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CHAPTER 8: OPERATING PROCEDURES

8.1 FLIGHT PREPARATION INSTRUCTIONS

8.1.0 General

Each aircraft of Compagnie Africaine d'Aviation (CAA) has operated in compliance with the terms of its Airworthiness Certificate and within the approved limitations contained in its Aircraft Flight Manual. Operations shall be conducted in accordance with any restrictions imposed by the Authority. An operational flight plan shall be prepared for each intended flight, and be filled in as the flight progresses.

The Commander shall not commence a flight unless he is satisfied that:

- The aircraft is airworthy,
- The aircraft configuration is in accordance with the Configuration Deviation List (CDL),
- The instruments and equipment required for the flight to be conducted are available,
- The instruments and equipment are in operable condition except as provided in the MEL,
- Those parts of the Operations Manual that are required for the conduct of the flight are available,
- Current maps, Charts and associated Documentation or equivalent data are available to cover the intended operation of the aircraft including any diversion which may reasonably be expected,
- Ground facilities and services required for the planned flight are available and adequate,
- The provisions specified in this operations manual in respect of fuel, oil and oxygen requirements, minimum safe altitudes, aerodrome operating minima and availability of alternate aerodromes, where required, can be complied with for the planned flight,
- The load is properly distributed and safely secured,
- The weight of the aircraft, at the commencement of take-off roll, will be such that the flight can be conducted in compliance with the Performance of the aircraft,
- The documents, forms and additional information to be carried as listed in Operations Manual Part A, Chapter 8.1.7, and,
- That all relevant emergency equipment is easily accessible for immediate use and remains so during the flight.
- The preflight inspection and exterior aircraft check are successfully performed.
8.1.1 Minimum Safe Altitudes

8.1.1.0 General

When an aircraft of Compagnie Africaine d'Aviation (CAA) is operated for the purpose of commercial air transport, the minimum altitude/Flight Level at which it is permitted to fly is governed, either by national regulations, air traffic control requirements or by the need to maintain a safe height margin above any significant terrain or obstacle en route. The highest Altitude/Flight Level produced by all these considerations for a particular route sector will determine the Minimum Flight Altitude.

8.1.1.0.1 Definitions

GRID MINIMUM OFFROUTE ALTITUDE (Grid MORA)
An altitude derived by Jeppesen or provided by State Authorities. The Grid MORA altitude provides terrain and man-made structure clearance within the section outlined by latitude and longitude lines. MORA does not provide for navaid signal coverage or communication coverage.

a. Grid MORA values derived by Jeppesen clear all terrain and man-made structures by 1000 feet in areas where the highest elevations are 5000 feet MSL or lower. MORA values clear all terrain and man-made structures by 2000 feet in areas where the highest elevations are 5001 feet MSL or higher. When a Grid MORA is shown as “Unsurvey” it is due to incomplete or insufficient information. Grid MORA values followed by a +/- denote doubtful accuracy, but are believed to provide sufficient reference point clearance.

b. Grid MORA (State) altitude supplied by the State Authority provides 2000 feet clearance in mountainous areas and 1000 feet in non-mountainous areas.

MINIMUM ENROUTE IFR ALTITUDE (MEA)
— The lowest published altitude between radio fixes that meets obstacle clearance requirements between those fixes and in many countries assures acceptable navigational signal coverage. The MEA applies to the entire width of the airway, segment, or route between the radio fixes defining the airway, segment, or route.

MINIMUM OBSTRUCTION CLEARANCE ALTITUDE (MOCA)
— The lowest published altitude in effect between radio fixes on VOR airways, off airway routes, or route segments which meets obstacle clearance requirements for the entire route segment and in the USA assures acceptable navigational signal coverage only within 22 nautical miles of a VOR.

MINIMUM OFF-ROUTE ALTITUDE (MORA)
— This is an altitude derived by Jeppesen. The MORA provides known obstruction clearance 10 NM either side of the route centerline including a 10 NM radius beyond the radio fix reporting or mileage break defining the route segment. For terrain and man-made structure clearance refers to Grid MORA.
MINIMUM SAFE ALTITUDE (MSA)  
— Altitude depicted on an instrument approach chart and identified as the minimum safe altitude which provides 1000 feet of obstacle clearance within a 25 NM radius from the navigational facility upon which the MSA is predicated. If the radius limit is other than 25 NM, it is stated. This altitude is for EMERGENCY USE ONLY and does not necessarily guarantee navaid reception. When the MSA is divided into sectors, with each sector a different altitude, the altitudes in these sectors are referred to as “minimum sector altitudes”.

MINIMUM SECTOR ALTITUDE (MSA) (ICAO)  
— The lowest altitude that may be used under emergency conditions that provides a minimum clearance of 300 meters (1000 feet) above all obstacles within a sector of a circle of 46 kilometers (25 NM) centered on a navigational aid.

8.1.1.0.2. Establishment of Minimum Flight Altitudes IFR/ VFR  
The Minimum Flight Altitudes for both VFR and IFR flights is determined in accordance with the Operations Manual, part C (Jeppesen) for all route segments to be flown which provide the required terrain clearance taking into account the RACD requirements. The procedure for determining the MFA is as follows:

- For night or IMC flying the Minimum Obstruction Clearance Altitude (MOCA) or, if not available, the Grid Minimum Off route Altitude (Grid MORA), the relevant Minimum Safe/Sector Altitude (MSA) or, when under the control of an approved, the Minimum Altitude (MVA);
- For VMC flying by day 500 ft above all obstacles. These shall be calculated in accordance with the requirements of this point 8.1 and particular care must be taken to ensure that the prescribed corrections for adverse weather conditions are applied to the basic MFA to ensure that the MOCA (or Grid MORA), the relevant MSA or MVA is not infringed.
- When it is no longer possible to maintain VMC(Visual Meteorological Conditions) to fly, the pilot may continue to flight in IMC conditions(Instrument Meteorological Conditions) under the instrument flight rules or IFR.

The above method for establishing minimum flight altitudes is approved by the Authority. Where minimum flight altitudes established by State over flown are higher than those established by Compagnie Africaine d'Aviation (CAA), the higher values will apply. When establishing minimum flight altitudes, the following factors must be kept in mind:

- The accuracy with which the position of the airplane can be determined;
- The probable inaccuracies in the indications of the altimeters used;
- The characteristics of the terrain (e.g. sudden changes in the elevation) along the routes or in the areas where operations are to be conducted;
- The probability of encountering unfavorable meteorological conditions (e.g. severe turbulence and descending gusts);
- Possible inaccuracies in aeronautical charts.
In fulfilling the above prescribed requirements, due consideration will be given to:

A. Correction for temperature and pressure variation from standard values as per points 8.1.1.6 and 8.1.1.7 below.
B. The ATC requirements;
C. Any contingencies along the planned route.

In any case, MFA for IFR flights can be lower of the Minimum En route IFR Altitude (MEA), where MEA is the lowest published altitude between radio fixes that meets obstacle clearance requirements between those fixes and in many countries assures acceptable navigational signal coverage.

**8.1.1.0.3 Presentation and Application of Minimum Flight Altitude**

It is Compagnie Africaine d'Aviation (CAA)’s policy to apply as necessary the safety altitudes specified in the Operations Manual Part C. Pilots must therefore ensure that they are familiar with and understand the system used by Operations Manual Part C for the designation of safety altitudes and its limitations in area with respect to route centre line and fixes. The MORA values are reported on all Compagnie Africaine d'Aviation (CAA) OFPs (Operational Flight Plans).

**8.1.1.0.4 Arrival and Departure**

Flight Crew will follow instrument departure and approach procedures established by the State where the aerodrome is located. Deviation from a published departure or arrival route may be accepted if approved or proposed by ATC and for operational condition providing, in any case, obstacle clearance criteria are observed. The final approach must be flown visually or in accordance with the established instrument approach procedure.

**8.1.1.0.5 Responsibility for Terrain Clearance**

The final responsibility for terrain clearance remains at all times with the aircraft Commander even when he has been positively identified and is being vectored by radar; in this instance he should use whatever navigational facilities are available to cross check his position, particularly when operating in the vicinity of high ground. The Commander or the pilot to whom conduct of the flight has been delegated will not fly below specified minimum altitude except when necessary for takeoff or landing.

**8.1.1.0.6 Flight Plan Requirement**

The MFA for each section must appear on the Flight Plan carried on the flight deck. It is Compagnie Africaine d’Aviation (CAA)’s policy to use Grid MORA as MFA. Operational Flight Plan should have this information for each waypoint. If the above information is missing, a hand-made entry in the flight plan must be done by the Flight Crew whenever MFA is higher than 10,000 ft.
8.1.1.0.6.1 Compagnie Africaine d'Aviation (CAA) OFP

The Compagnie Africaine d'Aviation (CAA) (OFP: Operational Flight Plan) provide a separation of 1000 ft up to 5000 ft and a separation of 2000 ft above this height, above known terrain or manmade obstacles within 10 nm of the track centerline and within 10nm radius of reporting points (the same calculations as for Jeppesen Airway MORA). When operating on an IFR flight plan in IMC, in order to utilize the Compagnie Africaine d'Aviation (CAA) 10 nm MSA, the following conditions must be met:

- Track guidance facilities such as VOR or NDB, or navigation capability using DME, must be available and be of such a class to give reasonable accuracy;
  Or
- A serviceable FMS/IRS approved navigation system is utilized to monitor tracking.
  Or
- The aircraft is under radar control with position monitoring by reference to other aids(radar control does not relief a commander from his responsibility for ensuring adequate terrain clearance)

8.1.1.0.7 Pressure Difference from Standard

All published safety altitudes in the Operations Manual Part C relate to height above mean sea level and are measured with reference to QNH. Particular care must therefore be taken when commencing descent in regions of particularly low pressure where terrain clearance is a concern. Both altimeters should be set to the regional QNH in order that a crosscheck may be carried out before the altimeter of the flying pilot is returned to standard pressure (assuming clearance has been given to a nominated flight level). The difference between the two altimeters should be noted and applied with great care during the descent to ensure that no safety height or clearance level is violated. For quick reference see table below:

<table>
<thead>
<tr>
<th>QNH or NEAREST</th>
<th>CORRECTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1050</td>
<td>+ 1.000</td>
</tr>
<tr>
<td>1045</td>
<td>+ 860</td>
</tr>
<tr>
<td>1040</td>
<td>+ 720</td>
</tr>
<tr>
<td>1035</td>
<td>+ 590</td>
</tr>
<tr>
<td>1030</td>
<td>+ 460</td>
</tr>
<tr>
<td>1025</td>
<td>+ 320</td>
</tr>
<tr>
<td>1020</td>
<td>+ 180</td>
</tr>
<tr>
<td>1015</td>
<td>+ 50</td>
</tr>
<tr>
<td>1013</td>
<td>---------</td>
</tr>
<tr>
<td>1010</td>
<td>- 80</td>
</tr>
<tr>
<td>1005</td>
<td>- 220</td>
</tr>
<tr>
<td>1000</td>
<td>- 380</td>
</tr>
<tr>
<td>995</td>
<td>- 510</td>
</tr>
<tr>
<td>990</td>
<td>- 630</td>
</tr>
<tr>
<td>985</td>
<td>- 780</td>
</tr>
<tr>
<td>980</td>
<td>- 920</td>
</tr>
<tr>
<td>975</td>
<td>- 1.080</td>
</tr>
</tbody>
</table>
8.1.0.8 Temperature Below Standard

Adequate allowance to calculated safety altitude must also be made when the Ambient Temperature on the surface is much lower than Standard.

When Ambient Temperature is lower than ISA, the following additions to safety altitudes must be made:

- Lower than ISA-15° C not less than 10%;
- Lower than ISA-30° C not less than 20%;
- Lower than ISA-50° C not less than 25%;

8.1.0.9 High Terrain

When flights are conducted within 20 NM of terrain which rises over 2,000 ft, and the selected cruising altitude or one engine inoperative reestablishing altitude is at or close to calculated MFA, the MFA must be corrected for wind effect in accordance with the following table:

<table>
<thead>
<tr>
<th>WIND SPEED</th>
<th>ELEVATION of TERRAIN (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2,000 → 8,000</td>
</tr>
<tr>
<td>0 → 30 Kts</td>
<td>+ 500</td>
</tr>
<tr>
<td>31 → 50 Kts</td>
<td>+ 1,000</td>
</tr>
<tr>
<td>51 → 70 Kts</td>
<td>+ 1,500</td>
</tr>
<tr>
<td>Over 70 Kts</td>
<td>+2,000</td>
</tr>
</tbody>
</table>

8.1.0.10 Mountains Waves

Furthermore, when mountain waves are forecasted, reported or encountered, the MFA must be further increased when flying over mountainous terrain in order to provide a vertical clearance over the highest ridge at least equal to the height of the ridge above the surrounding terrain. Naturally, common sense suggests that it is preferable, when practicable, to avoid such conditions by choosing an alternate routing, particularly if significant wind shear or turbulence is forecast.

8.1.0.11 Engine Inoperative

In flight planning, care must be taken that the maximum altitude obtainable with all engines operating and the appropriate maximum cruise altitude with one engine inoperative are both greater than the calculated MFA for all sectors of the route. Where performance is inadequate, the flight may still be dispatched by nominating specific safe escape routes after drift down from a critical point or point's en-route.

Great care must be taken in calculating such profiles and, in addition to being prominently featured on the flight plan, during the preflight briefing the attention of operating crews must be specifically drawn to the procedure required should an engine fail at a critical point.

When a particular route require the above procedure detail will be reported in the OM Part C or "Jeppesen"
8.1.1.0.12 Further MFA Requirements

The following additional requirements will be considered in conjunction with MFA:

- Except when taking off or landing, the absolute minimum height will be at least 2000 ft above any congested area or assembly of people.
- A MFA must provide adequate terrain clearance in the event of engine failure.
- Before takeoff, both pilots must be fully conversant with the ENGINE FAIL/Emergency Turn Procedure and ATC instructions will be checked to verify compliance with MFA requirements.
- When under radar control, the aircraft position and height will be monitored continuously and the Flight Crew will be ready to immediately assume responsibility for terrain clearance should there be a loss of radio communication.
- The ATC Instruction “Cleared To” normally given in a non radar environment does not take account of terrain.
- The instruction “Descend To”, however is normally used when radar control is applied and MFAs are considered.
8.1.1.1 VFR Procedures

**8.1.1.1 Method**

VFR will be undertaken as altitudes where an emergency landing shall be possible, without risk to persons and ground facilities.

**Congested area**

The minimum altitude to overfly a congested area (cities, towns, camps, or assembly of persons) cannot be less than 1,000 feet above the highest point situated within a radius of 600 m around the plane, except for phases required to takeoff or landing.

**Uncongested areas**

The minimum flight altitude cannot be less than 500 feet AGL.

8.1.1.2 IFR Procedures

**MOCA & MORA**

All IFR flights are scheduled to operate at an altitude of at least the MOCA or MORA, as indicated by the Jeppesen.

Nevertheless:

1. If the MEA is different from the MOCA, the highest value is taken into account.
2. If neither, the MEA or MOCA not included in the Jeppesen, the MORA be taken into account;
3. If neither, the MEA or MOCA or MORA not contained therein, the portion of the grid MORA highest 10 NM either side of the intended track will be taken into account.

**Performance requirements with one engine inoperative**

In addition to the minimum requirements altitude specified above, the aircraft must meet the following performance requirements:

**One engine inoperative**

In case of loss of an engine in the most critical phase along the road and in the expected meteorological conditions:

a) The net flight path must have a positive gradient at 1 500 ft above the aerodrome where the landing due to engine failure. If weather conditions require the use of protective systems against icing, the effect of their use on the net flight path must be taken into account.
b) The gradient of the net flight path must be positive at an altitude of 1000 ft above all terrain and obstructions along the road, a distance of 9.3 km (5 NM) on either side of the planned route.

c) The net flight path must permit the airplane to continue flight from the cruising altitude to an aerodrome where a landing is expected, net flight path clearing vertically, by at least 2000 ft above all terrain and obstructions along the road, a distance of 9.3 km (5 nm) on either side of the intended track in accordance with sub paragraphs (1) to (3) below:

1. The engine is assumed to fail at the most critical moment of the road;
2. Account is taken of the effects of winds on the flight path;
3. The aerodrome where the airplane is assumed to land after engine failure must meet the following criteria:
   I. requirements of performance with respect to the expected landing mass are met, and
   II. Weather reports or forecasts, or any combination thereof, as well as information on the state of the field indicate that the aircraft can land safely at the scheduled landing.

To comply with regulations, Compagnie Africaine d'Aviation increases the width margins of subparagraphs (b) and (c) above to 18.5 km (10 nm) if the navigational accuracy is not met at 95%

8.1.1.1.1.1 When planning flights on routes crossing mountainous terrain, the commander is responsible for regulatory compliance of the RACD 06 (Procedures for gradual descent - drift - down-). The Flight Department of Compagnie Africaine d'Aviation (CAA) has responsibility to ensure availability upon boarding calculations gradual descent necessary to the flight crew. These calculations must be requested in a timely manner.
8.1.2 Determination Criteria for the Authorization to Use Aerodromes

8.1.2.1 General

All aerodromes which are selected by Compagnie Africaine d'Aviation (CAA) as destinations or alternates must be adequate and suitable in all respects for the types of airplane which are intended to use them. In this context, "adequate" infers that the runway dimensions and significant obstacles in the local area are such that the performance requirements for the nominated airplane type will invariably be met at the weights at which the airplane is planned to land and take off, and in the conditions (including contaminated runways) which may be expected to exist at the time of operation.

Auxiliary services, including ATS, appropriate aerodrome lighting, nav aids, communications, weather reporting and emergency services as appropriate to the maximum total mass authorized and/or maximum passenger seating configuration of the particular airplane type are to be available.

8.1.2.2 Operations under Instrument Flight Rules

The official charts used by Compagnie Africaine d'Aviation (CAA) are Jeppesen charts where the minimum sector is published.

An approved approach procedure may be available for each destination and alternate aerodrome, with up-to-date copies of the approach plates available to each pilot of Compagnie Africaine d'Aviation (CAA).

Specific aerodrome operating minima are similarly to be made available to the flight crew. If the plates are not officially published, the approach must be conducted in VMC conditions below the MORA.

These may be contained in the Compagnie Africaine d'Aviation (CAA)'s Jeppesen, or be the subject of an entry in the PF briefing for one of aerodromes which the guide does not mention. Where departure and approach procedures are published by Compagnie Africaine d'Aviation (CAA) SOP they must be followed unless deviation is specifically authorized by ATC.

8.1.2.3 Visual Approaches

When arrival at or departure from a particular aerodrome is intended to be carried out under Visual Flight Rules, minimum operating visibilities and cloud ceilings are to be clearly stated on the PF briefing. It is not acceptable for the briefing simply to state ‘VFR’. Any particular hazards such as gliding activities at the aerodrome, or ‘free lane’ entries to an aerodrome surrounded by controlled airspace, are to be included in the briefing. The visibility must be above 5km and ceiling more 1500FTAGL.

8.1.2.4 Aerodrome Categorization

The Aerodrome categorization procedure and listing for flight crew competence qualifications will be found in Part C chapter 11, Route and Aerodrome Instructions and Information. In brief, aerodromes will be categorized in ascending order of difficulty from Category A to Category C.
The Categories are:

**Category A**
An aerodrome which satisfies all of the following requirements:

- An approved Instrument approach procedure,
- At least one runway with no performance limited procedure for take-off and/or landing,
- Published circling minima not higher than 1,000 feet AAL, and
- Night operations capability.

**Category B**
An aerodrome which does not satisfy the Category A requirements or which requires extra considerations such as:

- Non-standard approach aids and/or approach patterns, or
- Unusual local weather conditions, or
- Unusual characteristics or performance limitations, or
- Any other relevant considerations including obstructions, physical layout, lighting etc.

Prior to operating to a Category B aerodrome, all pilots of Compagnie Africaine d'Aviation (CAA) (Commander & First Officer) should be briefed, or self briefed by means of written instructions, on the Category B aerodrome(s) concerned and should certify that he has carried out these instructions.

**Category C**
An aerodrome that requires additional considerations to a category B aerodrome.

Prior to operating to a Category C aerodrome, the pilot-in-command should be briefed and visit the aerodrome as an observer and under supervision. A record of the briefing and route check is to be signed by the Chief Pilot/Line Training Pilot and maintained by the Compagnie Africaine d’Aviation.
8.1.2.5 Take-off Alternates

The operational flight plan will specify a take-off alternate if meteorological and/or performance considerations preclude return to the departure aerodrome. This take-off alternate shall be located within:

- One hour still air flight time at a one-engine-inoperative cruising speed according to the AFM in ISA, calculated on the actual take-off mass, or
- Any limitation related to one engine inoperative operation must be taken into account.

<table>
<thead>
<tr>
<th>AIRCRAFT</th>
<th>DISTANCE MAX</th>
</tr>
</thead>
<tbody>
<tr>
<td>A320</td>
<td>350 NM</td>
</tr>
<tr>
<td>F100</td>
<td>330 NM</td>
</tr>
<tr>
<td>F50</td>
<td>200 NM</td>
</tr>
</tbody>
</table>

8.1.2.6 Destination Alternates

At least one destination alternate for each IFR flight must be selected unless:

- The planned duration of the flight from take-off to landing does not exceed 6 hours, and
- Two separate runways are available at the destination and the meteorological conditions will support a VMC approach and landing from the minimum sector altitude for one hour before and after the airplane’s estimated time of arrival (ETA).

1. Two destination alternates must be selected when:

- The appropriate weather reports or forecasts for the destination, or any combination thereof, indicate that during a period commencing 1 hour before and ending 1 hours after the estimated time of arrival, the weather conditions will be below the applicable planning minima or
- No meteorological information is available

All required alternates must be specified in the operational flight plan.

8.1.2.7 Fire and Rescue Facilities

Fire and rescue facilities make no direct contribution to the safety of each flight, but are provided to rescue persons and property in an accident. It is not the Commander’s responsibility to ensure the adequacy of fire and rescue services. The cover required is to ICAO standards and it is the airport authorities’ responsibility to ensure the required cover is available. Clearance to land or take-off from an airfield implies that this responsibility has been fulfilled.
The procedure, at some airports, of having the nearest ambulance station on immediate call from the control tower is acceptable.

The respective aerodrome category may be found in the AIP and Jeppesen Airway manual. Both, destination and alternate have to fulfill these requirements.

As per the table below, the type of airplane used in CAA normally require at least the following categories:

<table>
<thead>
<tr>
<th>Aircraft Type</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>A320</td>
<td>6</td>
</tr>
<tr>
<td>F100</td>
<td>6</td>
</tr>
<tr>
<td>F50</td>
<td>5</td>
</tr>
</tbody>
</table>

Planning:

An aerodrome may be used for planning purposes provided the fire fighting and rescue equipment is operating with a minimum level of protection as follow (AAC must be notified):

- destination and departure aerodrome:
  2 category below the value listed

- destination alternate:
  3 categories below the value listed

These regulations are based on the policy that a fire in its initial stage is controllable with less than the aerodrome Rescue and Fire Fighting protection.

In the event of an extensive fire the passengers are evacuated and the plane is abandoned.

For in-flight assessment the decision lies with the CMD who shall base his decision on the criteria above.

8.1.2.8 Downgrading of Rescue & Fire Fighting Services

The Company is from a legal and insurance standpoint always covered as long as the airport is open for the aircraft concerned, even though the Rescue and Fire Fighting Service has been downgraded.

The fire fighting and rescue services may be downgraded temporarily or for a given hour by NOTAM.

It is the responsibility of the Airport Authority to declare an airport open or closed.
If the Rescue and Fire Fighting Services at an airport has been downgraded temporarily, the company aircraft can continue operation on the airport as long as the aircraft is fully operational consideration of all relevant aspects:

- Cargo/ dangerous goods on board
- Aerodrome conditions
- Weather
8.1.3 Methods for the Determination of Aerodrome Operating Minima

8.1.3.0 IFR Flights

The Flight Operations Department is responsible for the methods used and all the implementation and documentation involved. The method of determination of the operating minima shall be acceptable to the Authority.

a) Compagnie Africaine d'Aviation (CAA) has established minimum values for vertical and horizontal visibility for take-off and landing. These minimums are based on:

   ➢ DRC CAA criteria
   ➢ The Aircraft Approach Category as laid down by ICAO

b) The minimums for a specific type of approach and landing procedure are considered applicable if:

   ➢ The ground equipment shown on the respective chart required for the intended procedure is operative,
   ➢ The aircraft systems required for the type of approach is operative,
   ➢ The required aircraft performance criteria are met, and
   ➢ The crew is qualified accordingly.

c) In establishing the aerodrome operating minimums which will apply to any particular operation, one must take full account of:

   ➢ The type, performance and handling characteristics of the aircraft,
   ➢ The composition of the flight crew, their competence and experience,
   ➢ The dimensions and characteristics of the runways which may be selected for use,
   ➢ The adequacy and performance of the available visual and non-visual ground aids,
   ➢ The equipment available on the aircraft for the purpose of navigation and/or control of the flight path, as appropriate, during the take-off, the approach, the flare, the landing, roll-out and the missed approach,
   ➢ The obstacles in approach, missed approach, and the climb-out areas required for the execution of contingency procedures and necessary clearance,
   ➢ The obstacle clearance altitude/height for the instrument approach procedures, and
   ➢ The means to determine and report meteorological conditions.
8.1.3.1 Planning Requirements

**8.1.3.1.1 Take-Off Alternates.**

For selection as a take-off alternate an aerodrome must satisfy the following conditions:

- Meteorological reports and/or forecasts must indicate that the weather at the aerodrome will be at or above the applicable landing minima from 1 hour before to 1 hour after the airplane’s ETA, and
- If only non-precision and/or circling approaches are available ceiling must be taken into account, and
- Any one-engine inoperative limitations must be taken into account.

**8.1.3.1.2 Destination Aerodrome.**

For selection as a destination an aerodrome must satisfy the following conditions:

- Meteorological reports and/or forecasts must indicate that the weather at the aerodrome will be at or above the applicable planning minima as specified below from 1 hour before to 1 hour after the airplane’s ETA:
  - RVR/Visibility in accordance with paragraph 8.1.3.2.2, and
  - For a non-precision or circling approach the ceiling must be at or above MDH.

**8.1.3.1.3 Destination Alternate and En-Route Alternate Aerodromes.**

For selection as a destination alternate or en-route alternate an aerodrome must satisfy the following conditions:

- Meteorological reports and/or forecasts must indicate that the weather at the aerodrome will be at or above the planning minima specified in Table 1 below from 1 hour before to 1 hour after the airplane’s ETA:

<table>
<thead>
<tr>
<th>Type of Approach</th>
<th>Required Planning Minima</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cat II and cat III</td>
<td>Cat I</td>
</tr>
<tr>
<td>Cat I</td>
<td>Non-precision (Note1)</td>
</tr>
<tr>
<td>Non-precision</td>
<td>Non-precision plus 200ft/ 1000m RVR</td>
</tr>
<tr>
<td>Circling</td>
<td>Visibility and ceiling at or above circling minima</td>
</tr>
</tbody>
</table>

*Note 1: visibility and ceiling must be at or above minima.*
8.1.3.2 Operating Minima

For minima purposes, airplanes are divided into five speed categories based on their nominal threshold speeds. These are defined as 1.3 Vso or 1.23 Vs1G in the landing configuration at the maximum certified landing weight. The five categories are as follows and the particular category for each Company airplane type will be stated in the Part B for that type:

<table>
<thead>
<tr>
<th>Aircraft Category</th>
<th>Threshold Speed</th>
<th>CAA Aircraft</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Less than 91 Kt</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>91 to 120 Kt</td>
<td>Fokker 50</td>
</tr>
<tr>
<td>C</td>
<td>121 to 140 Kt</td>
<td>Airbus A320, Fokker 100</td>
</tr>
<tr>
<td>D</td>
<td>141 to 165 Kt</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>166 to 210 Kt</td>
<td></td>
</tr>
</tbody>
</table>

8.1.3.2.1 Departure Minima

Departure Minima for a given aerodrome shall be not less than those for landing for the same aerodrome unless a take-off alternate aerodrome is available which meets all the relevant landing minima and performance requirements for the airplane type. Minima must be high enough to ensure that there is sufficient guidance to enable the airplane to be controlled in the event of both a take-off in adverse circumstances and a continued take-off after failure of the critical engine.

When the reported meteorological visibility is below that required for take-off or is not available and RVR is not reported, the commander shall not commence take-off unless he can determine that the actual conditions satisfy the applicable take-off minima.
8.1.3.2.2 Required RVR/ Visibility

For multi-engine airplanes whose performance is such that in the event of a critical power unit failure at any point during take-off, the airplane can either stop or continue to a height of 1,500 feet above the aerodrome while clearing all obstacles by the required margins.

RVR/Visibility for Take-Off

<table>
<thead>
<tr>
<th>Facilities</th>
<th>RVR/Visibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nil (Day Only)</td>
<td>500m</td>
</tr>
<tr>
<td>Runway Edge Lighting and/or Centerline Marking</td>
<td>250m B et C/ 300m D</td>
</tr>
<tr>
<td>Runway Edge and Centerline Lighting</td>
<td>200m B et C/ 250m D</td>
</tr>
<tr>
<td>Runway Edge, Centerline Lighting and Multiple RVR information</td>
<td>150m B et C/ 200m D</td>
</tr>
</tbody>
</table>

As Compagnie Africaine d'Aviation (CAA) policy, the Commander shall not commence take off if the visibilities at departure airport is less than the minimum visibility for landing on same airport. If the visibility is decreasing down to 500m and the commander must select take-off alternate.

Note: the take off with RVR/ VIS less than 400m are permitted only on the airport with "low Visibility Procedure" (LVP) in progress and the ILS of that airport must be Cat II/ III.

8.1.3.2.3 Non-Precision Approaches.

Non-precision approach procedures are based on the use of ILS without glide slope (LLZ only), VOR, NDB, SRA or VDF. The minimum descent height on a non-precision approach shall not be less than the highest of:

- the obstacle clearance height (OCH) for the category of airplane,
- the system minimum, as contained in Table 3, below, or
- any State minima if applicable.
- The published approach minima (Jeppesen Chart).

Table 3

<table>
<thead>
<tr>
<th>System Minima for Non-Precision Approach Aids</th>
<th>Approach Aid</th>
<th>System Minimum (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ILS No Glide Path (Note 3)</td>
<td>250</td>
<td></td>
</tr>
<tr>
<td>VOR DME (Note 3)</td>
<td>250</td>
<td></td>
</tr>
<tr>
<td>VOR (Note 3)</td>
<td>300</td>
<td></td>
</tr>
<tr>
<td>NDB (Note 3)</td>
<td>300</td>
<td></td>
</tr>
<tr>
<td>Special permit for GPS approach by &quot; DRC CAA&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GPS (Note 1, 2 &amp; 3)</td>
<td>400’ DH</td>
<td></td>
</tr>
</tbody>
</table>
Note 1: That Approach must be performing in continue descent from the FAF located 10Nm from Runway threshold (If the resulting altitude is above MSA or MORA).

Note 2: If at DA/DH Runway is not insight the GO - AROUND must be executed without hesitation.

Note 3: The horizontal flight from the DA/ DH to Missed Approach point is NOT AUTHORIZED.

8.1.3.2.4 Visual Reference.

No pilot may continue an approach below Minimum Descent Height/Altitude (MDH)/ (MDA) unless at least one of the following visual references for the intended runway is distinctly visible to, and identifiable by the pilot:

- elements of the approach light system,
- the threshold, or its markings, lights or identification lights,
- the visual glide slope indicator(s), (VASI or PAPI)
- the touchdown zone, zone markings or zone lights,
- the runway edge lights.
8.1.3.2.5 Required Runway Visual Range (RVR).

The minimum RVR for a non-precision approach depends on the MDH and on the approach lighting and runway lighting/marking available as shown in Tables 4, a, b, c and d included, below.

**Table 4a**

<table>
<thead>
<tr>
<th>Non-Precision Approach Minima – Full Facilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDH (feet)</td>
</tr>
<tr>
<td>250–299</td>
</tr>
<tr>
<td>300–449</td>
</tr>
<tr>
<td>450–649</td>
</tr>
<tr>
<td>650 and above</td>
</tr>
</tbody>
</table>

See Notes 1, 5, 6 and 7

**Table 4b**

<table>
<thead>
<tr>
<th>Non-Precision Approach Minima – Intermediate Facilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDH (feet)</td>
</tr>
<tr>
<td>250–299</td>
</tr>
<tr>
<td>300–449</td>
</tr>
<tr>
<td>450–649</td>
</tr>
<tr>
<td>650 and above</td>
</tr>
</tbody>
</table>

See Notes 2, 5, 6 and 7

**Table 4c**

<table>
<thead>
<tr>
<th>Non-Precision Approach Minima – Basic Facilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDH (feet)</td>
</tr>
<tr>
<td>250–299</td>
</tr>
<tr>
<td>300–449</td>
</tr>
<tr>
<td>450–649</td>
</tr>
<tr>
<td>650 and above</td>
</tr>
</tbody>
</table>

See Notes 3, 5, 6 and 7
8.1.3.2.6 Precision Approaches.

For precision approach purposes, a Category 1 operation is one using ILS with a decision height (DH) not lower than 200 feet, and a runway range (RVR) not less than 550 meters. The DH shall be not less than the highest of:

- the OCH for the category of airplane,
- the minimum DH in the Airplane Flight Manual (AFM), if stated,
- the minimum height to which the precision approach aid can be used without the required visual reference,
- 200 feet, or
- Any State minima if applicable.

8.1.3.2.7 Visual Reference

No pilot may continue a precision approach below DH determined as in paragraph 8.1.3.2.6 above, unless at least one of the following visual references for the intended runway is distinctly visible to, and identifiable by the pilot:

- elements of the approach light system,
- the threshold, or its markings, lights or identification lights,
- the visual glide slope indicator(s),(PAPI)
- the touchdown zone, zone markings or zone lights,
- the runway edge lights.

Table 4d

| Non-Precision Approach Minima – Nil Approach Light Facilities |
|------------------|------------------|------------------|------------------|------------------|
| MDH (feet)       | Airplane Category and RVR (m) |          |          |          |
|                  | A    | B    | C    | D    |
| 250–299          | 1500 | 1500 | 1600 | 1800 |
| 300–449          | 1500 | 1500 | 1800 | 2000 |
| 450–649          | 1500 | 1500 | 2000 | 2000 |
| 650 and above    | 1500 | 1500 | 2000 | 2000 |

See Notes 4, 5, 6 and 7

Notes:

Note 1. Full facilities comprise runway markings, 720 meters or more of high or medium intensity (HI/MI) approach lights, runway edge lights, and threshold and end lights. Lights must be on.

Note 2. Intermediate facilities comprise runway markings, 420–719 meters of HI/MI approach lights, runway edge, and threshold and end lights. Lights must be on.
Note 3. Basic facilities comprise runway markings, <420 meters of Hi/MI approach lights, runway edge, threshold and end lights. Lights must be on.

Note 4. Nil approach light facilities comprise runway markings, runway edge, threshold and end lights or no lights at all.

Note 5. The Tables are only applicable to conventional approaches with a slope not exceeding 4°. Steeper approach angles will normally require that the visual approach slope guidance (e.g. PAPIs) is visible from the MDH.

Note 6. The MDH mentioned in Tables 4, 5, 6 and 7 refers to the initial calculation of MDH. When selecting the associated RVR there is no need to take account of a rounding up to the nearest 10 feet, which may be done for operational purposes.

Note 7. For definition of Airplane Category see Operation Manual Part C, JEPPSEEN - Flight Information Supplement

8.1.3.2.8 Runway Visual Range

The minimum RVR is governed by the DA/DH and the approach lighting and runway lighting/marking available as shown in Table 5, below. For night operations at least runway edge, threshold and runway end lights must be on.

Table 5

<table>
<thead>
<tr>
<th>Decision Height</th>
<th>Full Note 1 &amp; 5</th>
<th>Intermediate Note 2 &amp; 5</th>
<th>Basic Note 3 &amp; 5</th>
<th>Nil Note 4 &amp; 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>200</td>
<td>550</td>
<td>700</td>
<td>800</td>
<td>1000</td>
</tr>
<tr>
<td>201–250</td>
<td>600</td>
<td>700</td>
<td>800</td>
<td>1000</td>
</tr>
<tr>
<td>251–300</td>
<td>650</td>
<td>800</td>
<td>900</td>
<td>1200</td>
</tr>
<tr>
<td>301 and above</td>
<td>800</td>
<td>900</td>
<td>1000</td>
<td>1200</td>
</tr>
</tbody>
</table>

Notes:

Note 1. Full facilities comprise runway markings, 720 meters of Hi/MI approach lights, runway edge lights, and threshold and end lights. Lights must be on.

Note 2. Intermediate facilities comprise runway markings, 420–719 meters of Hi/MI approach lights, runway edge, and threshold and end lights. Lights must be on.

Note 3. Basic facilities comprise runway markings, <420 meters of Hi/MI approach lights, runway edge, threshold and end lights. Lights must be on.

Note 4. Nil approach light facilities comprise runway markings, runway edge, threshold and end lights or no lights at all.

Note 5. The above figures are only applicable to conventional approaches with a slope not exceeding 4°.

The DH mentioned in the table refers to the initial calculation of DH. When selecting the associated RVR it is not necessary to take account of “rounding up” to the nearest 10 feet which may be done for operational purposes, e.g. conversion to decision altitude (DA).
8.1.3.2.9 Commencement and Continuation of an Approach.

An approach may be started irrespective of the RVR, but it may not be continued past the outer marker or equivalent position unless the reported controlling RVR or visibility is equal to or better than the specified minimum. Once past the outer marker or equivalent position, the approach may be continued to the landing irrespective of reported RVR/Visibility provided that the required visual reference has been established at the DH/MDH, and is maintained.

Where no outer marker or equivalent position exists the pilot-in-command shall make the decision to continue or abandon the approach before descending below 1,000 feet above the aerodrome on the final approach segment.

**Note:** The equivalent position can be established by means of a DME distance, a suitably located NDB or VOR fix or any other suitable fix that independently establishes the position of the airplane.

8.1.3.2.10 Visual Maneuvering (Circling).

Visual maneuvering (circling) is the term used to describe the visual phase of an instrument approach required to position an airplane for landing on a runway which is not suitably located for a straight-in approach. The minimum MDH and visibility which are required for visual maneuvering are as given in Table 7 below.

### Table 6

<table>
<thead>
<tr>
<th>Aircraft Category</th>
<th>MDH (feet)</th>
<th>Visibility (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>500</td>
<td>1600</td>
</tr>
<tr>
<td>C</td>
<td>600</td>
<td>2400</td>
</tr>
<tr>
<td>D</td>
<td>700</td>
<td>3600</td>
</tr>
</tbody>
</table>

**Note:** Refer to Jeppesen Approach Chart

### Table 7

<table>
<thead>
<tr>
<th>Aircraft Category</th>
<th>MDH (feet)</th>
<th>Visibility (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>500</td>
<td>2000</td>
</tr>
<tr>
<td>C</td>
<td>1000</td>
<td>2500</td>
</tr>
<tr>
<td>D</td>
<td>1000</td>
<td>4000</td>
</tr>
</tbody>
</table>

**Note:** the table 7 is the Compagnie Africaine d'Aviation minimum that must be applied
Visual Approach Meteorological Condition
for visual approach the reference guide is the state minima.
Normally the visual approach is not associate to OCA/ OCH and relative protect area like the circling.
The visual approach required ceiling and visibility.

8.1.3.2.11 Missed Approach after Visual Maneuvering

The missed approach procedure to be carried out is the one applicable to the instrument approach runway unless another procedure is prescribed. Once the airplane has left the instrument procedure and commenced circling, an initial climbing turn towards the runway and overhead the aerodrome will be made, where the airplane will then establish in a climb on the missed approach track of the instrument approach runway. Because of the variability of circling procedures other patterns may be needed at different stages in order to keep the airplane in a safe area and to establish the missed approach track.

8.1.3.2.12 Instrument Approach Followed by Visual Maneuvering (Circling) without Prescribed Tracks.

Before visual reference is established, but not below MDH:
The flight should follow the corresponding instrument approach procedure.

At the beginning of the level flight phase at or above the MDH:
From the beginning of the level flight phase, the instrument approach track determined by radio navigation aids should be maintained until:

- The commander estimates that, in all probability, visual contact with the runway or runway environment will be maintained during the entire procedure,
- The commander estimates that his aircraft is within the circling area before commencing circling, and
- The commander is able to determine his aircraft’s position in relation to the runway with the aid of the external references.

If the conditions above are not met by the MAP, a missed approach must be carried out in accordance with the instrument approach procedure.
After the airplane has left the track of the corresponding instrument approach procedure, the flight phase outbound from the runway should be limited to the distance which is required to align the airplane for the final approach. Flight maneuvers should be conducted within the circling area and in such a way that visual contact with the runway or runway environment is maintained at all times.

Flight maneuvers must be carried out at an altitude/height which is not less than the circling minimum descent/altitude height (MDH).

Descent below MDH must not be initiated until the threshold of the runway to be used has been identified and the airplane is in a position to continue with a normal rate of descent and land within the touchdown zone.
8.1.3.2.13 Instrument approach followed by a visual maneuvering (Circling) with prescribed track.

Before visual reference is established, but not below MDH, the flight must follow the corresponding instrument approach procedure.

The airplane must be established in level flight at or above the MDH and the instrument approach track determined by the radio navigation aids maintained until visual contact can be achieved and maintained. At the divergence point, the airplane should leave the instrument approach track and the published routing and heights must be followed.

If the divergence point is reached before the necessary visual reference is acquired, a missed approach procedure should be initiated not later than the MAP and carried out in accordance with the instrument approach procedure.

The instrument approach track determined by radio navigation aids should only be left at the prescribed divergence point when only the published routing and heights should be followed.

Unless otherwise specified in the procedure, final descent must not be initiated until the threshold of the runway to be used has been identified and the airplane is in a position to continue with a normal rate of descent and land within the touchdown zone. The circling and side step minima per policy company must not be low MDH 1000 and visibility 3000 meter or the publish minima if higher.

8.1.3.2.14 Visual Approach

The policy Compagnie Africaine d'Aviation (CAA) for visual circuit is minimum ceiling 1500 feet and minimum visibility 5000 meters.

Visual Approach Meteorological Condition

for visual approach the reference guide is the state minima.
Normaly the visual approach is not associate to OCA/ OCH and relative protect area like the circling.
The visual approach required ceiling and visibility.
8.1.4 VFR En Route Operating Minima

8.1.4.1 Planning minima for VFR Flights

All Compagnie Africaine d'Aviation (CAA) flights will be conducted under IFR unless extraordinary circumstances require a VFR operation for which express permission must be granted by the Flight Operation Director: On a VFR flight, a Commander will not commence takeoff unless current meteorological reports or a combination of current reports and forecasts indicate that the meteorological conditions along the route or that part of route to be flown under VFR will, at the appropriate time, be such as to render compliance with these rules possible.

8.1.4.2 Minimum VIS for VFR Operations

The minimum visibility for VFR Operations is as follows:

<table>
<thead>
<tr>
<th>Airspace Class</th>
<th>B</th>
<th>CDE</th>
<th>F G</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance from Clouds</td>
<td>Clear of Cloud</td>
<td>1500 m Horizontally 300 m (1000 ft) Vertically</td>
<td>Clear of Cloud and in sight of the surface</td>
</tr>
<tr>
<td>Flight Visibility</td>
<td>8 Km at and above 3,050 m (10,000 ft) AMSL 5 Km below 3050 m (10,000 ft) AMSL</td>
<td></td>
<td>5 Km (**)</td>
</tr>
</tbody>
</table>

(*) When the height of the Transition Altitude is lower than 10,000 ft AMSL, FL100 should be used in lieu of 10,000 ft.

(**) Category A and Category B Airplanes may be operated in flight visibility down to 3,000 m, provided the appropriate ATS authority permits use of a flight visibility less than 5 Km, and the circumstances are such, that the probability of encounters with other traffic is low, and the IAS is 140 Kts or less.

Special VFR flights are not commenced when the visibility is less than 3 Km and not otherwise conducted when the visibility is less than 1, 5 km.
8.1.5 Presentation and Application of Aerodrome and en-Route Operating Minima for IFR Flight

Aerodrome en-route operating minimum shall be used as presented in the Operations Manual Part C supplements, Jeppesen chart IFR.

The following en-route operating minimums apply to all IFR flights:

A commander is not permitted to operate to minimums which are lower than those published in the Operations Manual Part C or notified by the State which controls the aerodrome in question.

A commander may nevertheless elect to operate to higher minimums than those published by any of these means if he considers that under the circumstances of the flight to do otherwise might compromise the safety of his aircraft or its passengers.

Once the flight has started, the commander must be prepared to amend the intended minimums for any aerodrome he is scheduled to use, in order to take account of any change in status of the relevant approach aids which occurs during the flight.
8.1.6 Interpretation of Meteorological Information

Explanatory material on the decoding of MET forecast and MET reports relevant to the area of operations, including the interpretation of conditional expressions is also given in the Operations Manual, Part C.

All flight crew members are required to develop and maintain a sound working knowledge of the system used for reporting aerodrome actual and forecast weather conditions and of the codes associated with it. Some of the codes (e.g. for wind velocity) use the same figures as the values being reported; thus, a wind blowing from 280° at 15 knots is reported as ‘28015KT’. Some of the more important codes, however, use lettered abbreviations which can become particularly significant when flight crews are attempting to assess whether conditions at a particular destination or alternate will be above company minima at the planned time of arrival.

8.1.6.1 Aerodrome Weather Observations - METAR

Routine actual weather reports (METARs) are compiled half-hourly or hourly at fixed times while the aeronautical meteorological station is open. They may include the following terms to clarify the codes used in reporting the various elements:

**Horizontal Visibility**
When there is no marked variation in the visibility by direction, the minimum is given in meters. When there is a marked directional variation the reported minimum will be followed by one of the eight points of the compass to indicate its direction, e.g. ‘4000NE’. If the minimum visibility is less than 1,500 meters, and the visibility in another direction is more than 5,000 meters, both the minimum and maximum values, and their directions will be given, e.g. ‘1400SW 6000N’. A code figure of ‘9999’ indicates a visibility of 10 km or more, while ‘0000’ indicates that the visibility is less than 50 meters.

**Runway Visual Range (RVR)**
An RVR group has the prefix R followed by the runway designator, then an oblique stroke followed by the touch-down zone RVR in meters. If the RVR is assessed simultaneously on two or more runways, the RVR group will be repeated; parallel runways will be distinguished by the addition of L, C or R after the runway designator to indicate the left, central or right parallel runway respectively. When the RVR is greater than the maximum value which can be assessed, or more than 1,500 meters, the group will be preceded by the letter P, followed by the lesser of these two values. When the RVR is less than the minimum value which can be assessed, the RVR will be reported as ‘M’ followed by the minimum value that can be assessed.
Cloud
Up to four cloud groups may be included, in ascending order. Each group consists of three letters to indicate the amount (FEW = 1 to 2 octas, SCT, or scattered = 3 to 4 octas, BKN, or broken, = 5 to 7 octas, and OVC, or overcast = 8 octas) and three figures indicating the height of the base of the cloud layer in hundreds of feet above aerodrome level. Apart from significant convective clouds (CB = cumulo-nimbus, TCU = towering cumulus) cloud types are not indicated. Cloud layers or masses are reported such that the first group represents the lowest individual layer of any amount, the second group is the next individual layer of more than 2 octas, the third group is the next higher layer of more than 4 octas, and the additional group, if any, represents significant convective cloud, if not already reported, e.g. ‘SCT010 SCT015 SCT018CB BKN025’.

CAVOK and SKC
“CAVOK” will replace the visibility, RVR, weather and cloud groups when the visibility is 10 km or more, there is no cloud below 5,000 feet or below the highest MSA, whichever is the greater, and no cumulo-nimbus, and there is no precipitation, thunderstorm, shallow fog or low, drifting snow. If any of these conditions are not met, but there is no cloud to report, then the cloud group is replaced by ‘SKC’ (sky clear).

Air Temperature and Dewpoint
The air temperature and dewpoint are shown in degrees Celsius, separated by an oblique stroke. A negative value is indicated by an ‘M’ in front of the appropriate digits, e.g. 10/03 or ‘01/M01’.

Pressure Setting
The QNH is rounded down to the next whole millibar and reported as a four-figure group preceded by the letter ‘Q’. If the QNH value is less than 1000 Mbs, the first digit will be ‘Q’, e.g. ‘Q0993’.

Recent Weather
Operationally significant weather which has been observed since the previous observation, but which was not current at the time of the present observation, will be reported using the standard present weather code preceded by the indicator ‘RE’, e.g. ‘RETS’.

Windshear
A windshear group may be included if windshear is reported along the take-off or approach paths in the lowest 1,600 feet with reference to the runway in use. ‘WS’ is used to begin the group as in the examples: ‘WS TKOF RWY20’, ‘WS LDG RWY20’.

Runway State
When snow or other runway contamination is present, an eight-figure group may be added at the end of the METAR.
Trend
A trend group is added when significant changes in conditions are forecast to occur during the two hours following the time of observation. The codes “BECMG” (becoming) or “TEMPO” (temporarily) are used, and may be followed by a time group (in hours and minutes UTC) preceded by one of the indicators “FM” (from), “TL” (until) or “AT” (at). These are followed by the expected change using the standard codes, e.g. BECMG FM 1100 250/35G50KT or TEMPO FM 0630 TL0830 3000 SHRA. Where no such significant changes are expected, the trend group will be replaced by the word ‘NOSIG’.

DENEB
The code word ‘DENEB’ may be added to a METAR to indicate that fog dispersal operations are in progress. Information which is missing from the METAR may be indicated by the use of oblique strokes to place the missing code figures /letters.

8.1.6.2 Aerodrome Weather Forecast (TAFs)

Aerodrome weather forecasts (TAFs) are usually issued to describe the forecast conditions at an aerodrome covering a period of 9 to 24 hours. The validity periods of many of the longer forecasts may not start for up to 8 hours after the time of origin and the forecast details only cover the last 18 hours. The 9-hour TAFs are updated and re-issued every 3 hours, and those valid for 12 and 24 hours, every 6 hours. Amendments are issued as and when necessary. A TAF may be sub-divided into two or more self-contained parts by the use of the abbreviation ‘FM’ (from) followed by the time UTC to the nearest hour, expressed as two figures. Many of the groups used for METAR are also used in the TAFs, but differences are noted below:

Validity Period
Whereas a METAR is report of conditions at a specific time, the TAF contains the date and time of origin, followed by the start and finish times of the validity period in whole hours UTC, e.g 'TAF FZAA 130600z (date and time of issue ) 0716 (period of validity 0700 to 1600 hours).

Horizontal Visibility
The minimum visibility only is forecast, RVR is not included.

Weather
If no significant weather is expected, the group is omitted. After a change group, however, if the weather ceases to be significant, the abbreviation ‘NSW’ (no significant weather) will be inserted.

Cloud
When clear sky is forecast, the cloud group will be replaced by ‘SKC’ (sky clear). When no cumulonimbus or clouds below 5000 feet or below the highest minimum sector altitude, whichever is the greater, are forecast , but ‘CAVOK’ or ‘SKC’ are not appropriate, the abbreviation ‘NSC’ (no significant cloud ) will be used.
Significant Changes
In addition to ‘FM’ and the time significant changes may be indicated by the abbreviation ‘BECMG’ (becoming) or ‘TEMPO’ (temporarily). ‘BECMG’ is followed by a four-figure group indicating the beginning and ending of the period in which the change is expected to occur. The change in the forecast conditions is expected to be permanent, and to occur at an unspecified time within this period. ‘TEMPO’ will similarly be followed by a four-figure time group; it indicates a period of temporary fluctuations in the forecast conditions which may occur at any time during the stated period. The ‘TEMPO’ conditions are expected to last less than one hour in each instance, and in aggregate, less than half the period indicated.

Probability
The probability of a significant change occurring will be given as a percentage, but only 30% and 40% will be used. The abbreviation ‘PROB’ will precede the percentage, which will be followed by a time group, or a change and time group, e.g. ‘PROB 30 0507 0800FG BKN004’, or ‘PROB40 TEMPO 1416 TSRA BKN010CB’.

Amendments
When a TAF requires amendment, the amended forecast will have ‘AMD’ inserted between ‘TAF’ and the aerodrome identifier, and will cover the remainder of the validity period of the original forecast.

The TAF codes are contained in the MET chapter of the Operation Manual Part C, which is carried as part of the Route Manual.
8.1.7 Determination of the Quantities of Fuel and oil to be Carried

8.1.7.1 Fuel Planning

Compagnie Africaine d'Aviation (CAA) ensures, through delegated authority to the Flight Operations Department that the planning of flights is only based upon:

a) Procedures and data contained in or derived from the Operations Manual or current aircraft specific data (i.e. Manufacturer provided data), or

b) When planning a flight, the operating conditions under which the flight is to be conducted shall be taken into account, including:

- Realistic aircraft fuel consumption data,
- Anticipated weight,
- Expected meteorological conditions, and
- Air Traffic services procedures and restrictions.

Based on the appropriate consumption figures for the stage of flight as contained in the Operations Manual Part B of the manual for the specific aircraft type(s)/variant(s) corrected by data of Compagnie Africaine d'Aviation (CAA). The fuel on board at the start of each flight must be sufficient to cover the elements listed in the following paragraphs.

8.1.7.2 Standard Fuel Planning Procedure

In the respect of the regulation.

The planning fuel required is the sum of:

a) Taxi Fuel, the total amount of fuel expected to be used prior to take-off including allowances for local conditions at the aerodrome of departure, the operation of ice protection systems and APU.

b) Trip Fuel, shall include:

- Take-off and climb from aerodrome elevation to initial cruising level/altitude, taking into account the expected departure routing,
- Cruise from top of climb (TOC) to top of descent (TOD), including any step climb and descent,
- TOD to initial approach point, taking into account the expected arrival routing and procedure, and
- Approach and landing at destination.

c) Contingency Fuel, which shall be the higher of (1) or (2) below:

- Either:
  (1) 5% of the planned trip fuel or, if in-flight replanning, the trip fuel for the remainder of the flight (Compagnie Africaine d'Aviation (CAA) policy),
  (2) Minimum 5 minutes at 1500 feet above the destination aerodrome in ISA conditions.
At the planning stage not all factors which could have an influence on the fuel used to the destination aerodrome can be foreseen. Consequently contingency fuel is carried to compensate for such items as:

- Deviations of an individual aircraft from the expected fuel consumption data,
- Deviations from forecast meteorological conditions, and
- Deviations from planned routings and/or cruising levels/altitudes.

d) Alternate Fuel, to include

- A missed approach from the applicable MDA/DH at the destination aerodrome to missed approach altitude, taking into account the complete missed approach routing and procedure,
- Climb from missed approach altitude to cruising level altitude,
- Cruise from TOC to TOD,
- Decent from TOD to initial approach point taking into account the expected arrival routing and procedure, and
- Approach and landing at the destination alternate aerodrome.

Note: For adverse weather condition at destination, when two destination alternates are required then alternate fuel must be sufficient to proceed to the alternate which requires the greater amount of alternate fuel.

e) Final Reserve Fuel which must be:

- Fuel to fly for 30 minutes at holding speed at 1500ft above alternate aerodrome elevation in ISA, calculated with the estimated landing weight on arrival at the alternate.

<table>
<thead>
<tr>
<th>A/C</th>
<th>FINAL RESERVE FUEL (Kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A320</td>
<td>1300</td>
</tr>
<tr>
<td>F100</td>
<td>900</td>
</tr>
<tr>
<td>F50</td>
<td>350</td>
</tr>
</tbody>
</table>

Note: If the crew expect the use of final reserve the commander must declare PAN PAN, if the used of final reserve has been initiate the commander must declare MAYDAY MAYDAY.

Total reserve fuel = Contingency fuel + Alternate fuel + Final reserve fuel

f) Extra fuel, are discretion supplementary fuel quantity required by the commander

A Commander shall not commence a flight unless he is satisfied that the aircraft carries at least the planned amount of (minimum flight plan fuel) and oil to complete the flight safely, taking into account the expected operating conditions. Extra fuel will be at the discretion of the commander.

g) Additional fuel, can include economical fuel or tankering fuel

Note: This fuel is limited if the reason any operational limitation like Wet Runway or MEL limitation or for commercial reason.
8.1.7.3 Decision Point Procedure

When planning to a destination aerodrome via an en-route decision point the fuel required is the greater of (a) or (b) below:

a) The sum of:

- Taxi fuel,
- Trip fuel to the destination aerodrome, via the decision point,
- Contingency fuel of not less than 5% of the estimated fuel used from the decision point to the destination aerodrome,
- Alternate fuel, if a destination alternate is required,
- Final reserve fuel,
- Additional fuel, and
- Extra fuel, at the discretion of the Commander, or

b) The sum of:

- Taxi fuel,
- Trip fuel to a suitable en-route alternate via the decision point,
- Contingency fuel of not less than 5% of the estimated trip fuel from the aerodrome of departure to the en-route alternate,
- Final reserve fuel,
- Additional fuel, and
- Extra fuel at the discretion of the Commander.

8.1.7.4 Isolated Aerodrome Procedure

Before this procedure is used, specific approval from the DSP office and Flight Operations Director must be obtained. When planning to an isolated aerodrome for which an alternate does not exist the fuel required is the sum of:

- Taxi fuel,
- Trip fuel,
- Contingency fuel in accordance with Operations Manual Part A, chapter 8.1.7.2 (c), and
- Additional fuel if required, but not less than:
  - Fuel to fly for two (2) hours, calculated with the normal cruise consumption, after arriving overhead the destination aerodrome, including final reserve fuel, and
  - Extra fuel, at the discretion of the Commander.

8.1.7.5 Predetermined Point Procedure

N/A
8.1.7.6 Standard Fuel Uplift

To facilitate the Flight Operation, the Company has approved the use of Standard Fuel Uplift based on operational flight plan minimum fuel.

a) The tables are based upon:

- The fuel consumption for each aircraft variant to destination and to a destination alternate,
- A fixed weight for each aircraft variant,
- Zero wind condition,
- Holding fuel for each aircraft variant,
- Company fuel and Contingency fuel, and
- Never less than the planned minimum destination arrival fuel upon landing at destination.

b) Uplift of standard fuel should be used whenever possible at the discretion of the Commander.

8.1.7.7 Measurement and Distribution of Fuel and Oil

N/A

8.1.7.8 Maintenance of Fuel and Oil Records

The different amounts of fuel required for a planned flight in accordance with the Operations Manual shall be identified in the Operational Flight Plan and recorded in the Technical Log. Fuel uplift shall be recorded in the Technical Log. Fuel remaining after a flight shall be recorded in the Technical Log, and fuel on board the aircraft is part of the Load Sheet message to the Commander. On the ground recording of oil consumption are made in the Technical Log system as part of Line Maintenance procedures.
8.1.8 Weight and Centre of Gravity

8.1.8.0 General

The flight operations department shall ensure that:

- During any phase of operation, the loading, weight and center of gravity of the aircraft complies with the limitations specified in the approved Airplane Flight Manual, or the Operations Manual if more restrictive,
- A copy of the final weight and balance documentation as accepted by the Commander shall be stored on the ground,
- The verification of data input validity for weight and balance documentation (Load sheet) is done data records shall be retained for 3 months,
- Based on the Basic Weight (BW) and Basic Index (BI), determine the weight of all operating items and crew members included in the aircraft dry operating weight (DOW) by weighing or by using standard weights. The influence of their position on the aircraft center of gravity (DOI) must be determined, and
- Make sure that updated and detailed descriptions of, load sheet, trim sheet, weight and index tables are available for the load master.

The Flight Operations department shall ensure:

- That the Company determines the weight of the fuel load by using the actual density. If the actual fuel density is not known, use the standard fuel density values for determination of the weight of the fuel load. The Standard fuel density values to be used for jet fuels is Jet A-1: 0.808 kg/l
- That the Take-off Weight Calculation Form, the Fuel Request form (Dispatch Release) and other forms for the purpose of calculation/operation are available for the flight crew. The instructions, use and lay out of the different forms shall be available in Operations Manual Part B (Aircraft Weight and Balance).

The Commander shall ensure:

- Established backup methods in case of unavailability, that limiting takeoff and landing weights are calculated for each flight. The takeoff weight shall be based on the actual airport environment conditions and aircraft configuration. The landing weight shall be based on appropriate weather reports or forecasts, or any combination thereof, and field condition reports for the estimated time of arrival and aircraft configuration.

The Technical department is delegated the authority to:

- Establish the Basic Weight (BW) and the Basic Index (BI) of any aircraft by actual weighing prior to initial entry into service and thereafter at intervals of 4 years if individual aircraft weights are used. The accumulated effects of modifications and repairs on the weight and balance must be accounted for and properly documented. Furthermore, aircraft must be reweighed if the effect of modifications on the weight and balance is not accurately known.
8.1.8.1 Definitions

**Allowed Traffic Load** is the available loading capacity for a certain flight sector. It is the result of the subtraction of the Operating Weight from the allows weight for Take-Off

**Allowed Weight for Take-Off (LOADSHEET)** is the maximum allowable take-off weight for a particular flight sector. It is the lowest of the following weights:

- Maximum Weight for Zero Fuel plus Take-Off Fuel
- Maximum Weight for Take-Off
- Maximum Weight for Landing plus Trip Fuel:

**Dry Operating Index (DOI)** is the index for the position of the centre of gravity at the Dry Operating Weight.

**Dry Operating Weight (DOW)** is the weight of the equipped airplane including crew and their baggage, pantry and toilets, supplies as well as standard quantities of oil and water, but without load and fuel.

**Landing Weight (LAW)** is the weight of the airplane at landing. It is calculated by subtracting the Trip Fuel from the Take-Off Weight.

**Last Minute Changes (LMC)** is changes of original entries shortly before departure. Last change/amendment to the weight and balance sheet (Load sheet) which does not require the preparation of a new weight and balance sheet if the changes/amendments to the existing weight and balance sheet do not exceed the limits specified in the AFM.

**Loaded Index at Take-Off Weight (LITOW)** is the index for the position of the centre of gravity at Take-Off Weight.

**Loaded Index at Zero Fuel Weight (LIZFW)** is the index for the position of the centre of gravity at Zero Fuel Weight.

**Maximum Weight for Landing (MLAW)** is the maximum allowable landing weight of a certain airplane type.

**Maximum Weight for Take-Off (MTOW) (Structural)** is the maximum allowable take-off weight of a certain airplane type.

**Passenger classification:**

- Adults, males and females are persons of an age of 12 years and above.
- Children are defined as persons of an age of 2 years and above, but who are less than 12 years of age, and
- Infants are defined as persons who are less than 2 years of age

**Payload** is the total weight of the revenue load

**Traffic Load** is the total weight of passengers, baggage and cargo, including any non-revenue load
8.1.8.2 Methods, Procedures and Responsibility for Preparation and Acceptance of the Weight and Balance Calculations

The Flight Operations department shall ensure the following:

Establish weight and balance documentation prior to each flight specifying the load and its distribution. The weight and balance documentation must enable the Commander to determine by inspection that the load and its distribution is such that the weight and balance limits of the aircraft are not exceeded.

The person preparing the weight and balance documentation (Load Master) shall be named on the document.

The weight and balance calculation shall be performed by trained and qualified personnel or by the flight crew. The personnel in charge of preparing the weight and balance (Load Master) documentation of aircraft shall have a valid proof of his/her recency on weight and balance training (certificate of course completion).

The loading personnel shall perform the loading of the aircraft according to written Load Instructions from the Load Master and the loader must sign the instruction to acknowledge that the aircraft is loaded according to instructions. (with the signature the load master confirm that all limitation are corrected and respected in conformity with the Regulation)

If any deviation from the Load Instructions is made the loader must report this to the Load Master.

The Weight & Balance calculations shall be completed by issuing specific Load sheet and Balance Table forms. This documentation shall be completed in a “computerized" form or as a “manual" preparation using the corresponding forms.

The Load Master shall confirm by signature that the load and its distribution are in accordance with the weight and balance documentation (Load sheet). This document must be acceptable to the Commander, his acceptance being indicated by countersignature or equivalent.
8.1.8.2.1 Centre of Gravity Limits

Unless seat allocation is applied and the effects of the number of passengers per seat row, of cargo in individual cargo compartments and of fuel in individual tanks is accounted for accurately in the balance calculation, operational margins shall be applied to the certified center of gravity envelope. In determining the CG margins, possible deviations from the assumed load distribution shall be considered.

The method for load sheet calculations is based on standard Airplane Manufacturer load sheet documents, such as load sheet and loading instructions. The trim calculation is based on index schedule calculation. All background material and formula with reference to weight and balance calculation is according to values for balance arms and formula stated in the Manufacturer weight and balance manual for the actual aircraft type(s) and/or variant(s).

The entries on the Trim sheet represent the extreme limits, taking into account the calculation of seating allowance for the various seat configurations that may appear related to cabin area trim.

The in-flight center of gravity travel caused by passenger/crew movement and fuel consumption/transfer is accounted for through the balance-Trim sheet.

8.1.8.3 Policy for Using Actual and/or Standard Weights

The Company computes the weight of passengers and checked baggage using Standard Values as found in OM A 8.1.8.4.3 for passengers, and OM A 8.1.8.4.4 for baggage.

On any flight identified as carrying a significant number of passengers, including hand baggage, and/or quantities of baggage that are suspected to exceed the standard values (e.g. military personnel or sports teams) the actual weight of such passengers/baggage must be determined by weighing or by adding an adequate weight increment:

- The check-in personnel shall report to the Load Master for the aircraft a significant number of passengers whose weight, including hand baggage.

- The Load Controller for the aircraft shall ensure that the Commander is advised when a non-standard method has been used for determining the weight of the load and that this method is stated in the weight and balance documentation (Load sheet); and

If determining the actual weight by weighing, it shall be ensured that the passenger’s personal belongings and hand baggage are included. Such weighing shall be conducted immediately prior to boarding and at an adjacent location.
8.1.8.4 Method for Determination of Weight Values for Crew, Passengers, Baggage and Cargo

Compagnie Africaine d'Aviation (CAA) uses the standards passengers weight for manual Loadsheet computation.

Luggages and cargo are weighed by ground handling agent before loading.

8.1.8.5 Weight Values for Crew, Passengers, Baggage on Different Aircraft type

The Flight Operations Department ensure that Authority and Compagnie Africaine d'Aviation (CAA) regulations are adhered to.

8.1.8.5.1 General

Passenger weight includes personal belongings, hand baggage.

8.1.8.5.2 Weight Values for Crew

The following values shall be used to determine the actual crew weight and index:

- Standard weights, including normal hand baggage is:

<table>
<thead>
<tr>
<th>Type of Flight</th>
<th>Flight Crew</th>
<th>Cabin Crew</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scheduled Flights</td>
<td>100 kg.</td>
<td>90 kg.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>All weights include overnight bags</td>
</tr>
</tbody>
</table>

8.1.8.5.3 Passengers

The standard weight for Passengers in Table 1 and 2 shall be used.

**TABLE 1**

<table>
<thead>
<tr>
<th>Type of Flight</th>
<th>Adult</th>
<th>Children</th>
<th>Infant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scheduled Flights</td>
<td>84 kg</td>
<td>35 kg</td>
<td>10 kg</td>
</tr>
</tbody>
</table>

**TABLE 2**

<table>
<thead>
<tr>
<th>Type of Flight</th>
<th>Adult</th>
<th>Children</th>
<th>Infant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scheduled Flights</td>
<td>84 kg</td>
<td>35 kg</td>
<td>10 kg</td>
</tr>
</tbody>
</table>
Note:

- Infants occupying separate passenger seats must be considered as children.
- These weights include hand luggages (10kg Maximum).

8.1.8.5.4 Baggage

The standard values for each piece of baggage in table 1 and 2 shall be used.

a) Domestic flight means a flight with origin and destination within the borders of the DRC
b) International Flights means flights, other than Domestic flights, whose origin and destination are within the African countries.

c) Intercontinental flight means a flight with origin and destination in different continents.

**TABLE 1**

<table>
<thead>
<tr>
<th>Type of flight</th>
<th>Standard baggage weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOMESTIC</td>
<td>23 Kg</td>
</tr>
<tr>
<td>INTERNATIONAL</td>
<td>23 Kg</td>
</tr>
<tr>
<td>BUSINESS</td>
<td>32 Kg</td>
</tr>
</tbody>
</table>

**TABLE 2**

<table>
<thead>
<tr>
<th>Type of flight</th>
<th>Standard baggage weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOMESTIC</td>
<td>20 Kg</td>
</tr>
<tr>
<td>INTERNATIONAL</td>
<td>23 Kg</td>
</tr>
</tbody>
</table>

**Note:** Franchise weight is defined according to the booked destination and aircraft operated in this line.
8.1.8.5.5 Weight values for Catering and Cargo

8.1.8.5.5.1 Catering

Standard catering weights are used for the different destinations. The standard weights are actual weight of the catering based upon a standard catering (A320: 500kg, F100: 250 Kg, F50: 100 Kg); and the actual figures are documented in the weight and balance and Operation Manual Part B (AFM).

8.1.8.5.5.2 Cargo

Compagnie Africaine d'Aviation (CAA) ensure that the loading of the cargo is consistent with the data used for the calculation of the aircraft weight and balance. The loading shall be within structural limits such as the floor strength limitations, the maximum load per running square meter, maximum weight per cargo compartment, and/or the maximum seat limits; the actual weight shall be used in the weight and balance documentation (Load sheet) to the Commander:

- Due consideration shall be given to the balance of the aircraft before loading cargo;
- Due consideration shall be given to the balance of the aircraft before loading any heavy cargo;
- Cargo in the cabin shall be distributed and strapped according to procedures in Ground Operations Manual. Any cabin area limitation shall be adhered to.
8.1.8.6 Weight and Balance Instructions and Documentation

8.1.8.6.1 Introduction

Weight and balance documentation shall be prepared prior to each flight. This documentation shall enable the Commander to determine that the load and its distribution are such that the weight and balance limits of the aircraft are not exceeded.

The weight and balance documentation shall at least contain the following information:

- The aircraft registration and type;
- The flight identification number and date;
- The Commander;
- The identity of the person who prepared the document;
- The dry operating weight and the corresponding CG of the aircraft;
- The weight of the fuel at take-off and the weight of the trip fuel;
- The weight of consumables other than fuel;
- The components of the load including passengers, baggage, cargo and ballast;
- The take-off weight, landing weight and zero fuel weight;
- The load distribution;
- The applicable aircraft CG position; and
- The limiting weight and CG values.

8.1.8.6.2 Load sheet /Trim sheet

For all types of flights, a Compagnie Africaine d'Aviation (CAA) approved standard weight and balance (Load sheet and Trim sheet) shall be used:

- The weight and balance documentation (Load sheet and Trim sheet) contains all the required Authority elements and is providing essential and necessary information to the flight crew.
- A sample standard Load sheet and Trim sheet form can be found at 8.1.8.6.3.
- The load master is a responsible for the preparation of the load and trim sheets.

8.1.8.6.3 Load sheet Information Form

This form is an aid to load message personnel at outstations to obtain correct flight information. This form is prepared by the load master and delivered upon arrival at destination.
8.1.8.6.4 Balance Calculation

The Compagnie Africaine d’Aviation (CAA) has adopted one of the most common methods for balance calculation:

- The manual index loading schedule is based on balance calculation for three chapters.
- The CG limits for the three chapters are calculated according to seating allowance regulations given in the Manufacturer's approved documentation;
- The index loading schedule provides an accurate method of computing and controlling the aircraft’s center of gravity;
- The procedure fully accounts for the extreme variation in CG travel during flight caused by passenger/crew movement and fuel consumption/transfer;
- If extreme longitudinal seat selections occur, the Commander shall move the passengers to remain within the balance limits;
- For the different type(s) and/or variant(s) of aircraft, the Compagnie Africaine d’Aviation (CAA)’s standardized Balance Calculation Form (Trim sheet) shall be used;
- The Balance Calculation Forms (Trim sheet) shall be prepared and one copy shall be given to the Commander;
- The index loading schedule is described in Operations Manual Part B (Weight and Balance).
- The fuel consumption is dependent on the aircraft’s balance condition.

Necessary considerations should therefore, during load planning, be made to load the aircraft into the most economical balance condition. It must be noted that aircraft’s Loaded Index at ZFW (LIZFW) should never exceed any prescribed limits.
8.1.8.7 Last Minute Changes (LMC)

Even after a most careful preparation and elaboration of an aircraft handling, some unforeseen change(s) in load, equipment or distribution may occur after the Load sheet has been completed. Even when no weight or balance limitations are endangered, the changed situation has to be recorded. Therefore, provisions have been made for appending LMCs to the Load sheet:

- Should the LMC adjustment be less than 500 kg and there is no change to the fuel load and you check that none of the limiting weights are exceeded then no action is required to recalculate the actual ZFW, TOW and LDW

**Note:** If there is a load change greater than 500 kg or 5 passengers then a new Load Sheet will be required

- If the LMC is greater than 500 kg then the actual TOW and LDW must be recalculated by adding (or subtracting if applicable) the LMC weight to the previous actual ZFW, the resultant weight is entered into the box to the right of the LMC weight which will be the new actual ZFW, this must be checked against the Max ZFW to ensure it is still within limits and the previous actual ZFW should be neatly crossed through with a single horizontal line

- This process must be repeated for the recalculation of the actual TOW and LDW the design of the Load Sheet / Balance Chart allows for two separate LMC adjustments for each parameter.
8.1.8.8 Specific Gravity of Fuel and Other Fluids

The fuel and oil supplier generally provide the specific gravity of fuel and oil to be used.

When entering the mass figures for the Take Off fuel and trip fuel (burn off) the correct specific gravity shall be used to convert the volume into the mass value. Same applies to any other fluids, such as oil. Whenever possible and practicable, the specific gravity of fuel as obtained from the fuelling crew shall be used. As this often is not practicable, the following specific gravity values may be used if no other values are published in the AOM/FCOM/FCOM:

<table>
<thead>
<tr>
<th>Fluid Type</th>
<th>Specific Gravity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jet fuel JP-1</td>
<td>0.796 Kg/liter (at 15°C)</td>
</tr>
<tr>
<td>Jet fuel JP-4</td>
<td>0.760 Kg/liter (at 15°C)</td>
</tr>
<tr>
<td>OIL</td>
<td>0.875 Kg/liter</td>
</tr>
</tbody>
</table>

8.1.8.9 Seating Policy/ Procedures

The Flight Operations department shall ensure the following:

- Calculation for seating allowance according to operators seating condition is based on calculation and restrictions given in the Weight and Balance Manual of the Manufacturer.
- The weight and balance documents assume a particular seating distribution of the passengers. If a seat allocation system is used, the possible errors in the CG position shall be covered/compensated by the CG envelope.
8.1.9 ATS Flight Plan

The Flight Operation Department is delegated the authority to ensure the following:

8.1.9.1 Introduction

The Operational Officer shall ensure that a flight is not commenced unless an ATS flight plan has been submitted to the appropriate ATS units, or adequate information has been deposited in order to permit alerting services to be activated if required.

8.1.9.2 ATS Flight Plan Types

The Repetitive Flight Plans is mainly used for scheduled, International flight not permitted by the law. RPL’s are used for flights, which regularly will be operated at the same time and day of operation within a specific time period (e.g. winter/ summer). Filed on a seasonal basis and maintained by the Operational Officer Flight Dispatchers; “Single” ATS flight plan. Used for one particular flight. Filed by the Operational Officer or the flight crew.

8.1.9.3 Flights without ATS Flight Plan

An ATS flight plan shall be filed for all Company operated flights.

8.1.9.4 Air Traffic Flow Management

Flights subject to Air Traffic Flow Management shall be planned and executed in accordance with the procedures developed by ATC Control;

The information contained in the Slot Allocation Message or Slot Revision Message or other relevant Air Traffic Flow Management messages shall be made available to relevant handling personnel and the flight crew. The minimum information required in this context, is the estimated off block time, the Estimated Takeoff Time and the taxi time;

The Compagnie Africaine d'Aviation (CAA) Flight Dispatcher on duty is in charge of obtaining the approval of the ATC Flight Plan. This may be delegated to a local agent for a specific volume of flights.
8.1.10 Operational Flight Plan

The Flight Operations Department is delegated the authority to prepare the appropriate documentation and establish adequate routings in complying with Authority and Compagnie Africaine d’Aviation (CAA) requirements. This subchapter contains procedures and responsibilities for the preparation and acceptance of the Operational Flight Plan. The use of the Operational Flight Plan is described including samples of the Operational Flight Plan.

8.1.10.1 General

The operational flight plan is prepared by the Flight Dispatch on duty; the commander will approve and sign before flight. The flight plans shall be filled in as the flight progresses; used Operational Flight Plans shall be returned, by the First Officer, to the Flight Dispatch on duty. The entries on the Operational Flight Plan shall be made consecutively and be of a permanent nature.

The operational flight plan should contain the following items:

- Aircraft registration;
- Aircraft type and variant;
- Date of flight.
- Flight identification.
- Names and duty of flight crew members.
- Place of departure.
- Time of departure (actual off-block time, take-off time).
- Place of arrival (planned and actual).
- Time of arrival (actual landing and on-block time).
- Type of operation (VFR, IFR, Ferry flight, etc.).
- Route and route segments with checkpoints; way points, distances, time and tracks.
- Planned cruising speed and flying times between check-points, way points. Estimated and actual times overhead.
- Safe altitudes and minimum levels.
- Planned altitudes and flight levels.
- Fuel calculations (records of in-flight fuel checks).
- Fuel on board when starting engines.
- Alternate(s) for destination and, where applicable, take-off and en-route.
- Initial ATS Flight Plan clearance and subsequent re-clearance.
- In-flight re-planning calculations.
- Relevant meteorological information.
- Flight time and Block time; and
- Commanders’ signature.
## Sample Operational Flight Plan

<table>
<thead>
<tr>
<th>Type of Operation</th>
<th>Flight Number</th>
<th>NAC</th>
<th>Registration: SQ - C</th>
<th><strong>OPERATIONAL FLIGHT PLAN</strong></th>
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**Fuel Calculation**

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**Departure**

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**Destination**

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**Other Information**

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**Start**

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**Optional**

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**Captains Signature**

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**Flight Dispatcher**

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**Signature**

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**CAA - 01**

CHAPTER: 8

Operations Manual Part A  
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Edition 0
8.1.11 Aircraft Technical Log

8.1.11.1 General

The Aircraft Technical Log is represented by the Aircraft Technical Log Book, which is medium for written communication between flight crews and maintenance personnel. It is the system used for recording defects and malfunctions discovered during the operation and details of all maintenance carried out on the particular aircraft between scheduled visits to the base maintenance facility, and/or any line station where repairs or defect rectification is undertaken. In addition, it is used for recording operating information relevant to flight safety and contains maintenance data relevant to the Operating Crew when carrying out their assigned duties. All entries made in the Technical Log Book are transferred to a computerized system.

All irregularities shall be recorded.

The aircraft Technical Log Book allows the Commander to satisfy himself that the aircraft is airworthy in accordance with its Certificate of Airworthiness and within the limitations of the Minimum Equipment List (MEL) and Configuration Deviation List (CDL).

The responsibility for the management of the Technical Log Book rests with the Technical Director.

8.1.11.1.1 Technical Log Book Entries

A Technical Log Book entry will only be raised when the requirement exists to record an Aircraft Defect, Maintenance accomplished or component change.

The aircraft Commander, upon termination of each flight, shall enter the complete details of any reportable maintenance occurrences in the next page of the Technical Log Book.

 Provision is made for Engineering to record all component changes which must include details in the appropriate change CHAPTER of the Technical Log Book i.e. Part # OFF, Serial # OFF, Part # ON, Serial # ON - Batch. # ON (Approved Stores Serial number release)

Airworthiness or MEL deferred Defect (ADD) must be entered ADD record sheet.

The Certificate of Release to Service following any defect rectification, defect deferral or maintenance check undertaken shall be signed for by an appropriately authorized Engineer. Such a certificate readily identifies the defect(s) to which it relates or the particular maintenance checks as appropriate.

When a deferred defect has been rectified, it is noted in the “DEFECT CLEARED” column of the ADD’s and also entered on the current Technical Log Book page with the corrective actions taken and the appropriate certifying stamp and date.

For factors influencing the decision of the commander concerning MEL and configuration deviation list (CDL) considerations, refer to MEL/CDL Operations Manual, Part A 8.6

Any defect/occurrence, which is the subject of an “Air Safety Report”, shall be raised by the Commander and endorsed “ASR”.
8.11.1.2 Technical Log Book Instructions

All the instructions necessary to complete the Log are attached at the back of the appropriate log book.
All entries shall be printed with a ball point pen, preferable BLACK ink, using the hard backing sheet supplied beneath the last copy page of the serialized set.

It shall be completed by the airplane Commander and completed/signed by the appropriately Maintenance Engineer prior to flight release.

The WHITE page remains in the Technical Log Book.

The BLUE copy shall be faxed to the Maintenance and Engineering Department and later removed for Technical records.

The YELLOW copy shall be removed at the departure station before flight and retained for a period of 3 months to fulfill the legal requirements.
### Sample Aircraft Technical Log Book

#### Aircraft Registration
- **N°**: 1432
- **C/ID**: TC
- **Aircraft Type**: 9Q-ChD
- **Country**: CAA
- **Registation**: UD

#### Aircraft Log Book
- **Serial Number**: N° 1432
- **Previous Log Book**: 05/08/06
- **New Log Book**: 01/05/09

#### Flight Log
- **Log Date**: 10/13
- **Start Time**: 08:05
- **End Time**: 08:46
- **Duration**: 41 min

#### Flight Details
- **Flight Number**: 1
- **Flight Type**: Daily Service
- **Flight Crew**:
  - **Captain**: O. Valier
  - **First Officer**: O. Valier

#### Maintenance Checks
- **Pre-Flight Check**:
  - **Engine 1**: OK
  - **Engine 2**: OK

#### Engine Log
- **Engine Hours**: 1,020.00
- **Engine Manufacturer**: CFM56-5C2
- **Engine Type**: Turbofan

### Engineering Corrective Action
1. **BAT CHARGER SUPPLY BREAKER RE-UP**
   - **Description**: Impossibility to recharge the battery.
   - **Action**: Perform daily service.

2. **I.A.W. FLOOR FLOOR FROM CAA WM**
   - **Description**: Daily Service was performed.
   - **Action**: OK

### Captain Acceptance
- **Signature**: O. Valier
- **Date**: 11/11/13
8.1.11.1.3 Cabin Defect Log (Cabin log)

Cabin defect Log (Cabin log) is a document that keeps records of cabin/galley/lavatory complaints and cockpit cosmetic complaints reported by cabin personnel. The wording "Safety items" in this chapter include the following:

- Emergency equipment.
- Damaged or inoperative part(s) or equipment which can cause hazard to crew or passengers. Safety items at time of discovery must be transferred to the Technical Record, in the Aircraft Technical Log. The Commander shall monitor Cabin defect Log (Cabin log) status. This is done through the following procedure:
  - A Senior Cabin Crew Member (SCCM) shall check the Cabin Defect Log (Cabin log) before each flight. Status is given to the Commander.
  - Commander shall inform Cabin Crew if there is any MEL item in the Tech Log that has any relevance for the Cabin crew.
  - When a new Cabin complaint is written in the Cabin defect Log (Cabin log), a CCM should evaluate if the complaint is important or cosmetic; the Commander shall be notified.

The Commander shall use the Cabin Defect Log (Cabin log) to write up cosmetic complaints in cockpit. There is no requirement for these Complaints to be transferred to the Technical Log.

At the latest at due scheduled maintenance check, Maintenance personnel shall check the Cabin defect Log (Cabin log) for complaints. 3 options are allowed:

- Snag repair of minor complaints. Reported directly in the Cabin defect Log (Cabin log);
- Transferred to Tech Log;
- Cabin Defect log – opened.

For layout of Cabin defect Log (Cabin log)-sequence form, see Cabin Attendant Manual.

8.1.11.1.4 Cabin Defect Log (Cabin log) Form, shipping

White original: Keep in Cabin Defect Log (Cabin log) for history.
Yellow copy: Remove from Cabin Defect Log (Cabin log) by authorized technical personnel.
Blue copy: Remove from Cabin Defect Log (Cabin log) by authorized technical personnel, when a Cabin Defect log is closed.
8.1.11.1.5 De-/Anti-Icing Report

De-/Anti-icing are documented on this report-form by the organization that performs the service, and the following information is given to the flight crew by radio:

- Start of final fluid application;
- Type of fluid;
- Mixture ratio fluid/water.

This information is to be used by the crew to determine the hold-over time. The De/Anti-icing crew fills out de/anti-icing report.
8.1.12 List of Documents, Forms and Additional Information to be Carried

8.1.12.1 Crew

All Crew Members of Compagnie Africaine d'Aviation (CAA) are personally responsible for the validity of all required documents and consequently have to arrange in time for their issue, prolongation or renewal.

During flight duty, all Crew Members must carry along the following documents:

- Compagnie Africaine d'Aviation Identification Card
- Valid Passport
- Vaccination Certificate
- Valid Crew License with Appropriate Rating
- Medical Certificate
- Crew Member Card

Cabin Crew Members must additionally carry along:

- Qualification Cards
- Announcements to passengers
- Report forms (SCCM)
- Cabin Attendant Manual (CAM)
- Catering Plan

The loss of a passport at the Main base must be notified to the first available police station without delay. Consular services may also require notification. If this occurs away from Main base, the loss must be notified to the Dispatch Station /contract agency and the nearest DRC representation (embassy, consulate) or other Consular service as appropriate.

On return to Main base, a new passport must be applied for presenting a copy of the report of loss from the police.
8.1.12.2 Flight Deck

The following documents and manuals must be carried in the flight deck:

- Operation Manual Part A – General
- Operation Manual Part B - (FCOM, AOM, QRH,AFM)
- MEL/CDL
- Standard Operating Procedure (SOP)
- Airport Analysis (RTOW: Regulated Take-Off Weight)
- Jeppesen
- ICAO Emergency Response Guidance for Aircraft Incidents Involving
- DGR Regulations.

In addition to the documents and manuals described above, the following information and forms, relevant to the type and area of operation, are carried on each flight:

<table>
<thead>
<tr>
<th>Documentation</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operational Flight Plan</td>
<td>DSP/Commander</td>
</tr>
<tr>
<td>ATS flight plan</td>
<td>DSP/Commander</td>
</tr>
<tr>
<td>NOTAM</td>
<td>DSP/Commander</td>
</tr>
<tr>
<td>Meteorological information</td>
<td>Commander</td>
</tr>
<tr>
<td>Weight and balance documentation (Load Sheet)</td>
<td>DSP/Commander</td>
</tr>
<tr>
<td>Notification of special categories of passengers</td>
<td>DSP</td>
</tr>
<tr>
<td>Current maps and charts and associated Documents</td>
<td>DSP/Commander</td>
</tr>
<tr>
<td>Any other Documentation which may be required by the States concerned with this flight, such as cargo manifest, passenger manifest etc.</td>
<td>DSP</td>
</tr>
<tr>
<td>Checklists according to Part B</td>
<td>DSP/Commander</td>
</tr>
<tr>
<td>On board Document Folder</td>
<td>DSP</td>
</tr>
</tbody>
</table>
8.1.12.3 On-Board Document Folder

The onboard document folder is intended to allow for quick retrieval of crucial documents and certificates of informative and/or no-go character. The folder contains the following:

**Note: In case of loss or theft of the below specified documents in “On-Board Document Folder Part 1, the operation is allowed to continue until the flight reaches the base or a place where a replacement document can be provided.**

<table>
<thead>
<tr>
<th>On-Board Document Folder Part 1 document requirements for on-board carriage:</th>
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<tbody>
<tr>
<td>Original Certificate of Registration</td>
</tr>
<tr>
<td>Original Certificate of Airworthiness</td>
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<tr>
<td>Original or copy of Certificate of Environmental Quality – Noise</td>
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<tr>
<td>A certified copy of the Air Operator Certificate (AOC)-Operation Specifications</td>
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<tr>
<td>Original of Radio Station Certificate</td>
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<tr>
<td>A certified copy of the Certificate of Insurance</td>
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<table>
<thead>
<tr>
<th>On-Board Document Folder Part 2 Additional Documents of Informative Character</th>
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<tbody>
<tr>
<td>A copy of “Approval of Lease of Aircraft” (if applicable)</td>
</tr>
<tr>
<td>A copy of Exemption of On-Board Carriage of Airplane Flight Manual</td>
</tr>
<tr>
<td>A Copy of any required temporary documents, if applicable</td>
</tr>
<tr>
<td>A certified copy of the Certificate of RVSM</td>
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</tbody>
</table>

**Note: The documents shall not be removed from the aircraft. If discrepancies are discovered immediately contact Flight Dispatch officer, who will telex a temporary copy until the document can be re-supplied.**
8.1.12.4 Aircraft Reports and Form Folder

Flight Dispatch is responsible to keep the Aircraft Document Folder up to date with the documents and forms to be carried. It is the Commanders responsibility (can be delegated to the First Officer) to carry forms listed (OM A 8.1.12.3). If sealed envelope is opened, the instructions given there shall be followed, and the envelope and remaining content shall be put in the enclosed envelope and delivered to Flight Dispatch as soon as possible:

- Operational Flight Plan
- Air Safety Report
- ATC Flight Plan
- Fuel Request Form (Dispatch Release)
- Trim sheet and load sheet
- Notoc
- Operation Flight Plan Form
- Meteorological Information form

8.1.12.5 CCM Stations

The following documents shall be available at each CCM station:

- Cabin Crew Abnormal Checklist
- PA Manual, and

The following documents are supplied by Technical Department and shall be available only in the forward galley:

- Aircraft Technical Log.
- Cabin Defect Log (Cabin Defect Log (Cabin log))

8.1.12.6 Information retained on the Ground

The Commander must ensure that information relevant to the flight and appropriate for the type of operation is delivered to traffic personnel; ground operations department shall, ensure that information is retained until it has been duplicated at the place at which it will be stored in accordance with Operations Manual Part A chapter 3.1.9

The information referred to in subparagraph above includes:

- A copy of the operational flight plan where appropriate;
- Copies of the relevant part(s) of the aircraft technical log;
- Weight and balance documentation if required; and
- Special loads notification.
INTENTIONALLY LEFT BLANK
8.2 GROUND HANDLING INSTRUCTIONS

8.2.0 Introduction

This subchapter contains Compagnie Africaine d'Aviation (CAA) standards for ground handling. Required detailed information, instructions, procedures, methods, duties and responsibilities are within the Ground Operations Manual.

Should any discrepancy between the manuals be discovered, the Operations Manual takes precedence.
8.2.1 Fuelling Procedures

The Commander or a Qualified Person ensure that fuelling is carried out according to manufacture instruction and Compagnie Africaine d’Aviation (CAA) procedures.

No other vehicle than needed for the fuelling itself shall be permitted to operate or be positioned in the venting areas of the aircraft (normally the vents are located at the wing tips). The fuel truck/dispenser must at all time be ensured a clear escape route.

Loading/unloading may take place when the aircraft is fueled provided the equipment used complies with regulations regarding sparks formation.

Any fuel spillage shall be removed/ dried up in cooperation with the fire brigade before passenger boarding.

No smoking shall be permitted within a radius of at least 20m of the aircraft unless local regulations require a wider safety area.

*Note: Re-/de-fuelling in thunderstorms are prohibited.*

8.2.1.1 Fuelling Operations with APU Running

Fuelling with APU running is permitted at Compagnie Africaine d’Aviation (CAA). in case of fuel spillage, the APU shall be shut down immediately by the Technician or the Commander. It is not permitted to start the APU during fuelling. Specified procedures shall be found in manufacturer manuals of each aircraft.

8.2.1.2 Re/ De Fuelling with Passengers Embarking, On Board or Disembarking

8.2.1.2.1 Precautions

Fuelling or defueling may be carried out Compagnie Africaine d’Aviation (CAA) with passengers boarding, on board or disembarking provided that the following requirements can be satisfied. If these cannot be complied with, fuelling operations must not take place.

Requirements:

- Following qualified personnel shall be positioned:
  - The technician must be on ground close to re/defueling operations area, capable of handling emergency procedures concerning fire protection and fire-fighting, handling communications with the flight deck.
  - Flight Crew Member or Technician shall be on the flight deck and should coordinate the precautions and procedures to be observed and be ready to perform emergency procedures.
  - Cabin Crew Members shall be positioned according to procedures detailed in Cabin Attendant Manual; an attendant who must be stationed at one of the main cabin doors will be responsible for notifying the refueling staff immediately should any fuel vapor be detected in the passenger compartment or if any condition arises which might constitute a potential hazard.
Crew, staff and passengers must be warned that re defueling will take place. Passengers remaining on board must be informed that they must remain in their seats with their seat belts unfastened and that they must not smoke or operate electrical equipment; aisles and exits must remain unobstructed.

When re/de fuelling with passengers on board, ground servicing activities and work inside the aircraft, such as catering and cleaning, must be conducted in such a manner that they do not create a hazard and that the aisles and emergency doors are unobstructed.

The 'Fasten Seat Belt' sign must be off and 'No Smoking' signs must be on, together with sufficient interior lighting to enable the exits to be identified.

The SCCM must perform safety announcement informing passengers to unlock seats belt and enforce no smoking (CAM chapter 3.22)

The minimum required cabin crew must be on board (OM Part B Chapter 1)

The forward left passenger exit shall be open and an external stairway be positioned at the forward left exit, unless the aircraft is not parked at a "nose-in gate".

The others doors may be closed provided the automatic slides are disarmed and safety pin removed one Crew Member is stationed in the front cabin and one crewmember in the aft area of the cabin; the ground area beneath the exits must be kept clear of any obstruction for slide deployment and emergency evacuation.

For safety purpose, fire brigade shall be positioned in compliance with the airport rules.

If the presence of fuel vapors is detected inside the airplane, or any other hazard arises during re-defueling, fuelling must be stopped immediately.

Where it is desired to move passengers to and from the aircraft during fuelling the authorized re fullers must ensure that the passenger movement paths are well clear of aircraft wing tip tank vents and fuelling equipment and that the movement of passengers through the fuelling area is supervised by a responsible person. Passengers must not be allowed to linger near the aircraft;

If passenger/baggage reconciliation is necessary, it must be carried out away from the fuelling area.

8.2.1.3 Fuelling with One Engine Running

If restart of engines is considered impossible without APU or external equipment, fuelling with one engine running is permitted if the following safety measures are observed:

Permission must be granted from the Airport Authorities;

The Commander shall be present in the cockpit ready to initiate and direct an evacuation;

A fire truck shall be parked near the aircraft;

Fuelling must not take place with passengers on board;

Fuelling shall be performed as pressure fuelling, with the lowest fuelling pressure available for normal operation.

Refer to appropriate Operation Manual Part B.
8.2.1.4 Precautions to be taken to avoid fuel contamination

To avoid fuel contamination, Compagnie Africaine d'Aviation (CAA) performs procedures described in Ground Operations Manual (chapter 11.5.2). However flight deck Crew or technical staff can request extra fuel test from the supplier before any refueling.

8.2.1.5 Method to Check Refueling.

The following method will be used to check the refueling figure:

- Check Bowser/ Fuel Truck meter zeroed before refueling.
- Uplift as required.
- Check cockpit gauges: if not correct and under the requested fuel, top up as required.
- From the cockpit gauges, subtract the total fuel from the remaining fuel (to obtain required uplift in Liters, convert these figures using OAT table below).
- Record actual Bowser/Fuel Truck uplift figure in the “Actual box” and calculated uplift in «Calculated» box and compare the two figures and if the difference is more than 3% an investigation may be required and the event noted on the Flight Report and Tech Log.

<table>
<thead>
<tr>
<th>TEMPERATURE</th>
<th>&lt; 6°C</th>
<th>6°C → 18°C</th>
<th>19°C → 30°C</th>
<th>31°C</th>
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<tbody>
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<td>Kg</td>
<td>1.24</td>
<td>1.25</td>
<td>1.27</td>
<td>1.28</td>
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<tr>
<td>Kg</td>
<td>0.270</td>
<td>0.275</td>
<td>0.279</td>
<td>0.282</td>
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<tr>
<td>LBS</td>
<td>1.779</td>
<td>1.763</td>
<td>1.736</td>
<td>1.724</td>
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<tr>
<td>LBS</td>
<td>0.123</td>
<td>0.125</td>
<td>0.126</td>
<td>0.128</td>
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</table>

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US GALLONS/ LITRES  US GALLONS * 3.78 = LITRES

IMP GALLONS/ LITRES IMP GALLONS * 4.54 = LITRES

DO NOT INTERPOLATE
8.2.1.6 Airplane Technical Assistance

**Technical assistance by personnel of the Compagnie Africaine d’Aviation (CAA)**

The technical content and modality of the interventions to be performed on the a/c are established in MCM approved by CAA DRC.

To coordinate all the technical issues which are beyond the normal operations, is expected at the main base the presence of a service engineer, reachable through the flight dispatch or frequency of the Compagnie Africaine d’Aviation (CAA).

**Technical assistance and supplies spare parts by other Companies**

Technical assistance at airports without technical Compagnie Africaine d’Aviation (CAA) personnel can be provided by other companies, qualified and accepted by Compagnie Africaine d’Aviation (CAA), reported in a document (Outside Sources List) defined by the MCM.

**Release to service the a/c in the absence of the technical staff.**

In case of absence of technical staff for reasons not programmable and/ or unexpected situation, the execution, by the Flight Crew, of the complete "Procedures Guides " pertinent to the" Exterior inspection "and" Cockpit preparation "must be accomplished.

More over to release into service of the aircraft provided that:

- Authorized by the Maintenance Engineer on Duty, and
- The "daily" inspection does not expire before the expected time of next landing;
- The transit inspection (If any) has been performed in previous flight, and may be enforced in the next suitable transit;
- No “MEL Maintenance Procedures” is required for the dispatch of flight;
- The Commander ensure the proper procedures is performed by the fuel supplier.
- The Commander will sign, on 'ATL, only the box for the acceptance, reporting
- In addition to the above, in the case of any transcription on the ATL, the flight may be released into service only after on ATL carry the same specification permission of the Engineer on duty for each item.

**Technical assistance at not regular airports**

Where, on stop at non-regular airport, and maintenance is needed or special or extraordinary inspections, the Commander must ensure, through contact Engineer on duty that the available technical staff on the ground is authorized to provide the necessary assistance.
Parking of the aircraft
The immobilization of the aircraft on the ground must be ensured by the use of the parking brake or the chocks to the wheels.

Anchoring of the aircraft on the ground
In anticipation of meteorological conditions of exceptional violence, strong winds, hurricanes, etc., every precaution possible must be taken, consistent with the equipment available at the airport according to the ground procedures laid down in the Maintenance Control Manual.

Protections Pitot tubes and engine intakes
a) Pitot tubes and Engine intakes, for stop of the aircraft over than 6 hours and overnight, should be used the proper protection of Pitot tubes by ground staff.

b) The forwardly open intake end of a jet engine, powering an aircraft, is screened against birds and other airborne objects by a conical cage formed from an array of metal rods converging on the engine axis, the rods being held together at the vertex of the cone by a solid tip and in an intermediate plane as well as at the cone base by a pair of metal rings. In flight, they are free to vibrate so as to shake off adhering ice particles. Before starting the removal of protections must be made by the ground staff and verified by the crew.

The flying kit
If provided on board, the flying kit must be contained in secured cases marked in the red label: "LOT DE BORD / NE PAS DEBARQUER - FLYING KIT / DO NOT OFF LOAD".
The list of materials composing the flying kits is reported in a plastic housing which is located in the cockpit and those are:

- 1 Main Tire ;
- 1 Nose Tire ;
- 2 Special tools for Removal & Installation of Main and Nose tires (1 for main tire and 1 for nose tire) ;
- 3 Engine oil cans ;
- 3 Hydraulic oil cans ;
- 1 Torque meter ;
- Individual tool-box ;
- 2 hydraulic jacks (1 for nose gear and 1 for Main gear) ;
- some times 1 wheel shock .
Outstation Spares Parts

The availability of spare parts at the out station airport is listed in the "Maintenance Control Manual" (Outstation Spares Parts) published by the Technical Department and distributed to all stations.
8.2.2 Airplane, Passengers and Cargo Handling Procedures Related to Safety

8.2.2.0 Descriptions

8.2.2.0.1 Seat Allocation

As Compagnie Africaine d'Aviation (CAA) policy, passenger embarkation is free seating. Therefore, the SCCM shall verify the passenger seating in compliance with the load sheet indication.

The mass and balance sheet is prepared assuming a particular passenger seating distribution. If a seat allocation system is used in connection with the preparation of the mass and balance sheet, any possible errors in the CG position will be covered / compensated by the operational CG envelope, provided the passengers are seated as allocated.

“Free seating” however might require a repositioning of passengers in the cabin. The PIC shall instruct the cabin crew to reseat so as to create the actual seating distribution in compliance with the assumed distribution on the mass and balance sheet.

<table>
<thead>
<tr>
<th>PAX NOT to be Seated at Emergency Exits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persons who are physically or mentally handicapped to the extent that they would have difficulty in moving quickly if asked to do so. (PRM)</td>
</tr>
<tr>
<td>Persons whose sight or hearing is impaired to the extent that they might not readily become aware of instructions given to begin evacuating the airplane.</td>
</tr>
<tr>
<td>Children and infants, whether or not they are accompanied by an adult.</td>
</tr>
<tr>
<td>Persons in custody and those who are being deported.</td>
</tr>
<tr>
<td>Persons whose physical size would prevent them from being able to move quickly.</td>
</tr>
</tbody>
</table>

8.2.2.0.2 Passenger Embarkation/ Disembarkation Procedures

8.2.2.0.2.1 Passengers Boarding Procedures

The normal rules of Compagnie Africaine d'Aviation (CAA) is the complete composition of the Crew (Flight deck and Cabin) prior boarding. However, if flight deck crew is not present, the boarding can start provided that:

- The Cabin Crew must be on board and positioned according to the procedures, refer to CAM Chap 3.10.5 and 3.19.2.
- All safety and security checks are to be done.
- The GPU must supply the aircraft and the PA must be operational.
- If the aircraft is supplied by the APU, a technician must remain in the cockpit during boarding.
A. Acceptance of passengers in cabin/ Cockpit Jump – Seats

1° The Jump Seat Occupation is submitted to the commander authorization
2° Only Compagnie Africaine d'Aviation (CAA) and Civil Aviation Authority personnel can be carried on Jump - Seats.

8.2.2.0.2.2 Disembarkation/ Staying on Board of Passengers During Transit

During transit, if passengers remain on board, the Cabin Crew shall perform a security check after disembarkation of the non transit passengers.
8.2.2.1 Infants/ Children, Sick Passengers and Persons with Reduced Mobility

8.2.2.1.1 Infants/ Children

a) Introduction:

The maximum number of infant occupants (less than 2 years of age, from 2 to 12 years unreached):

- Is limited by the number of oxygen masks, life-vests and restraint devices.
- Infants may use adult life-vests if infant life-vests are unavailable.
- A child restraint device means e.g. a car-type baby seat, supplementary loop belt or other approved harness.
- Each aircraft carries supplementary loop belts.
- An adult shall not bring more than two infants on board.

b) Seating of infants:

- An infant shall sit on the lap of an adult (secured with a loop belt)
- Infants shall not be seated on jump seats or in the cockpit.

c) Securing each passenger (including infants) shall be during takeoff, landing, taxiing or whenever the Fasten Seat Belt sign is ON:

- Only one infant is allowed seated on any adult’s lap. A loop belt shall be strapped around the infant and secured to the adult’s safety belt.
- The car-type b shall be secured to the passenger seat's safety belt, and the window seat shall be used for this type of transport.
- The infant shall be properly secured whenever the Fasten Seat Belt sign is lit.

d) Transportation of Unaccompanied Minors (UM's):

- If unaccompanied minors are carried, the cabin crew must be familiar with the procedures involved. An unaccompanied minor (UM) is a child between age of 5 and 12, not being escorted by an adult during the trip;

- All UM’s shall have a plastic folder “Unaccompanied Minor”, where all Travel documents are being kept, such as ticket, boarding card, “Handling Advice”. The plastic folder must at all times be kept where it can be easily seen.
- Normally on our flights up to 24 UM’s per sector can be accepted. However, the Commander may dispense from this rule;
- In case of special weather conditions, with minimal possibilities of landing, one must be very restrictive in accepting unaccompanied minors.
- Unaccompanied Minors, who have an illness that needs medication or special assistance during the flight, are not accepted onboard.
Avis d’assistance pour un enfant non accompagné
Handling advice for an unaccompanied minor

Pour le nombre de copies, veuillez contacter CAA-Congo/children ou notre centrale de réservation CAA-CONGO.
For number of copies, please contact CAA-Congo/children or our CAA-CONGO Service Center.

<table>
<thead>
<tr>
<th>Vol aller/outbound flight</th>
<th>Vol retour/return flight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prenom et Nom de famille de l'enfant non accompagné/Family name and first name of the unaccompanied minor</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>Sex</td>
</tr>
<tr>
<td>---------------------------------</td>
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</tr>
<tr>
<td>Vol/Flight</td>
<td>Date</td>
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<td>Vol/Flight</td>
<td>Date</td>
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**Responsable au Départ/Escort on Departure**

<table>
<thead>
<tr>
<th>Nom/Name</th>
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<tr>
<td>----------</td>
</tr>
<tr>
<td>Adresse/Address</td>
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<tr>
<td>Numéro de Téléphone/Phone number</td>
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</tbody>
</table>

**Responsable à l'arrivée/Escort on Arrival**

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<tr>
<th>Nom/Name</th>
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<tr>
<td>----------</td>
</tr>
<tr>
<td>Adresse/Address</td>
</tr>
<tr>
<td>Numéro de Téléphone/Phone number</td>
</tr>
</tbody>
</table>

Signature

**Confirmation**

I confirm that I have arranged for the aforementioned minor to be escorted to the airport for departure and to be met at the stopover point and on arrival by the persons named. These persons will remain at the airport until the flight has departed and/or be available at the airport at the scheduled arrival time of the flight. Should the minor not be met as stated, I authorize the carrier(s) to take whatever action they consider necessary to ensure the minor’s safe custody including return of the minor to the airport of original departure. I agree to indemnify and reimburse the carrier(s) for the costs and expenses incurred by them in taking such action. I certify that the minor is in possession of all travel documents (passport, identity card, visa, health certificate, etc.) required for the journey.

**Engagement**

Je confirme avoir pris toutes les dispositions nécessaires pour que les personnes mentionnées accompagnent l'enfant à l'aéroport de départ et l'accueillent lors d'une intempestive arrivée du voyage ainsi qu'à son arrivée à destination. Ces personnes doivent se trouver à l'aéroport respectif jusqu'au décollage de l'avion ou lors de l'arrivée prévue à l'hôtel. Au cas où l'enfant ne serait pas attendu à l'aéroport comme convenu, l'autoriser par la présente la (les) compagnie(s) à prendre toutes les mesures qu'il(e) juge(nt) nécessaires pour assurer la garde de l'enfant, et même son retour éventuel à l'aéroport d'origine. J'accepte de prendre à ma charge les frais résultant de ces mesures ou de les rembourser à la (aux) compagnie(s) adjointe(s). Je confirme que l'enfant est en possession de tous les documents nécessaires au voyage (passport ou carte d'identité, visa, certificat de vaccination, etc.).

**Nom des Parents ou du Responsable/Parent or guardian**

<table>
<thead>
<tr>
<th>Nom/Name</th>
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</thead>
<tbody>
<tr>
<td>----------</td>
</tr>
<tr>
<td>Adresse/Address</td>
</tr>
<tr>
<td>Numéro de Téléphone/Phone number</td>
</tr>
</tbody>
</table>

Signature

CAA.CONGO/children
Edition 2013
1. Children under the Age of 5:

Children under the age of 5 cannot be accepted for transportation without an escort. In case no adult/parent is able to escort the child, an escort shall be appointed by the Compagnie Africaine d'Aviation (CAA) (preferably extra Cabin Crew). "Handling Advice" shall be issued;

2. Handling Advice:

The form “Handling Advice” is necessary for all transportation of children under the age of 5 traveling alone or escorted by a Compagnie Africaine d'Aviation (CAA) employee.

At least one copy of the Advice is to be placed in the “I AM TRAVELING ALONE”-folder and the cabin crew on the actual flight must be informed in order to keep an eye on the child during the trip. During transit-stops it is the responsibility of the cabin crew to take care and look after the child. During transfer-stops the traffic personnel attend to this task. On arrival the cabin crew delivers the child to the ground handling staff (Red cap).

8.2.2.1.2 Sick Passengers

The sick passenger shall hold a Medical Certificate or medical travel document. All information related to these matters is strictly confidential and must, under no circumstances, be handed over to persons outside the Compagnie Africaine d'Aviation (CAA) or Handling Agent. The Compagnie Africaine d'Aviation (CAA) should do the utmost to make the trip as comfortable and safe as possible for the sick passenger. Therefore it is necessary to make a detailed plan of the transport, and to inform all personnel involved. It is also important to know if the sick passenger is traveling alone or with a nurse/family escort.

The “Medical Certificate” should include the patient’s diagnosis in order to inform medical personnel or the nearest hospital in case the condition of the patient has become worse.

The following medical cases shall not be accepted for transportation on our flights:

- Persons whose medical status or treatment may seem hazardous or shocking towards other passengers;
- Persons in need of individual treatment or care during the trip and who are not escorted by a suitable companion. An authorized doctor shall issue “Medical Certificate”. Distribution of copies is stated on the form.

8.2.2.1.3 Persons with Reduced Mobility (PRM)

A Person with Reduced Mobility (PRM) is understood to mean a person whose mobility is reduced due to physical incapacity (sensory or locomotory), an intellectual deficiency, age, illness or any other cause of disability when using transport and when the situation needs special attention and the adaptation to a person's need of the service made available to all passengers.

PRM from the age of two years may bring/use special equipment onboard the aircraft. PRMs shall not be allocated, nor occupy, seats where their presence could:

- Impede the crew in his duties;
- Obstruct access to emergency equipment; or
➢ Impede the emergency evacuation of the aircraft.

The number of PRMs shall not exceed the number of able-bodied persons capable of assisting with an emergency evacuation.

PRM should be seated in a seat row close to an emergency exit in such a way that access to the emergency exits does not get blocked.

The Commander must be notified when PRMs are to be carried;

➢ The number and seating of PRMs (and the number of any escorts).
➢ An escort is defined as a person who is trained in assisting PRMs.

**Note: The captain has the final decision for accepting PRM**

### 8.2.2.1.4 Pregnant Passenger

A pregnant passenger is to be treated as an ordinary passenger until 4 weeks before expected birth, flight time is restricted to 8 hours. Between 28 and 32 weeks of pregnancy, a “medical certificate” stating “fit for flight” is required, and flight-time is restricted to 4 hours. Above 32 weeks the pregnant passenger is accepted only as MEDA.
8.2.2.1.5 Medical Aid for a Patient

First aid kits and medical kits available on each company aircraft. Refer to Cabin Attendant Manual: Special Loads. The list of medicines available in the first aid and medical kits shall be placarded on the kits with related expiry dates.

<table>
<thead>
<tr>
<th>Code</th>
<th>Passenger Condition</th>
</tr>
</thead>
</table>
| MEDA    | Impaired mobility, due to clinical cases with medical pathology in progress, authorization to travel by medical authorities.  
*Medical Certificate Required* |
| STCR    | Transportation on a stretcher.  
*Medical Certificate Required* |
| WCHR    | Can walk up and down stairs and move in the cabin, but requires a wheelchair or other means for movements between the airplane and the terminal.  
*Medical Certificate Required* |
| WCHS    | Cannot walk up or down stairs, but can move about in the cabin and requires a wheelchair to move between the airplane and the terminal.  
*Medical Certificate Required* |
| WCHP    | With a disability of the lower limbs who has sufficient personal autonomy to take care of himself, but who requires assistance to embark or disembark and who can move about in an airplane cabin only with the help of an on-board wheelchair.  
*Medical Certificate Required* |
| WCHC    | Is completely immobile, can move only with the help of a wheelchair or any other means and requires assistance at all times  
*Medical Certificate Required* |
| BLIND   | Blind passenger.                                                                   |
| DEAF    | Deaf or deaf without speech.                                                        |
| MAAS    | Meet and assist required.                                                           |
| PREG    | If over 32 weeks,  
*Medical Certificate Required* |
| OXYG    | Passenger needing extra oxygen for medical use.                                      
*Medical Certificate Required* |

*Note: The commander must be informed by the ground staff if there is a MEDA on board.*
8.2.2.1.5.1 First-Aid Kits and Universal Precaution Kits

(a) The required first-aid kits shall include at least the following:

1. Antiseptic swabs (10/pack)
2. Bandage: adhesive strips
3. Bandage: gauze 7.5 cm × 4.5 m
4. Bandage: triangular; safety pins
5. Dressing: burn 10 cm × 10 cm
6. Dressing: compress, sterile 7.5 cm × 12 cm
7. Dressing: gauze, sterile 10.4 cm × 10.4 cm
8. Tape: adhesive 2.5 cm (roll)
9. Sanitary towel
10. Pad with shield, or tape, for eye
11. Scissors: 10 cm
12. Tape: Adhesive, surgical 1.2 cm × 4.6 m
13. Tweezers: splinter
14. Disposable gloves (multiple pairs)
15. Thermometers (non-mercury)
16. Mouth-to-mouth resuscitation mask with one-way valve
18. Air Safety report form
19. Mild to moderate analgesic
20. Antiemetic
21. Nasal decongestant
22. Antacid
23. Antihistamine

(b) The required universal precaution kits shall include at least the following:

1. Dry powder that can convert small liquid spill into a sterile granulated gel
2. Germicidal disinfectant for surface cleaning
3. Skin wipes
4. Face/eye mask (separate or combined)
5. Gloves (disposable)
6. Protective apron
7. Large absorbent towel
8. Pick-up scoop with scraper
9. Bio-hazard disposal waste bag
10. Instructions.

8.2.2.1.5.2 Emergency Medical Kit

(a) The required medical kit shall include the following equipment:

1. Stethoscope
2. Sphygmomanometer (electronic preferred)
3. Airways, oropharyngeal (three sizes)
4. Syringes (appropriate range of sizes)
5. Needles (appropriate range of sizes)
6. Intravenous catheters (appropriate range of sizes)
7. Antiseptic wipes
(8) Gloves (disposable)
(9) Needle disposal box
(10) Urinary catheter
(11) System for delivering intravenous fluids
(12) Venous tourniquet
(13) Sponge gauze
(14) Tape – adhesive
(15) Surgical mask
(16) Emergency tracheal catheter (or large gauge intravenous cannula)
(17) Umbilical cord clamp
(18) Thermometers (non-mercury)
(19) Basic life support cards
(20) Bag-valve mask
(21) Flashlight and batteries

Note: If a cardiac monitor is available (with or without an AED) add to the above list.

(b) The required medical kit shall include the following medication:

(1) Epinephrine 1:1 000
(2) Antihistamine – injectable
(3) Dextrose 50% (or equivalent) – injectable: 50 ml
(4) Nitroglycerin tablets, or spray
(5) Major analgesic
(6) Sedative anticonvulsant – injectable
(7) Antiemetic – injectable
(8) Bronchial dilator – inhaler
(9) Atropine – injectable
(10) Adrenocortical steroid – injectable
(11) Diuretic – injectable
(12) Medication for postpartum bleeding
(13) Sodium chloride 0.9% (minimum 250 ml)
(14) Acetyl salicylic acid (aspirin) for oral use
(15) Oral beta blocker

Note 1: Epinephrine 1:10 000 (can be a dilution of epinephrine 1:1 000)
8.2.2.1.6 Transportation of Inadmissible Passengers, Deportees and/or Persons in lawful custody

Inadmissible Passengers (INAD) are passengers, who are refused admission to a country by authorities of such country, e.g., due to lack of a visa, expired passport, lack of funds or suspected intent to illegally take up employment.

Deportees are foreign persons, who had legally been admitted to a country or who had entered a country illegally, and who at some later time are formally ordered by the authorities to be removed from that country. Apart from illegal entry, reasons for removal comprise expiry of residence permit, offences or criminal acts committed in the deporting country, extradition at the request of another country.

<table>
<thead>
<tr>
<th>Deportees</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEPU</td>
</tr>
<tr>
<td>DEPA</td>
</tr>
</tbody>
</table>

Category of deportees and maximum number per flight:

- Unaccompanied deportees (DEPU): maximum 2;
- Accompanied deportees (DEPA): maximum 4, escorted by at least 2 guard. But not exceeding a total of 4 (DEPA + DEPU)

No confusion must be done between Accompanied Deportees (DEPA) and Persons in Custody / Detainees.

Exceptions to the above numbers must be authorized by the DFO.

Children under 16 years of age travelling together with an adult, family or group need not to be considered for the number of deportees.

Persons in lawful custody are persons under arrest or convicted criminals under escort (including persons being transferred under the Convention on the Transfer of Sentenced Persons, Strasbourg, 1983).

The traffic supervisor or the Commander have the right to refuse transportation of inadmissible passengers, deportees or persons in custody if their carriage poses any risk to the safety of the aircraft or its occupants - or will cause unpleasant situations for the other passengers.

The following special categories of passengers shall only be carried under escort by escorting government official(s) or guard(s).

Any passenger who:

- Will physically resist carriage;
- Have already been denied transportation by another company;
- Might endanger the safety of the aircraft, its load, passengers or crew;
- Is deported after execution/suspension of a sentence for a crime of violence; or
- Assailants.
Note: If the assailant is not accepted into the country of arrival, and the Authorities demand that the assailant is escorted back to the country of departure, it is the Compagnie Africaine d'Aviation (CAA)’s policy that the assailant shall be escorted by government officials(s) or guard(s) on the return trip as well. In this case, if the flight is fully booked, the assailant and escort(s) take priority before ordinary passengers. The Handling Agent will issue tickets etc. The person and the escort shall, if possible, board the aircraft before the other passengers. This should be done as discretely as possible.

The Commander must be notified when the above-mentioned persons are to be carried, and inform the rest of his Crew before departure.

Dangerous prisoners
At least two escorts should be required for each prisoner considered dangerous by the escorting agency or in the judgment of a responsible representative of Compagnie Africaine d'Aviation (CAA). No more than one such prisoner and escorts should be carried on any one Compagnie Africaine d'Aviation (CAA) flight.

8.2.2.2 Permissible Size and Weight of Hand Baggage.

Each passenger may only carry one hand baggage in the passenger cabin provided it can be adequately and securely stowed and it is labeled with the passenger's name. In addition passengers may carry personal belongings such as an overcoat or pillow, an umbrella or walking stick, a small handbag or purse, reading material, a small camera or binoculars, a portable cradle and infant food to be used during flight, a pair of crutches or other similar devices, duty free articles. Dangerous goods and alarm devices are not allowed except those listed, under special conditions, in Chapter 9.

When boarding is in progress and ground staff at the aircraft, crewmembers shall visually scan the hand baggage held by passengers. Only such hand baggage shall be carried into the aircraft and taken into the passenger cabin that can be securely stowed. Maximum weight on schedule flights is 10 kg.

Dimensions should not exceed 55x25x35 cm

Note: Only One identified hand baggage (Comfort class: two hand baggages) shall be admitted in the cabin.
Whenever the passenger number or the size of the hand baggage exceeds the prescription above, they will be collected from the passengers before boarding and placed into the cargo.

8.2.2.3 Cargo and Baggage in the Passenger Cabin

All baggage and cargo in the passenger cabin which might cause injury or damage or obstruct aisles and exits can only by placed in the appropriate stowage compartments, observing the published weight limits. The stowage under the seat shall not be used unless the seat is equipped with a restraint bar and the baggage is of such size that it may be adequately restrained.
Where, in exceptional cases, the baggage cannot be loaded in the cargo compartments (e.g. musical instruments), it can be carried on a passenger seat, provided the following requirements are observed:
- Seats adjacent to windows and not in proximity of emergency exits shall be used;
- Seats located behind cabin dividers/partitions (if installed) should be preferred;
- The baggage is adequately secured (by seat belts, extension seat belts, etc.) to prevent movement forward, sideways and upwards;
- Maximum weight of each baggage: 50 Kgs
- The Commander shall be informed.

8.2.2.4 Cargo and Baggage in the Cargo Compartment

All equipment being used to lash and secure the load, such as crash nets, stud fittings and ropes, must be approved and meet the gravity force limitations.

All individual items of load which by their nature, shape or density may constitute a hazard shall be restrained.

Whenever the available volume of the compartment/net section is not completely used, additional securing is necessary for:
- Small pieces with high individual weight.
- Load which is sensitive against jolts or tilting.
- Pipes, bars, blanks, machinery etc.

Pieces weighting 150 kg or more, as well as wet freight shall always be tied down in accordance with RACD 8.8.1.28, AFM and Weight Balance Manual.

The floor contact load limitations shall be used to prevent the weight imposed by those parts of the load in direct contact with the floor from exceeding the capability of the horizontal floor panels.

Load in the individual net sections is secured by compartment separation nets; after completion of loading the nets shall be fastened to the corresponding attachment fittings and tightened.

On the main deck, the crash net, where applicable, shall be properly installed. Securing of ULD against acting forces is effected either by a restraint system on the compartment floor, or by means of the reinforced overall compartment shell.

Compartments, net sections and ULD which are filled up to three-quarters of their height are considered to be volumetrically full.

Particular attention shall be given to dangerous goods. All packages containing such goods must be stowed in an upright position, if so indicated, have the hazard label visible and shall be restrained to prevent their shifting or any damage by other load.

Only Qualified Ground Personnel shall normally perform all loading and securing with nets and straps. Tie-down straps, steel cables, other lashing equipment and lashing rings shall conform to the standards laid down in the Ground Operations Manual and Cargo Operations Manual and be acceptable to the DRC CAA.

8.2.2.5 Loading and Securing of Items in the Aircraft

Checks must be made before take-off, before landing, and whenever the fasten seat belt signs are illuminated or it is otherwise so ordered to ensure that baggage is stowed where it cannot impede evacuation from the aircraft or cause injury by falling (or other movement) as may be appropriate to the phase of flight.
Each item carried in a cabin must be stowed only in a location that is capable of restraining it.

Weight limitation placards in the stowage must not be exceeded.

Items must not be stowed in toilets or against bulkheads, unless the bulkhead is certified to withstand specific load factors and carry a placard specifying the greatest weight allowed there.

Baggage and cargo placed in lockers must not be of such size that they prevent latched doors from being closed securely.

Baggage must not be placed where it can impede access to emergency equipment or exits.

**Note:** Before taxi, take-off and landing, each serving cart shall be secured in its stowed position. Cargo and baggage carried in an aircraft must be secured in such a way that it cannot cause injury or damage, obstruct aisles and exits or a change in the aircraft’s center of gravity if displaced.

### 8.2.2.5.1 Special Loads and Classification of Cargo Compartments

#### 8.2.2.5.1.1 Special Loads

Articles and substances which would otherwise be classified as dangerous goods are excluded from the provisions of Operations Manual Part A, chapter 9 to the extent specified in the Technical Instructions, provided:

- They are required to be aboard the aircraft in accordance with the relevant regulations for operating reasons (See Note 1),
- They are carried as catering or cabin service supplies,
- They are carried for use in flight for medical aid for a patient, provided that (See Note 2):
  - Gas cylinders, manufactured specifically for the purpose of containing and transporting the particular gas,
  - Drugs, medicines and other medical matter, under the control of trained personnel while onboard the aircraft (Medical kits);
  - Equipment containing wet cell batteries is kept and, when necessary secured, in an upright position to prevent spillage of electrolyte; and
  - Proper provision is made to stow and secure all the equipment during take-off and landing and at all other times when deemed necessary by the Commander in the interest of safety; or
- Passengers or crewmembers carry them (See Operations Manual Part A, chapter 9).

**Note 1:** “Operating reasons” includes “The health of passengers”. Such dangerous goods include but are not limited to Batteries, Life Saving Appliances and Portable Oxygen Supplies.

**Note 2:** Gas cylinders, drugs, medicines, other medical material (such as sterilizing wipes) and wet cell or lithium batteries are the dangerous goods which are normally provided for use in flight as medical aid for a patient. However, what is carried may depend on the needs of the patient. These dangerous goods are not those, which are a part of the normal equipment of the aircraft. The dangerous goods referred to in the paragraph above may also be carried on a
flight made by the same aircraft to collect a patient or after that patient has been delivered, when it is impracticable to load or unload the goods at the time of the flight on which the patient is carried.

Maximum size of gas cylinders/bottles is 2.6 liter. (Standard size bottles are 1.1 liter and 2.6 liter). 3 bottles of 1.1 liter or 2 bottles of 2.6 liter may be accepted in the cabin or as checked baggage in the hold. Refrigerated liquid oxygen is strictly forbidden.


8.2.2.5.1.1 Live Animals

Pets are domestic animals such as:

- Dogs;
- Cats;
- Singing birds;
- Rabbits;
- Hamsters;
- Guinea pigs.

Pets only are considered as domestic animals travelling with a passenger: animals different from pets will be handled as Cargo. Two or more animals are allowed in the same container if they are familiar with each other and not exceeding the maximum weight and container’s dimensions. Carriage of pets in the cabin (PETC) is limited by considerations of passenger safety and comfort and by the size of the cabin. Carriage of live animals in cargo compartments (AVIH) either pets or not requires pressurization and may require ventilation, heating and lighting. Information about pets carried in cargo compartment can be found in the present manual: for details, refer to each airplane’s AOM or FCOM.

Pet must be carried in a suitable leak proof container or bag with total dimensions of 115 cm (sum of length, height and width) and must stay in the container/bag, on the floor, for the duration of the flight. The passenger, under whose care the pet travels, must be in possession of all documents required by the authorities at destination. The Commander and handling staff shall ensure that no animal is carried in the cabin which might impede an emergency evacuation. They therefore must not be assigned to the emergency exit seat rows.

Before boarding the animal shall be already into the container. For guide dogs limitations, refer to BLND paragraph.
Cargo Compartment (AVIH)

Pets not carried in cabin and other animals (both defined as AVIH) can be carried in the cargo compartment. The maximum number of pets not carried in cabin is reported in the GOM (Ground Operations Manual) present on board the A/C, as long as at least ventilation is available and working and: Cargo heating is working (if applicable); or, if the Cargo Heating is not working, Outside Air Temperature on ground is > 5°C. For airplane without ventilation system, a case by case evaluation will be done among Commander, Ramp Agent and owner of the pet. Anyway the transport of pets in cargo compartment without ventilation is not recommended. Lighting system should be turned on during the all flight. Special care will be exercised in order to:

- Load the AVIH not too much in advance of the expected time off blocks;
- Close the cargo compartment few moments prior starting the engines;
- Unload the AVIH without any delay.

For animals (not pets), refer to Ground Operations Manual.

Guide Dogs

Guide dogs (for blind passengers) may be accepted in the cabin regardless of scheduled flight time, provided the flight is not reserved for asthmatics (if so, these dogs shall be carried in the cargo compartment. This also applies for young guide dogs during preparation period and when in training; only cats and small dogs may be transported as cabin baggage. These animals are accepted in standard boxes, which are provided by the passengers.

**Note:** To ensure that the guide dog cannot impede evacuation from the aircraft, it should be leashed to a hard-point (seat) whenever the fasten seat belt sign is lit, or as may be appropriate.

8.2.2.5.1.1.2 Human Remains

Non-cremated human remains shall be contained in a hermetically sealed inner coffin of lead or zinc inside a wooden coffin. The wooden coffin may be protected by outer packing and should be covered by canvas or tarpaulins in such a way that the nature of its contents is not apparent. Such human remains shall not be loaded in close proximity to food for human or animal consumption or edible materials.

The PIC, by Special Loads Notification (NOTOC), and the down line stations shall be informed. Prior transportation of human remains the authority approval shall be obtained.
8.2.2.5.1.2 Classification of Cargo Compartments

For any compartment class, a hold of Compagnie Africaine d’Aviation airplanes meets the following criteria:

**Class A**
A Class A cargo or baggage compartment is one in which:

1. The presence of a fire would be easily discovered by a crewmember while at his station; and
2. Each part of the compartment is easily accessible in flight.

**Class B**
A Class B cargo or baggage compartment is one in which:

1. There is sufficient access in flight to enable a crewmember to effectively reach any part of the compartment with the contents of a hand fire extinguisher;
2. When the access provisions are being used, no hazardous quantity of smoke, flames, or extinguishing agent, will enter any compartment occupied by the crew or passengers;
3. There is a separate approved smoke detector or fire detector system to give warning at the pilot or flight engineer station.

**Class C.**
A Class C cargo or baggage compartment is one not meeting the requirements for either a Class A or B compartment but in which:

1. There is a separate approved smoke detector or fire detector system to give warning at the pilot or flight engineer station;
2. There is an approved built-in fire extinguishing or suppression system controllable from the cockpit.
3. There are means to exclude hazardous quantities of smoke, flames, or extinguishing agent, from any compartment occupied by the crew or passengers;
4. There are means to control ventilation and drafts within the compartment so that the extinguishing agent used can control any fire that may start within the compartment.

**Class D**
A class D cargo or baggage compartment is one in which:

1. A fire occurring in it will be completely confined without endangering the safety of the Airplane or the occupants;
2. There are means of excluding hazardous quantities of smoke, flames, or other noxious gases from any compartment occupied by the crew or passengers;
3. Ventilation and draughts are controlled within each compartment so that any fire likely to occur in the compartment will not progress beyond safe limits; and
4. Consideration is given to the effect of heat within the compartment on adjacent critical parts of the Airplane.

For compartment of 14.2m³ or less, airflow of 42.5m³ per hour is acceptable.
Class E.

A Class E cargo compartment is one on airplanes used only for the carriage of cargo and in which:

1. There is a separate approved smoke or fire detector system to give warning at the pilot or flight engineer station;
2. There are means to shut off the ventilating airflow to, or within, the compartment, and the controls for these means are accessible to the flight crew in the crew compartment;
3. There are means to exclude hazardous quantities of smoke, flames, or noxious gases, from the flight crew compartment; and
4. The required crew emergency exits are accessible under any cargo loading condition.

8.2.2.6 Positioning of Ground Equipment

Once Compagnie Africaine d'Aviation (CAA) aircraft has been parked, ground support vehicles shall be stationed clear of its extremities and possible parallel to the fuselage centerline so that in the event of brake failure they will not collide with the aircraft. Ground equipment shall also be positioned so that inadvertent movement will not endanger the aircraft structure.

In all cases, free access to the aircraft main exit must be preserved. For details refer to GOM 10.8.

8.2.2.7 Operation of Aircraft Doors

Senior Cabin Crew is responsible for opening and closing the cabin door with authorization of the Commander. Upon arrival, doors shall be disarmed and not be opened until all engines were stopped, parking brakes set and anti-collision light turned off. Departure procedure is the reverse.

8.2.2.8 Safety on the Ramp, including Fire Prevention, Blast and Suction Areas

Compagnie Africaine d'Aviation (CAA) has trained his Ground staff on all aspects of ramp safety with particular reference to fire prevention, blast and suction areas, and the need to be constantly alert to remove loose objects and/or debris. Compagnie Africaine d'Aviation (CAA) ramp personnel shall wear high visibility vest at all times, and ear protection when working within a noisy area. Crew members shall wear high visibility vests when perform a walk around.

8.2.2.9 Start-Up, Ramp Departure and Arrival Procedures

Whenever an aircraft of Compagnie Africaine d'Aviation (CAA) is to be positioned on the ramp and marginal wingtip clearance is experienced, the assistance of marshallers or wingtip guides shall be obtained. This applies both during towing or moving by the aircraft’s own power.

When departing from the ramp, local procedures for start-up and taxi clearance are to be followed. Engine start is not to be initiated until all passengers or freight have been loaded, the aircraft doors and hatches have been closed, and all ground equipment not needed for engine start/push back, has been removed.
8.2.2.9.1 Pushback Phraseology

<table>
<thead>
<tr>
<th>PUSHBACK</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>COCKPIT</td>
<td>GROUND</td>
</tr>
<tr>
<td>Ground from cockpit, cleared for push</td>
<td>Cockpit from ground release brakes</td>
</tr>
<tr>
<td>Do you confirm all doors closed, aircraft is cleared and towbar is connected?</td>
<td>I confirm all doors closed, aircraft is cleared and towbar is connected.</td>
</tr>
<tr>
<td>Brake released, ready to push</td>
<td>Pushing back</td>
</tr>
<tr>
<td>Clear to start?</td>
<td>Clear to start or stand by</td>
</tr>
<tr>
<td>Starting engine 2/1</td>
<td>Push back is completed, set brakes</td>
</tr>
<tr>
<td>Parking brakes set, clear to disconnect, signal on left/ right</td>
<td>Disconnecting, signal on left/ right, good bye</td>
</tr>
</tbody>
</table>

8.2.2.9.2 Phraseology when Starting Engines using a Ground Air Source

<table>
<thead>
<tr>
<th>STARTING</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>COCKPIT</td>
<td>GROUND</td>
</tr>
<tr>
<td>&quot;Ground from cockpit, are you ready to start?&quot;</td>
<td>&quot;Yes/No/Standby&quot;</td>
</tr>
<tr>
<td>&quot;You May Connect External Air&quot;</td>
<td>&quot;Connecting&quot;</td>
</tr>
<tr>
<td>Check Bleed Air Pressure Minimum 30 PSI</td>
<td></td>
</tr>
<tr>
<td>&quot;Clear to start engine number 1?&quot;</td>
<td>&quot;Number one clear&quot;</td>
</tr>
<tr>
<td>After Engine Has Stabilized: Generator #1 “ON” Ground power “OFF”</td>
<td></td>
</tr>
<tr>
<td>&quot;Normal Start, Disconnect External Air and Ground Power&quot;</td>
<td>&quot;Disconnecting&quot;</td>
</tr>
<tr>
<td>Continue normal pushback and start engine number 2 after pushback is completed, using cross bleed start</td>
<td></td>
</tr>
</tbody>
</table>
8.2.2.9.3 Marshalling Signals (Hand signals)

a) Ground to Cockpit.

These signals are designed for use by the signalman, standing facing the aircraft, in a position forward of the left wing tip and within view of the pilot.

Proceed Under Further Guidance by a Signalman! Signalman directs pilot if traffic conditions on aerodrome require this action.

This Bay!
Arms above head in vertical position with palms facing inward.

Proceed to Next Signalman! Right or left arm down, other arm moved across the body and extended to indicate direction of next signalman.

Move Ahead!
Arms a little aside, palms facing backward and repeatedly moved upward backward from shoulder height.

Turn to Your Left!
Right arm downward, left arm repeatedly moved upward backward.
Speed of arm movement indicating rate of turn;
Turn to Your Right!
Left arm downward, right arm repeatedly moved upward backwards. Speed of arm movement indicating rate of turn.

Stop!
Arms repeatedly crossed above head (the rapidity of the arm movement should be related to the urgency of the stop, i.e. the faster the movement the quicker the stop).

Engage Brakes!
Rise arm and hand with fingers extended, horizontally in front of body, then clench fist;

Release Brakes!
Rise arm with fist clenched horizontally in front of body, then extend fingers.

Chocks Inserted!
Arms down, palms facing inwards, move arms from extended position inwards;

Chocks Removed!
Arms down, palms facing outwards, move arms outwards.
Start Engine(s)
Left hand overhead with appropriate number of fingers extended to indicate the number of the engine to be started, and circular motion of right hand at head level.

Cut Engines
Either arm and hand level with shoulder, hand across throat, palm downward. The hand is moved sideways with the arm remaining bent.

Slow Down
Arms down with palms toward ground, then moved up and down several times.

b) Cockpit to Ground.
These signals are designed for use by a pilot in the cockpit, with hands plainly visible to the signalman, and illuminated as necessary.

Brakes
The moment the fist is clenched or the fingers are extended indicates, respectively, the moment of brake engagement or release.
Brakes Engaged: raise arm and hand, with fingers extended, horizontally in front of face, then clench fist.
Brakes Released: raise arm with fist clenched, horizontally in front of face, and then extend fingers.

Chocks
Insert chocks: arms extended, palms outwards, move hands inwards to cross in front of face.
Remove chocks: hands crossed in front of face, palms outwards, move arms outwards.

Ready to Start Engine(s)
Raise the appropriate number of fingers on one hand indicating the number of engine to be started.

All Clear!
Right arm raised at elbow with thumb erect.
8.2.2.10 Servicing of Aircraft

**Potable Water.**
Potable water systems are susceptible to contamination by bacteria and other microorganisms. It is therefore essential that such water is free from chemical substances/micro-organisms, which might cause illness, and that it is chlorinated.

**Removal and Disposal of Waste.**
The Company’s handling agent is responsible to provide information once the removal of waste at a specific airport is not ensured. Such information shall be relayed, by Ground Operations, to the cockpit and cabin crews; for details refer to the Grounds Operations Manual.

**Oxygen**
Special safety provisions shall be observed when oxygen bottles of the aircraft are being filled or exchanged (i.e. connection/disconnection to/from system):

- No passenger shall be onboard;
- No Ground Power Unit shall be connected or disconnected;
- Technical Manual specifies which electrical system shall be “off”, respectively;
- shall not be operating when filling, exchanging oxygen bottles;
- No fueling/de-fueling is permitted and;
- Filling/exchanging bottles is not permitted during a thunderstorm;

**Cleaning of Cabin.**
Cleaning should have been finished before passenger embarkation.

**Cleaning of Cockpit.**
The cockpit may only be cleaned by Company authorized personnel.

8.2.2.11 Documents and Forms for Aircraft Handling

**8.2.2.11.1 Introduction**

Documents on forms are used for legal purposes and are concerning the airplane or the crew, the passengers and the cargo load. They are:

- **General Declaration**
  It is the main document for the airplane, crew, passengers and cargo. It must be done on request of the outgoing and / or incoming Authority. The General Declaration is usually done by the handling employers, but it can be done by the Commander if needed. The Declaration of Health (which is a document with the same characteristic of the General Declaration) is part of the General Declaration.

- **Passengers Manifest**
  This is a list of the passengers’ name and it is used to check them upon departing and arriving. It must be on board the aircraft for each flight.
➢ Cargo Manifest
   This is the document certifying the cargo loaded on the airplane. It must be noted that the passengers' baggage is not considered cargo load. It must be on board the aircraft for each flight

➢ Other documents
   Depending on airplane transit / destination, the filling of other specific documents can be requested.

See Ground Operations Manual for further details (GOM).

8.2.2.11.2 Information Retained on the Ground
At least for duration of each flight or series of flights the following documents must be released to the ground operator:

   ➢ A copy of the operational Flight Plan in the Flight Dispatch Office;
   ➢ A copy of the relevant part(s) of the airplane technical log;
   ➢ A copy of the last update mass and balance documentation forms;
   ➢ A copy of NOTOC;
   ➢ A copies of the passengers and cargo manifests

8.2.2.11.3 Records to be filled
At the end of the flight the Commander is responsible for the completion of the following flight records:

   ➢ Aircraft Technical Log Book;
   ➢ Pilot Flight Report (at the end of the last flight);
   ➢ Cabin Defect log Book;
   ➢ Operational Flight Plan or Fuel Planning & Navigation/ Computer Log with the signature to validate it;
   ➢ Engines Monitoring Log (if applicable);
8.2.2.12 Multiple Occupancy of Aircraft Seat

The Commander shall ensure that multiple occupancy of Compagnie Africaine d'Aviation (CAA) aircraft seats may only be allowed on specified seats (no exit seats) and does not occur other than by one adult and one infant who is properly secured by a supplementary loop belt or other restraint device.

8.2.3 Procedures for the Refusal of Embarkation

This section describes the procedures to ensure that persons who appear to be intoxicated or who demonstrate by manner or physical indications that they are under the influence of drugs, except medical patients under proper care, are refused embarkation.

8.2.3.1 Introduction

No person is permitted to enter or be in Compagnie Africaine d'Aviation (CAA) aircraft when under the influence of alcohol or who demonstrate unruly by manner or physical indications that they are under the influence of drugs to an extent that the safety of the aircraft or its occupants is likely to be endangered. The traffic supervisor or the Commander has the right to refuse transportation of inadmissible passengers, deportees or persons in custody if their carriage poses any risk to the safety of the aircraft or its occupants or will cause unpleasant situations for the other passengers. The Commander has the authority to refuse or disembark any crewmember, passenger, or any part of the cargo, which, in his opinion, may represent a potential hazard to the safety of the aircraft or its occupants.

The Compagnie Africaine d'Aviation (CAA) shall refuse transportation or remove any person who the handling staff or the Commander decides that:

- Denies to follow the security instructions;
- Due to conduct, behavior or neglect of appearance make him objectionable to other passengers;
- Due to age or mental or physical condition needs individual nursing or special assistance that cannot be provided;
- Does not hold a valid ticket; or
- Does not hold a valid passport, visa or health certificate when such is required;

Considerations to be taken when refusing passengers:

- No special procedure applies on how to deal with the situation of refusing passenger transportation, however, good judgment and behavior must be exercised; and
- As denying a passenger is a serious matter with various consequences for the person involved, great care should always be taken. The passenger should be informed about the refusal as discreet as possible. The passenger should be treated in a polite manner, and offensive wording should be avoided. One should never insinuate that the passenger is under the influence of alcohol, but try to indicate that his condition is not suitable for air travel.
8.2.4 De-Icing and Anti-Icing on the Ground

This operation is not applicable within AFI operational area of Compagnie Africaine d'Aviation (CAA). Exception is Addressed for Johannesburg operations, where de-icing and anti-icing on the ground shall be outsourced.

In case of unscheduled flight, this operation shall be outsourced on punctual basis.
8.3 FLIGHT PROCEDURES & NAVIGATION AID EQUIPMENTS

8.3.1 VFR / IFR Policy

All Compagnie Africaine d'Aviation (CAA) flights shall be conducted under IFR flight plan. Regardless of weather conditions, all flights Compagnie Africaine d'Aviation (CAA) should normally be conducted in accordance with an IFR flight plan. As a general rule, the IFR flight plan shall not be cancelled. It is acceptable to fly specific segment of the flight under VFR (Below 10000'/ FL 100), such as part of climb, descent or part of the approach unless VMC conditions are maintained from the point where IFR is cancelled until landing or MSA/ MORA at takeoff. The VFR clearance shall only be accepted and used with the greatest caution, and only if information of relevant traffic is available. Under these circumstances it is extremely important that one pilot maintains vigilante look out. The Commander is responsible for anti-collision from other aircrafts.

Note: Whenever the flight is conducted under VFR for any reason, it shall be reported on the Operational Flight Plan in "Remarks”. The Director of Flight Operations may authorize training or ferry flights to be conducted under VFR.

8.3.1.1 Use of Air Traffic Services (ATS)

All flights shall use Air Traffic Services (ATS) whenever available. All flights shall be planned and performed within air space that is adequately covered by Air Traffic Services as specified in the various forms stated below. Flights shall primarily be performed in controlled air space. It is the responsibility of the pilot-in-command to abide with regulations within the areas specified. Flights within uncontrolled air space may be performed when necessary. The pilot-in-command is responsible for own separation to other air traffic within uncontrolled air space. On radar controlled airspace the crew must monitor continuously the emergency frequency 121.5. On certain AFI airspace the crew must monitor continuously in Flight Broadcast Frequency 126.9 (For procedures refer to OM Part C).

8.3.1.2 Sterile Cockpit Concept

During taxi, take-off and landing and below FL 100 or cruise altitude, whichever is lower, the flight crew shall maintain a “sterile cockpit”. On the departure, sterile cockpit starts when the aircraft leaves the gate and terminates when the fasten seat belt sign is OFF when aircraft crossing 10000 ft/ FL100. During approach, sterile cockpit starts when the commander makes the announcement (CABIN CREW LANDING IN../ PERSONNEL DE CABINE ATTERRISSAGE DANS...) when aircraft crossing 10000 ft/ FL100.

Note: The use of headset is mandatory during sterile cockpit.

The Commander shall give firm orders to personnel occupying the jump-seat(s) to remain silent during the above mentioned phases of flight.
Examples of activities, which are to be avoided during these phases of flight, are:

- Eating meals, engaging in non-essential conversation, communicating on the Compagnie Africaine d'Aviation (CAA) radio, passenger announcements pointing out sites of interest, and completion of paperwork not required for the safe operation of the aircraft. After landing the First Officer may communicate on the Compagnie Africaine d'Aviation (CAA) radio, if necessary, as long as the Commander is listening on the ATS frequency.
- During taxi operations only the aircraft has been stopped, an explanation to the passengers about the reason (waiting in line for take-off, waiting for a gate) is permitted and encouraged.

8.3.1.3 ATS Flight Plan

No Compagnie Africaine d'Aviation (CAA) aircraft shall depart VFR or IFR, an aerodrome without an ATS flight plan. All flights shall be filed and normally be performed according to an IFR flight plan. The IFR flight plan may be cancelled if the Commander finds it necessary.

8.3.1.4 Controlled Airspace

The ATS (Air Traffic Service) will provide air traffic clearance within controlled air space, establishing sufficient traffic separation according to standard procedures. The Commander shall abide by the clearance given and shall keep the ATS informed of deviations from his flight plan according to published procedures for the area concerned. The Commander has the primary responsibility for terrain clearance, however, during radar vectoring (not during radar control or radar monitoring) en route or in connection with approach and departure procedures the primary responsibility for terrain clearance rests with ATC, although the Commander shall monitor proper terrain clearance by means of navigation aids.

8.3.1.5 Uncontrolled Airspace – FIR

- Flight Information Service

Within a FIR the ATS provides Flight Information Service - FIS - and establishes regulations regarding reporting procedures as well as altitude regulations. Flights should be kept informed about all relevant known IFR traffic. Flights within FIR shall adhere to regulations published for such regions and maintain flight levels as specified for the direction flown;

- AFIS Airports

Airports where only Flight Information Service is provided are not to be considered “controlled airports”. The responsibility for avoidance of collision rests with the Commander. AFIS is provided to aircraft before take-off, on the maneuvering area, or in the vicinity of the airport and comprises:

- Relay of Air Traffic Control clearances;
- Information about other known traffic;
- Meteorological information;
- Serviceability of the airport;
- Other relevant information.
- Advisory Areas or Routes
Flights within advisory areas or routes will in addition to the flight information service also receive advice or suggestions from the relevant ATS. Terrain clearance is the responsibility of the Commander.

8.3.1.6 Separation of IFR-traffic in VMC

Clearance within controlled air space subject to maintaining own separation and remaining in VMC shall only be requested and accepted during daylight and under the following conditions:

- Weather conditions for the entire intended flight path is at least VFR minimum.
- The flight crew is able to establish its exact position and to maintain proper terrain clearance; and
- The aircraft involved is clearly in sight and will stay in sight until passed.

8.3.1.7 Meteorological Conditions

- On an IFR flight a Commander shall not:
  - Commence take-off; nor,
  - Continue beyond the point from which a revised flight plan applies in the event of in-flight replanning, unless information is available indicating that the expected weather conditions at the destination and/or requires alternate airport(s) at or above the planning minimum;

- On an IFR flight, a Commander shall not continue towards the planned destination airport unless the latest information indicates that, at the expected time of arrival, the weather conditions at the destination, or at least one destination alternate airport, are at or above the applicable planning operating minimum;
- Before commencing take-off, the Commander must satisfy himself that the RVR or visibility in the take-off direction of the aircraft is equal to or better than the applicable minimum.
- On a VFR flight, a Commander shall make sure that the criteria of Enroute Operating Minima for VFR flights or VFR Portions of a Flight are met.

8.3.1.8 Simulated Abnormal Situations in Flight

During commercial air transportation flights all simulation of abnormal or emergency situations are prohibited.
8.3.2 Navigation Procedures

8.3.2.1 Standard Navigational Procedures

Compagnie Africaine d'Aviation (CAA) aircraft shall not be operated unless the navigation equipment required is installed, approved and in operable condition for the kind of operation being conducted except as provided in MEL. These authorizations (RNP, RNAV, RVSM) are found in the AOC operations specification. Flights may not be performed in areas where minimum navigation performance specifications apply unless authorized. Procedures for normal operations and procedures in the event of system degradation are found in Operations Manual Part A, B and C.

8.3.2.1.0 Navigation Equipment

Refer to Operation Manual Part B of each aircraft type

8.3.2.1.1 Policy

Reliance should not be placed on information derived from navaids until the appropriate coded signal has been identified. When FMS (Flight Management System) is in use, crosschecks with conventional aids should be taken to ensure signal validity. Above all, flight crew members must be prepared to low accuracy performance of the automated systems, and be prepared to revert to the use of basic mode. The flight crew is responsible for the correct use of the equipment in accordance with the limitations laid down in Operations Manual Part B. Compulsory/prohibited use of equipment is specified in the Operations Manual Part B.

8.3.2.1.2 Instrument Departure and Approach Procedures

- The Compagnie Africaine d'Aviation (CAA) uses instrument departure and approach procedures based on the official procedures.
- Notwithstanding paragraph above (No radar vector), a Commander may accept an ATC clearance to deviate from a published departure or arrival route, provided obstacle clearance criteria are observed and full account is taken of the operating conditions. The final approach can be flown visually (VMC) or in accordance with the established instrument approach procedure;
- Different procedures may be used in accordance with approval of the State in which the aerodrome is located.

8.3.2.1.3 Noise Abatement Procedures

The noise abatement procedure used by the Compagnie Africaine d'Aviation (CAA) complies with (ICAO doc 8168 chapter 7) type B. This procedure is the standard and should always be adhered to, except where variations are published by local Authorities.
8.3.2.2 Minimum Navigation Performance Specification (MNPS) and Polar Navigation

Compagnie Africaine d'Aviation (CAA) aircraft is not approved to operate MNPS and beyond 82 degrees N in its primary area of operations.

8.3.2.3 Area Navigation (RNAV)

Area Navigation (RNAV) is a method of navigation which permits point to point aircraft operations on any desired flight path within the limits of the capability of self-contained sensors or a combination of these. Terminal area RNAV operation shall be flown using FMS stored data from the database only. This is due to the fact that each separate leg contains database coding that cannot be entered manually, such as fly-over or fly-by commands. The flight crew shall be trained to perform navigational procedures on the basis of RNAV sources.

8.3.2.3.1 B-RNAV

Compagnie Africaine d'Aviation (CAA) uses BASIC RNAV (BRNAV) operations, based on RNP5 criteria.

8.3.2.3.2 RNAV Approach

These procedures are recommended when the accuracy is below RNP 0.3

1. Manual amendment of the FMS approach procedure or flight plan via the MCDU during the approach is prohibited.
2. If the PFD "RNP": alert is annunciated and suitable visual reference is not established, the pilot may continue the approach if radio navigation data is immediately available on the Navigation Display (ND).
3. To help preclude any nuisance RNP alerts, the pilot may manually update the FMS RNP value to 1.0 (NM) prior to the approach fix, delete the 1.0 RNP value, the FMS will then default to 5(NM) RNP.

8.3.2.3.3 P-RNAV

Compagnie Africaine d'Aviation (CAA) uses Precision Area Navigation (P-RNAV) operation, based on ICAO criteria, if approved. (See Operation Manual Part B, Limitations)
P-RNAV is being introduced to enable RNAV applications to be introduced in terminal airspace. It requires aircraft conformance to a track-keeping accuracy of ±1 NM for at least 95% of flight time, together with advanced functionality, including, high integrity navigation databases and GPS information.
P-RNAV can be achieved using inputs from DME/DME, VOR/DME or GPS. PRNAV requirements may also be published for selected parts of the en-route structure where capacity benefits can be identified.
Where the responsible airspace authority has specified in the AIP that dual PRNAV systems are required for specific terminal P-RNAV procedure, this requirement will be stated on the appropriate charts.
For further details refer to AFM.
8.3.2.3.4 P-RNAV Contingency Procedures

Contingency procedures refer to cautions and warnings for following conditions:

- Failure of the RNAV system components including those affecting flight technical error (e.g. failures of the flight director)
- Multiple system failure.
- Failure of the navigation sensors:
  - The flight crew must notify ATC of any problem with the RNAV system that results in the loss of the required navigation capability, together with the proposed course of action.
  - In the event of communications failure, the flight crew should continue with the RNAV procedure in accordance with the published lost communication procedure.
  - In the event of loss of P-RNAV capability, such as loss of FMC or loss of FMS position updates, the flight crew shall invoke contingency procedures. Navigation shall be performed using alternate means of navigation, which include ATS radar vectoring or conventional navigation (VOR).

8.3.2.3.5 P-RNAV Incident Reporting

Significant incidents associated with the operation of the aircraft, which affect or could affect the safety of RNAV operations, need to be reported using the Technical Log. Specific examples may include:

- Aircraft system malfunctions during P-RNAV operations, which lead to:
  - Navigation errors (e.g. map shifts)
  - Significant navigation errors attributed to incorrect data or a navigation database coding error.
  - Unexpected deviations in lateral or vertical flight path not caused by pilot input.
  - Significant misleading information without a failure warning.
  - Total loss or multiple navigation equipment failure.

- Problems with ground navigational facilities leading to significant navigation errors.

Note: The RNAV can be applicable when the accuracy high.
8.3.2.4 In-Flight Re-Planning

Compagnie Africaine d'Aviation (CAA) does not perform in flight replanning in normal operations.

8.3.2.5 Procedures in the Event of System Degradation.

The effect of temporary downgrading of ground equipment on landing minima must be taken into account during preflight planning and in flight.

A. Failure during the approach phase.

1. If the airplane has already passed the Outer Marker or equivalent position on final approach, it is NOT required that a Commander consult the relevant table to ascertain the minima applicable to the reduced level of equipment. If failures of ground aids are announced at this late stage, the approach may be continued at the Commander discretion.

2. If, however, the failure is announced before such a late stage, the Commander must consider its effect and the approach must be discontinued to permit this consideration.

B. Failures other than ILS affect RVR only and not DH.

C. When the approach light system is supplied only from the standby power source, attention is particularly drawn to the fact that the RVR minimum to be used for a precision approach is that applicable when only basic facilities are available.

The specific actions taken by ATC in the event an aircraft’s transponder fails in an RVSM transition area will be determined by the provider States.
8.3.2.6 Reduced Vertical Separation Minima (RVSM)

8.3.2.6.1 Introduction

Compagnie Africaine d’Aviation (CAA) is authorized to operate within the RVSM airspace with A320 and F100.

8.3.2.6.2 Flight Planning

During flight planning and in close interaction with the Flight Dispatch, the Flight Crew shall pay particular attention to conditions that may affect operation in RVSM airspace:

- Verifying that the aircraft is approved for RVSM operations;
- Reported and forecast weather on the route of flight;
- Minimum equipment requirements (MEL) pertaining to systems that may affect RVSM operations;
- Any aircraft Limitations or operating restriction related to RVSM approval; and
- The letter “W” to be inserted in field 10 of the ICAO FPL, or in item EQPT in case of a RPL, if RVSM approved, regardless of requested FL.

8.3.2.6.3 Pre-Flight Procedures

The following actions shall be accomplished during the pre-flight procedure:

- Review Technical Log and forms to determine the condition of equipment required for flight in the RVSM airspace. Ensure that maintenance action has been taken to correct defects to required equipment;
- During the external inspection of aircraft, pay particular attention to the condition of static sources and the condition of the fuselage skin near each static source and any other component that affects altimeter system accuracy. This check may be accomplished by a qualified and authorized person other than the pilot (e.g. ground engineer);
- Before takeoff, the aircraft altimeters should be set to the QNH of the airfield and should display a known altitude, within the limits specified in the aircraft operation manuals. The two primary altimeters should also agree within limits specified by the aircraft operations manual. Any required functioning checks of altitude indicating systems should be performed.

*Note: The maximum value for these checks sited in operating manuals should not exceed 75ft for RVSM purpose.*

- Before takeoff, equipment required for flight in RVSM airspace should be operative, and any indications of malfunction should be resolved.

8.3.2.6.4 Procedures Prior to RVSM Airspace Entry

The following equipment shall be operating normally at entry into RVSM airspace:

- Two independent altitude measurement systems
- One automatic altitude control system (Autopilot function)
- One altitude alerting system
One operating transponder with altitude reporting system that can be connected to the altitude measurement system in use for altitude control.

Should any of the required equipment fail prior to the aircraft entering RVSM airspace, the Commander shall request a new clearance to avoid entering this airspace.

In cruise, before entering RVSM airspace, a cross check of primary altimeters shall be made and recorded on the flight plan.

8.3.2.6.5 In-Flight Procedures in RVSM Airspace

Re-checking of proper altimeter setting when reaching cleared flight level shall be done. When changing levels, the aircraft shall not be allowed to overshoot or undershoot the cleared flight level by more than 150 ft.

Note: It is recommended that the level off be accomplished using the altitude capture feature of the automatic altitude control system.

During level cruise, an automatic altitude control system should be operative and engaged.

At intervals of approximately one hour, crosschecks shall be made between the primary altimeters. The two must agree within 200 ft. Failure to meet this condition shall be reported to ATC. In normal operations, the altimeter system being used to control the aircraft should be selected for the input to the altitude reporting transponder, transmitting information to ATC.

If the pilot is advised on radio that the aircraft has been identified by a height monitoring system as showing a TVE greater than +/- 300 ft and/or an ASE greater than +/- 245 ft, then the pilot in command should follow established regional procedures to protect the safe operations of the aircraft.

If the pilot is notified by ATC of an AAD error exceeding +/-300 ft, then the pilot should take action to return to cleared flight level as quickly as possible.

8.3.2.6.6 RVSM Contingency Procedures

An in-flight contingency refers to unforeseen circumstances that may have a direct impact of the ability of aircraft to operate in accordance with the RVSM height keeping performance requirements. Such situations may be equipment and/or weather related.

The pilot shall immediately inform ATC if such a situation occurs and obtain, whenever possible, a revised clearance prior to initiating any deviation from the last clearance. Where a revised clearance is not possible prior to a deviation from the clearance, the pilot shall obtain one as soon as possible thereafter.

- Equipment related:

If an aircraft cannot operate anymore in accordance with the RVSM height keeping performance requirements, it will be considered by the ATC as non RVSM approved. Such an aircraft, whenever possible shall be cleared out of the RVSM airspace. The Commander shall inform ATC of restoration of the proper functioning of equipment. Examples of equipment failures, which shall be notified, to ATC are:

- Failure of all automatic altitude control systems (autopilots);
- Loss of redundancy altimetry system;
✓ Loss of thrust on an engine necessitating descent; or
✓ Any other equipment failure affecting the ability to maintain cleared flight level;

➢ Weather related:

When an aircraft operating in airspace encounters severe turbulence that is believed to impact the aircraft’s capability to maintain its cleared flight level, the pilot shall inform ATC.

8.3.2.6.7 RVSM Phraseology

<table>
<thead>
<tr>
<th>Pilot-Controller Communication Phraseology RVSM Operation</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>For a controller to ascertain the RVSM approval of an aircraft</td>
<td>(Call Sign) Confirm RVSM approved</td>
</tr>
<tr>
<td>For a pilot to report RVSM approved status</td>
<td>(Call Sign) affirm RVSM</td>
</tr>
<tr>
<td>For a pilot to report Non-RVSM approved status</td>
<td>(Call Sign) negative RVSM [supplementary information, e.g. State aircraft]</td>
</tr>
<tr>
<td>1. On initial call on any frequency within RVSM airspace</td>
<td></td>
</tr>
<tr>
<td>2. In all requests for FL changes pertaining to FL within RVSM airspace; and</td>
<td></td>
</tr>
<tr>
<td>3. in all readbacks of level</td>
<td></td>
</tr>
<tr>
<td>For a pilot of a non RVSM approved state aircraft to report non-RVSM approved status in response to the phrase (Call sign)</td>
<td>(Call Sign) Negative RVSM state aircraft</td>
</tr>
<tr>
<td>To deny ATC clearance into RVSM airspace</td>
<td>(Call Sign) Unable issue clearance into RVSM airspace; Maintain, descend to or climb to FLXXX</td>
</tr>
<tr>
<td>Pilot report when severe turbulence affects the capability of an aircraft to maintain height-keeping requirements for RVSM</td>
<td>(Call Sign) Unable RVSM due turbulence.</td>
</tr>
<tr>
<td>To report that the equipment of an aircraft has degraded below minimum aviation system performance standards</td>
<td>(Call Sign) Unable RVSM due equipment</td>
</tr>
<tr>
<td>To request an aircraft to provide information as soon as RVSM approved status has been regained or the pilot is ready to resume RVSM operations.</td>
<td>Report when able to resume RVSM</td>
</tr>
<tr>
<td>To request confirmation that an aircraft has regained RVSM approved status or a pilot is ready to resume RVSM operations</td>
<td>Confirm able to resume RVSM</td>
</tr>
<tr>
<td>To report ability to resume RVSM operations after an equipment or weather-related contingency</td>
<td>Ready to resume RVSM</td>
</tr>
</tbody>
</table>
8.3.3 Altimeter Setting Procedures

The basic procedures herein describe the method, all pilots of Compagnie Africaine d'Aviation shall use in providing adequate vertical separation between the aircraft and adequate terrain clearance during all phases of a flight. The pressure altimeter readout is referenced to Feet (ft);

The three different types of pressure altimeter settings used:

- For vertical separation of aircraft a system of Flight Levels (FL) is used. The Flight Levels are related to a pressure datum of 1013.2 hpa and are based upon the ICAO standard atmosphere. The minimum FL shall always be equal to or higher than the true minimum safe altitude.
- QNH (altitude). The reference datum shall be approximately Mean Sea Level (MSL) and can be measured in hpa or inches of Hg; and
- QFE (height). The reference datum shall be the aerodrome elevation and can be measured in hpa or inches of Hg.

A transition altitude (TA) shall be specified for each airport and given on Instrument Approach charts. At this altitude the altimeter reference datum is shifted from altitude to flight levels (FL).

A transition level (TL), based on actual pressure situation, is calculated by ATS and transmitted to the aircraft prior to approach. At this altitude the altimeter reference datum is shifted from flight level (FL) to altitude (QNH).

The transition layer is the vertical distance between the transition altitude and transition level and will be at least 1000ft.

During operation in high pressure and/or low ambient temperature, correction(s) shall be made to altitude shown on the pressure altimeter according to procedures laid down in Operations Manual Part B.

8.3.3.1 Altimeter Temperature Error Correction

Pressure altimeters are calibrated to indicate true altitude under ISA conditions. Any deviation from ISA will result in erroneous altimeter readings. The error is proportional to the difference between actual and ISA temperature, and the vertical distance of the aircraft above the altimeter setting datum.

The error is approximately 4 feet/1,000 feet for each degree of difference. When temperatures are LESS than ISA an aircraft will be LOWER than the altimeter reading. To ensure adequate OBSTACLE CLEARANCE on approach add the figure in body of the table to the calculated DA/MDA.
8.3.3.2 Radio Altimeter

The radio altimeter measures the actual aircraft height in feet above the terrain below. The operating range is from 0-2500ft.

The radio altimeter is used for:
- Ground proximity warning purposes; and
- Call-outs and procedure reference.

Detailed radio altimeter procedures are laid down in the Operations Manual Part B.

8.3.4 Altitude Alerting System Procedures

The Altitude Alert System is automatic and reference only the Mode Control Panel set altitude. The system is used as backup to normal call-outs, all pilots of Compagnie Africaine d'Aviation shall strictly follow these procedures. At no time shall the altitude alert system be pre-set according to the expected or filed flight level. It shall only be set according to ATC clearance or the altitude restriction(s) in the SID/STAR.

Detailed Mode Control Panel altitude-setting procedures are laid down in the Operations Manual Part B.
8.3.5 Enhanced Ground Proximity Warning System Procedures

The EGPWS is automatic in use by all pilots of Compagnie Africaine d'Aviation. When undue proximity to the ground is detected by any flight crew member or by a ground proximity warning system, the pilot in command shall ensure that corrective action is initiated immediately to establish safe flight conditions.

Investigation of the reason for the alert/warning shall take second place.

The detailed corrective action to EGPWS warnings are described in Operations Manual Part B.
8.3.6 Policy and Procedures for the Use of TCAS/ACAS

Airborne Collision and Avoidance Systems (ACAS) provide Flight Crew of Compagnie Africaine d'Aviation (CAA) with an independent backup to visual search for other aircraft. This assists the ATC system by alerting the crew to collision hazards, independent of any ground-based aids that may be used by air traffic control for such purposes.

A TA (Traffic Alert) warning indicates proximity of other aircraft and requires an immediately effort to establish visual contact with other aircraft.
If visual contact with other aircraft is established, safe separation shall be maintained. If no visual contact with other aircraft is established, no avoiding action shall be taken unless TA warning changes to RA warning.

A RA (Resolution Advisory) warning requires immediately action by the pilot in command to follow indicated RA maneuver. Aircraft shall be returned to cleared altitude as soon as clear of conflict.
ATS shall be advised immediately.

Operational details are included in Operations Manual Part B.

8.3.6.1 Phraseology

After airborne condition avoidance system has annunciated “clear of conflict” and if, concurrently, no other traffic conflict exists, the pilot at the controls shall return the aircraft to the assigned level and clearance and shall report:

“TCAS RA” (pronounced “TEE-CAS-AR-AY”) When the pilot is unable to comply with an ATC clearance or instruction because there is an RA, the appropriate message is:

“UNABLE, TCAS RA” Also, the pilots are required to explicitly announce the TCAS “Clear of conflict” message when the conflict is over:

CLEAR OF CONFLICT, RETURNING TO (assigned clearance)”; or
“CLEAR OF CONFLICT, (assigned clearance) RESUMED”

Note: *Once an aircraft of Compagnie Africaine d'Aviation (CAA), in compliance with an RA, departs from an assigned ATC clearance the controller ceases to be responsible for providing separation; however, circumstances permitting, the controller should acknowledge such a report; to provide traffic information to all aircraft affected by the maneuver.*

1. He acknowledges the report that the aircraft has resumed its assigned clearance, or;
2. He acknowledges the report that the aircraft is resuming its assigned clearance, and issues an alternative clearance which is acknowledges by the pilot.
8.3.7 Policy and Procedures for in-Flight Fuel Management

8.3.7.1 Fuel Checks

The Commander of Compagnie Africaine d'Aviation (CAA) must ensure that fuel checks are carried out at regular intervals throughout the flight. On flights with duration of more than one hour, such checks shall be carried out at not more than hourly intervals. On flights of less than one hour, an intermediate check shall be made. At each check, the remaining fuel must be evaluated so as to:

- Compare actual fuel consumption with planned consumption;
- Check that the fuel remaining will be sufficient to complete the flight; and
- Determine the expected fuel remaining on arrival at the destination.

The relevant fuel data shall be recorded on the operational flight plan.

8.3.7.2 Destination Fuel

If an in-flight fuel check reveals that the expected fuel remaining on arrival at the destination will be less than the required alternate fuel plus final reserve fuel (Operations Manual Part A, 8.1.7), the Commander shall:

- Assess and take into account the traffic, operational and meteorological conditions prevailing and expected at the destination aerodrome;
- Similarly along the diversion route to the alternate aerodrome; and
- Similarly at the destination alternate aerodrome;

When deciding whether to proceed to the destination aerodrome or to divert and land with not less than final reserve fuel.

8.3.7.3 Isolated Destination Fuel

If an in-flight fuel check reveals that on a flight to an isolated destination aerodrome planned in accordance with Operations Manual Part A, 8.1.7, the expected fuel remaining at the point of last possible diversion is less than the sum of:

- Fuel to divert to an en-route alternate aerodrome selected in accordance with procedures in Operations Manual Part A chapter 8.1.3;
- Contingency fuel; and
- Final reserve fuel.

Then the Commander shall either:

- Divert; or
- Continue to the destination provided that two separate runways are available at the destination and the expected weather conditions at the destination comply with those specified for planning in Operations Manual Part A chapter 8.1.3.
8.3.7.4 Declaration of Emergency

The Commander shall declare a fuel emergency when the actual useable fuel on board is less than final reserve fuel according to Operations Manual Part A chapter 8.1.7
8.3.8 Adverse and Potential Hazardous Atmospheric Conditions

To some extent possible, ATS will issue pertinent information on weather and assist aircraft in avoiding such areas when requested. Some adverse and potentially hazardous atmospheric conditions require avoidance if possible. Requests for such avoidance should be made through ATS and clearance should be strictly adhered to. When weather conditions encountered are so severe that an immediate deviation is determined to be necessary, and time does not permit approval by ATS, the Commander emergency authority may be exercised. ATS shall be notified as soon as possible.

8.3.8.1 Thunderstorms

Recommended Technique for Flying Through Areas of Thunderstorm Activity. Irrespective of the equipment fitted the latest meteorological forecasts and actual weather reports should be used to plan routes along which the risk of a thunderstorm encounter is low. If, despite these precautions, the commander finds himself committed to flying through an area of thunderstorm activity, the following procedures are recommended.

a) Approaching the thunderstorm area:

- Ensure that crew members’ and passengers’ safety belts or harnesses are firmly fastened and any loose articles are secured.
- One pilot should control the aircraft and the other monitors the flight instruments.
- Select an altitude for penetration whilst ensuring adequate terrain clearance.
- Fly at turbulence speed.
- Operate anti-icing and de-icing equipment and operate all these systems in accordance with manufacturer’s or operator’s instructions.
- Disregard any radio navigation indications subject to interference from static, e.g. ADF.
- Turn the cockpit lighting fully on and lower the crew seats and sun visors to minimize the blinding effect of lightning flashes.
- Follow the manufacturer's procedures for the use of autopilot, flight director and continuous ignition.
- Monitor the weather radar in order to select the safest track for penetration and avoid active cells.

b) Air Traffic Control Considerations

A pilot intending to detour round observed weather should obtain notify ATC so that separation from other aircraft can be maintained. If for any reason the pilot is unable to contact ATC to inform the controller of his intended action, any maneuver should be limited to the extent necessary to avoid immediate danger and ATC must be informed as soon as possible.

c) Take-off and Landing

- Do not take-off if a thunderstorm is overhead or approaching.
- At destination hold clear if a thunderstorm is overhead or approaching. Divert if necessary.
- Avoid severe thunderstorms even at the cost of diversion or an intermediate landing. If avoidance is impossible, the procedures recommended in these paragraphs should be followed.
8.3.8.2 Icing Conditions

Refer to Operation Manual Part A, chapter 8.3.8.7

8.3.8.3 Turbulences

Turbulence is defined as a distance, irregular flow of air with embedded irregular whirls or eddies and waves. An airplane in turbulent flow is subjected to irregular and random motions while. More or less, maintaining its intended flight path.

If the weather conditions, cloud structure and route forecast indicate that turbulence is likely, the cabin crew should be pre-warned, and the passengers advised to return to, and/or remain in their seats, and to ensure that their seat belts/harnesses are securely fastened. Catering and other loose equipment should be stowed and secured until it is evident that the risk of further turbulence has passed. Consideration must be given to flying at the turbulence speed/Mach No. It is recommended that the autopilot remains engaged unless there is an unintentional disconnection. It is also recommended that the auto-thrust remains engaged and the speed is monitored.

8.3.8.3.1 Turbulence Types and Intensity

I. Turbulence intensity

- Light = slight discomfort
- Moderate = Moderate changes in airplane attitude and/or altitude accompanied by small variations in airspeed. Walking is difficult, loose objects move around.
- Severe = abrupt changes in airplane attitude and/or altitude. The airplane may be out of control for short periods accompanied by large variations in airspeed. Occupants are forced violently against seat belts. Loose objects are tossed around.

II. Turbulence types

- Convective turbulence

Convective turbulence is caused by thermal instability and is met in connection with the development and activity of thunderstorms. It can cause external air motion with vertical speeds up to 6000ft/min. Mostly it is encountered with severe turbulence in connection with thunderstorm activity.

- Mountain waves turbulence

Mountain waves at the lee side of a mountain may cause severe turbulence, called orographic turbulence. Typical signs are lenticular, rotor clouds with <weather-fall> appearance. The strongest turbulence may be found in rotor clouds.

- CAT (Clear Air Turbulence)

Clear air turbulence (CAT) is of special significance, since its presence cannot be detected before it is encountered, it is caused by large windshears with rapid changes of wind direction horizontally and/or vertically.
Clear air turbulence may sometimes be avoided by increasing/decreasing the cruising level if operational considerations so permit. Monitoring of other aircraft reports also assists in avoidance.

CAT may also be expected on the upper side of a sloping tropopause. Further large horizontal and vertical shears of wind speed in the transition zone between cold and warm air masses as well as at the tropopause associated with jetstreams may cause severe CAT. These areas of turbulence are normally shallow, narrow and extended patches which move with the wind.

III. Pireps Relating to Turbulence

A. When encountering turbulence, pilots are urgently requested to report such conditions to ATC as soon as practicable. The PIREP should state:

B. Aircraft location;

C. Time of occurrence in UTC;

D. Turbulence intensity;

E. Whether the turbulence occurred in or near clouds;

F. Aircraft altitude or flight level;

G. Type of aircraft;

H. Duration of turbulence.
8.3.8.4 Windshear

8.3.8.4.1 Introduction

Compagnie Africaine d'Aviation (CAA) Pilots must remain alert to the possibility of windshear, and be prepared to make relatively harsh control movements and power changes to offset its effects. Immediately after take-off, the pilot’s choices of action will be limited. If the presence of shear is indicated by rapidly fluctuating airspeed and/or rate of climb/descent, ensure that full power is applied and aim to achieve maximum lift and maximum distance from the ground. Similarly, if the shear is encountered during the approach, positive application of the power and flying controls should be used to keep the speed and rate of descent within the normal limits; if there is any doubt, a go-around is the safest course of action. Whenever windshear is encountered, its existence should be reported to air traffic control.

In order to avoid dangerous windshear phenomena it is important to know what windshear is and in which meteorological and geographical environment it can be expected. The following definition seems to be the most suitable for aviation:
Windshear is any rapid change in wind direction and/or speed along the flight plan of an airplane.

8.3.8.4.2 In-flight Windshear Conditions and Affect

I. Windshear, with or without turbulence, alerts the lift force acting on an aircraft, resulting in a significant sinking or rising motion. Therefore windshear may be categorized as

   A. Increased performance shear caused by increasing head-wind/decreasing tailwind component or vertical updrafts,
   B. Decreasing performance shear caused by decreasing head-wind/increasing tailwind component or vertical downdrafts.

II. Condition for potentially hazardous windshear are:

   A. Convective conditions (thunderstorms, rain/snow showers)
   B. Frontal systems
   C. Jet streams
   D. Strong or gusty surface winds
   E. Other cases (temperature inversion, mountain waves, sea breeze circulations).

III. The windshear events are typically one to two miles in diameter and mostly occur near the ground (below 500ft) during take-off and landing.

8.3.8.4.3 Crew Recognition

There is only limited time for windshear recognition and action, typically 5 to 15 seconds. Several factors can impede windshear recognition:

   A. Marginal weather conditions
   B. High crew work load conditions
   C. Illusion of normally: during the initial part of the windshear encounter, everything may appear normal. Even severe windshear onset may not provide dramatic early indications to the flight crew.
8.3.8.4.4 Operating Procedure in Windshear Condition

Standard operating procedures of the flight crew should be:

A. Announce windshear by calling “WINDSHEAR GO”
B. Control of flight path through pitch attitude; a downward change in pitch attitude can be perceived as normal response to low airspeed.
C. Unusual stick forces may be required to maintain pitch attitude during airspeed variations away from normal target airspeed.
D. Low airspeed must be accepted. Flying at airspeeds below normal reference speeds may be required in order to utilize the full performance capability of the airplane.
E. Coordination of crew responsibilities is required to recognize an inadvertent windshear encounter and to respond correctly.

8.3.8.4.5 Downbursts

The term downburst describes a severe downwind rush of air and its outburst of damaging winds on or near the ground. It has been classified into macro burst. They are different in their size with radial outflow at the earth’s surface lasting between 3 to 20 minutes. Downburst can occur wherever convective weather conditions exist. Approximately 5 percent of all thunderstorms produce a microburst. Downdrafts associated with microburst are typically only a few hundred to 1000m across. When the downbeats hit the ground, it spreads out horizontally and may form one or more horizontal vortex rings around the downdrafts up 2000 ft AGL. In the downburst with the vortices very powerful updrafts and roll forces in conjunction with wind speed change up to 45 KTS can be expected. The time period over which wind speeds exceed half the park value may last from 1 to 8 minutes. Depending on the movement and the height of the base of parent cloud, Micro bursts have occurred in relatively dry conditions of light rain or precipitation that evaporates before reaching the earth’s surface.

8.3.8.4.6 Frontal Windshear

Frontal windshear is present in both cold and warm fronts, but exists in a different relative location in each type of front. Because the cold front boundary slopes back behind the frontal surface, the windshear line also slopes back. The frontal boundary of the warm front slopes upward ahead of the surface front and so does the windshear. Significant wind-hears can be expected if there is big difference in surface temperature (>60) across the front is moving rapidly with more than 30 KTS.

8.3.8.4.7 Friction Windshear

Large wind speed changes near the ground can be found in many meteorological situations, including the frontal conditions. Terrain irregularities or buildings which interrupt the wind flow can produce significant Windshears close to the ground.
8.3.8.4.8 Precautions

Avoidance is the best precaution. In case of unexpected severe windshear encounter during take-off or on approach, special precautionary techniques can be applied by the flight crew to reduce the effect of windshear. The following precautions should be taken into consideration:

A. Thrust setting: Maximum take-off thrust should be used for take-off. It shortens the take-off roll and provides the best rate of climb which leads to increasing altitude available for recovery if required. During approach thrust reductions should be minimized.

B. Runway selection: the longest suitable runway should be used taking into consideration cross-wind and tailwind limitations, and obstacles in take-off or landing direction.

C. Flap selection: the flap setting is dependent on the type of airplane according to the AOM/FCOM. Although for take-off greater flap setting gives the performance for windshear encounters on the runway and lesser flap setting give the best performance and the air, the performance difference between flaps setting is rather small. Experience has that for landing the flap setting recommended in the AOM/FCOM provide the best overall recovery performance for wide range of windshears.

D. Airspeed: Available field length and runway condition must be taken into consideration when increasing airspeed for take-off and/or landing.

E. Take-off airspeed should be increased at rotation to improve the ability to negotiate a windshear after lift-off. Increased airspeed improves the flight path, and reduces potential exposure to flight at stick shaker speed and reduces the workload of the flight crew.

F. During approach increased airspeed improves climb performance capability and reduces the potential for flight at stick shaker speed during recovery from windshear encounter. The increased speed should be maintained to flare.

G. Use of auto-throttle, auto pilot and flight director:
H. For take-off only speed referenced flight directors with windshear recovery guidance should be used.
I. During approach flight director, auto pilot and auto-throttle should be used to the maximum extent practical. This will relieve the workload of the flight crew and give them more time to monitor instruments and weather conditions. When the use of auto pilot and/or auto-throttle becomes unproductive they should be disconnected.

8.3.8.4.9 Conclusion

The action to be taken by flight crews can be summed up as follows:

A. Elevation of the weather situation,
B. Avoidance of known windshear,
C. Consideration of precautions,
D. Using standard operating techniques when crossing areas of windshear and for recovering.
8.3.8.10 Windshear PIREP

Pilots are urged to promptly volunteer reports to controllers of windshear conditions they encounter. Advanced warning of such conditions will assists other flight crews in avoiding or coping with a windshear on approach or departure. The recommended method for windshear reporting is to state the loss or gain of airspeed and the altitudes at which it was encountered.

8.3.8.5 Jetstreams

8.3.8.5.1 General

Near the tropopause there narrow bands with extreme high wind speeds up to 300kts to be found. Such a band of high wind speeds is called Jet-stream. The extension in length is up to several thousand miles, the width can be several miles. The main direction of the jet-stream is south-west to north.

In mid-latitudes there is common area for clear air turbulence (CAT) around the Jet stream, above and below the jet core and to the polar side. Taking a cross chapter of a jet core in Northern Hemisphere and to the right in Southern Hemisphere.

Avoid flying along the edge of Jetstreams due to the possibility of associated turbulence. Pilots should be aware of the effect of increased fuel consumption due to unexpected significant head wind components. It may be possible to avoid Jetstreams by changing route and/or altitude.

8.3.8.5.2 Procedure to Avoid the Jet-stream CAT Area

To avoid or to leave the areas of CAT the following procedures should be applied:

A. Reducing airspeed, to reduce the acceleration due to Windshears.
B. When flying parallel with the Jet-stream changing altitude up to 1000 ft.
C. When flying perpendicular to the Jet-stream, changing altitude by 1000 ft from the warm to the cold side downwards, from the cold to the warm side upwards.
D. If the temperature is changing in the CAT area will be crossed in a short time.
E. If the temperature remains constant the course should be varied not to stay in the CAT area for a longer.
8.3.8.6 Volcanic Ash Clouds

1. General

The atmospheric repercussions of volcanic activity can be particularly hazardous to aircraft. Flight through volcanic ash can cause abrasion to all forward facing parts of the aircraft, to the extent that visibility through the windshields may be totally impaired, control surface leading edges may be severely damaged, airspeed indications may be completely unreliable through blocking of the pilot heads and engines may become so choked as to cause power interruptions or even shut-downs.

Flying through an ash cloud should be avoided by all means because of extreme hazard for the engines and the airplane. Volcanic ash may extend for several hundred miles, and eruptions may send ash plumes up to 40,000 ft. Neither ash clouds nor volcanic dust can be detected by the weather radar.

2. Crew Recognition

If a Compagnie Africaine d'Aviation (CAA) airplane enters an ash cloud the Flight Crew can expect:

A. Smoke, dust or acrid odors similar to electric sparks in the flight-deck,
B. In the dark heavy static discharges around the windshield,
C. Engine surge or overheat,
D. Engine failure,
E. Unreliable airspeed indication,
F. Pressurization and electrical systems may be affected,
G. At night, St. Elmo's fire or other static discharges accompanied by a bright Orange glow in the engine inlets.

3. Operating procedure when encountering ash cloud

When encountering ash cloud the following procedures are recommended:

A. Turn on continuous ignition,
B. Declare an emergency,
C. Do not climb in order to overfly the ash cloud,
D. Reduce power to idle to provide additional engine stall margin and lower turbine temperature,
E. Try to escape the ash cloud by descending and flying a 180° turn (if terrain clearance permits),
F. Monitor attitude versus airspeed,
G. Keep as many engine running as possible
H. Restart an engine which had to shut down due to EGT exceeding the limits. If an engine fails to restart repeated attempts should be made immediately to avoid solidification of molten ash on the turbine blades,
I. Turn on all accessory air bleeds including all air conditioning parks, nacelles, and wing ant-ice. This will provide an additional engine stall margin by reducing engine pressure.

For additional procedures the AOM/ FCOM/Emergency checklist of the respective type of aircraft must be checked.
When having crossed an ash cloud a landing at the next suitable airport is recommended. If the visibility through the windshield is impaired a runway with auto land capability should be considered.

Every Flight Crew of Compagnie Africaine d'Aviation (CAA) is requested to make a special air report when volcanic eruption is observed or when volcanic ash cloud is observed or encountered. Information on volcanic activities, including pre-eruption activity, volcanic eruption and volcanic ash clouds are transmitted to airplanes operating on routes that could be affected.

This information is also published by NOTAMS and SIGMENTS up to a 12 hours validity period and if necessary recommendations on-routings will be included.

The NOTAM system details known areas of volcanic activity where ash may be present in the atmosphere. Flight into such known areas is to be avoided, particularly at night or in daytime forecast IMC conditions when ash clouds may not be seen.

Reported instances of flight into such activity indicates that the weather radar will not pick up any returns so the only avoidance methods are by NOTAM or visual contact. In the event of inadvertent penetration of ash cloud, the major immediate problem is to keep all or some of the engines running and find the shortest route out of the cloud, which may be downwards. ATC and other aircraft in the vicinity must be informed.

8.3.8.7 Rain, Snow and Heavy Precipitation

On the ground, maneuvering may require the use of slower taxing speeds to allow for the reduction in braking performance in snow, slush or standing water. At the same time, higher power settings may be required to overcome the drag caused by such contaminants, and great care should be taken to avoid jet blast from blowing unsecured ground equipment or contaminants into nearby aircraft. When taxiing, account may need to be taken of banks of cleared snow and their proximity to wings or engine pods.

It may be advisable to delay the completion of such vital actions as flap selection to minimize the danger of damage to such surfaces, or the accumulation of slush on their retraction mechanisms. Greater distances should be observed between successive aircraft to avoid damage from jet blast or propeller wash.

On the runway, directional control may be adversely affected by surface contamination; take-off distance may be increased due to slower acceleration; accelerate-stop distance may be increased for the same reason, and because of poor braking action and aquaplaning, landing distance will be increased for similar reasons. If landing on a contaminated runway is unavoidable, any crosswind component should be well below the normal dry runway figure. Touchdown should be made firmly and at the beginning of the touchdown zone, the nose wheel lowered as early as possible, and all retarding devices deployed.

Heavy precipitation can quickly lead to high levels of runway contamination. When encountered in flight, heavy precipitation can be associated with significant down drafts and windshear.

8.3.8.8 Sandstorms

This operation is not applicable within DRC operational area of Compagnie Africaine d'Aviation (CAA). Exception is Addressed for some AFI Region where this phenomena is experienced. Procedures below shall be followed:
Active sandstorms should be avoided. When on the ground, all engine blanks and covers should be fitted. These should be removed before flight checking to ensure that dust has not accumulated in areas which the covers are designed to protect.

8.3.8.9 Mountain Waves

These form in the lee of a range of mountains when a strong wind is blowing broadside on (within about 30°) to the range. They are usually in the form of standing waves, with several miles between peaks and troughs; they can extend to 10 or 20,000 feet above the range and for up to 200 or 300 miles downwind.

Encounter with mountain waves can be recognized by long-term variations in aircraft speed and pitch attitude in level cruise. Variations may be large. Altitude can usually be maintained by the autopilot, but in severe cases, it may be necessary to change power settings if speed fluctuations are significant. Bear in mind that at cruise height the margin between low and high speed limits can be relatively small.

Near the ground in a mountain wave area, severe turbulence and windshear may be encountered. This region is known as a lee-wave rotor, and is caused by flow separation behind the mountain range.

8.3.8.10 Significant Temperature Inversions

All ambient temperature variations have an effect on aircraft performance. Inversions will usually affect performance adversely. Examples of inversion effects include those shown below.

Large temperature inversions encountered shortly after take-off can seriously degrade an aircraft’s climb performance, particularly at high operating mass. Similarly if the aircraft is operating to a maximum landing mass limited by go around climb performance considerations, the required gradient may not be achieved.

The maximum cruising altitude capability of the aircraft can be significantly reduced if a temperature inversion of even small magnitude exists in the upper levels. This may prevent an aircraft reaching its preferred cruising altitude.

Temperature inversions at lower levels in the atmosphere are frequently associated with deteriorating visibility and can prevent the clearance of fog for prolonged periods.

8.3.8.11 Microbursts

Of the several types of wind shear, it is the sudden speedy appearance of micro bursts and their violence that makes them especially hazardous to aircraft. A microburst is a convective downdraught, usually not wider than 2.5 NM, which spreads out near the ground into opposite horizontal components and contains horizontal wind gradients of up to 80 - 110 Kts.

The wind speed difference within a very short distance between the inside and outside of a microburst can be as much as 95 Kts.

Shear may arise from a change in horizontal wind velocity along the flight path or from the existence of a vertical wind component. Horizontal shear affects the airspeed and performance only while the longitudinal component is actually changing, whereas even small but constant vertical wind changes continually affect the flight path.

Extreme wind effects can so change airspeed and flight path that it may be impossible to recover the situation. This is a particular risk in the Takeoff and landing configurations, with relatively low airspeed and high drag, when close to the ground.
These extreme wind effects are associated with micro bursts. Simulator studies of microburst effects on aircraft highlight the following:

- The down flow of a microburst is much greater at height.
- Lower down the effect is more dominated by horizontal wind shear.

Demonstrations of encounters at various points down the glide slope show vividly that there is no simple recovery formula, for the wind effects are differently distributed according to the transit path location.

Three phases are, however, always present, with different extremes of effect depending on the penetration profile:

- An outward flow that may also be rising;
- A vertical down flow, with maximum flow at the level of the core cortex;
- An outflow with still some element of downdraught, especially if the microburst is slanted away.

The first phase, with increasing IAS and climb is merely destabilizing. The second, with rapid descent but less imposed change in attitude and airspeed, is misleading and dangerous the normal relationship between IAS and angle of attack is broken, and pitch does not relate to flight path.

The final phase, with gross loss of airspeed and some downward flow remaining may be beyond performance limits, if there is little height left. It can be seen that the microburst is a potential killer and must be recognized as such. The only effective answer is to ESCAPE (Go Around), not recovery to continue the approach.

8.3.8.11.1 The Microburst Accident Prevention

The classic thunderstorm «downburst or microburst cell» has a strong downdraught in the centre of the cell. There is often heavy rain in this vertical flow of air. As the vertical air flow nears the ground it turns 90 degrees and becomes a strong horizontal wind, flowing radially outward from the centre. An aircraft on approach which has not yet entered the cell's flow field will be on speed and on glide slope. As it enters the cell it encounters an increasing headwind. Its airspeed increases, and it balloons above the glide slope. If the pilot does not fully appreciate the situation, he may attempt to regain the glide slope and lose excess airspeed by reducing power and pushing the nose down. Then in a very short span of time the headwind ceases, a strong downdraught is entered and the tailwind begins increasing. The engines spool down, the airspeed drops below Vref, and the sink rate becomes excessive. A missed approach initiated from this condition may not be successful.

Note: A missed approach initiated earlier when the aircraft first penetrated the cell would probably be successful since the aircraft was fast and high at this point. A pilot of an aircraft equipped with groundspeed readout would see the telltale signs of a downburst cell shortly after he entered it, i.e. rapidly increasing airspeed with decreasing groundspeed.
8.3.8.11.1.1 Angle of Attack in a Downdraught.

When an aircraft flies into a downdraught, the relative wind shifts so as to come down from above the horizon, this decreases angle of attack, which in turn decreases lift, and the aircraft starts to sink rapidly. In order to regain the angle of attack necessary to support the weight of the aircraft, the pitch attitude must be significantly increased.

- Such a pitch attitude may seem uncomfortably high to a pilot.
- However, a normal pitch attitude will result in a continued sink rate.
- The wing produces lift based on angle of attack not pitch attitude.
- Caution should be observed when a pilot has traversed a downdraught and has pitched up sufficiently to stop the sink rate.

If the pilot does not lower the nose of the aircraft quickly when it exits the downdraught, the angle of attack will become too large and may approach the stall angle of attack.

8.3.8.11.1.2 Climb Performance

Aircraft manufacturers have pointed out that their aircraft still have substantial climb performance (generally in excess of 1000 fpm) at speeds down to stall warning or stick shaker speed, Vss.

8.3.8.11.1.3 Energy Trade.

There are only two ways an aircraft can correct for a wind shear. There can be an energy trade or a thrust change. Historically, most pilots have opted for a thrust change since they had no idea how much an energy trade would benefit them. Further information on the energy of flight therefore is warranted.

The energy of motion (kinetic energy) is equal to 1/2 MV^2 where M is the mass of the aircraft and V is the velocity. Kinetic energy is directly convertible to energy of vertical displacement (potential energy). More simply put, airspeed can be traded for altitude or vice versa. It is important to note that adding 10% to the speed of the aircraft results in a 21% increase in kinetic energy because of the velocity being squared. This, of course, explains the concern over stopping an aircraft on the available runway when additional speed is added.

The following table shows a typical altitude conversion capability of trading 10 or 20 Kts of speed for altitude at various initial speeds. Independent of its mass, the capability of the aircraft to trade airspeed for altitude increases as its initial speed increases.

8.3.8.11.1.4 Trading Altitude for Speed

A pilot caught in low level wind shear who finds he is slower than the normal airspeed (even though he has gone to maximum power) could lower the nose and regain speed by trading away altitude. (This is trading potential energy for kinetic energy). However, data shows that the penalty for doing this is severe. A large sink rate is built up and a great deal of altitude is lost for a relatively small increase in airspeed. Therefore, at low altitudes this alternative becomes undesirable. It is preferable to maintain the lower airspeed and rely on the aircraft's climb performance at these lower speeds than to push the nose over and risk ground contact.
8.3.8.11.1.5 Trading Speed for Altitude.

Conversely, a pilot caught in low level wind shear may pull the nose up and trade speed for altitude, i.e., trade kinetic energy for potential energy. If the speed is above V2 or Vref (as applicable), then this trade may well be desirable. If at or below V2 or Vref, such a trade should be attempted only in extreme circumstances, in doing so, the pilot is achieving a temporary increase in climb performance. After he has traded away all the airspeed he desires to trade, he will then be left with a permanent decrease in climb performance. In addition, if ground contact is still inevitable after the trade, there may be no airspeed margin left with which to flare in order to soften the impact. Wind shear simulations have shown, however, that in many cases trading airspeed for altitude (down to Vss) prevented an accident, whereas maintaining Vref resulted in ground impact.

8.3.8.11.1.6 Adding Speed for Wind Shear

The possibility of having to trade speed for altitude in wind shear makes it attractive to carry some extra speed. However, on landing, if the airspeed margin is not used up in the shear and the aircraft touches down at an excessive speed, the aircraft may not be able to stop on the available runway. It is generally agreed that if a speed margin in excess of 20 Kts above Vref appears to be required, the approach should not be attempted or continued.

8.3.8.11.1.7 Difficulties of Flying near Vss.

It has been stated that in simulations, wind shear «accidents» have been prevented by trading speed for altitude all the way down to Vss. There are difficulties associated with flying at or near Vss which should be recognized. These include:

- The fact that the pilot often does not know Vss;
- The stick shaker mechanism may be miss calibrated (especially on older aircraft);
- The downdraught velocity may vary, which requires a change in pitch attitude to hold speed;
- The difficulty of flying a precise airspeed in turbulence, which is often associated with wind shear;
- Turbulence may abruptly decrease the airspeed from Vss to Vs.

8.3.8.11.1.8 Wind Shear Indications and Action

Early recognition of abnormal conditions and adequate corrective action are important factors in successfully dealing with wind shear. Full use should be made of all aids available, particularly the Glide Slope. There is a need for added caution in undertaking an approach with limited aids in marginal weather conditions. One pilot should always be on full instrument scan during the final approach to touchdown. No INS equipped aircraft have information available in the comparison of reported surface wind and the clues available from flight instruments. Monitoring rate of descent on the standard glide slope (fixed for a given ground speed) and power settings compared with those normally experienced will give indications of head or tailwind components. Drift angle should also be monitored.
8.3.8.11.1.9 Avoidance

Recent accidents have highlighted the major wind shear hazards associated with landing while a thunderstorm or cumulonimbus activity is over, or close to, the airfield. The flight crew should be alert for any clues to the presence of wind shear along the intended flight path. These include PIREPS, Low Level Wind shear alerting System (LLWAS) Warnings, thunderstorms and Virga (rain that evaporates before reaching the ground). Areas of known wind shear which produce airspeed changes greater than 15 Kts, and/or vertical speed changes greater than 500 ft/minute should be avoided. If severe wind shear is indicated, delay Take Off or do not continue an approach. In any case, where a Commander identifies a wind shear greater than 10 Kts at 100 ft or where his rate of descent and airspeed become unstable below 500 ft, he should GO AROUND and makes a further approach provided no greater emergency exists.

8.3.8.11.1.10 Prevention.

If wind shear is suspected, be especially alert to any of the danger signals and be prepared for the possibility of an inadvertent encounter. In such cases the following preventative actions are recommended:

1) Take Off.

A. use maximum Takeoff power instead of reduced power;

B. use the longest suitable runway;

C. Be alert for any airspeed fluctuations during Take Off and initial climb. Such fluctuations may be the first indication of wind shear;

D. If wind shear should be encountered near Vr and airspeed suddenly decreases, there may not be sufficient runway left to accelerate back to the normal Vr. If there is insufficient runway left to stop, initiate a normal rotation at least 2,000 ft before the end of the runway even if airspeed is low. Higher than normal attitudes may be required to lift off in the remaining runway;

E. Know the all engine initial climb pitch attitude. Rotate at the normal rate to this attitude for all non engine failure Take Offs. Minimize reductions from the initial climb pitch attitude until terrain and obstruction clearance is assured. unless the stick shaker activates;

F. Should airspeed fall below the trim airspeed, unusual control column forces may be required to minimize pitch attitude reductions. Stick shaker, if installed, must be respected at all time.

G. Crew coordination and awareness is very important. Develop an awareness of normal values of airspeed, attitude, vertical speed and airspeed buildup. Closely monitor vertical flight path instruments such as vertical speed and altimeters. The pilot not flying should be especially aware of vertical flight path instruments and call out any deviations from normal.
2) Approach and Landing.

Select the minimum landing flap position consistent with field length. Add an appropriate airspeed correction (correction applied in the same manner as gust), up to a maximum of 20 Kts. Take immediate positive action power and attitude – in response to deviations. Avoid large thrust reductions or time changes in response to sudden airspeed increases as these may be followed by airspeed decreases. Crosscheck flight director commands using vertical flight path instruments. Crew coordination and awareness is very important, particularly at night or in marginal weather conditions. Closely monitor the vertical flight path instruments such as vertical speed, altimeters, and glide slope displacement. The pilot not flying should call out any deviations from normal. Use of the autopilot and auto throttle/auto thrust for the approach may provide more monitor and recognition time.

8.3.8.11.1.11 Recovery.

The following action is recommended whenever flight path control becomes marginal below 500 ft on Take Off or landing. As a guideline, marginal flight path control may be indicated by uncontrolled changes from normal steady state flight conditions in excess of the following:

- A. 15 Kts indicated airspeed;
- B. 500 fpm vertical speed;
- C. 5° pitch attitude; Or
- D. 1 dot displacement from the glide slope.

If flight path control has become marginal below 500 ft above the ground, accomplish the following procedure without delay. Simultaneously:

- aggressively position thrust levers forward to ensure maximum rated thrust is attained;
- Disengage autopilot and rotate aircraft smoothly and at a normal rate to achieve a positive rate of climb.
- Stop rotation immediately if stick shaker or buffet should occur. Stick shaker may occur at pitch attitudes below the target attitude;
- do not attempt to regain lost airspeed until terrain contact is no longer a factor;
- do not change flap or gear configuration until vertical flight path control is assured;
- Keeps the scan going.
8.3.8.12 Operating Restrictions

8.3.8.12.1 Cold Weather Operations

Icing conditions will occur when low temperature is accompanied by precipitation. Icing of the aircraft is one of the most dangerous flight hazards. Besides these general procedures specific limitations, produced and type related information are laid down in the respective OM Part B.

Cold weather operations require specific and very careful flight precipitation. The commander has the final authority to decide whether de-icing /anti-icing are necessary. His request will supersede the ground crew's judgment. He is responsible for the anti-icing condition of the aircraft prior to take-off. Taking into account weather conditions, taxi times, hold overtime and other relevant factors the commander shall whenever he will be doubtful about the condition of the aircraft in respect of icing have visual inspection performed or return to the ramp.

I. It should always keep in mind that the following may reduce the hold overtime:

   A. Heavy precipitation
   B. High wind speed
   C. Jet blast
   D. Very low temperature with full or nearly full tanks

II. For the need to the ice the following part of the aircraft should be checked for frost, ice slush or snow:

   A. Wings
   B. Elevator
   C. Horizontal stabilizers
   D. Rudder
   E. Fuselage

III. It should be remembered that clear ice is very difficult to detect. It may from on the upper side of the wind by:

   A. Freezing rain : cold fuel (causing cold wing surface) and precipitation e.g rain, drizzle, freezing above area,
   B. Snow melting on a warm wing, but re-freezing as the wind cols down,
   C. Melted snow running to a cold part of the wing,
   D. Clear ice can form during drizzle and rain near the fuel tanks due to cold fuel (even With the OAT up to + 15° c)
8.3.8.12.2 Operations Contaminated Surface

I. Runway friction characteristics

A. The stopping performance of aircraft is to great degree dependent on the available friction between the aircraft tires and the runway surface, their landing and take-off could be critical in relation to the runway length available. Adequate runway friction characteristic/braking action is mainly needed for three distinct purposes:

1. Deceleration of the aircraft after landing or ejected take-off
2. Directional control during the ground roll on take-off or landing, in particular in the presence of cross-wind ,asymmetric engine power or technical malfunction,
3. Wheel spin-up at touchdown.

B. To compassable for the reduced stopping and directional control capability for adverse runway conditions (such as wet or slippery conditions) performance corrections are applied in the form of:

1. Runway length increment
2. Reduction in allowable take-off or landing weight,
3. Reduction of allowable cross-wind component.

Note: Takeoff and Landing with runway contaminated at Goma Airport are prohibited in Compagnie Africaine d'Aviation (CAA) Operations.

II. Measuring and expressing friction characteristic

When friction measuring are not available but can be only estimated, the pilot is informed only of the estimated braking action reported as "good"-"medium"-"poor"-unreliable (NIL) or a combination of these terms. The pilot should treat reported braking action measurements with caution and interpret them conservatively. Practically the following correlation may be used as a guideline:

<table>
<thead>
<tr>
<th>Breaking action</th>
<th>Mu values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good</td>
<td>0.4 and above</td>
</tr>
<tr>
<td>Medium/good</td>
<td>0.36 to 0.39</td>
</tr>
<tr>
<td>Medium</td>
<td>0.30 to 0.35</td>
</tr>
<tr>
<td>Medium /poor</td>
<td>0.26 to 0.29</td>
</tr>
<tr>
<td>Poor</td>
<td>0.25 and below Unreliable</td>
</tr>
</tbody>
</table>

III. Breaking action

Friction measurements or braking action estimated may be reported:

A. In plain language by the tower
B. By the routine weather broadcast (see Jeppesen airway manual Meteorology chapter)
C. By SNOWTAM (see Jeppesen airway Manual-tables and codes chapter)
IV. Meteorological observation

Meteorological observation in connection with acknowledge of previous runway in use to each arriving and departing aircraft. Pilot should also be prepared to provide a prescription runway condition report to ATC after landing:

A. Coefficient of friction between 0.10 and 0.25 (poor-medium /poor)
   1. Slush or rain on snow-or ice-covered runway,
   2. Runway covered with wet snow or standing water;
   3. Change from frost to temperature above freezing point ;
   4. Change mild to frost (no always);
   5. The type of ice which is formed after long periods of cold;
   6. A thin layer of ice formed.

B. Coefficient of friction between 0.26 and 0.35 (medium/poor-medium)
   1. Snow conditions at temperature below freezing point,
   2. Slush snow –covered runways at temperature below freezing point, exposed to sun
   3. Slush-covered runway

C. Coefficient of friction between 0.36 and 0.45 (medium/good-good)
   1. Snow-covered runways which have not been exposed to temperatures higher than-2°C to -4°C
   2. Damp or wet runway without risk of hydroplaning (less than 3 mm water depth).

V. Aircraft performance on contaminated runways

Take-off and landing performance from contaminated runways is given in respective OM Part B.
As no accurate correlation can be made between the aircraft friction coefficient on a given runway and the reported friction coefficient or braking action, these performances given in the OM part B have been established for given depths of water or contaminant (slush, snow).
Therefore the only way to determine the applicable take off and landing performance is to obtain the depth and type of contaminant.
It is not recommended to determine to land or take off a runway for which the braking action is reported as “POOR” or the coefficient of friction is 0.25 or less.
Take off runway covered with more than 5 cm (2 inch) of dry snow or 2.5 cm (1 inch) of wet snow is not recommended.

VI. Guidelines for operations on contaminated surface

A. General consideration

   1. The two most important variables confronting the pilot when runway coefficient of friction is low and/or conditions for hydroplaning exist are length of runway and cross-wind magnitude.
   2. The total friction force of the tires is available for two functions-braking and cornering. If there is cross-wind, some friction force (cornering) is necessary to keep the aircraft on
the centerline. Tire cornering capability is reduced during braking or when wheels are not fully spun up. Locked wheels eliminate cornering. Therefore in cross-wind conditions, a longer distance will be required to stop the aircraft.

3. According to the runway conditions the following cross wind values indicated in OM Part B should not be exceeded for take-off and landing.

B. Push back

1. Push back and engine start require special attention when the parking position is covered with ice or snow. The truck may not be capable of developing normal power for push back due to reduced friction. In order to make push back as easy as possible, engines should not be started until push back is completed.

2. Abnormal engine indications may occur during engine start as oil pressure exceeding maximum limits until oil temperature rises. That may be accepted but the engine should be operated at idle power until the engine indications are normal.

C. Taxing

1. Greatest caution shall be exercised and slow speed shall be maintained when taxing on slippery surfaces. Aircraft may be taxed at the commander discretion on ramp and taxi-ways not cleared of snow and slush as brakes and wheels may freeze up after takeoff. The taxi speed has to be adjusted to the weather conditions and surface conditions. Power changes should be carried out very carefully with title rates.

2. During turns brakes shall not be applied to get optimum side force by tires. When executing sharp turns while taxing or parking at the ramp, remember that braking and steering capabilities are greatly reduced with icy airport conditions, reduce taxi speed accordingly.

3. During taxing a great distance than normal should be maintained from other aircraft, Jet blast may blow snow into the air intake or into the aircraft.

4. It is recommended to keep flaps in the up position when taxing through slush and standing water in low temperatures. Anti-ice systems should be used during longer ground operations with a higher power setting.

D. Take off

1. Severe retardation may occur in slush or wet snow.

2. In most cases, lack of acceleration will be evident early on takeoff run. Maximum permissible power must be used from the start.

3. Large quantities of snow or slush, usually containing sand or other anti-skid substances may be thrown into the engines, static ports and into the airframe. Pod and engine clearance must be watched when the runway is cleared and snow is banked at the sides of runways or taxi-way.

4. A lag in nose wheel steering and a possible skidding of the nose wheel may occur during take-off on contaminated runways. The effectiveness pressure of the control column.

a) Take-off not authorized:

- In freezing rain and freezing drizzle unless adequate ice protection can be provided by anti-ice fluid
During heavy fall of wet snow (temperatures around 0)
If snow, ice or frost has gathered on the aircraft,
When the runway braking action is reported to be “poor” (brake coefficient less than 0.05)

b) Aborted take-off

During aborted take-off skidding occur caused by the maximum achieved deceleration. To stay on centerline it might be necessary to reduce reverse thrust to idle. Directional control problems may also arise due to excessive anti-skid cycling.
Rudder steering should be the primary for directional control
Modulation of wheel brakes during aborted take-off should not be performed when anti-skid system is installed.

E. Landing

1. Pilot should be aware that where rain, hail, sleet or snow showers are encountered on the approach or have been reported as having recently crossed the airport, there is high probability of the runway being contaminated. The runway state should be checked with ATC before commencing or continuing the approach. Very often a short delay is sufficient to allow the runway to drain or the contaminant to melt.
2. Use of reverse thrust on landing on dry snow in very low temperature may melt this snow and form clear ice on re-freezing on static ports.
3. The required landing field length for dry runways is defined as 1.67 times the demonstrated dry landing distance. For wet runways, this landing distance requirement is increasing by 15%
4. The shortest stopping distances on wet runways occur when the brakes are fully applied as soon as after main wheel spin up with maximum and immediate used of reverse thrust. Landing on contaminated to use the auto-brake (if available) provided the contaminated is evenly distributed.
5. The factors and considerations involved in landing on a slippery surface are quite complex and depending on the circumstance, the pilot may have to make critical decisions almost instinctively.

F. Summary

The following list of items summarizes the key points to borne in mind. Several may have to be acted upon simultaneously:

1. Do not land where appreciable areas of the runway are flooded or covered with ½ inch or more of water or slush.
2. Limit cross-wind components when runway condition are poor and runway length short
3. Establish and many variables involved before landing on a slippery runway:

   I. Landing weather forecast
   II. Aircraft weight and approach speed
   III. Landing distance required
   IV. Hydroplaning speed
   V. Condition of tires
   VI. Brake characteristics (anti-skid, auto-brake mode)
VII. Wind effects on the directional control of the aircraft on the runway
VIII. Runway length and slope
IX. Glide path angle
X. Do not exceed vapp at the threshold
XI. Be prepared to go-around
XII. Flare the aircraft firmly at the aircraft down quickly
XIII. Select reverse thrust as soon as possible
XIV. Get the nose of the aircraft down quickly
XV. If the auto-brake is not available, and if remaining runway length permits, allow the aircraft do decelerate to less than dynamic hydroplaning sped before applying wheel brakes. If however maximum braking is required applying wheel brakes are the primary means for stopping the aircraft is fully stopped.

8.3.8.12.3 High Temperature and High Altitude Operations

8.3.8.12.3.1 Effect of Temperature and Altitude on airplane Performance

The figures published in the Flight Manual for the performance capabilities of a certain model of airplane are always related to standard atmosphere (29.92 inches of mercury at 15° C at sea level). However, only rarely will the airplane actually operate under conditions that approximate standard atmosphere. Any increase in temperature or altitude means a decrease in the aircraft's optimum performance.

Air density decreases with altitude. At high elevation airports, an airplane requires more runways to take off. Its rate of climb will be less, its approach will be faster, because the true air speed [TAS] will be faster than the indicated air speed [IAS] and the landing roll will be longer.

Air density also decreases with temperature. Warm air is less dense than cold air because there are fewer air molecules in a given volume of warm air than in the same volume of cooler air. As a result, on a hot day, an airplane will require more runways to take off, will have a poor rate of climb and a faster approach and will experience a longer landing roll.

In combination, high and hot, a situation exists that can well be disastrous for an unsuspecting, or more accurately, an uninformed pilot. The combination of high temperature and high elevation produces a situation that aerodynamically reduces drastically the performance of the airplane. The horsepower out-put of the engines decrease because its fuel-air mixture is reduced. The propeller develops less thrust because the blades, as airfoils, are less efficient in the thin air. The wings develop less lift because the thin air exerts less force on the airfoils. As a result, the take-off distance is substantially increased, climb performance is substantially reduced and may, in extreme situations, be non-existent.

Humidity also plays a part in this scenario. Although it is not a major factor in computing density altitude, high humidity has an effect on engine power. The high level of water vapor in the air reduces the amount of air available for combustion and results in an enriched mixture and reduced power.
Mountain airports are particularly treacherous when temperatures are high, especially for a low performance airplane. The actual elevation of the airport may be near the operational ceiling of the airplane without the disadvantage of density altitude. Under some conditions, the airplane may not be able to lift out of ground effect or to maintain a rate of climb necessary to clear obstacles or surrounding terrain.

**Density altitude** is pressure altitude corrected for temperature. It is, in layman terms, the altitude at which the airplane thinks it is flying based on the density of the surrounding air mass.

Too often, pilots associate density altitude only with high elevation airports. Certainly, the effects of density altitude on airplane performance are increasingly dramatic in operations from such airports, especially when the temperature is also hot. But it is important to remember that density altitude also has a negative effect on performance at low elevation airports when the temperature goes above the standard air value of 15° C at sea level. Remember also that the standard air temperature value decreases with altitude.

In order to compute the density altitude at a particular location, it is necessary to know the pressure altitude. To determine the latter, set the barometric scale of the altimeter to 29.92” Hg and read the altitude.

Density altitude can be calculated for any given combination of pressure altitude and temperature, by using the circular slide rule portion of a flight computer.

### 8.3.8.12.3.2 Takeoff Performance Charts

Airplane Flight Manual publishes information, usually in chart or table form, on the take-off performance of a specific model of airplane. As a pilot, you should familiarize yourself with these charts/tables, to be able to predict how your airplane will perform under varying atmospheric conditions and you should refer to these charts/tables whenever there is any doubt that the takeoff conditions may not be sufficient for the performance capabilities of the airplane. In addition, it is important to remember that the charts/tables for any particular airplane were compiled from performance figures of factory new equipment in optimum conditions. Any typical general aviation airplane, with considerable time on both airframe and engine, will have a poorer performance potential than that predicted by the charts/tables. In addition, under-inflated tires, dragging brakes, dirt on the wings, etc., will also affect performance negatively.

If after calculating density altitude and checking the tables, it appears that the take-off run will require more runway than is available, you, as pilot-in-command, have several alternatives. You can lighten the load, if possible, or you can wait until the temperature decreases. Generally, the most critical time for flight operations when the temperature is very hot is from mid-morning through mid-afternoon. This is especially true at high elevation airports, but even at lower elevations, aircraft performance may be marginal. Aircraft operations should, therefore, be planned for early morning or late evening hours.

It is important to remember that in taking off from airfields that are at high elevation, you should use as a reference the same indicated airspeed that you would use during take-off from an airfield at sea level. It is the true airspeed and groundspeed that is affected by the increase in elevation and temperature.
8.3.8.12.3.3 Climb Performance Charts

Airplane Flight Manual also publishes data for climb performance. The maximum, or best rate of climb, is the rate of climb which will gain the most altitude in the least time and is used to climb after takeoff until ready to leave the traffic circuit.

Many Airplane Manuals also publish charts for cruise climb. Cruise climb, or normal climb, is the climb airspeed used for a prolonged climb. The chart indicates the fuel used, time required to reach altitude, and still air distance covered in order to reach various altitudes when climbing at a certain indicated airspeed with various power settings.

8.3.8.12.3.4 Cruise Performance Charts.

Performance figures for cruise at gross weights are also given in most Airplane Flight Manuals. These charts show the fuel consumption, true airspeed, endurance and range that may be expected when cruising at a certain altitude with the engine being operated at normal lean mixture at various combinations of rpm and MP settings (to give a required % of power).

8.3.8.12.3.5 Landing Performance Charts

Perfect landings are usually preceded by deliberately planned and well executed approaches. Correct approach speeds are important. Airplane Flight Manual recommends the speeds to use on approach with various flap settings. These airspeeds should always be used.

The factor of weight is important in determining landing speed. All airplanes stall at slower airspeeds when they are light. A lightly loaded airplane, landing at the same airspeed that is used when it is heavily loaded, will float before touchdown to dissipate the excess energy, thus extending the landing distance. If the Owner’s Manual does not publish a table of approach speeds as a function of reduced weight, a rule of thumb is to reduce the calibrated approach airspeed for the maximum weight of your airplane by one-half of the percentage of the weight decrease. If for example, the airplane weight is 20% below maximum, the calibrated approach airspeed would be decreased by half of that, or by 10%

On some airplanes, the manufacturer may require a particular approach speed for all weights because, during certification flight testing, it was found that for stability and control reasons, or for go-around safety, a fixed airspeed is required. Always comply with the manufacturer's recommendations.

Since there is some loss in the quality of braking action on the grass of a sod runway, the ground roll after landing can be expected to be longer than it would be on a hard surface runway.

Density altitude affects the landing performance of an airplane as greatly as it affects take-off performance. High temperature and high elevation will cause an increase in the landing roll because the true airspeed is higher than the indicated airspeed. Therefore, even though using the same indicated airspeed for approach and landing that is appropriate for sea level operations, the true airspeed is faster, resulting in a faster groundspeed (with a given wind condition). The increase in groundspeed naturally makes the landing distance longer and should be carefully considered when landing at a high elevation field, particularly if the field is short.
Airplane Flight Manuals contain performance charts and tables, which relate landing distance to density altitude. Pilots should develop the habit of referring to these charts/tables in order to anticipate the distance that will be required to safely land their airplane under various conditions of flight.

8.3.8.13 Maximum Wind Component for Takeoff and Landing

For takeoff, the wind component value is the liftoff zone and touchdown zone for landing, when there is two values.

The maximum cross wind within Compagnie Africaine d’Aviation (CAA) operations is 33kts for dry runways unless otherwise mentioned in the AFM limitations.

The maximum tailwind is 10kts for dry runways.

*Note: For wet and SSW, refer to appropriate AOM/ FCOM.*
8.3.9 Wake Turbulence

Wake turbulence vortices are present behind every aircraft of Compagnie Africaine d'Aviation (CAA), but are particularly severe when generated by large and wide body jet aircraft. These vortices are two counter-rotating cylindrical air masses trailing aft from the aircraft. The vortices are most dangerous to following aircraft during the take-off, initial climb, final approach and landing phases of flight. They tend to drift down and when close to the ground move sideways from the track of the generating aircraft, occasionally rebounding upwards.

The three basic effects of wake turbulence on a trailing aircraft are impaired roll, loss of height or rate of climb and possible structural stress. The greatest danger is the imposed roll on the penetrating aircraft to a degree exceeding its counter control capability. Should the vortex encounter occur in the approach area, its impact is heightened because the trailing aircraft is in a critical state with regard to speed, thrust, altitude and reaction time. The following criteria apply:

8.3.9.1 Successive Aircraft on Final Approach

<table>
<thead>
<tr>
<th>Leading Aircraft</th>
<th>Following Aircraft</th>
<th>Minimum Distance (NM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heavy</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Medium</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Heavy</td>
<td>Small</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Light</td>
<td>8</td>
</tr>
<tr>
<td>Medium (Note)</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Medium</td>
<td>Small</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Light</td>
<td>6</td>
</tr>
<tr>
<td>Small</td>
<td>Medium or Small</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Light</td>
<td>4</td>
</tr>
</tbody>
</table>

*Note: Where the leading medium aircraft is a B757 the minimum distance shall be increased to 4 nm.*
8.3.9.2 Departing Aircraft

The minimum spacing listed below is to be applied between successive aircraft, both IFR and VFR flights.

a) Aircraft departing from the same runway or from parallel runways less than 760 meters apart.

<table>
<thead>
<tr>
<th>Leading Aircraft</th>
<th>Following Aircraft</th>
<th>Minimum spacing at time aircrafts are airborne</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heavy</td>
<td>Medium Small Light</td>
<td>Departing from the same take-off position</td>
</tr>
<tr>
<td>Medium or Small</td>
<td>Light</td>
<td>Departing from the same take-off position</td>
</tr>
<tr>
<td>Heavy</td>
<td>Medium Small</td>
<td>Departing from an intermediate take-off</td>
</tr>
<tr>
<td>Medium or Small</td>
<td>Light</td>
<td>Departing from an intermediate take-off point</td>
</tr>
</tbody>
</table>

b) Operations on a runway with a displaced landing threshold if the projected flight paths are expected to cross.

<table>
<thead>
<tr>
<th>Leading Aircraft</th>
<th>Following Aircraft</th>
<th>Minimum spacing at time aircrafts are airborne or have touched down</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heavy</td>
<td>Arrival</td>
<td>Medium Small Light Departure</td>
</tr>
<tr>
<td>Heavy</td>
<td>Departure</td>
<td>Medium Small Light Arrival</td>
</tr>
<tr>
<td>Medium Small</td>
<td>Arrival</td>
<td>Light Departure</td>
</tr>
<tr>
<td>Medium Small</td>
<td>Departure</td>
<td>Light Arrival</td>
</tr>
</tbody>
</table>

C) Operations on crossing and diverging runways or on parallel runways greater than 760 meters apart.

The spacing below is to be applied whenever the projected flight paths of the aircraft cross.

<table>
<thead>
<tr>
<th>Leading Aircraft</th>
<th>Aircraft Crossing Behind</th>
<th>Minimum Distance</th>
<th>Time Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heavy</td>
<td>Heavy</td>
<td>4 miles</td>
<td>2 minutes</td>
</tr>
<tr>
<td></td>
<td>Medium Small</td>
<td>5 miles</td>
<td>3 minutes</td>
</tr>
<tr>
<td></td>
<td>Light</td>
<td>6 miles</td>
<td>3 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8 miles</td>
<td>4 minutes</td>
</tr>
<tr>
<td>Medium</td>
<td>Medium Small</td>
<td>3 miles</td>
<td>2 minutes</td>
</tr>
<tr>
<td></td>
<td>Light</td>
<td>4 miles</td>
<td>2 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6 miles</td>
<td>3 minutes</td>
</tr>
<tr>
<td>Small</td>
<td>Medium or Small</td>
<td>3 miles</td>
<td>2 minutes</td>
</tr>
<tr>
<td></td>
<td>Light</td>
<td>4 miles</td>
<td>2 minutes</td>
</tr>
</tbody>
</table>
d) Opposite direction runway operations.

A minimum of two minutes shall be applied between a medium aircraft and a heavy aircraft and between a light aircraft and a medium aircraft when the heavier aircraft is making a low or missed approach and the lighter aircraft is:

- Utilizing an opposite direction runway for take-off, or
- Landing on the same runway in the opposite direction, or
- Landing on a parallel opposite direction runway separated by less than 760 meters.

### 8.3.9.2.1 Weight Parameters (Maximum Take-Off Mass in KG)

<table>
<thead>
<tr>
<th>Category</th>
<th>ICAO and Flight Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heavy (H)</td>
<td>136 000 or greater</td>
</tr>
<tr>
<td>Medium (M)</td>
<td>&lt;136 000 and &gt;7000</td>
</tr>
<tr>
<td>Small (S)</td>
<td>–</td>
</tr>
<tr>
<td>Light (L)</td>
<td>7000 or less</td>
</tr>
</tbody>
</table>

The wake turbulence group of an aircraft should be indicated on the flight plan (item 9) as H, M or L according to the ICAO specification.
8.3.10 Crew Members at their Stations

8.3.10.1 Flight Crew

Each Flight Crew member of Compagnie Africaine d'Aviation (CAA) required to be on duty on the flight deck:

- During Take Off and landing, he must be at his station.
- Whilst en route, he shall remain at his station except when his absence is necessary for the performance of duties in connection with the operation of the aircraft or for physiological needs provided at least one suitably qualified pilot remains at the control of aircraft at all times. Good teamwork consists mainly of mutual initiative, assistance and continuous briefing.

Thus it is necessary that Flight Crew members duly inform each other about their intentions and other important facts concerning the flight, such as a temporary discontinuation of lookout, a momentary break of listening watch on normal communication frequencies, handling over of controls, use of autopilots, handling of throttles or thrusts.

Whenever any Crew Member of Compagnie Africaine d'Aviation (CAA) observes or suspects an irregularity, deviation or anomaly in the operation of the airplane or its systems, all Flight Crew members of Compagnie Africaine d'Aviation (CAA) must be advised immediately before analyzing the situation further.

Since crew compositions are constantly changing, it is necessary to facilitate the flight deck teamwork by adherence to standard procedures.

8.3.10.2 Flight and Cabin Crew Positions

It is standard procedure that both pilots’ seats are occupied by qualified pilots during all phases of a flight. A pilot may leave his seat temporarily during flight, with the Commander’s permission, e.g. when minor irregularities or personal necessities so require. The autopilot must be engaged in such cases (this is not a minimum requirement).

In principle the Commander always sits in the left hand seat. Exceptions are possible during command course and crew augmentation with first officers. By being ready at controls, the pilot responsible will, in case of an emergency during any phase of the flight, always be in position to take over (instantly). Changing pilots’ seats: Whenever a pilot is replaced on the front seat, this has to be authorized by the commander. The changeover has to be done quickly and must be so arranged that only one of the pilots’ seats is empty at a time. The autopilot shall be engaged during the pilots’ seat change whenever serviceable and pilot command must be fully fastened. While flying and / or taxing: Reading below 20000 ft, is restricted to the minimum. Below 10000 ft the management of FMS (or similar) is restricted to the essential for the phase of flight. Meals, teas, coffee etc should normally be served above 20000 ft and be taken separately, so that one pilot can keep watch until the other is ready, thus maintaining an adequate lookout.

- Allocation of Flight Crew Duties
The general allocation of Flight Crew duties during takeoff, climb, cruise, descent, approach and landing is underlined in O.M., part B. The main duties of the Pilot Flying are the control of the airplane and its navigation. He shall monitor the airplane’s attitude and be immediately ready to take over manually. The Pilot Monitoring has to perform all non flying duties. He has to assist the pilot flying whenever possible in monitoring the flight instruments and in the lookout. He always monitors the pilot flying for signs of incapacitation, especially during the critical stages of the flight such as take–off and approach/landing and is prepared to take over control at all times.

 Allocation of Duties in Emergency

Depending on the circumstances, the Commander shall allocate specific duties to all flight personnel concerned. It must be clear that the pilot flying shall mainly be responsible for controlling and monitoring flight progress, while other Flight Crew members are performing their allocated duties, e.g. technical handling of troubles, etc. If the Commander is not seated in the left hand seat (command course, training flights, augmented flights etc.), he will decide about his seating position. Hand-over of controls shall be performed as prescribed in a definite unmistakable way. The taking over pilot must call clearly “I HAVE CONTROL” and the other pilot must answer “YOU HAVE CONTROL”. In the same way should be fully clear the control of the radio of switchover from normal or emergencies duties.

 Command Course

Pilot admitted for command course on the route will use the left hand seat under the supervision of a designated instructor for takeoff, approaches and landing, subject to the discretion of the instructor who still remains in command.

 Initial command course from copilot to Commander: During the initial learning phase of the command course program the instructor must for takeoff and landing, be in the right hand seat.

 Conversion course for Captain (type rating course) The instructor shall supervise a Captain Transition course from the observer’s seat at his own discretion.

 Augmented Flight Crew Seating position In principle, above 20000 ft, a Commander or Copilots may occupy any seat. During other phases of flight a Commander shall occupy the left hand seat unless during command course.

 Distribution of duties Commanders in the right hand seat and Copilots in the left hand seat during augmentation may act as Pilot Flying or Pilot Monitoring above 20,000 ft. Below 20,000ft only Commanders trained on right hand seat may be seated on the right seat and Copilot may only seat in the right hand seat.

 Cabin Crew during Takeoff and landing, during preplanned emergencies, or whenever so instructed by the commander in the interest of safety, the cabin crew must occupy their allocated crew seats. Where the number of cabin crew exceeds the availability of cabin crew seats the additional crew members will occupy seats in the passenger cabin. The first seats to be assigned in this manner should be aisle seats adjacent to an over wing exit. Where there are additional crews and the passenger cabin is full, the C/A1 must liaise with the Commander to ensure the availability of a seat on the flight deck.
8.3.11 Use of Safety Belts for Crew and Passengers

8.3.11.1 Flight Crew

RACD 8.5.1.7 require each Flight Crew Member of Compagnie Africaine d'Aviation (CAA) to wear and fasten his seatbelt when at his station.

During Takeoff, landing and below 10000ft, and whenever required in the interests of safety or by the Commander, each Flight Crew member of Compagnie Africaine d'Aviation (CAA) at his station shall wear and fasten his full safety harness.

However, each Flight Crew Member of Compagnie Africaine d'Aviation (CAA), other than the Commander and the Copilot, may wear and fasten only his seatbelt if the harness straps interfere with the performance of his duties. At least one pilot must be seated at the controls at all times during flight and must be strapped in with his full safety harness.

8.3.11.2 Passenger

As required by RACD 8.8.1.3 and 8.6.2.9 (d), Passengers on board of Compagnie Africaine d'Aviation (CAA) aircraft shall remain in their seats with their seatbelts fastened during taxi, takeoff and landing, also whenever so instructed by the Commander, either verbally or through use of the seatbelt sign. Commander may release Cabin Crew for service even if the Seat Belt sign is still ON.

8.3.11.3 Cabin Crew

Per RACD 8.5.1.34, during Takeoff, landing and below 10000ft, and whenever required in the interests of safety or by the Commander, each Cabin Crew Member of Compagnie Africaine d'Aviation (CAA) at his station shall wear and fasten his full safety harness.

On the Commander's instructions, either via the Passenger Address or the Senior Cabin Crew, the cabin crew must secure all major items of loose equipment, sit down and fasten their seat belts. They will normally remain in their seats until instructed by the Commander but are authorized to use their full discretion in attending to passengers. If a passenger insists on moving despite being reminded of the necessity to remain strapped in, as a matter of policy he or she should not be prevented but should be warned by cabin crew that they do so at their own risk and to take particular care.

8.3.11.4 Flight in Turbulence

8.3.11.4.1 Preflight Crew Briefing

It is important to brief cabin crew as early as possible if turbulence is forecast or expected. The ideal time is preflight with an update as more information becomes available.

8.3.11.4.2 In-flight Crew Briefing

When approaching an area of known or predicted turbulence or during a turbulence encounter, the Commander shall endeavor to give as much warning as possible to passengers by switching on the seat belt sign and by making the appropriate PA announcement.
If the turbulence in question is moderate or severe; the Commander must then decide what level of service should continue to be given to the passengers and must instruct the cabin crew accordingly.

His instructions must be clear and unambiguous especially where he wishes the cabin crew to cease service and strap into their seats stating: "CABIN CREW FASTEN SEAT BELT".

In this latter event, use of the Passenger Address system will ensure that a clear undiluted message reaches all the cabin crew members in the shortest possible time.

8.3.11.4.3 Seat Belt Sign ON in Anticipation of Turbulence.

The L1 will instruct the passengers with announcements to return to their seats and fasten the seat belts. Cabin Crew will check that: The passenger’s seat belts are fastened; The overhead lockers are all locked; The toilettes are empty; The trolleys and any loose galley equipment are stowed. Senior Cabin Crew will then reports to the Commander when the passengers are strapped in and receives his instructions as to whether or not cabin service is to be continued. Unless otherwise instructed, service will continue normally; special attention must be paid regarding hot beverages.
8.3.12 Admission to Flight Deck

Cockpit door of any aircraft operated or owned by Compagnie Africaine d'Aviation (CAA) will be always closed and locked. For cockpit door operation see appropriate chapter of this manual. No person, other than a flight crew member assigned to a flight, is admitted to, or carried in, the flight deck unless that person is:

8.3.12.1 An operating Crew Member; or

A representative of the Authority responsible for certification, licensing or inspection if this is required for the Performance of his official duties; or Personnel cleared to fly seated in the vacant Flight Deck Crew Seat (see point 8.3.13): The Commander must be sure that: In the interest of safety, admission to the flight deck does not cause distraction and/or interfere with the flight's operations; and All persons carried in the flight deck are made familiar with the relevant safety procedures. The final decision regarding the admission to the flight deck is responsibility of the Commander.

8.3.12.2 Flight Deck Discipline and Distractions

Non essential activities such as Compagnie Africaine d'Aviation (CAA) calls unrelated to safety, the filling out of forms and documents, non-essential communications with other flights etc. should be avoided during critical phases of flight. The Commander must ensure that in general there is no unnecessary conversation or performance of non-essential duties during all phases of flight below FL 100, including ground maneuvering. Visit by passenger to the Flight Deck could be allowed but it must be clear that it doesn’t have to interfere with the safe operations of the aircraft and, where necessary, the Commander should brief visitors to this effect. While visitors are present, one pilot must concentrate solely on the operation of the aircraft and on the maintenance of ATC communications. Visits to the flight deck should in most cases be limited to the cruise phase of flight. In general, visitors to the flight deck should be briefed that they should not initiate conversations with the flight crew and that in the event of any warning indication they must remain silent.
8.3.13 Use of Vacant Crew Seats

Two different type of vacant crew seat may be available on Compagnie Africaine d'Aviation (CAA) airplanes: Flight Deck Crew seats; Cabin Jump seats; Crew rest seats (if installed). The carriage of revenue passengers on vacant Flight Deck Crew seats and Cabin Jump seats is not permitted. The carriage of revenue passengers on vacant Crew Rest seats is permitted in special situation and reported to the Company via Captain Report with details. The carriage of Non revenue passenger ID00 on vacant Cabin Jump seats is permitted. The Cabin Jump seats that may be occupied are only those that are not essential to be used by the minimum Cabin Crew requirement for emergency evacuation. Any person seated on Flight Deck Crew seats and Cabin Jump seats should be briefed on safety procedures and on use of emergency equipment.

Note: Cabin Crew not included in the minimum Crew requirement may sit in the Flight Deck. The bunks (if installed) must not be used during Takeoff and Landing.

➢ Use of Vacant Flight Deck Crew Seats

The use of vacant Flight Deck Crew seats is only permitted at Commander Discretion. Any person that occupies a vacant Flight Deck Crew seats must be briefed of use of safety equipment relevant with crew seat and general Flight Deck rules. The Commander may refuse the access to the flight deck if, in his opinion, the safety of the airplane would thereby be endangered.

➢ The following persons are authorized on the Flight Deck seats:

✓ Compagnie Africaine d'Aviation (CAA) Ground Engineers following the flight for technical reason;
✓ Compagnie Africaine d'Aviation (CAA) Flight and Cabin Crew on duty or off duty;
✓ Compagnie Africaine d'Aviation (CAA) Flight Operations Personnel;
✓ Compagnie Africaine d'Aviation (CAA) Flight and Cabin Crew not yet type rated or certified;
✓ Flight Crew Member of known IATA carriers;
✓ Any person cleared by the Flight Operations Director;
✓ Civil Aviation inspectors on duty for the specific flight and authorized.

The Commander may refuse the use of Flight Deck seats if the presence of any person including the Civil Aviation inspector would be prejudicial to the safety of the flight. Use by ID00 of Cabin Crew Jump Seats In case of overbooking, transportation of Compagnie Africaine d'Aviation (CAA) passengers with Airline Discount (ID00 = P.A.D.) on free Cabin Crew jump seats may be granted by the Commander provided: The ID00 is in possession of a valid free ticket; The ID00 is properly briefed on safety procedures and equipment and their relevant operating procedures, if applicable.

Note: Cabin Crew not included in the minimum requirement may sit in the Flight Deck. Selling of Cabin Crew seats to other than ID00 is not permitted.
8.3.14 Incapacitation of Flight Crew Members

Incapacitation is defined as any condition which affects the health of any member of the aircraft crew to the extent that the crew member is unable to continue carry out his/her duties. Incapacitation can be gradual or sudden, subtle or overt, partial or complete and may not be preceded by any warning.

8.3.14.1 Partial or Gradual Incapacitation

The following procedures are to be used if a pilot suffers any medical symptoms in flight which might impair his ability to handle the aircraft such that he would hand over control. These symptoms include severe pain (especially sudden severe headache or chest pain), dizziness, blurring or partial loss of vision, disorientation, vomiting or diarrhea. The procedures must be followed even if the pilot has apparently recovered, as temporary symptoms are often a warning of more severe illness to follow, and self diagnosis is notoriously unreliable.

If the affected pilot is handling the aircraft, he is immediately to inform the other pilot and hand over control to him. The destination, base or appropriate agency, is to be informed of the problem and, if necessary, a diversion made to the nearest suitable landing place, bearing in mind the nature and severity of the symptoms and the availability of medical facilities.

The affected pilot is not to take control again for the remainder of the flight and is to lock his shoulder harness to prevent him falling on to the controls if the illness becomes more severe. The affected pilot is not to fly again as a crew member until he has been medically examined or, in the case of diarrhea or vomiting, has had no symptoms for 24 hours.

If during line flying it appears that both pilots are suffering from some form of incapacitation or that one pilot appears to be in any way incapacitated for no obvious reason, then the flight crew should don oxygen masks without delay and switch them to 100%.

8.3.14.2 Sudden or Complete Incapacitation

Complete incapacitation may be subtle or overt, and may not be preceded by any warning. While incapacitation may occur at any stage of flight, fatal collapse among flight crew has most commonly occurred in the critical stages of approach and landing when ground proximity presents a direct hazard.

Detection of the incapacitation in the subtle case may be indirect, as a result of the pilot not taking some expected action. If, for example, the pilot conducting the approach collapses without any overt sign and the body position is maintained, the other pilot will not be aware of his colleague’s collapse until the expected order of events becomes interrupted.

In the context of pilot incapacitation it is essential that crew members closely monitor the aircraft’s flight path in the critical stages of take-off, initial climb, final approach and landing, and immediately question any deviation from the norm and from SOP calls and responses. Where the pilot handling the aircraft has collapsed, the other pilot will assume control.

Once incapacitation has been detected, the first requirement is to ensure that the affected pilot does not interfere with any controls. It is therefore essential that his harness should be locked and, if possible, the seat slid back. The next priority is to re-plan the flight, including consideration of diverting to the nearest suitable destination.
8.3.14.3 The “Two Communication” Rule

The ‘Two communication’ rule of thumb should be used to assist in detecting incapacitation. This states that a flight crew member should suspect the onset of incapacitation any time when a pilot does not respond appropriately to a second verbal communication associated with a significant deviation from a standard operating procedure or flight profile.

8.3.14.4 Actions to be taken when Incapacity is recognized

1. **First step:**
   - Take over control of the aircraft by announcing “have control”
   - Engage auto pilot,
   - Declare an urgency or emergency whichever is applicable,( PAN PAN or MAY DAY)
   - Have an incapacitated Flight Crew Member removed from his seat. It any case, his seat should be moved fully back to prevent obstruction of flight controls, switches, levers, etc. The help of other Crew Members or passengers might be required,
   - If necessary, reset COM and NAV to your side.

2. **Second:**
   - Take care of the incapacitated Crew Member by trying to provide first aid (ask if doctors other medical persons are aboard).
   - Arrange a landing as soon as practicable after considering all pertinent factors,
   - Arrange medical assistance after landing-giving as many details about the condition of the affected Crew Member as possible;

3. **Third step:**
   - Prepare for landing (flight-deck and cabin), but do not press for a hasty approach,
   - Perform approach checklist earlier than normal (request assistance from other Crew Members or "capable" persons),
   - Request radar vectoring and make an extended approach-where possible-to reduce workload,
   - For landing do not change seats-fly the aircraft from that position you initially were assigned to,
   - Organize work after landing; this shall include, depending on the situation, a change of seats for taxiing in, but only after the aircraft has come to a complete stop; having the incapacitated Crew Member off-loaded and to the ambulance as quickly as possible arrangements for the parking of the aircraft.

**Note:**

a) The Compagnie Africaine d'Aviation (CAA) operations department must be kept informed.

b) In case of incapacitation of the system panel operator, pilots shall refer to procedures as published in the AOM/FCOM.
8.3.14.5 Summary

- The problems involved with incapacitation of Crew Members may be summarized as follows:
  - If you do not feel well, say “NO” before the flight.
  - Remember that best medical examinations as well as a health conscious life still do not guarantee that an incapacitation during flight will not happen to you or to your other Crew Members.
  - The “TWO COMMUNICATION RULE” must be used in order to have a chance of detecting any incapacitation in time. Take notice of any also be an indication of onset of incapacitation.

- Once an incapacitation is identified, remember the three basic steps:
  - **Step 1**: Take over the aircraft and bring it under YOUR control.
  - **Step 2**: Take care of the incapacitated pilot (either has him removed from his seat or fixed so that he will not interfere with the controls).
  - **Step 3**: Prepare for landing.

Finally, it is emphasized that incapacitation requires special actions using the good judgment of the crew Member left in command of the aircraft.
8.3.15 Cabin Safety Requirements

The Commander has ultimate responsibility for cabin safety. This responsibility is normally delegated to the SCCM.

The SCCM is directly responsible to the commander for the safety of the passengers from the time when they board the aircraft until the time when they disembark after the flight. All other cabin crew is responsible to the SCCM and to the aircraft commander, who has the complete authority.

8.3.15.1 Cabin Safety Preparation

8.3.15.1.1 Pre-Flight

The SCCM shall confirm to the commander that the passenger compartment contains the requisite emergency equipment in the appropriate stowage and that the evacuation slides are armed; seat-backs are in the upright position and lap straps and/or harnesses are neatly arranged ready for use. Tables should be folded and stowed, and any catering secured in its approved area or compartment. Unless the mass and balance for the flight and passenger category will be such that the random occupation of seats is permissible, passengers should be shown, or conducted to their allocated seats. Passengers should be advised to keep their seat belts fastened whilst in their seats, and stay seated unless they require exercise or to use the toilet facilities throughout the flight. Passenger briefing should be carried out when all passengers are seated, and their attention can readily be gained. The briefing is to be given in a calm and authoritative manner, and be as interesting and informative as possible in order to ensure that all passengers will retain sufficient of the information to react sensibly in the event of an emergency. It should be remembered that although passengers may be experienced air travelers, others may have not previously flown, or may not be accustomed to different content of the passenger safety cards.

8.3.15.1.2 In-flight

Whenever the "Fasten Seat Belt" sign is illuminated the cabin staff will ensure that all passengers seat belts are securely fastened and, prior to landing, that all tables are folded away and secured. In the event of turbulence, the Senior Cabin Crew will ascertain from the Commander whether or not the Cabin Crew can continue working, or whether they should secure their equipment and return to their seats.

8.3.15.1.2.1 Surveillance of Passenger Cabin At regular intervals, check cabin for:

- The well-being of the passengers;
- Keep cabin free of papers on the floor and other waste; and
- Inform flight crew about the cabin temperature (too cold/warm).

8.3.15.1.2.2 Prevention and Detection of Fire in the Cabin

For fire avoidance/detection cabin crew shall conduct regular checks of all accessible areas and observe the following provisions:

- Enforce strict observation of the “NO SMOKING” sign;
- Search trays for glowing cigarettes and cigars before stowing. Never dispose glowing
cigarettes/cigars in waste boxes;
- Restrict spreading of papers by passengers on the cabin floor; and
- Check lavatories for signs of smoke and open flaps of waste boxes. Check the
temperature of the hot water and the proper working of electric toilet appliances.

8.3.15.1.2.3 Smoking on Board

It is the Company’s policy that smoking in our aircraft is prohibited at all times. The Cabin
Crew shall strictly enforce the “No Smoking” instructions.
If a passenger defies the no-smoking signs in the lavatories, he shall be informed that the
Company will deliver a prosecution to the police and thus press charges / request public
prosecution.
If a passenger is caught smoking in his seat in the cabin, one oral warning is to be given to the
passenger.
If the smoking does not cease immediately following such oral warning, he shall also be
informed that the Company will deliver a prosecution to the police and thus press charges /
request public prosecution.

The passenger in question shall be requested to give his personal details to the Cabin Crew.
If the passenger refuses to do this, the Pilot-in-Command shall request police to meet the
passenger upon landing.
An air Safety Report must be filled in after landing, including the passenger’s personal details.
See OM A 8.3.15.3.1 Procedure for Dealing with Unruly / Violent Passengers.

Note: Any crew member detecting concealed smoking in the lavatories shall report to
the cabin chief, who shall have the passenger point out where cigarette remains
are located.

8.3.15.1.2.4 Action to be taken when Turbulence is encountered or In-flight Incidents

Unless otherwise permitted by the Commander, all cabin crew shall remain seated with seat
belts fastened and advice passengers to do the same until the “FASTEN SEAT BELT” sign
has been switched OFF. When encountering turbulence in flight and the “FASTEN SEAT
BELT” sign has been switched on, exemption from this obligation may be obtained from the
Commander for the cabin crew;
Unless the degree of sudden encountered turbulence renders it too dangerous, cabin crew
shall, in case of turbulence, ensure that baggage and other load is restowed and secured so
as not to cause injury by falling or other movement; When it becomes necessary to administer
first aid oxygen, the cabin crew shall inform the flight crew. The “NO SMOKING” sign shall be
ON;
When discovering “dangerous goods”, inform the Commander immediately and act according
to Dangerous Goods Emergency Check List in Operations Manual Part B, chapter 10 and
Cabin Attendant Manual;
All breakdowns or malfunctions of electrical equipment in the pantry or cabin chapter shall be
immediately reported to the flight crew; and
All occurrences, which may affect the safety of the operation and the well being of the
passengers, shall be immediately reported to the flight crew.
8.3.15.1.2.5 Silent Review

Before each take off and landing cabin crew shall complete a “Silent Review” of evacuation responsibilities so that they are well prepared and taken in to account all conditions. Silent Review shall include the following:

- Type of aircraft;
- Takeoff/ Landing Conditions;
- CCM position and duties;
- Equipment to carry; Sitting positions and commands;
- Evacuation commands; and
- Location of Able bodied passengers / Passengers needing special assistance.

8.3.15.1.3 Pre-Landing

Before landing, after performing the appropriate checks, the Senior Cabin Crew, must confirm to the Commander that the passengers and crew are seated in their allocated seats with their seat belts fastened and that all equipment and baggage is properly stowed by announcing to him “Cabin Secure for Landing”. After this communication, strict interphone silence must be observed until the aircraft has landed and has evacuated the runway, unless abnormal / emergency problems arise.

8.3.15.1.4 Post Fight

Passenger must be instructed to remain seated with their seat belts fastened until the airplane has come to a complete stop and the engines have been shut down. The SCCM is to ensure the evacuation slides are disarmed. Normally a cabin crew member is to open the airplane door(s) and remain in attendance with the passengers until an approved escort is available. The Commander is to ensure that local aerodrome procedures do not prohibit pedestrian passengers from traversing the movement area. In order to comply with directive issued by the DRC Civil Aviation Authority, a security search, as prescribed in the appropriate Publications, has to be done by the cabin crew members: Immediately after the disembarkation of passenger;

8.3.15.1.4.1 Reporting of any Deficiency and/or Unsserviceability of Equipment

The Cabin Crew shall have reported any deficiency and/or in-service ability of the equipment:

- In the Cabin defect Log (Cabin defect Log (Cabin log)) for any “cosmetic” deficiency; and
- In the Technical Log for any deficiency of airworthiness/safety concern.
8.3.15.2 Exit Row Seating Briefing

- No CCM shall allow a passenger to sit in an emergency exit row if the PIC or SCCM determine that the passenger would be unable to understand and perform the functions necessary to open an exit and to exit rapidly.
- No cabin crewmember may seat a person in a passenger exit seat if it is likely that the person would be unable to perform one or more of the applicable functions listed below:
  - The person lacks sufficient mobility, strength, or dexterity in both arms and hands, and both legs:
    1. To reach upward, sideways, and downward to the location of emergency exit and exit slide operating mechanisms;
    2. To grasp and push, pull, turn, or otherwise manipulate those mechanisms;
    3. To push, shove, pull, or otherwise open emergency exits;
    4. To limit out, bond, deposit on nearby seats, or maneuver over the seatbacks to the next row objects the size and mass of over wing window exit doors;
    5. To remove obstructions of sign and mass similar to over wing exit doors;
    6. To reach the emergency exit expeditiously;
    7. To maintain balance while removing obstructions;
    8. To exit expeditiously;
    9. To stabilize an escape slide after deployment;
    10. To assist others in getting off an escape slide.
  - The person is less than 15 years of age or lacks the capacity to perform one or more of the applicable functions listed above without the assistance of an adult companion parent or other relative.
  - The person lacks the ability to read and understand instructions required, by this chapter and related to emergency evacuation provided by the Compagnie Africaine d'Aviation (CAA) in printed or graphic form or the ability to understand oral crew commands.
  - The person lacks sufficient visual capacity to perform one or more of the above functions without the assistance of visual aids beyond contact lenses or eyeglasses.
  - The person lacks sufficient aural capacity to hear and understand instructions shouted by cabin crewmembers, without assistance beyond a hearing aid.
  - The person lacks the ability to adequately impart information orally to other passengers.
  - The person has a condition or responsibilities, such as caring for small children that might prevent the person from performing one or more of the functions listed above; or a condition that might cause the person harm if he or she performs one or more of the functions assied above.

Determinations as to the suitability of each person permitted to occupy an exit seat shall be made by the cabin crewmembers or other persons designated in the Compagnie Africaine d'Aviation (CAA) Operations Manuals.
In the event a cabin crewmember determines that a passenger assigned to an exit seat would be unable to perform the emergency exit functions, or if a passenger requests a no exit seat, the cabin crewmember shall expeditiously relocate the passenger to a no exit seat.

In the event of full booking in the no exit seats, and if necessary to accommodate a passenger being relocated from an exit seat, the cabin crewmember shall move a passenger who is Schilling and able to assume the evacuation functions, to an exit seat.

Each Compagnie Africaine d'Aviation (CAA) handling agent shall, before boarding, assign seats consistent with the passenger selection criteria and the emergency exit functions, to the maximum extent feasible.

Each Compagnie Africaine d'Aviation (CAA) handling agent shall make available for inspection by the public at all passenger loading gates and ticket counters at each aerodrome where Compagnie Africaine d'Aviation (CAA) conducts passenger operations, written procedures established for making determinations in regard to exit row seating.

Each cabin crewmember shall include in his or her passenger briefings a request that a passenger identify himself or herself to allow reseating if he or she:

- Cannot meet the selection criteria;
- Has a non discernible condition that will prevent him or her from performing the evacuation functions;
- May super bodily harm as the result of performing one or more of those functions; or
- Does not wish to perform emergency exit functions:

Each cabin crewmember shall include in his or her passenger briefings a reference to the passenger information cards and the functions to be performed in an emergency exit.

Each passenger shall comply with instructions given by a crewmember or other authorized Compagnie Africaine d'Aviation (CAA) employee implementing exit seating restrictions.

No PIC may allow taxi or pushback unless at least one required crewmember has verified that all exit rows and escape paths are unobstructed and that no exit seat is occupied by a person the crewmember determines is likely to be unable to perform the applicable evacuation functions.

Refer to CAM 3.10.5

Note: *Exits and Escape Paths: the Cabin Crew Member is to ensure that before taxing, take-off and landing all exits and escape paths are unobstructed.*
8.3.15.3 Passenger Boarding Procedures

**8.3.15.3.1 Procedure for Dealing with Unruly/ Violent Passengers**

All crewmembers are committed to help and assist the Commander, and obliged by law to obey the Commander’s orders. If requested by the Commander, the passengers should also assist. When urgency requires, and in the interest of the aircraft’s security and/or to protect person or property, crewmembers and passengers may, without the Commander’s request, carry out preventive actions including the use of force, to the extent deemed necessary by the circumstances.

**8.3.15.3.2 Commander’s Authority**

All persons carried in the aircraft shall obey all lawful commands given by the Commander. When deemed necessary in the interest of the aircraft safety, and to protect person or property - or to maintain order and obedience onboard - the Commander has the right to use force and initiate enterprise to the extent deemed necessary by the circumstances. When the Commander finds it necessary he can temporary assign crewmembers other duties than what they are appointed to.

*Note: The Commander has authority to give all commands he deems necessary for the purpose of securing the safety of the aircraft and persons or property carried therein.*

**8.3.15.3.3 Commander’s Emergency Authority**

The Commander shall, in an emergency situation which requires immediate decision and action, take any action he considers necessary under the circumstances. In such cases he may deviate from rules, operational procedures and methods in the interest of safety. Occurrence Report and Air Safety Report must be made when the situation has become normal again.

**8.3.15.3.4 Restraint of Passengers**

One should consider restraining a person if all other feasible means of placating him have been exhausted or if the urgency of the situation demands immediate restraint and if the Commander does not consider that the act of restraining the passenger is likely to cause an increase in the safety hazard. The restraint may be continued, without consent, after the aircraft has landed, provided that the Commander notifies the police in DRC or the proper Authorities abroad. He must notify the Authorities either before or as soon as is reasonable practicable after the aircraft has landed.

*Note: If the aircraft is still on the ground, and the person is not acting according to the Commander's order, he should be disembarked. (If the person refuses to leave the aircraft, the Commander should call for police assistance to have him removed rather than using force himself.)*
8.3.15.3.5 Crew Procedures

The crew actually witnessing an incident must make an Air Safety Report right after the incident and not later than upon landing. The crew should clearly identify who were involved - not only the names and addresses but also, if possible, the seat row and number of passengers involved. The Commander shall be informed and the ASR forwarded to Flight Safety Department, Compagnie Africaine d'Aviation (CAA) Office. It is also important to include information as to what kind of information / reports have already been given to the police upon landing.

The Commander shall make an Occurrence Report to be sent as soon as possible to Flight Safety Department, which will forward a copy to Legal Department for further action.

Note: The Commander shall record details in the report which can be used by the police together with eventual request for public prosecution.

8.3.15.3.6 Communication Procedures

During the flight, which for the purpose of these guidelines refers to after «doors closed» and prior to «doors open», the Commander is «in command» and should request police assistance via ATS only.

8.3.15.3.7 Handover to Police

When the police arrive, the Commander shall inform the police about the occurrence stating the threat to the safety of aircraft, passengers or cargo, or that the passenger has behaved in an unruly manner;

Note: Legal Department shall on receipt of the Occurrence Report and/or the Air Safety Report and any other relevant information from the crewmembers issue a request for public prosecution to be sent to the relevant police authorities. Such request for public prosecution must be signed by the persons having been given such Power of Attorney by the Board of Directors to request public prosecution on behalf of the company.

The Commander and involved crewmembers will in due course receive copy of the public prosecution request and all further available information about the case.

8.3.15.3.8 Summary

If actions according to laws of DRC are taken in a timely and justifiable manner against a person jeopardizing the safety of the aircraft, passengers, property or crew, or if this person has behaved in an unruly manner and refused to obey the Commander's and/or the crewmembers' orders, no compensation is awarded such person for damage neither from the Commander nor from other crew members or passengers having taken part in such an occurrence.

The same applies to the owner or operator of the aircraft.

For further information refer OM Part 8.2.2.1.1
8.3.15.4 Re-/de fuelling with Passengers Embarking, on Board or Disembarking

The Commander shall ensure the following safety precautions are taken during re-/de fuelling with passengers embarking, on board or disembarking the aircraft: Note: Ground Handling Instructions for re-/de fuelling is found in Operations Manual Part A chapter 8.2.

- One flight crew member must remain on the flight deck during fuelling operations with passengers on board. The flight crew member must be capable of handling emergency procedures concerning fire protection and firefighting, handling communications and initiating and directing an evacuation;
- A two way, flight crew and re-/de fuelling personnel, communication must be established by use of hand signals or by radio communication;
- Crew, staff and passengers shall be warned that re-/de fuelling will take place, and the flight crew shall make the following announcement on the aircraft PA system: “Refueling will take place”;
- «Fasten Seat Belt» signs must be off;
- «NO SMOKING» signs must be on, together with interior lighting to enable emergency exits to be identified;
- Passengers must be instructed to unfasten their seat belts and refrain from smoking;
- At least two Cabin Crews must be on board and be prepared for an immediate emergency evacuation;
- If the presence of fuel vapor is detected inside the aircraft, or any other hazard arises during re-/de fuelling, fuelling must be stopped immediately;
- The ground area beneath the exits intended for emergency evacuation and slide deployment areas must be kept clear. Necessary ground handling operations may continue, provided the equipment can be instantly moved in case of emergency evacuation;
- The forward left passenger exit shall be open and an external stairway positioned at the forward left exit, if the aircraft is not parked at a “nose-in gate”. The aft doors may be closed provided the slides are armed and one crew member is stationed in the front cabin and one crew member in the aft area of the cabin;
- The aisle must be kept free from hand luggage during fuelling;
- Toilets shall not be used;
- Embarking or disembarking of passengers is permitted during fuelling, provided the passengers are directed away from the fuelling area by a crew member or ground staff;
- During transit stop, when crew change is scheduled, the crew going on duty shall be on board in sufficient time to supervise the fuelling operation. The crew off duty shall not leave the aircraft before the next crew arrives, or until fuelling is finished;
- The use of WX-radar or HF transmitting is not allowed during re-/de fuelling; and
- Re-/de fuelling in thunderstorms are prohibited.

8.3.15.5 Cabin Passenger and Officers Safety

Refer to CAM 3.11.2
8.3.16 Passenger Briefing Procedures

8.3.16.0 Safety Information to Passengers

Safety information to passengers shall be made before take-off, in-flight seatbelt sign off, before landing and after landing.

The commander is responsible for ensuring that all the passengers are given the appropriate briefing, or equipment demonstration, for the various stages of flight, as outlined in the following paragraphs.
This responsibility is delegated to the SCCM.

8.3.16.1 Pre-Board Briefing Concerning Dangerous Goods

Poster with dangerous good illustration is the display at checking enters for passenger information, and passenger service agent shall infield passenger on dangerous good rest ructions.

8.3.16.2 Means for Briefing Passengers

A Public Address (PA) system is installed for verbal briefing;
Megaphones can be used for verbal briefing;
Briefing by visual mean are provided through:

- A Safety Briefing Card which provides, by means of a pictorial presentation, information and detailed instructions on the use of emergency equipment and exits intended to be used by passengers;
- Pictorial placards and picture type instructions shall indicate the location and the use of emergency installations. This includes the “FASTEN SEAT BELT” and the “NO SMOKING” signs; and
- Passenger demonstration by cabin crew.

8.3.16.3 Pre Take-Off Briefing

Prior to flight it is the SCCM's responsibility to ensure that passengers’ attention is drawn to the briefing cards, which they should be advised to read, and they are in any case to be verbally briefed on:

- prohibition of smoking at any time, with particular reference to the toilets;
- position of seat-backs and stowage of tables;
- location and use of emergency exits;
- location and use of floor proximity emergency escape path markings;
- stowage of carry-on baggage;
- the use of certain electronic equipment can adversely affect the performance of the aircraft’s systems and equipment. No person shall be permitted to use such equipment onboard an aircraft.
The following items are prohibited from use during take-off, approach and Landing (Seat Belt sign ON), allowable in climb, cruise and descent:

- Laptop Computers connected to a peripheral device such as a printer/mouse;
- Radio and TV receivers;
- Audio and Video Playback devices, i.e. CD Players, Tape Players, Mini Disc, MP3 Player etc;
- Audio and Video Recorders;
- Electronic Games/Entertainment Devices;
- Portable GPS;
- Calculators;
- Electric razors; and
- Other personal electronic equipment such as toothbrush, hairdryer etc.

8.3.16.4 Pre Take-off Demonstration

The following items are to be demonstrated:

- the use, fastening and unfastening of safety belts;
- the location and use of oxygen equipment. (A demonstration oxygen mask is to be used).
- the location and use of life jackets (a demonstration life jacket is to be used for passenger briefing).

8.3.16.5 In-Flight

- After take-off passengers are to be reminded of the smoking regulations and the use of safety belts.
- Passengers are to be advised as necessary throughout the flight whenever conditions require the fastening of seat belts.

8.3.16.6 Before Landing

Before landing it is the SCCM’s responsibility to ensure that the passengers are advised that:

- hand baggage should be secured;
- seat backs should be returned to the upright position, and tables stowed;
- seat belts/harnesses should be fastened;
- restrictions on the use of electronic devices including mobile telephones.

8.3.16.7 After Landing

After landing, passengers are to be advised to remain seated, with safety belts/harnesses fastened until the airplane has come to rest, and to refrain from smoking until they have entered a clearly defined smoking area.
8.3.16.8 In-Flight Emergencies

If an emergency occurs during flight the passengers are to be briefed on such emergency action as may be appropriate to the circumstances.

*Note: Further details on passenger briefings are given in CAM.*
8.3.17 Procedures for Aircraft Operated Whenever Required Cosmic or Solar Radiation Detection Equipment is Carried

The Compagnie Africaine d'Aviation aircraft are operating well below 49,000 feet. Cosmic or solar radiation detection equipment is not installed. Specific procedures are not relevant in this matter.
8.4 ALL WEATHER OPERATIONS

NOT APPLICABLE
8.5 ETOPS/ EDTO

Compagnie Africaine d'Aviation is not approved to perform ETOPS/ EDTO operations.
8.6 USE OF THE MINIMUM EQUIPMENT AND CONFIGURATION DEVIATION LIST

8.6.1 Introduction

Aircraft owned or leased by Compagnie Africaine d'Aviation (CAA) shall operate according to standards required by the Airworthiness Authority, the Aircraft Manufacturer and Compagnie Africaine d'Aviation (CAA). The aircraft of Compagnie Africaine d'Aviation (CAA) shall have instruments and equipment for the flight to be conducted, according to the requirements specified by the Authority. The instruments and equipment shall be in operable condition except as provided in the Minimum Equipment List (MEL). The aircraft of Compagnie Africaine d'Aviation (CAA) configuration shall be in accordance with the Configuration Deviation List (CDL). Compagnie Africaine d'Aviation (CAA) keeps a Minimum Equipment List (MEL) approved by the Authority for each aircraft type.

8.6.1.1 Master Minimum Equipment List (MMEL)

The Airworthiness Authority from the country of manufacture develops a Master Minimum Equipment List (MMEL) with participation of the aviation industry, to improve aircraft utilization and thereby provide more convenient and economic air transportation for the public. The Airworthiness Authority from the country of manufacture approved MMEL includes those items of equipment related to airworthiness and RACDs.

8.6.1.2 Minimum Equipment List (MEL)

The Compagnie Africaine d'Aviation (CAA) Minimum Equipment List is based on the MMEL, but also considers the operational environment, RACDs and company requirements:

- The MEL provides the Commander with the authority to operate the aircraft with inoperative items of equipment. The Commander shall decide whether or not to accept an aircraft with in-service abilities allowed by the MEL.
- To dispatch out of an airport where repairs cannot be made, the Commander must adhere strictly to the MEL.

Note 1: Multiple unserviceabilities may have a significant effect upon safety.

Note 2: For more information refer to Specific MEL/CDL Manual.
8.6.1.3 Configuration Deviation List (CDL)

For dispatch with secondary airframe or engine parts missing, refer to the Configuration Deviation List (CDL).

8.6.1.4 Criteria for Dispatch

The decision of the Commander of the flight to have allowable inoperative items corrected prior to flight will take precedence over the provisions contained in the MEL/CDL. The Commander may request requirements above the minimum listed, whenever in his judgment such added equipment is essential to the safety of a particular flight under the special conditions prevailing at the time. However, he shall never accept lower requirements.

Wherever possible account has been taken in the MEL/CDL of multiple inoperative items. It is unlikely that all possible combinations of this nature have been accounted for. When operating with multiple inoperative items, the interrelations between those items and the effect on aircraft operation and crew workload must be considered.

8.6.1.5 Maintenance Action

Every effort shall be made by maintenance to correct all technical irregularities as early as practicable so that the aircraft can be released from a maintenance base in fully operational condition.

The decision of the Commander to comply with the appropriate MEL/CDL requirement and to postpone maintenance activity will supersede any other intention.

The Commander must be informed by maintenance as soon as practicable, should it be impractical to repair the inoperative item prior to departure.

Whenever an airplane is released by maintenance for dispatch with items inoperative, the following is required:

The Technical Log aboard the airplane must contain a detailed description of the inoperative items, special advice to the flight crew, if necessary, and information about corrective action taken.

When they are accessible to the crew in flight, the control(s), and/or indicator(s) related to inoperative unit(s) or component(s) must be clearly placarded. If inadvertent operation could produce a hazard such equipment must be rendered inoperative (physically) as given in the appropriate Maintenance Procedure.

The relevant Operational and Maintenance Procedures are contained in the MEL/CDL. Whenever MEL/CDL items are identified which affect flight performance/flight limitations and/or fuel calculations, this must be notified to the Flight Dispatch Office.
8.6.2 Introduction to the Compagnie Africaine d'Aviation (CAA) MEL/ CDL

The Flight Operations Director supported by the Airworthiness Director is responsible for the MEL/ CDL performance execution on a permanent basis.

He is also responsible for keeping the aircraft manuals and checklists up-to-date with regard to latest revision of MMEL (Master Minimum Equipment List) dictated by Compagnie Africaine d'Aviation (CAA) requirements.

Any revisions affecting Maintenance and Engineering procedures shall prior to issue be coordinated with Airworthiness Director.

The purpose of the Minimum Equipment List/Configuration Deviation List (MEL/CDL) is to aid the flight and/or maintenance crew to bring the aircraft from its point of origin to the point of destination safely and on schedule; if some deviations from the type certificate, configuration and equipment required by the operating rules were not permitted, the aircraft could not be flown unless all such equipment is operable.

Experience has proven that the operation of every system or component installed on the aircraft is not necessary when the remaining operative instruments and equipment provide continued safe operations; therefore certain deviations from these requirements are authorized to permit continued or uninterrupted operation of the aircraft.

The MEL/CDL gives information about equipment or systems, which must be inoperative, or can be wholly or partially inoperative without reducing the flight safety; when making the MEL/CDL, the official regulations, as well as the Compagnie Africaine d'Aviation (CAA)'s own requirements regarding safety and passengers' comfort is considered; the CDL(s) and MEL(s) for the Compagnie Africaine d'Aviation (CAA) aircraft are contained in Operations Manual Part B or in separated.

8.6.3 How to use the MEL/ CDL

For the sake of brevity, the MEL/ CDL does not include obviously required items such as wings, flight controls, engines, landing gear etc. Also the list may include items which do not affect the airworthiness of the aircraft such as galley equipment, entertainment systems, passenger convenience items. However, it is important to note that:

ALL ITEMS WHICH ARE RELATED TO THE AIRWORTHINESS OF THE AIRCRAFT AND NOT INCLUDED ON THE LIST, ARE AUTOMATICALLY REQUIRED TO BE OPERATIVE.
8.6.3.1 MEL

When an aircraft is dispatched in accordance with the applicable MEL, an entry has to be made in the aircraft Technical Log describing the current situation and the reason for dispatch in the Deferred Defect book.

The Commander is responsible for correct entry.

In addition he is responsible for the installation of any required placard (MEL - INOP) on item inoperative.

Standard placards (MEL / INOP) are enclosed in the MEL/ CDL-Manual.

The MEL refers to two levels of discrepancies:

- Items, which are related to the airworthiness of the aircraft and not included on the list, are automatically required to be operative prior to any flight.
- Items related to the MEL with the note “Aircraft not to dispatch an airport where repairs or replacements can be made” mean that an aircraft shall not depart station with spare parts and authorized personnel available.

8.6.3.2 CDL

The CDL gives minimum number of exterior parts of the aircraft required, and limitations associated with the missing part(s). The CDL also specifies weight reductions, Enroute diversion speed effects and Enroute fuel mileage effects.

When an aircraft is dispatched in accordance with the applicable CDL, an entry has to be made in the aircraft Technical Log.

Describe the current situation and the reason for dispatch in the Deferred Defect book on the Technical Record.

8.6.3.3 Ferry

This subsection is provided for insertion of information for dispatch with selected configuration deviations, for which revenue operation is not allowed by the MMEL or CDL, when it is necessary to fly the aircraft back to a maintenance base for repairs.

When Airbus/Fokker feels that such a configuration can be clearly defined, the appropriate performance data and procedures will be included.

All ferry flights conducted under this subsection must adhere to the defined configuration and conditions.

Differences in configuration or conditions can invalidate performance corrections.

Airbus/Fokker Flight Operations Engineering is available to provide technical guidance for obtaining DRC CAA approval for ferry flights on a case basis.

8.6.3.4 Miscellaneous

This subsection is available for items and information that do not fit into the categories covered by subsections 2, 3 and 4 of this section, such as:

- Items declared by the FAA/ EASA to be “Non-Airworthiness” in which case they are allowed to be inoperative, but do not appear on the MMEL.
- Items for which special dispatch approval has been granted.
8.6.4 MEL Applicability

The applicability of the MEL is limited up to the point when the aircraft moves by its own means. Should a failure occur before this time, the conditions of the MEL shall apply. The MEL is not intended to provide for continued operation of the aircraft for an indefinite period with inoperative items. To avoid the aircraft being taken out of service due to additional malfunctions, the intention of the usage of the MEL is that any discrepancies shall be rectified as soon as possible and not later than specified in the three levels of MEL repair intervals. The exposure to additional failures during continued operation with inoperative systems or components must also be considered in determining that an acceptable level of safety is being maintained.

The MEL does not deviate from requirements of the Approved Flight Manual Limitation chapter, emergency procedures or airworthiness directives, unless the approved Flight Manual of airworthiness directives provides otherwise. Even though an aircraft can be dispatched in accordance with an MEL, the ultimate responsibility for any decision to accept an aircraft with in-service ability, for the intended flight, shall rest with the commander. (Ref. Operations Manual Part A-1.4.2) Dispatch is defined as being the point of actual commencement of the take-off run.

Note: However, if the failure occurs during taxi but before the takeoff run, any decision about the continuation of flight will be at the discretion of the commander in order to apply the MEL.

8.6.5 Operations Outside the Scope of the MEL/CDL

No aircraft shall be operated other than in accordance with the MEL/CDL unless approved by the Authority directly (or in accordance with a Special Procedure approved by the Authority). Any such permission can under no circumstances permit operation outside the constraints of the MMEL.

8.6.6 MEL Revision and Amendment

8.6.6.1 Normal Revision

Issued periodically to cover non-urgent corrections, change or/and to add new data. They are accompanied by filing instructions, highlights and updated list of effective pages including customized pages. A normal revision record sheet is provided.

8.6.6.2 Temporary Revisions

Printed on yellow paper, issued to cover urgent matters arising between normal revisions. They are accompanied by filing instructions, and an updated list of effective temporary revisions. A yellow temporary revision record sheet is provided.

Compagnie Africaine d'Aviation (CAA) has access to MY FOKKER FLEET and MY AIRBUS WORD for any revision and amendment.

The revisions and amendments have to be performed by the Flight Operations Engineering Manager, Corporate Documentation system and Airworthiness Department.
The Quality and Safety Systems shall perform periodic verification of the contents of MEL versus MMEL updates and amendments.
8.7 NON REVENUE FLIGHTS

This subchapter describes procedures and limitations for non-revenue flights. All non-revenue flight shall normally be performed in accordance with Compagnie Africaine d'Aviation (CAA) procedures and limitations:

- **Passenger Carrying Flights**
  Flights on which passengers are carried but which are not classed as commercial air transport flights such as those carrying Compagnie Africaine d'Aviation (CAA) personnel only and shall be conducted in accordance with all the normal requirements of the Operations Manual. However on flights carrying the aircraft owner or his family only, the flight and duty time limitations may be exceeded, subject to consent by both flight crewmembers. Minimum rest time must be in accordance with all requirements of OM-A chapter 7.

- **Non-Passenger Flights**
  When no passengers are carried, such as flight crew training, aircraft air tests, delivery and demonstration flights or empty positioning flights. The normal requirements of the Operations Manual shall be met.

8.7.1 Training Flights

As Compagnie Africaine d'Aviation (CAA) policy, the Commander must be qualified and licensed as flight instructor on the aircraft concerned when training flights are being performed. Only flight crew members involved in the training (and representatives of the Authority) may be carried during training and proficiency check flights.

8.7.2 Test Flights

It is Compagnie Africaine d'Aviation (CAA) policy that the Director of Flight Operations or the Chief Pilot shall perform these flights. However test flights may be performed by any Commander appointed by the Director of Flight Operations. A test flight must be performed after Basic Inspection, whenever required per Maintenance Manual or if requested by the Authority.

8.7.2.1 Power to Request Flight Testing

The following persons are authorized to request flight tests:

- Director of Flight Operations
- Chief Pilot
- FSO
- DRC CAA Inspector
- Airworthiness Director

8.7.2.2 Permission to Participate

Only technical inspectors/personnel are allowed to participate according to Insurance Coverage.
8.7.3 Delivery Flights

Delivery flights are flights performed in connection with purchase/sale or leasing in/out aircraft. For some delivery flights the Authority may only issue a "Ferry permit" instead of Certificate of Airworthiness and Certificate of Registration. This ferry permit may exclude the carriage of other persons than the minimum flight crew.

8.7.4 Ferry Flights

Ferry flight permits shall be issued by the Authority for aircraft of Compagnie Africaine d'Aviation (CAA) not meeting applicable airworthiness requirements but are capable of safe flights for the purpose of flying such aircraft to a base where maintenance or repair can be performed. For ferry flights, all applicable requirements as for normal operations must be adhered to. Covers insurance for all Compagnie Africaine d'Aviation (CAA) personnel.

8.7.5 Demonstration Flights

Demonstration flights may be flights for the purpose of sales/ advertising demonstrations or to introduce a new type of Compagnie Africaine d'Aviation (CAA) aircraft or route. A demonstration flight may also be a flight to demonstrate flight characteristics to potential customers interested in buying the aircraft. For demonstration flights, all applicable requirements as for normal operations must be adhered to.

8.7.6 Positioning Flights

Positioning flights are flights to bring an aircraft from one airport to another for flow of traffic (schedule) reasons. Compagnie Africaine d'Aviation (CAA) personnel may be carried. For positioning flights, all applicable requirements as for normal operations must be adhered to.

8.7.7 Crew Composition

Non-revenue flights may operate with a maximum of 5 Compagnie Africaine d'Aviation (CAA) employees provided the following criteria are met:

- The employees carried are qualified personnel directly connected with the flight, such as crew, loaders, technicians, dispatchers etc;
- The Commander has the responsibility to thoroughly brief these employees as to the use of emergency equipment and doors.
8.8 OXYGEN REQUIREMENTS

8.8.1 Oxygen Using Conditions

8.8.1.1 General

Aircraft of Compagnie Africaine d'Aviation (CAA) which normal cruising altitude is above 10,000 ft shall have the oxygen equipment. The aircraft may fly without cabin pressurization because of an aircraft system deficiency (see MEL) or after a decompression in flight. The pilot’s choice of flight level and airspeed depends on the cause of the depressurization, the distance to fly, the topographic conditions and the meteorological conditions. For the mentioned reason, Compagnie Africaine d'Aviation (CAA) aircraft must be equipped with enough oxygen to face with a pressurization failure.

8.8.1.2 Protective Breathing Equipment

8.8.1.2.1 Flight Crew

Protective Breathing Equipment requirements are as follows:
Each Compagnie Africaine d'Aviation (CAA) Flight Crew Member on duty shall have equipment to protect his eyes, nose and mouth and to provide oxygen for a period of not less than 15 minutes. If the flight crew is more than one and a cabin crew member is not carried, a portable protective breathing apparatus to protect the eyes, nose and mouth of one member of the flight crew, and to provide oxygen for not less than 15 minutes must also be available on the flight deck and be easily accessible for immediate use by each member of the flight crew at his duty station.

8.8.1.2.2 Cabin Crew

Each required Compagnie Africaine d'Aviation (CAA) Cabin Crew Member shall have Protective Breathing Equipment adjacent to their individual duty station:

- Portable protective breathing equipment to protect the eyes, nose and mouth of each required Cabin Crew Member, and to provide oxygen for not less than 15 minutes, installed adjacent to each required Cabin Crew Member duty station.
- If the passenger compartment seating capacity is seven or more persons, and a hand fire extinguisher is required to be installed in the cabin, an additional portable protective breathing apparatus is to be carried, and located at or adjacent to the fire extinguisher.
8.8.2 Oxygen Requirement for Crew and Passengers

8.8.2.1 Flight Crew

Compagnie Africaine d'Aviation (CAA) Flight Crew shall have an oxygen mask located within immediate reach while at his/her duty station. If the aircraft is operating above 25 000 feet, the mask shall be of the quick donning type.

Compagnie Africaine d'Aviation (CAA) shall ensure that Flight Crew Members engaged in performing duties of an aircraft in flight use supplemental oxygen continuously after 30 minutes when cabin pressure altitude exceeds 10000 feet and at all times when the cabin pressure altitude exceeds 13 000 feet.

Each Compagnie Africaine d'Aviation (CAA) Flight Crew Member on flight deck duty shall have, in the event of cabin pressure failure, sufficient oxygen for the entire flight time when the cabin altitude exceeds 10 000 feet, subject to a minimum of 2 hours for aircraft certified to fly at altitudes greater than 25 000 feet;

8.8.2.2 Cabin Crew

When operating above 25 000 feet, all Compagnie Africaine d'Aviation (CAA) Cabin Crew Members shall have access to a sufficient numbers of spare outlets and masks, and/or portable oxygen units with masks.

Portable oxygen shall be distributed through the cabin to ensure immediate availability of oxygen to each Compagnie Africaine d'Aviation (CAA) Cabin Crew Member irrespective of his/her location at the time of decompression.

The Cabin Crew shall have sufficient oxygen supply for the entire flight when the cabin altitude exceeds 13 000 feet.

The Commander shall ensure that Flight Crew Members engaged in performing duties essential to the safe operation of the aircraft in flight, use supplemental oxygen continuously whenever cabin altitude exceeds 10 000 ft for a period in excess of 30 minutes.

8.8.2.3 Passengers

When operating above 25 000 feet, a dispensing unit attached to an oxygen supply for each passenger, wherever seated, with 10% more dispensing units and outlets than the number of seats, is distributed evenly through the cabin.

In addition, the Compagnie Africaine d'Aviation (CAA) shall carry supply for:

- All passengers carried for the entire flight time when the cabin altitude exceeds 15 000 feet, or for 10 minutes, whichever is the greater.
- 30% of the passengers for the entire flight time when the cabin altitude exceeds 14 000 feet but does not exceed 15 000 feet;
- 10% of the passengers for the entire flight time when the cabin altitude exceeds 10 000 feet, but does not exceed 13 000 feet;
Compagnie Africaine d'Aviation (CAA) A320 and F100 are certified to fly at altitudes exceeding 25 000 feet, and a Cabin Crew Member is required to be carried, a supply of undiluted first aid oxygen for passengers who, for physiological reasons, might require oxygen following an emergency descent from altitudes above 25 000 feet. The supply should be sufficient for 2% of the passengers, or two persons, whichever is the greater, for the entire flight time at cabin altitudes exceeding 8000 feet after depressurization.