouts the PF should make it.

At any phases of flight,the PM shall call out or report any non-normal situation timely with terminology.

Standard Callouts:

	Condition/location	Callout(pilot monitoring, unless noted)
Climb and Descent	Approaching transition altitude/transition level	"transition altitude/ transition level，altimeters reset___"(in. or mb)
	1,000ft above/below assigned altitude/flight level (IFR)	1,000ft to level off
Descent	10,000ft.msl/FL100 (reduce airspeed if required)	10,000/FL100

Standard Call-outs for ILS Approach

Condition/Location	Callout (pilot monitoring, unless noted)
First positive inward motion of localizer pointer	"LOCALIZER ALIVE"
First positive motion of glide slope pointer	"GLIDE SLOPE ALIVE"
Final approach fix/outer marker (inbound)	"FAF/OUTER MARKER,____FT"
At 1000 ft AFE	"1000 feet"
500ft.AFE(check autoland status annunciator, if applicable)	"500 FEET" Auto land status "FLARE ARMED"
1,00ft.above DA(H)(fail passive airplane)	"APPROACHING MINIMUMS"
Individual sequence flasher lights visible	"STROBE LIGHTS"
At DA(H) with individual approach light bars visible	"MINMUMS-APPROACH LIGHTS/RED BARS (if installed)"
At DA(H)-suitable visual reference Established, i.e. PM calls visual cues	PF "CONTINUE"

Condition/Location	Callout (pilot monitoring, unless noted)
At DA(H)-suitable visual reference not established, i.e. PM does not call any visual cues or only strobe lights / or PM says Go Around	PF "GO AROUND" (Captain makes decision to Go Around but FO may fly maneuver)
At minimums callout-If no response from PF	"I HAVE CONTROL_____"(state intentions)
Below DA(H)-suitable visual reference established	"THRESHOLD/RUNWAY TOUCHDOWN ZONE"
Below DA(H)-suitable visual reference established	PF: "LANDING"
Below DA(H)-suitable visual reference not established, i.e. PM does not call any visual cues	PF: "GO AROUND"

Standard Call-outs for Non-ILS Approach

Condition/Location	Callout (pilot monitoring, unless noted)
First positive inward motion of VOR or LOC course deviation indication	"COURSE/LOCALIZER ALIVE"
Approximately 2NM before the final approach fix	"APPROACHING GLIDE PATH"
Final approach fix inbound	"VOR/NDB/FIX"
1000 ft above the elevation of the airport	"1000 feet"
500ft.AFE	"500 FEET"
1,00ft.above DA(H) or MDA(H)	"APPROACHING MINIMUMS"
Individual sequence flasher lights visible	"STROBE LIGHTS"
At DA(H)or MDA(H) with individual approach light bars visible	"MINMUMS-APPROACH LIGHTS / RED BARS" (if installed)
At DA(H) or MDA(H)-suitable visual reference Established, i.e. PM calls visual cues.	PF"CONTINUE"
At DA(H) or MDA(H)-suitable visual reference not established, i.e. PM does not call any visual cues or only strobe lights	PF "GO AROUND" (Captain makes decision to Go Around but FO may fly maneuver)
At minimums callout-If no response from PF	"I HAVE CONTROL_____"(state intentions)

Condition/Location	Callout (pilot monitoring, unless noted)
Below DA(H) or MDA(H)-suitable visual reference established	“THRESHOLD / RUNWAY TOUCHDOWN ZONE”
Below DA(H) or MDA(H)-suitable visual reference established	PF: "LANDING”
Below DA(H) or MDA(H)-suitable visual reference not established, i.e. PM does not call any visual cues.	PF: “GO AROUND”

Standard Terminology

Standard Terminology 1

Condition	Pilot Responses	
	Pilot Monitoring	**Pilot Flying**
FMC change required		Set CDU _____
	_____ Check?	
		checked execute/negative
When a switch needs moving on overhead panel		switch ___ on/off /auto/left/right/manual
	___ on/off/auto/left /right/manual	
Requesting flaps		flaps ___
(speed is checked silently by both pilots)	flaps___	
When relinquishing control of the aircraft to another pilot. (PF call each FMA status and Altitude), thence		__ you have control
	I have control	

Condition	Pilot Responses	
	Pilot Monitoring	**Pilot Flying**
When the Captain assumes control of the aircraft after landing or when the pilot monitoring has cause to take control of the aircraft without delay.	I have control	
		you have control
Transfer of ATC	You have ATC	
		I have ATC
	Back on ATC	
		State all changes….you have ATC / or No Changes you have ATC

Standard Terminology 2

Condition	Pilot Responses	
	Pilot Monitoring	Pilot Flying
ATC assigns an altitude		
If autopilot engaged: An ATC-assigned altitude is set on mode control panel (MCP) altitude selector	…[altitude] checked	…[altitude] set
If autopilot not engaged: An ATC-assigned altitude is set on MCP altitude selector	…[altitude] set	…[altitude] checked
Climbing-Passing Transition Altitude.	transition altitude altimeters 1013 mb / STD set and cross checked	
(The cross checked confirms within limits for RVSM by confirming both altimeters are within 200 ft of each other and the STD is set)		altimeters 1013 mb / STD set and cross checked
Descent-Approaching Transition Level	transition level altimeters ____ mb/in set and cross checked	

Condition	Pilot Responses	
	Pilot Monitoring	**Pilot Flying**
(Confirm QNH from ATIS and ATC if possible) (call for approach checklist and then repeat QNH for a triple check of QNH)		altimeters ____ mb/in set and cross checked
at 1000 ft before reaching an assigned altitude	1000 ft to level off	
		checked
The altitude alert tone and/or display or light activates if not leveling at cruise altitude.		alert for… [altitude]
	check	

Standard Terminology 3

Condition	Pilot Responses	
	Pilot Monitoring	**Pilot Flying**
Level flight 100 ft deviation	altitude	
		check
Speed +10 kts or -5 kts from target speed	airspeed	
		check
ILS approach after passage of outer marker or 1500 ft, and outside ½ dots (50 ft) high or ½ dot low from beam centre.	glide slope	
		check
Non-precision approaches with DME,	...__ DME from __ …[feet] high / low / on profile	
		check
VOR approach below 1500 ft AGL and outside ½ dot left or right of track.	track left (right)	
		check

Condition	Pilot Responses	
	Pilot Monitoring	**Pilot Flying**
NDB or locator approach outside ±5º	track left (right)	
		check
Outside ±2 DME if tracking on DME ARC	track left (right)	
		check
Below 1000 ft AGL and speed outside VAPP ±5 kts or target speed ±5 kts	airspeed	
		check
Wind shear Conditions are encountered	wind shear	wind shear
(continue calling until out of wind shear)	altitude__ Airspeed___	

Standard Terminology 4

Condition	Pilot Responses	
	Pilot Monitoring	**Pilot Flying**
Below 2500 ft AGL and V/S exceeds 1500 fpm or below 1000 ft AGL V/S exceeds 1000 fpm	sink rate	
		check
Disconnecting AP for landing		autopilot / auto throttles off
	check	
During visual descent from minimum and you are low or high	You are low/ You are high	
		check
Manual braking		manual braking
	check	
During Flare-Pitch Attitude Approaches 7 degree NU	pitch	
		check
Speed brakes on landing	Speed brakes up/no speed brakes	

Condition	Pilot Responses	
	Pilot Monitoring	**Pilot Flying**
Auto-brakes disconnect during rollout	autobrake disarmed	
		checked manual braking
No Thrust Reverser	no left (right) reverse	
		check
Rollout Deviation left or right	steer left (right)	
		check
approaching 60 kts ground speed	60 knots	
		Check
runway end coming	runway end stop now	
Not stable below 1000 feet AFE	not stable	
(Go Around highly recommended-Captain's decision)		

Briefings

The purpose of briefing is to enhance the teamwork and promote communication between the flight crew.

The briefing should be specific for every flight, and be understood by each crew member.

Taxi & Take-off Briefing

The PF should complete taxi and takeoff briefing after the receipt of ATC clearance and prior to engine start. PM should understand the content of the briefing and supplement if needed.

PF should refresh the briefing when any component of the ATC instruction is modified.

Left-seat pilot should accomplish rejected-takeoff briefing.

The taxi and take off briefing should include evacuation procedure for the first flight for the crew of the day.

Both pilots should verify the validity and applicability of the airport diagram and departure chart.

The briefing should include but not limit to:

- Expected taxi route,
- Surface condition of the takeoff runway,
- Takeoff flap setting/stabilizer trim,
- Thrust setting and V1, VR, V2
- Minimum Alt. of flap retraction
- Initial Alt.(height) and heading
- Departure procedure and the required NAVAIDS
- Transition Alt (height).

- Related obstacles, prominent terrain and MSA
- Takeoff planning for adverse weather
- Procedures for non-normal situation including: rejected takeoff, engine failure, evacuation, etc.
- If required: restriction area, MEL, no engine bleed takeoff procedure, de-icing/anti-icing procedure, special departure procedure for one engine inoperative, etc.

Approach Briefing

Before doing the descent checklist, PF should complete descend preparation and approach briefing during cruise with low workload before reaching top of descend. PM should understand the content of the briefing and supplement if needed.

PF should refresh the briefing or supplement as necessary when any component of the ATC instruction is modified.

Both pilots should verify the validity and applicability of the airport diagram, arrival chart and the approach chart.

The briefing should include but not limit to:

- Expected runway and the runway surface condition
- Arrival procedures and type of the approach; Transition level and QNH/QFE setting;
- The associated altitude and speed restrictions
- Landing weight, flap setting/VREF and wind corrections;
- NAVAIDS frequency and course
- DA(H)or MDA(H) and the visibility or RVR
- Missed approach maneuver and missed approach procedure
- Approach under adverse weather and divert planning
- Airport elevation, MSA, critical terrain and obstacles in the related approach route and terminal area
- Expected taxi route and autobrake setting

Briefing for Special Airports

If the takeoff or landing airport is the defined special airport in the Operations Manual, corresponding items should be added to the takeoff or approach briefing.

The briefing should include but not limit to:

- ✈ Special terrain in the vicinity of the airport
- ✈ Performance limitation of the airplane
- ✈ Special departure procedure for one engine inoperative
- ✈ Departure or arrival procedure with special requirements
- ✈ Special weather condition
- ✈ Preview the maneuver for terrain avoidance

Normal Checklists

Normal checklists are used to check and verify the completion of critical procedural steps in the order of flight phase.

Normal checklists are used after doing all respective procedural terms.

Execution of checklist should be avoided during phases of high workload.

Use of Normal Checklists

checklist	call	read	verify	respond
Preflight	Captain	First Officer	Both	Captain
Before start	Captain	First officer	Both	Captain
Before taxi	Captain	First officer	Both	Captain
Before takeoff	Captain	First officer	Both	Captain
After takeoff	PF	PM	Both	PM
Descent	PF	PM	Both	PF
Approach	PF	PM	Both	PF
Landing	PF	PM	Both	PF
shutdown	Captain	First officer	Both	Captain
Secure	Captain	First officer	Both	Captain

If the airplane configuration disagrees with that required, discontinue checklist until the item is resolved.

If it becomes apparent that an entire procedure was not done, stop the checklist, complete the entire procedure and do the checklist from start.

When checklist is interrupted, pilot may either continue the checklist with the next step if the interruption is short, or do the checklist from the beginning if a pilot is not sure where the checklist was stopped or the interruption is long.

After checklist completed, PM calls out “XX checklist completed”, PM calls out “Confirm” after checking out;

Timing for Using Normal Checklists:

Preflight： PIC and FO have completed preliminary preflight procedure and preflight procedure, PIC calls for "preflight checklist".

Before Start：With approval of start-up from ATC, PIC and FO have accomplished before start procedure, PIC calls for "before start checklist".

Before Taxi: PIC and FO have accomplished before taxi procedure, PIC calls for "before taxi checklist".

Before Takeoff：With approval of line-up from ATC, after confirmation of cabin preparation completion and before airplane alignment to runway, PIC calls for "before takeoff checklist".

After Takeoff: with gear up, flaps retracted and airplane stabilized PF calls for "after takeoff checklist" as early as applicable.

Descent：PF and PM have accomplished descent procedure, PF calls for "descent checklist".

Approach：After passing transition level and both pilots have completed altimeter setting procedure, PF calls for "approach checklist".

Landing：With landing configuration and confirmation of cabin preparation completion, PF calls for "landing checklist".

After Shutdown： PIC and FO have accomplished shutdown procedure, PIC calls for "after shutdown checklist".

Secure: For post-flight at airports other than bases, PIC and FO have accomplished secure procedure, PIC calls for "secure checklist".

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Pre-Fight

Captain should specify the PF and PM early for the convenience of preflight preparation.

If stopover time is less than 50 minutes, succeeding flight crew shall reach parking bay before the preceding flight land.

For ferry, training or test flights, flight crew shall also accomplish cabin security checks.

Verify the validity and integrity of the flight before all doors closed：

Flight Record

Besides flight assignment form and the airplane flight logbook, flight crew shall also fill in the line maintenance report if any of the following occurs during the flight:

- Malfunction，malfunction lights, flags or status information show up
- instrumental disagreements with flight status
- unusual noise and vibration
- other items which may have adverse effects.

Dispatch Release

PIC and dispatcher shall ensure all operation conditions for this flight in full compliance with company safety standards prior to signing on the dispatch release. Both are responsible for the dispatch.

Dispatcher offers the following documents to flight crew:

NOTAM, flight plan, dispatch release and meteorological documents which includes:

- METARs and TAFs of departing airport, destination airport, and alternative airports related
- enroute weather forecasts
- snowtam (if needed)
- other weather information related to this flight.

Maintenance Release

Flight crew shall check the line maintenance report and confirm maintenance engineer' signature on the airplane flight logbook prior to , each flight and assure cabin facilities conditions are fine.

MEL Dispatch

When dispatch with MEL items, captain shall:

- ✈ Refer to MEL and communicate with maintenance engineer
- ✈ Assure they have accomplished maintenance procedures (M) (if available).
- ✈ Preview MEL operation procedure (O) (if available) with other crew members.

If necessary, request technical support from AOC.

CDL Dispatch

When dispatch with CDL items, captain shall consult CDL and communicate with maintenance engineer, and collaborate with AOC to assess potential performance losses of the airplane.

Airplane Exterior Inspection

Flight crew shall carry out exterior safety inspection along specified fixed route before each flight.

Captain should ensure exterior conditions meet airworthiness requirements.

Load Sheet

Load sheet is usually signed by the captain; however, first officer may also sign under captain's approval.

All flight crew members shall verify the load sheet data, make sure airplane gross weight and center of gravity meet the performance requirements.

Load sheet should be redone if more than 5 persons or **450kg** traffic load changed in last minute. Captain and load officer shall assess the Influence to airplane center of gravity caused by personnel or cargo position change.

Passenger and Cargo

Person on Board and Cargo Loading: Before cabin doors are closed, captain should confirm that the number of person on board agrees with that in manifest. When the plane carries special cargo, captain should designate crew member (first officer or air marshal) to check special cargo loading, and complete all requirements described in the "Special Load Notification to Captain".

Emergency Exit Seats: Before all cabin doors are closed, captain should confirm that passengers sit on the emergency exit seats comply with regulatory requirements. .

Hand Baggage: Push-back and start-up should not be initiated until captain confirms that all hand baggage is placed in accordance with regulatory requirements.

Prisoners / detainees: When prisoners or criminal suspects onboard, captain have should assure:

- There are at least 3 policemen taking control of 1 suspect under escort. In case of any female suspect, there shall be at least 1 policewoman within the escorting police force;
- Persons under escort onboard one airplane shall not exceed 3;
- There is no VIP on the flight.
- Prisoners or criminal suspects sit in the middle of three-seat arrangement at the rear of the plane, and should not be close to or facing to any exit;
- Flight attendants and air marshal(s) been notified.

Guns On Board: local public security organs guards carrying guns, bullets must be held by the CPC Central Committee General Office Security Bureau, the Ministry of Public Security Bureau, the Central Military Commission Office Security Bureau, the General Political Department Security Department, the Provincial (Autonomous regions and Municipalities) Public Security Office Bureau) in letter and "gun license" of his/her own.

The airport authority security department shall inform cases of legal guns on board to air marshal(s) on duty, and then they report to the captain and the purser /

Security personnel of public security organizations carrying guns shall have the bullets separated from the gun.

Dangerous Goods

Only aircraft spare parts of Xiamen Airlines (Company Materials) that belong to dangerous goods and lithium batteries specified in Section Ⅱ of packing instruction 965-970 of ICAO DOC9284 Technical Instructions for the Safe Transport of Dangerous Goods by Air (hereinafter referred to as Technical Instructions) are allowed to be carried on domestic, regional and international flights of Xiamen Airlines. Except dangerous goods specified in Technical Instructions, no dangerous goods are allowed to be carried either in baggage or in mail.

When the airplane carries dangerous goods, captain should designate crew member (first officer or air marshal) to check the identification, packaging, loading conditions of dangerous goods in accordance with the “Special Load Notification to Captain”.

For different types of dangerous goods on board, flight crew should accomplish the requirements in the “Special Load Notification to Captain” and check the “Airplane Emergency Response Operation Guide” in the “Operation Procedures”, preview emergency procedures.

During the period of stopover, captain should designate crew member to supervise disembark of dangerous goods.

After arrival at destination airport, crew members shall notify ground personnel of dangerous goods, and ask for their signature confirmation on the “Special Load Notification to Captain”

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Ground Operations

Pressurize hydraulic system only under approval of ground engineer.

Set or release parking brakes according to ground engineer's instructions during pushback.

Do not check flight controls or extend flaps until ground engineer clear (confirming ground equipment and personnel clear).

Reversal thrust not to be used for backtrack.

Taxi

Conducting before taxi procedure after takeoff flap set is not required, while the right-seat pilot should confirm and call takeoff flap set before taxi.

Accomplish the "before taxi checklist" before taxi.

EFB should be secured and set the relevant charts.The right-seat pilot request and write down the taxi instructions from ATC then repeat to the left-seat pilot.

Flight crew shall confirm the correct taxi routes, PF update "taxi and takeoff briefing" as required.

With approval of ground engineer, assure airplane clear of left and right before taxi out.

Turn on taxi lights while taxiing.

Apply initially minimum breakaway power to prevent damage to ground facilities and personnel. Normally **N1** should be no greater than **40%,.**

Taxi at high-elevation airport, thrust should be limited to idle as much as practicable.

During taxi, the right-seat pilot should monitor taxi routes and remind any turning direction and holding positions.

When in doubt of taxi routes and/or obstacle separation, pilots shall either stop

to verify taxi instructions with ATC or request ground vectoring.

Maintain at least 50m to the preceding airplane, increase spacing appropriately when taxiway is contaminated or anti-icing fluid is in use.

Taxi with one engine shutdown is prohibited whenever both engines are running normally. For one engine inoperative with no other malfunctions affecting taxi, the crew is permitted to continue taxi.

Engine warm up recommendation:

Before takeoff, run the engines for at least 2 minutes;

Engines cool down recommendations:

After landing, run the engines for at least 3 minutes.

Taxi speed limits

Apron：

- maximum 10kts on dry apron
- maximum 7kts on contaminated apron
- maximum 5kts when approach parking stand

Main taxiway：

- maximum 30kts on straight dry taxiway
- maximum 15kts on straight contaminated taxiway

Turning speed：

- Maximum 15kts on dry surface.
- Maximum 7kts on contaminated surface.

Avoidance of Runway Intrusion

When approaching holding point, the right-seat pilot should remind “hold short of runway” or “line up / cross runway”, to confirm instructions.

Confirm both the approach path and the departure is clear before entry or crossing a runway. Then turn on the strobe lights and set the transponder mode selector in TA/RA. Unless confirmed with ATC, DO NOT cross runways with red stop light illuminated. When crossing runway, turn on the fixed landing light/ landing light.

Departing aircraft should turn on the fixed landing light/landing light after takeoff clearance. Flight crew should confirm runway is clear before takeoff.

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Take-off and Climb

Take-off

It is recommended to select appropriate map display range as needed rather than fixed range. For RNAV departures, appropriate map display range should be selected to verify aircraft position. Only when aircraft position meets precision requirement RNAV departure could be executed.

Set takeoff power before **60 kts**.

At $\mathbf{V_1}$, PM verify automatic electronic callout or call $\mathbf{V_1}$.

At hearing of "$\mathbf{V_1}$", the left-seat pilot's hand should be removed from throttle to prevent inadvertent rejection after $\mathbf{V_1}$.

Autothrottle and flight director are recommended for takeoff.

Once takeoff thrust is set, should an engine exceedance occur but the decision is made to continue the takeoff, do not retard the thrust lever in an attempt to control the exceedance until above a safe altitude.

Reduced Thrust Takeoff

Before every takeoff flight crew should calculate the Assumed Temperature under current conditions based on EFB performance calculation to obtain the maximum allowable takeoff thrust reduction.

Takeoff thrust reduction no greater than **25%** of full rated thrust.

Do not takeoff with reduced thrust under the following conditions:

- ✈ Contaminated runway
- ✈ Wind-Shear anticipated during takeoff
- ✈ Engine bleeds off
- ✈ Anti-skid system inoperative

Reduced Length of runway (Partial Runway) Takeoff

In principle, reduced length of runway takeoff is forbidden unless ATC has agreed to do so and the company has performed takeoff performance analysis under such conditions.

Noise Abatement

For airports with special noise reduction requirement, pilots should strictly comply with published procedures. When unable to follow the procedures due to safety, captain should notify the relevant units.

Flight crew should follow the following noise abatement takeoff procedure:

- NADP A: Maintain takeoff thrust and flaps till 1500ft(AGL). Use climb thrust at or above 1500ft(AGL). Accelerate, retract flaps and continue climbing as planned at or above 3000ft(AGL).
- NADP B: Maintain takeoff thrust and flaps till 1000ft(AGL). Use climb thrust at or above 1000ft(AGL). Maintain positive climb rate and retract flaps as planned. Accelerate to flaps up speed and continue climbing. Accelerate from flaps up speed to normal climb speed at or above 3000ft(AGL).
- Comply with the special noise abatement procedure when required by the airport.

Minimum Turn Altitude

Minimum turn altitude is **400 feet** AGL unless otherwise required by departure procedure.

Special Departure Procedure

Pilots shall preview them in takeoff briefing at airport with special departure procedure and/or one engine inoperative procedure.

Comply with published departure procedure.

Refer toEFB performance calculation and the "Engine Out Emergency Departure Procedure" for flap retraction altitude, or **1,000 feet** above airport elevation, whichever is higher. Select climb power at that altitude before start to accelerate and retract flaps as schedule. For airports such as ZGGG, ZSWY and ZPPP etc where flap retraction altitude stated in respective "Emergency Departure Procedure" is higher than **1,000 feet**:

Modify thrust reduction altitude in FMC during preflight as to maintain takeoff power below minimum flap retraction altitude.

Rejected Take-off

The captain has the sole responsibility for the decision to reject the takeoff.

The Captain should clearly announce “REJECT”.

Actions to reject takeoff shall be initiated by the left-seat pilot.

If the right-seat pilot is making the takeoff, the order “reject” indicates that the left-seat pilot will assume control and commence the stopping action.

Any abnormality found during takeoff should be called out clearly.

Prior to **80kts**, the takeoff should be rejected for any of the following:

- activation of the master caution system
- system failure(s)
- unusual noise or vibration
- tyre failure
- abnormally slow acceleration
- takeoff configuration warning
- fire or fire warning
- engine failure
- predictive windshear warning
- if a side window opens
- if the airplane is unsafe or unable to fly.

Above **80 kts** and prior to $\mathbf{V_1}$, the takeoff should be rejected for any of the following:

- fire or fire warning
- engine failure

- predictive windshear warning
- if the airplane is unsafe or unable to fly.

When the airplane is stopped, analyze the reason, assess comprehensively the situation while concerning speed at which rejection start, and consider the following as applicable:

- If on fire or other circumstances which may cause further aircraft damage or passenger injury, accomplish memorized items of related checklist
- The need to vacate the runway, where or to which direction to park
- Do not set parking brake unless passenger evacuation is necessary.
- Advise passengers of the need to remain seated or evacuate
- Notify ATC of airplane status, crew intentions and aid required
- Review the brake cooling schedule for brake cooling time and precautions
- Advise ground staff of the hot brake hazard
- Accomplish non-normal checklists (if appropriate) for conditions which caused the RTO.

Climb

Normally reduced thrust climb is recommended, however, higher climb thrust may be selected if rate of climb is less than 500ft/min or upon ATC request or at the captain' discretion.

Initial Climb Speed

Follow speed restrictions stated in departure procedure.

Max IAS 250kts below 10,000ft (plus 10,000 ft to elevation at high elevation airports)

Economy Climb Speed

Normally maintain economy climb speed FMC provides.

If FMC data unavailable, maintaine: Below 10000ft: 250kts;Above 10000ft:280/0.78mach

Maximum Rate Climb

Selection of FMC maximum climb rate provides minimum time to assigned altitude, or

Flap 0 maneuvering speed +50kts, until 0.76 mach.

Maximum Angle Climb

Selection of FMC maximum angle climb provides minimum distance to reach a specified altitude.

Climb Gradient

Climb gradient of each leg must satisfy what required in departure procedure.

If unable to comply with climb gradient required in departure procedure, pilot shall:

- ✈ slow down to maximum angle climb speed
- ✈ select higher climb thrust
- ✈ request departure procedure of less climb gradient.

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Cruise and Descent

Cruise

Optimum flight altitude is normally selected as cruise altitude.

Step climb to a new optimum altitude as the airplane gross weight decreases during the cruise may improve economic efficiency.

Normally maintain economy cruise speed, however, pilot may also select LRC to boost endurance.

Pilot shall maintain the cruise speed instructed by ATC if flight condition permits.

Cruise altitude shall be at or below maximum cruise altitude, which is the lowest of:

- ✈ maximum certified altitude;
- ✈ thrust limited altitude;
- ✈ maneuver limited altitude.

At maximum cruise altitude, under turbulent conditions or if airplane needs to maneuver, engine thrust may not be sufficient to maintain required speed or altitude, if so, pilot shall immediately:

- ✈ reduce bank angle
- ✈ increase to maximum continuous thrust
- ✈ descend.

Descent

Pilot shall receive ATIS information of destination airport as early as applicable and input arrival routes anticipated.

Complete “descent checklist” before descent.

Comply with all altitude and speed restrictions.

Pilot should normally descend along flight path at economy speed provided by FMC.

Pilot shall maintain speed instructed by ATC, advise if unable.

Max IAS is 250kts below 10,000ft (plus 10,000 ft to elevation at high elevation airports).

Approach, Landing and Missed-Approach

Approach

Airplane approach category

The following table is an airplane category classified according to the published instrument approach procedure minima based on ICAO PANS OPS (used by China mainland and most ICAO contracting States). In the following table speeds are indicated airspeeds in knots. The aircraft category remains fixed and will not vary due to daily operational conditions.

Aircraft Category	Vat	Initial Approach Speed	Final Approach Speed	Maximum Speeds for Visual Maneuvering (Circling)	Maximum Speeds for Missed Approach	
					Intermediate	Final
A	＜91	90-150(110*)	70-100	100	100	110
B	91-120	120-180(140*)	85-130	135	130	150
C	121-140	160-240	115-160	180	160	240
D	141-165	185-250	130-185	205	185	265

Note 1: Vat: Speed at threshold based on 1.3 times stall speed in the landing configuration at maximum certificated landing weight,or the higher among the two when both are availiable.

Note 2: The sign “*”in the table means maximum speed for reversal and racetrack procedures.

Based on the published instrument approach procedures defined in compliance with the FAA TERPS (used in the international/regional airports of USA and Japan), the following category of aircraft is classified.

The speeds in the table are indicated airspeeds in knots. The aircraft category remains fixed and will not vary due to daily operational conditions.

Aircraft Category	A	B	C	D
Speed	＜91	≥91 ＜121	≥121 ＜141	≥141 ＜166

Note : The speeds in the table mean the prescribed reference speeds; while others without the prescribed reference speed mean 1.3 times stall speed at maximum certificated landing weight.

In operations under special conditions such as emergency diversion, failure of flap or approach in icing conditions, higher approach speed shall be used due to possible over weight landing. In such cases, the Vat (Speed at threshold) will exceed the speed limitation of the related airplane category, and thus the PIC shall use landing standard of higher airplane category, i.e., Category C airplane shall use landing standard of Category D airplane.

When conducting cycling approach, the flight crew shall decide the landing standard in accordance with the airplane category which is correspondent with the real cycling speed. For example,when the cycling speed of a Category C airplane exceeds 140 NM/h, the cycling approach landing standard of Category D/E airplane shall be applied; nevertheless, cycling approach landing standard of Category B airplane shall never be used in any conditions even if when the cycling speed is lower than 121 NM/h.

PANS OPS or TERPS written in the left corner of the JEPPESEN approach chart indicates the corresponding standard on which the chart is based.

Precision approaches are primarily be used in liner operation to reinforce safety margin.

All altitudes related to approach other than **CAT Ⅱ** refer to pressure altitudes.

ILS Approach

Go-around must be initiated if required visual reference not established at DA/DH during ILS approach.

G/S interception must be preceded by LOC interception.

Select **APP** when following conditions are satisfied:

- ILS frequency is tuned , identified and course is set
- airplane on inbound intercept heading
- LOC and G/S indicator are correctly displayed on ADI
- cleared for ILS approach.

If VOR/ DME navaid is not available or not needed during approach, both VHF should be tuned to ILS frequency as early as possible before intercepting localizer.

If VOR/DME navaid is needed during approach, VHF on pilot monitoring side should be tuned to VOR/DME frequency. After localizer intercepted, both VHF should be tuned to ILS frequency After ILS established, DME and MAP information should be monitored to crosscheck approach profile.

Non-ILS Approaches

Non-ILS Approaches divide into:

- ✈ RNP approach
- ✈ Conventional non-precision approaches (VOR, NDB, LOC or LDA)

For non-ILS approach, use autopilot with appropriate pitch/roll mode. Auto flight is recommended till appropriate visual references established on final and disengage autopilot at or above minimums.

For RNP approach, use LNAV for lateral path tracking and use VNAV no later than FAF for vertical path tracking. Monitor and assure ANP does not exceed RNP for corresponding legs and lateral/ (final approach course) vertical path deviations below the limit. Select MAP display.

For conventional non-precision approaches, use VOR/LOC, LNAV or HDG SEL to maintain lateral track and monitor raw data applicable throughout the approach; use VNAV or V/S to maintain vertical path. at airports using QNH. Select Map mode, use raw data to verify airplane position.

Constant Descent Final approach（CDFA）

To effectively prevent CFIT and maintain a stabilized approach, CDFA is recommended for non-precision approach, which makes it easier for pilots to approach and land after visual references is established.

For safer vertical separation and better situational awareness, PM shall report altitude passing over published fixes PF shall maintain constant profile till touchdown.

Note: this method is not applicable to circling approach.

Minimums

For RNP APCH, if use LNAV/VNAV approach minimums use published DA as minimum;if use LNAV approach minimums, use published MDA+50feet as minimum.

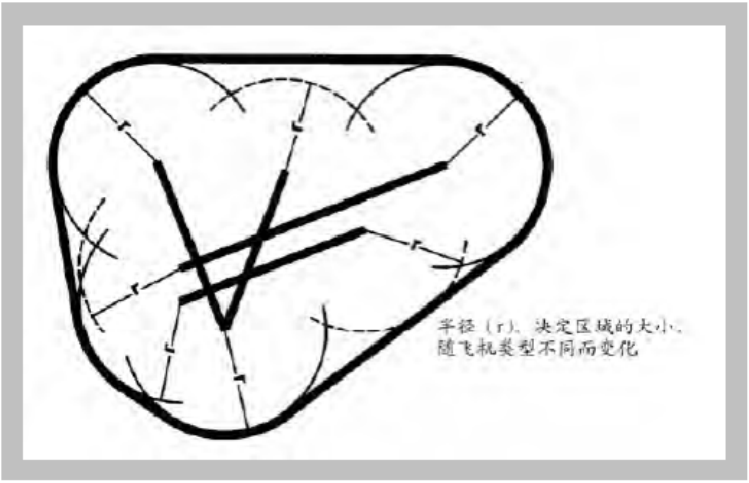
For non-precision approach, use DDA as mnimum.DDA is published MDA/MDH+50feet.

Circling Approach

Unless the captain has successfully completed the circling maneuver training in approved training program and successfully completed the circling maneuver flight checks with special approval for the maneuver from CAAC, the circling maneuver should not be conducted whenever the ceiling is less than 300 meters (1,000 ft) or the visibility is less than 5,000 meters (3 statute miles),

Obstruction Clearance Radius

For circling approach using "PANS OPS" standard, **737 is** classified as "C" category, If "TERPS" standard is in use, approach category depends on the approaching speed.



ICAO Circling Area Radius（r） PANS OPS		FAA Circling Area Radius（r） TERPS	
C（180kts）	4.2NM	140kts	1.7NM
D（205kts）	5.28NM	165kts	2.3NM

Descend to and maintain MDA/H as published. Accomplish circling maneuver in VMC within obstruction clearance radius. Do not intercept the visual profile and descent below MDA/H unless runway threshold is kept in sight and obstruction clearance is ascertained. Use auto flight system until leaving MDA/H. Circling approach shall also meet company requirements for stabilized approaches.

FAA Expanded Circling Maneuver Airspace Radius

The FAA has modified the criteria for circling approach area via TERPS. Circling approach area for approach procedures developed beginning in 2013 use the radius distances(in NM) as depicted in the following table. These distances, dependent on aircraft category, are also based on the circling altitude which accounts for the true airspeed increase with altitude.

Circling MDA in feet MSL	Circling Area Radius (r) from Threshold (NM)	
	Cat C Max 140 KIAS	Cat D Max 165 KIAS
1,000 or less	2.7	3.6
1,001 to 3,000	2.8	3.7
3,001 to 5,000	2.9	3.8
5,001 to 7,000	3.0	4.0
7,001 to 9,000	3.2	4.2
9,000 and above	3.3	4.4

Effect on Charts

Charts where the new criteria have been applied can be identified by the "Inverse C" icon in the CIRCLE-TO-LAND minima box as shown in the following table.

C	CIRCLE-TO-LAND Circling not authorized East of Rwy 3R/21L.
Max Kts	*MDA(H)*
90 120	1580'(495') -1
140	1580'(495') -1½
165	1640'(555') -2

Circling minima not identified by the "Inverse C" icon continue to use the older circling area dimensions defined by the smaller radii.

Missed Approach-Circling

If a missed approach is required at any time while circling, make a climbing turn in the shortest direction toward the landing runway. This may result in a turn greater than 180°to intercept the missed approach course. Continue the turn until established on an intercept heading to the missed approach course corresponding to the instrument approach procedure just flown. Maintain the missed approach flap setting until close-in maneuvering is completed. Different patterns may be required to become established on the prescribed missed approach course. This depends on airplane position at the time the missed approach is started.

Visual Approach

Implementation of the visual approach shall be subject to the relevant regulations in the "detailed Regulations of Airport Usage".

Keep clear of cloud throughout the visual approach. Visibility shall be sufficient to acquire visual references so as to avoid all obstructions or conflicting traffic.

During visual approach, tune and identify frequency of NAV aids required to help identity runway and plan out descent profile.

Do not descent below the related Minimum Enroute Altitude (MEA) / Minimum Safe Altitude (MSA), Minimum Vectoring altitude (MVA) or specified altitude at the Final Approach Fix (FAF) unless any of the following is satisfied:

- With instrument approach procedure established and below cloud base, pilots have acquired sufficient visual references to fly the airplane till landing.
- Flight is clear of cloud with runway visible and pilots are able to keep runway in sight throughout the maneuver.

Missed Approach

All missed approaches shall comply strictly with published procedures or as instructed by ATC.

When go-around with autopilot engaged, flight crew should monitor autopilot operation. If anything is abnormal or the captain think it is necessary, disengage autopilot and fly the airplane manually.

After go-around, the PF should calls for "after takeoff checklist".

Abort approach and execute go-around under the following conditions:

- Unable to establish effective visual references at DA/H during ILS approach
- Unable to establish effective visual references at DA or MDA/MDH+50 feet or missed approach point is reached during non-ILS approach.
- The approach process does not meet requirements for stabilized approach below 1,000 ft above airport elevation in IMC or 500 ft in VMC.
- During instrument approach, either ground NAV radio or flight instruments failure occurs which affects the ability of safely complete the approach.
- Significant instrumental disagreement and runway is not in sight.
- During ILS approach in IMC, full deflection of localizer or glideslope indicator.
- Radio communication failure during radar vectoring approach.
- Lose visual references during the maneuvering portion of a circling approach.
- Landing configuration warning or ground proximity warning in IMC.
- Other circumstances which the captain considers necessary.

Landing

Land inside the touchdown zone **(3,000 ft** beyond threshold or the first **1/3** of runway length, whichever is shorter) with normal pitch attitude.

Touchdown speed should be $\mathbf{V_{REF}}$ or V_{REF} + **any gust correction**.

Lower nose wheel naturally on runway after main gear touchdown, do not attempt to hold the nose wheel off the runway.

Factors Affecting Landing Distance:

Actual stopping distances for a maximum effort stop are approximately 60% of the dry runway field length requirement.

Besides weather conditions, runway surface conditions, landing weight, landing configuration, other factors affecting landing distance are:

- ✈ height and speed over the threshold
- ✈ glide slope angle
- ✈ landing flare
- ✈ lowering the nose to the runway
- ✈ use of reverse thrust, speed brake, wheel brakes.

Automatic Landing

Make an automatic landing only when the conditions meet the requirements of company "Operations Manual".

The crew must keep monitoring the Navigation signal and the FMA displays.

Standard callouts for automatic landing shall be made.

No automatic landing shall be attempted when:

One engine inoperative;

ILS localizer or glide slope unstable;

Runway contaminated.

Use of Reverse Thrust

Reverse thrust should be used for each landing to significantly reduce the wheel braking temperature.

PM should monitor and callout the operation of reverse thrust.

Start reducing the reverse thrust when indicated airspeed approaches **60kts**. The thrust levers should be positioned to reverse idle by taxi speed. The reverse thrust levers should be fully stowed after the reversers idle.

Overweight Landing

Normally, verify landing weight within limit before descent.

Under emergency situation, overweight landing is permitted.

After landing, fill in the "Maintenance Logbook" about the overweight landing in detail.

Speed limits to quickly vacate the runway

surface	deflection angle（degree）	
	≤30	≤45
dry	45	30
wet / contaminated	30	20

Rejected Landing

Under the following conditions, landing must be rejectedand missed approach shall be executed：

- ATC instruction
- Runway incursion
- lose visual references already established during landing
- when passing the threshold, any of the following is not satisfied:
  - stabilized within target speed+10 kts until flare
  - normal maneuver is sufficient to remain on flight path
  - normal touchdown inside the touchdown zone achievable **(3,000 ft** beyond threshold or the first **1/3** of runway length, whichever is shorter).
- the captain thinks it is necessary.

If a go-around is initiated after touchdown, auto speedbrake retract and autobrake disarm as thrust levers are advanced.

Once reverse thrust is initiated following touchdown, a full stop landing must be made.

Quick Stopover

If the stopover is too short, conform to the “brake cooling schedule”.

Holding and Diverting

Holding

When hold at waypoints or NAV aids with published standard procedures, comply with the procedures strictly.

Tune associated frequency of radio navigation facilities as required.

Try making full use of LNAV when holding.

Maintain clean configuration for all holdings unless required otherwise. Avoid prolonged holding in icing or turbulent conditions.

If there is no published holding procedure, use right-hand pattern or do as instructed by ATC. Outbound time is **1.5 minutes** for holdings above **14,000 ft**, **1 minute** for those at or below **14,000 ft**.

Holding Speed

Use holding speed FMC provides as it is the optimum holding speed based on fuel burn and speed capability but never lower than the flaps up maneuvering speed.

If holding speed is not available from the FMC, refer to the PI section of the FCOM. If time does not permit immediate reference to the FCOM, the following speed schedule may be used temporarily:

- ✈ Flaps up maneuvering speed approximate minimum fuel burn speed and may be used at low altitudes.
- ✈ Above **FL250,** use $\mathbf{V_{REF}40}$ + **100kts** to provide adequate buffet margin.

The holding speed should not greater than the maximum holding speed recommended by ICAO.

Maximum holding speed recommended by ICAO:

Altitude	Speed
Through 14,000 ft	230kts
Above 14,000 to 20,000 ft (MSL）	240kts
Above 20,000 to 34,000 ft（MSL）	265kts
Above 34,000 ft	0.83M

Diverting

The captain has the right to decide to divert and which airport to divert to.

Flight crew should assure before takeoff that METAR and TAF for destination and selected alternate airports in line with the release standards.

When decide to divert, select alternate airport specified on dispatch release, however, considering all the available airport weather conditions and trends, airport operations support capabilities and other factors, other airports may also be chosen as the alternate airports, these airports must be approved by the operation specification except in emergency.

If the weather of destination airport is marginal, flight crew should keep abreast of destination and alternate airport weather conditions and figure out alternate plan in advance.

When decide to divert, coordinate promptly with the ATC in order to obtain more help and inform cabin crew of alternate reasons, alternate destination, and ETA. Try communicating with dispatch departments via ACARS or other means and request them to coordinate with the operation support department of the alternate airport to prepare for the flight in advance. If failed to do so in the air, report to dispatch without delay after landing.

Takeoff Alternate Airport

In case of the weather condition at departure airport is lower than the landing minimum prescribed in Operations Specifications, but is at or above the takeoff minimum, or some other operation conditions which do not allow the aircraft return to departure airport, no person may release an aircraft unless he select a takeoff alternate airport.

According to the aircraft type of the Company, the takeoff alternate airport shall be within the distance not more than one hour from the departure airport at normal cruising speed in still air with one engine inoperative and be listed in dispatch release..

Destination Alternate Airport

When dispatching an aircraft, the flight dispatcher shall list at least one alternate airport for each destination airport in the flight dispatch release. When the weather condition forecast for the destination and first alternate airport are marginal, at least one additional alternate must be designated.

Adverse Weather Operation

Operating under Thunderstorm Condition

Thunderstorm Avoidance

Do not fly into cumulonimbus and towering cumulus.

Do not dispatch the airplane under thunderstorm conditions if the following equipments inoperative:

- ✈ weather radar
- ✈ de-icing/anti-icing equipment

When thunderstorm is a factor, the captain should plan out departure routes for weather deviation which includes sufficient maneuvering radius for possible return to land and obtain ATC approval before takeoff.

When avoiding thunderstorm, comply with restrictions for weather deviation to maintain sufficient spacing.

Consider the influence of prohibited area, restricted area, danger area and any airway special rules when deviating. This requires advance planning.

Consider the minimum safe altitude and potential traffic conflicts.

Plan weather deviation as early as possible and obtain ATC approval. If unable to contact ATC, the captain may use the emergency authority to avoid adverse weather on own discretion.

Do not takeoff if any of the following is a factor:

- ✈ Heavy precipitation present at takeoff airport;
- ✈ Thunderstorm predominates at the takeoff airport;
- ✈ The deviation plan after takeoff is subject to the prohibited area, restricted area, boundary line or unsafe terrain;
- ✈ Large area of unavoidable thunderstorm presents along the climb-out departure route; or the available deviation space is less than the corresponding thunderstorm deviation requirements.

Do not make approach if any of the following is a factor:

- Braking action poor reported by ATC or indicated in ATIS;
- No applicable go-around path to be chosen, or the chosen go-around path is affected by terrain and obstacles;
- Auto brake, speed brake, anti-skid or reverse thrust inoperative or partially inoperative on contaminated runway.

Approach under heavy precipitation

When the weather forecasts indicate heavy precipitation in the area of landing runway, prior to approach the flight crew shall make assessment of weather conditions of destination airport, alternate airport and alternate route, make approach plan, study the diversion program and ensure the remained fuel satisfies the planned diversion;

During approach, the flight crew should make judgment based on visual observation, weather radar display and information from ATC/pilot . At 1000ft AGL,if the PIC determines the following conditions existing, the flight crew shall commence go- around:

- At RWY 10 of Dalian/Zhoushuizi Airport (DLC) and RWY 28 of Taipei/Songshan Airport (TSA) when there is moderate or above precipitation over the landing area;
- At other special airports rather than Dalian Airport and Songshan Airport, when there is moderate or above precipitation over the landing area;
- At non-special airports, when there is heavy/over heavy precipitation over the landing area

Recovery after flying into a thunderstorm

When running into a thunderstorm inadvertently, the flight crew shall operate strictly under IFR, and carry out the following procedures:

- The PIC shall take over the control immediately, operate the aircraft to penetrate through the less severe thunderstorm area, and try best to maintain the selected heading. When the aircraft must change the direction, the pilots shall choose a smaller bank angle to ensure the aircraft is able to resist the maneuvering stress;
- Engage engine start switches in FLT position. Turn on the engine anti-ice system as necessary;
- Engage the Fasten Seatbelt Light; inform and ensure all crew members and passengers have fastened their seat belts and all objects secured. When encountering severe turbulence, the supplementary procedures of "Severe Turbulence" shall be executed;
- Tune up the cockpit lighting to maximum and lessen danger of temporary blindness from lightning.
- Try best to reduce the thrust change in case of engine flameout and damage.
- Report ATC as soon as possible. Upon clearing of the thunderstorm, the flight crew shall check the following instrument and equipment timely: engine indications, flight control, flight instruments, and electronic system etc. If the systems work normally, the flight crew may continue the flight; If there are any abnormal conditions orsystem failure, the flight crew shall make analysis of the situation and report to the General Dispatch Office of the Company to decide whether to make diversion or not.
- Once the airplane is into a thunderstorm, the flight crew shall record the event on the Maintenance Logbook and inform the maintenance personnel to accomplish After Thunderstorm Check.

Cold Weather Operation

From the pre-flight safety checks to engine shutdown after landing，flight crew should assess the cold weather effects on flight operations and accomplish the appropriate supplementary procedures. Implementation of de-ice / anti-ice operation shall be based on the “ground airplane de-ice / anti-ice outline” approved by regulatory authority, accomplish “de-ice / anti-ice checklist” after such operation.

The captain bears the ultimate responsibility for airworthiness of the airplane exterior surfaces and makes final decision on de-ice / anti-ice operation.

Do not take off with any form of ice, snow, frost attached to airplane wings, control surfaces, engine inlet, vents or static pressure ports, unless an effective de-ice / anti-ice operation has been completed before takeoff.

If valid weather report shows that icing conditions exist or are anticipated and are liable to seriously endanger flight safety, do not dispatch the airplane, or continue with flight along route, or land at an airport associated with such weather.

In cold weather (**0 ~ -30°C or below**) flight crew should do the cold temperature altitude corrections with ATC clearance where high terrain and/or obstacles exist near airport.

Avoid prolonged operation in moderate to severe icing conditions.

Flap extension is not recommended for prolonged flying in icing conditions. Avoid prolonged holding with flaps extended in icing conditions.

Engine Anti-ice

Use anti-ice in strict accordance with the definition of icing conditions; avoid operation of engine anti-ice solely by visual reference of ice on aircraft structure.

Engine anti-ice switches should be put on or off one by another for.

Engine anti-ice must be turned on whenever icing conditions exist or are anticipated, except for climbing or cruising phase with SAT lower than **-40**℃.

Wing Anti-ice

Wing anti-ice may be used for de-ice as well as anti-ice.

Taxi in Cold Weather

When taxiing in cold weather, taxi at lower speed. Use less nose wheel steering and rudder inputs and apply minimum thrust symmetrically and smoothly.

During prolonged ground operation, increase engine thrust periodically to minimize the possibility of ice-forming. Retract flaps when taxi through areas of slush, water or in falling sleet.

If landed after prolonged operation in icing conditions, do not retract flaps less than **15** unless de-icing operation or ground inspection is completed.

Hot Weather Operation

Due to the adverse impact of high temperature on engine performance, flight crew must rigidly comply with the maximum takeoff weight depicted in EFB performance calculation.

If a landing is intended at a high elevation airport of high temperature, assure before takeoff that estimated landing weight meet the approach and landing performance requirements.

Take measures to cool down the flight deck and passenger cabin when on ground.

At airport of high temperature, take measures to prevent brakes from overheat.

Operation on Wet or Contaminated Runway

Wet runway

Runway of which surface is covered by water of no greater than 3mm (0.118 inch) in thickness, or slush, wet snow, dry snow of no greater than 3mm (0.118inch) in equivalent thickness, or moisture but no standing water, is defined as wet runway.

Contaminated runway

Runway of which over 25% surface (single patch or a few patches together) within the width and length of available part of required takeoff and landing distance is contaminated by water of 3mm or more in thickness, or slush, wet snow, dry snow of 3mm (0.118inch) or more in equivalent thickness or squeezed snow and ice (including wet ice) or other contaminants

Runway of which surface of the critical part, including high speed section or roll-out and lift-off section during takeoff run is covered by contaminants listed above, shall also be regarded as contaminated runway.

Flight crew's consideration

During pre-flight, flight crew and dispatcher should assess the takeoff and landing distance while concerning runway surface conditions, braking effects etc.

Comply with wind limits on wet and contaminated runway.
Takeoff with reduced thrust on contaminated runway is prohibited.

Prior to approach, flight crew shall assess all factors that may affect the safe operation of aircraft on wet or contaminated runway, particularly adverse weather conditions and landing distance required.

Simplified calculation of landing distance

Condition		Effect on landing distance
Unstabilized approach		Unpredictable
Higher speed	Dry runway	300 feet increment for every 10 kts
	Wet runway	500 feet increment for every 10 kts
	Floating landing	2500 feet increment for every 10 kts
Normal speed	downslope	10% increment of landing distance for every 1% downslope
	Delayed touchdown	230 feet for every second
	Overshoot	200 feet for every 10 feet higher
	Delayed braking	220 feet for every second

Let airplane touchdown inside the touchdown zone normally other than floating for an attempt of soft landing as firm touchdown may prevent water skiing and ensure main gear wheels spin-up.

Establish stabilizedapproach on final otherwise go around resolutely.

Cross-check between crew member and rigid carryout of standard callouts during approach and landing are essential, any deviation shall be called out by PM without delay.

PM should monitor speedbrake and autobrake after touchdown, callout any abnormalities so that PF can raise speedbrake and apply brake manually before using reverse thrust immediately.

Direction control on wet or contaminated runway

Use rudder to maintain direction control on contaminated runway, do not use nosewheel steering before airplane slowing down to normal taxi speed as that may result in nosewheel water-skiing and loss of turning force, finally out of direction control.

Should asymmetric braking be necessary, apply brake on the required pedal but release brake on the other pedal entirely to regain direction control.

Turbulence Penetration

During flight, a smooth communication shall be maintained between the flight crew and the cabin crew. In case of possible moderate (and above) turbulence or thunderstorm/CB ahead, the flight crew shall switch on the passenger seatbelt sign in advance, If encountering unexpected turbulence flight crew should cycle the off/ on passenger seatbelt light once, so as to call attention to the cabin crew and the passengers. The duration and strength of the turbulence shall also be informed to the cabin crew.

The airplane shall not be kept flying in a moderate or severe turbulence for long time. When encountering a moderate to severe turbulence, the flight crew shall:

- Engage the starter of the engine on FLT;
- Cycle the off/ on the passenger seatbelt light, to inform the suspension of cabin service and lavatory and take other security measures;
- Request the altitude and/or heading change from ATC to get out of the turbulence area;
- Report promptly to the ATC and other aircraft in the same frequency about the turbulence (location, time and intensity).

Speed limits for turbulence

Flight Phase	Speedlimit for turbulence
Climb	280kts/M.76
Cruise	FMC turb N1
Descent	M.76/280kts

Note: On descending it is allowed to decelerate to 250kts with clean configuration below 15,000ft and the gross weight less than maximum landing weight when encountering heavy turbulence.

If encounter severe turbulence during approach, delay flaps extension as clean configuration withstands higher G load.

The autopilot management in turbulence area

Autopilot should be used as much as possible with appropriate auto mode selected.

If appropriate track and parameters could not be maintained by present auto mode, another auto mode should be considered.

If autopilot disengaged or CWS mode is selected accidentally due to turbulence, autopilot should be reengaged as soon as possible with an appropriate auto mode.

Maneuvers

Recovery from Wind shear

The principles of dealing with wind shear are avoiding and precaution. If wind shear is reported or anticipated, delay takeoff or abort approach.

Judgment of potential Wind shear

The following are hints of potential wind shear:

- Thunderstorm.
- Virga (rain evaporating before reaching ground)
- Reports from other pilots
- Aural or visual warning of predictive winds hears warning system (if installed).

Recognition of Wind shear

The following are indications the airplane is in wind shear:

- Aural wind shear warning.
- Unacceptable flight path deviations are recognized as uncontrolled changes from normal steady state flight conditions below **1,000 ft** AGL, in excess of any of the following:
  - 15kts indicated airspeed
  - 500 ft/min vertical speed
  - 5°pitch attitude
  - 1 dot displacement from the glideslope
  - Unusual thrust lever position for a significant period of time

Wind shear Precautions

If wind shear is suspected, be alert to those signs and prepare for sudden appearance of wind shear. Delaying the takeoff or the approach should be considered if wind shear is likely to occur. Take the following precautions if wind shear is possible:

Take-off

Apply maximum takeoff thrust.

Use full length of the longest runway.

Mind airspeed variations during initial climb as that may be the sign of an impending wind shear.

Rotate at normal rate toward an initial pitch attitude of 15 degree when takeoff with both engines operative. Try not to pitch down before obstacle clearance altitude is gained unless stick-shaker is activated.

Crew cooperation and situational awareness are essential. Crew should have a clear concept of normal values of airspeed, attitude, vertical speed and airspeed increment. PM should pay more attention of vertical speed indicator and altimeter and call out any abnormality.

As airspeed decreases below the in-trim speed, control column forces become higher than usual to regain required pitch attitude, possible stick-shaker have to be considered.

Unless the airplane is equipped with wind shear guidance system, or pilot shall not follow the pitch attitude provided by flight director during take-off and initial climb.

Approach and Landing:

Select the most suitable runway and use landing flaps as small as applicable according to runway length.

Early establishment of a stable approach is helpful to identifying wind shear。

Appropriately increase approach speed in order to improve stall margin, but the increment should not exceed **20kts**.

If airspeed suddenly increases, avoid excessive thrust reduction and trim change, as that may be followed by significant airspeed reduction.

Use vertical path instruments to cross-check flight director commands.

Crew cooperation and situational awareness are essential, particularly at night or under critical weather conditions. Monitor closely vertical path instruments such as vertical speed indicator, altimeter and glide-slope. PM should call out any abnormality. Use autopilot and auto-throttle as far as applicable to allow more time for monitoring and identifying..

Wind shear Escape

Wind shear encountered during takeoff roll:

- If wind shear is encountered prior to $\mathbf{V_1}$, there may not be sufficient runway remaining to stop if an RTO is initiated at $\mathbf{V_1}$. At $\mathbf{V_R}$ rotate at a normal rate toward a **15 degree** pitch attitude. Once airborne, perform the wind shear escape maneuver.
- If wind shear is encountered near the normal rotation speed and airspeed suddenly decreases, there may not be sufficient runway left to accelerate back to normal takeoff speed. If there is insufficient runway left to stop, initiate a normal rotation at least **2,000 ft** before the end of runway, even if airspeed is low. Higher than normal attitudes may be required to lift off in the remaining runway. Ensure maximum thrust is set.

Wind shear encountered during approach and landing:

- Abort approach immediately, perform the wind shear escape maneuver.
- Do not change gear or flaps configuration.
- When wind shear is no longer a factor, notify ATC to remind other pilots of the situation.

Avoidance of Terrain

Principles:

- ✈ do not fly below minimum safe altitude unless in VMC and ATC permission has been obtained.
- ✈ use airborne enhanced GPWS to monitor terrain
- ✈ comply with altimeter setting procedures
- ✈ verify or clarify ambiguous or incorrect ATC clearances, comply with speed and vertical speed restrictions at low altitude.
- ✈ at night or in IMC, turn on "TERRAIN" wherever terrain /obstacles exist in the vicinity of departure/approach routes.

Speed Limits

Maximum IAS is **250kts** below **10,000 ft** on QNH (add 10,000 ft to elevation for high elevation airports).

IAS should not exceed **200kts** within **4 nm** of airport center and below **2,500 ft AGL** unless ATC permits otherwise.

Rate of Descent limits

When fly at low altitude, excessive rate of descent will result in rapid loss of altitude safety margin and evoke potential threat of CFIT. Unless required otherwise in approach procedure or the airplane is under emergency, rate of descent shall NOT exceed:

- ✈ **1,500ft/min** between **1,000 ft** and **2,500 ft** above airport elevation.
- ✈ **1,000ft/min** below **1,000 ft** above airport elevation.

Terrain Avoidance Maneuver

Accomplish immediately the terrain avoidance maneuver in QRH by recall whenever a terrain warning emerges.

Avoidance of Confliction

TCAS shall be turned on prior to entry of runway till clear of runway after landing.

Accomplish immediately the traffic avoidance maneuver in QRH by recall whenever a TCAS traffic advisory (TA) or resolution advisory (RA) occurs in flight.

Traffic Advisory（TA）

Maneuvers based solely on a traffic advisory (TA) without visual contact are not recommended.

Resolution Advisory（RA）

Always follow the command of resolution advisory (RA)，never maneuver to the contrary direction.

Do not follow flight director commands until clear of conflict.

A resolution advisory (RA) takes precedence to ATC clearances.

When a resolution advisory (RA) has potential conflict with terrain; pilot shall disregard it and take appropriate action.

Do not follow a descent resolution advisory below **1,000 ft AGL**.

Wind shear escape, GPWS and stall recovery are superior to resolution advisory (RA).

Following a resolution advisory (RA) may result in a short period of exceedance of altitude or placard limits, nevertheless the airplane has sufficient margin of performance to perform a safe maneuver.

When clear of conflict, return to altitude and speed as appropriate, gently but swiftly, and notify ATC without delay.

Upset Recovery

An upset can generally be defined as unintentionally exceeding the following conditions:

- pitch attitude greater than **25 degrees** nose up, or
- pitch attitude greater than **10 degrees** nose down, or
- bank angle greater than **45 degrees**, or
- within above parameters but flying at airspeeds inappropriate for the conditions.

Upon recognition of an upset situation, accomplish immediately the upset recovery maneuver in QNH.

If the upsetting airplane stalls at the same time, accomplish stall recovery maneuvers first. An upset is still controlled flight while a stall is uncontrolled flight.

Approach-to-Stall Recovery

Accomplish immediately the maneuvering procedure in QRH by recall at the first indication of stall buffet or stick shaker.

Be aware of:

- ✈ Follow the procedures and the steps to recover from the stall;
- ✈ Ensure not to get into the continues stall/ second stall/full stall;
- ✈ Any time if terrain is threatening, keep alert of terrain while recovering from the stall.

Intentionally

Blank

Non- Normal Checklist

The checklists are grouped in sections which match the system description chapters in operation manual Volume 2. Non-normal checklists are used by the flight crew to manage non–normal situations. Non–normal checklist use starts when the airplane flight path and configuration are correctly established. Only a few situations need an immediate response (such as stall warning, GPWS warning, windshear warning, RTO). Usually, time is available to assess the situation before corrective action is started. All actions must then be coordinated under the captain's supervision. Flight path control must never be compromised.

After identify the non-normal situation, at the direction of the PF both crewmembers do all memory items in their areas of responsibility simultaneously and without delay.

The pilot flying calls for the checklist when:

- ✈ the flight path is under control
- ✈ the airplane is not in a critical phase of flight (such as takeoff or landing)
- ✈ all memory items are complete.

Use of Non-normal Checklist

If non-normal situation occurs during engine start and prior to take off, flight crew complete the associated checklist, then consult the MEL for dispatch requirement.

System controls should be in the normal configuration for the phase of flight before the start of the non–normal checklist.

Flight crew silence aural alerts and reset the master caution system as soon as the cause of the alert is recognized.

Indicator lights are tested to verify suspected faults.

In some multiple failure situations, the captain needs to combine the elements of more than one checklist. In all situations, the captain must assess the situation and use good judgment to determine the safest course of action.

For checklists with memory items, the pilot monitoring first verifies that each memory item has been done by reading aloud during this verification. The pilot flying does not need to respond except for items that are not in agreement with the checklist. However, during the non-normal Landing checklist, the pilot flying responds to checklist items.

The checklist title and reference items, including the response or action and any amplifying information, are read aloud by the pilot monitoring. Read aloud the condition statement as much as needed to verify the selection of the correct checklist. Information appearing in brackets does not need to be read aloud. The pilot flying need not repeat those items, but must acknowledge that the items were heard and understood. After moving the control, the pilot taking the action also states the checklist response. Action is taken by the pilot flying and the pilot monitoring based on the crewmember's area of responsibility. With the airplane stationary on the ground, action is taken by pilots based on preflight areas of responsibility.

Both pilots must obtain agreement before moving critical controls in flight such as:

- ✈ The thrust lever of a failed engine
- ✈ Engine start lever
- ✈ Engine, APU or cargo fire switch
- ✈ Generator drive disconnect switch
- ✈ Flight control switch
- ✈ IRS mode switch when only one IRS fault

This does not apply to the LOSS OF THRUST ON BOTH ENGINES checklist.

The pilot flying may also direct reference checklists to be done by memory if no hazard is created by such action, or if the situation does not allow reference to the checklist.

Flight crew should carry on the checklist till the checklist complete symbol. After completion of each non–normal checklist, the pilot monitoring states "___CHECKLIST COMPLETE.", or "___CHECKLIST COMPLETE EXCEPT FOR DEFERRED ITEMS."

After completion of the non–normal checklist, normal procedures are used to configure the airplane for each phase of flight.

The flight crew must be aware that checklists cannot be created for all conceivable situations and are not intended to replace good judgment. In some situations, captain may deviate from a checklist and take responsibility for such action.

If an engine shutdown or activation of the engine fire switch is needed in flight, pilot flying shall retard the thrust lever after verified by pilot monitoring. Moving start lever and/or pulling the fire switch should activated by pilot monitoring after be verified by pilot flying.

Non-Normal Terminology

Below is a list of recommended terminology to be used by the flight crews. This is not an exhaustive list of all memory items.

Non-Normal Terminology 1

Condition	Pilot Responses	
	Pilot Monitoring	Pilot Flying
Engine Failure	engine failure	
		check
To check status of aircraft/engine		confirm status
	left (right) engine flame out/fire/severe damage	
Recall Items		Memory items left (right) engine fire/severe damage
	Memory items left (right) engine, autothrottle arm switch disengage	
		disengage
(PF moves Thrust Lever to closed)		thrust lever close
	confirm close	
	engine start lever cut off	

Condition	Pilot Responses	
	Pilot Monitoring	Pilot Flying
(cut off means you confirm the correct engine)		confirm cut off
	engine fire switch pull	
(pull means you confirm the correct engine)		confirm pull
Requesting QRH checklist. *do not need to read FMA indications in this situation		*I have control, I have ATC, QRH _____ checklist
	you have control you have ATC, QRH _____ checklist	
Critical switches specified in QRH checklist. An exclamation point inside a shaded triangle with a shaded text box indicates precaution information that should be considered before taking action.	confirm ___ (read precaution before the PF confirms action)	

Non-Normal Terminology 2

Condition	Pilot Responses	
	Pilot Monitoring	**Pilot Flying**
Aborted Engine Start		Memory items aborted engine start
(Captain may need to cut off immediately to prevent damage to engine)	engine start cutoff	cut off
Dual Engine Failure		Memory items dual engine failure
	Memory items dual engine failure engine start selectors flight	
		flight
	Engine start levers cut off, idle detent	
		cut off, idle detent
Engine Limit or Surge or Stall		Memory items engine limit or surge or stall
	Memory items engine limit or surge or stall auto throttle disengage	

Condition	Pilot Responses	
	Pilot Monitoring	Pilot Flying
		disengage
	thrust lever retard	
(PF retards TL until indications remain within normal limits or the TL is at idle)		confirm retard

Non-Normal Terminology 3

Condition	Pilot Responses	
	Pilot Monitoring	**Pilot Flying**
Cabin Altitude or Rapid Depressurization (Left Seat Pilot is PF)		Memory items cabin altitude
(O2 mask ON, speaker ON and use intercom switch on yoke)	captain/first officer on oxygen	captain/first officer on oxygen
	pressurization mode selector manual	
	outflow valve switch close	
	cabin is controllable / not controllable	
	cabin altitude is uncontrollable passenger signs ON	
Continue emergency descent		
(may initiate descent as necessary)		emergency descent
normal bank and pitch limits exceeded	bank angle/pitch	
		check

Condition	Pilot Responses	
	Pilot Monitoring	Pilot Flying
Pitch 25 degrees UP or 10 degrees DN, Bank exceeds 45 degrees, Inappropriate Airspeed for condition	upset	upset
	recover	
buffeting, lack of pitch authority, lack of roll control, and/or inability to arrest descent rate	stall	stall
	recover	
Rudder trim to 0 if single engine		Set rudder trim 0
(when task is complete)	Rudder trim is 0	
Evacuation required (Captain is considered Pilot Flying)		Evacuate Evacuate Evacuate
Standby PA to Cabin (After Rejected TO or after coming to a stop on the Runway after an Emergency Landing)		Remain Seated Remain Seated

Landing at the Nearest Suitable Airport

There are some situations where the flight crew must land at the nearest suitable airport. These situations include, but are not limited to, conditions where:

- ✈ the non–normal checklist includes the item “Plan to land at the nearest suitable airport.”
- ✈ fire or smoke continues
- ✈ only one AC power source remains (engine or APU generator)
- ✈ only one hydraulic system remains (the standby system is considered a hydraulic system)
- ✈ any other situation determined by the flight crew to have a significant adverse effect on safety if the flight is continued.

Engine Failure

Engine Failure during Take-off

With an engine fail at or after $\mathbf{V_1}$, the rate of rotation will be slightly slow than that for a normal takeoff, the target pitch attitude will be approximately **2--3 degree** below the normal all engine pitch attitude.

Keep initial climb speed between $\mathbf{V_2}$**--**$\mathbf{V_2}$**+20** until reaching flap retraction altitude. Follow the proper pitch guidance provided by flight director. Maintain the required speed at the airport with special procedure for one engine inoperative.

Accomplish the memory checklist items as soon as the airplane is under control, the gear has been retracted and a safe altitude (typically **400 feet** AGL or above) has been attained. Accomplish the reference items after the flaps have been retracted and conditions permit.

The minimum altitude for flap retraction with an engine inoperative should be above **1,000 feet** AGL in general. For airports with special procedure for one engine inoperative comply with requirement.

Set the flaps up maneuvering speed and LVL CHG mode after flaps retracted, set maximum continuous thrust (CON) and continue the climb to the obstacle clearance altitude.

If an engine failure occurs during assumed temperature method (ATM) takeoff, based on takeoff performance data, it is not necessary to increase thrust on the remaining engine. However, if more thrust is desired during an ATM takeoff, thrust on the operating engine may be increased to full takeoff thrust by manually advancing the thrust levers, this will provide additional performance margin, and it is flight crew's discretion to use it.

Engine Failure during Cruising

When an engine failure occurs at cruise level, drift down may be necessary.

Disconnect the auto-throttle and set thrust to CON manually. Set maximum engine out altitude and engine out target speed at MCP. Allow airspeed to slow to engine out speed then engage LVL CHG. Maintain the engine out target airspeed and maximum continuous thrust (MCT) and descend to level off altitude. After level off at the target altitude, maintain maximum continue thrust and allow the airplane to accelerate to the single engine long range cruise speed. Engine inoperative performance data are available at FMC or QRH.

Engine Failure during Approach

If an engine failure should occur on final approach with the flaps in the landing position, the decision to continue the approach or execute a go-around should be made immediately.

If decide to execute a go-around, set flaps **15** If the approach is continued and sufficient thrust is available, continue the approach with landing flaps.

If the approach is continued and sufficient thrust is not available for landing flaps, retract the flaps to **15** and increase command speed to **15 knots** over the previous set flaps **30** or **40 V_{REF}** for **737-700;** increase command speed to **20 knots for B737-800**.

Intentionally

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Evacuation

Captain is decision-maker and fully responsible for evacuation. It is captain's responsibility to announce evacuation order, command and designate flight crew's task.

Principles for Evacuation

Execute evacuation when one of the following conditions exists and evacuation is mandatory:

- Fire/smoke uncontrollable
- Fuel leak may jeopardize the safety
- Serious structural damage
- Any other situations which have a significant adverse effect on safety of any personnel onboard and airplane

Substitution of Duty

It is captain's duty to decide and declare evacuation. The following sequence should be obeyed to substitute the duty of captain when he or she is incapacitated

- First officer
- Flight radio operator
- Other fight crew member
- Purser
- Flight attendant
- Air marshal

In emergency situation, flight crew should inform the cabin crew the captain's intention (prepare for evacuation or remain seated) within **30 seconds** when airplane is stopped. If cabin crew doubt the Pilot Incapacitation or was not informed after **30 seconds**, purser should connect fight deck. He or she should substitute captain's duty immediately if no reply.

Evacuation Procedure

If time is allowed, captain and purser should discuss the evacuation details. Captain should inform cabin crew:

- The situation of emergency and possibly consequence;
- Time available for preparation;
- synchronize time;
- Other special requirement for the emergency situation.

Captain declares the evacuation to flight deck and then flight crews accomplish the evacuation procedure according QRH.

If available evacuation exits are uncertainty, captain shall inform the reason for evacuation and declare evacuation to cabin. For example, Left engine fire，evacuate、evacuate、evacuate.

If available evacuation exits are certain, captain shall inform all available exits and declare evacuation. For example, all front exits are available, evacuate、evacuate、evacuate.

First officer reports airplane condition, captain intention and assistance required to tower.

Flight crews evacuate the airplane under captain's command after verifying all passengers are evacuated.

Help the incapacitated flight crew evacuate the airplane.

Captain should be the last one to evacuate and check for pinned down passengers with flashlight.

Procedure after Evacuation

All fight crew should accomplish the follow procedure under captain's command until rescue team arrived.

On Land:

- Locate passengers on upwind area and keep a safe distance from airplane.
- Count passengers and crew member.
- Help the injured.
- Send distress signal.

Ditching:

- Cut or disconnect the connecting rope between airplane and the life raft.
- Rescue the person fell overboard.
- Leave the fuel leak and burning area, but should stay adjacent the airplane.
- Group the life rafts link together, moor by anchor.
- Count passengers and crew member; arrange group and family on same raft.
- Help the injured.
- Check the inflation of raft.
- Send distress signal.

Emergency descend

It is captain's responsibility to decide and declare emergency descend.

If there is a malfunction happened to the pressurization system, emergency descend can only execute after fail to resume the of cabin pressure control.

Flight crew should accomplish emergency procedure by QRH.

Left-seat pilot should be pilot-flying when execute emergency descend.

Emergency Descend Procedure

Don Oxygen Masks and Select Intercom/or ATC as appropriate. Use speaker.

Captain declare emergency descend by PA

First officer report to ATC and request local QNH.

Pilot-flying and pilot-monitor do the memory items in their areas of responsibility.

Use $\mathbf{V_{MO}}/\mathbf{M_{MO}}$ as descend speed. If structural damage exit or suspect, use lower descend speed. Avoid high maneuvering load.

The captain calls for related checklist after all memory items are complete and flight path is under control to verify all actions are accomplished properly.

When flight are conduct at **RVSM** airspace or the route involving special emergency descend procedure, flight crew should accomplish emergency descend procedure as required.

Procedure after Emergency Descend

Level off at lowest safe altitude or **10,000 feet**, whichever is higher.

Crew members must use oxygen if cabin altitude is above 10,000 feet after level off.

After reaching safety altitude, flight crew should use the PA system to inform the cabin that the plane has reached safety altitude.

Choose to land at suitable airport and plan the next course of action based on assessing the injuries, the damage of airplane, the endurance and the oxygen remaining.