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# MANUAL ADMINISTRATION

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# ADMINISTRATION AND CONTROL OF OPS MANUAL

## INTRODUCTION

### COMPLIANCE WITH ALL APPLICABLE REGULATIONS AND TERMS

This Manual is issued in accordance with the prescription of Mali Air operating license and complies with the Austria Aviation Legislation, the AOCV, ICAO, EASA and JAA regulations.

The Operations Manual is describing policy and procedures of the company for the operation of any civil aeroplane; it shall assure that each flight crew member and all other persons involved in Mali Air operation are properly instructed regard their particular duties and responsibilities.

The common language is English. Each aeroplane is operated according the Minimum Equipment List unless permitted by the Authority. A Quality System shall be installed and a Quality Manager designated to ensure safe operation and airworthy aeroplanes. An accident and flight safety program is integrated in the Operation.

This Manual shall be carried aboard the aircraft either in written form or electronically stored on a laptop.

The Air Operator Certificate will not remain valid unless the aeroplanes operated have a standard Certificate of Airworthiness issued in accordance with ICAO Annex 8 by a Member State. Standard Certificates of Airworthiness issued by a JAA Member State other than the State responsible for issuing the AOC, will be accepted without further presentation when issued in accordance with JAR-21.

The contents of this manual are confidential and shall be treated accordingly. No part of this manual may be reproduced, photocopied, recorded or handed over to persons not employed with Mali Air.

This manual is protected by copyright law and international treaties. Unauthorized reproduction or distribution of this manual, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law.

Suggestions and contributions towards the improvement of this manual are always welcomed. Any discrepancies found should be reported to the Flight Operations Department immediately.

### COMPLIANCE WITH OPERATIONAL INSTRUCTIONS BY RELEVANT PERSONNEL

Under normal conditions strict compliance with all policies, rules, regulations and procedures as laid down in the manual is required.

No regulation can be a substitute for awareness.

Nothing in the manual, however carefully outlined and precisely adhered to, can replace the exercise of good judgment and the application of conservative operating practices if conditions so dictate.

In case of emergency all instructions are guiding principles and it is the PIC’s authority to apply them accordingly. No deviation from the instruction given in the manual is permitted in case of emergency unless the situation at hand is not covered by procedures, or leaves no time to apply them. Flight conditions may necessitate the PIC’s temporary disregard of instructions in favour of the exercise of his authority, for the sake of safety, according to his own momentary judgement

### DESCRIPTION OF THE VARIOUS PARTS, THEIR CONTENTS, APPLICABILITY AND USE

Permanent regulations and information are contained in the following in the following parts of the OM:

#### Part A General/Basic

This part contains all non-type-related operational policies, instructions and procedures needed for a safe operation.

#### Part B Type-related aeroplane operating matters

Aeroplane Flight Manual / POH: The AFM has been designed to be used as compulsory operating instructions concerning the handling of the airplane and the equipment installed, including operating procedures and performance. The AFM also states the approved limitations within which the aircraft is considered to be airworthy as defined by the appropriate airworthiness requirements as well as additional instructions and information necessary for the safe operation of the aircraft.

Standard Operating Procedures (SOPs): Procedures developed by Mali Air for each aeroplane type. These procedures are based on the AFM but take account of cockpit crew cooperation and the individual equipment installed. SOPs shall be adhered to by all Mali Air flight crews during normal operations.

#### Part C Route and aerodrome instructions and information

Jeppesen Route Manual and Bottlang Airfield Manual: The Route Manual / Airfield Manual provides current information required for air-navigation under instrument and visual flight conditions, including Standard Instrument Arrivals and Departures, Approaches, Airport Diagrams and Enroute Charts. It contains a wide variety of information necessary for the safety and efficiency of flight operations. The Route Manual incorporates pertinent regulations laid down by governmental and aviation authorities of countries through which Mali Air is operating.

Additional information concerning aerodrome categorisation and operating minima as required by Mali Air are published in Part C.

#### Part D Training

This part contains all training instructions required for a safe operation.

The Pilot's Operating Handbook and FAA approved Airplane Flight Manual for the Cessna Model 340A is considered to be an integral part of this manual and shall be carried on board the aeroplane at all times.

### EXPLANATION OF TERMS

In order to determine the meaning of a wording that could be ambiguous, the following explanations are given:

* **“Shall”, “must”, “has to”, “is to”** and the verbs used in present indicative form such as “does”, “performs” etc. are used in an imperative compulsory sense.
* **“May”, “might”, “should”** are used in a permissive sense to state the authority or permission to do the mentioned act.
* **“Must not”, “may not” or “no crew members may”** means that nobody is authorized or permitted to do the act.

### ABBREVIATIONS

The following abbreviations are used throughout this manual:

| **Abbr.** | | **Explanation** |
| --- | --- | --- |
| AAL | | Above Aerodrome Level |
| ACAS | | Airborne Collision Avoidance System |
| ACFT | | Aircraft |
| AFM | | Aeroplane Flight Manual |
| AGL | | Above Ground Level |
| AIP | | Aeronautical Information Publication |
| AMC | | Aeromedical Centre |
| AME | | Aeromedical Examiner |
| AMS | | Aeromedical Section (Authority) |
| AOC | | Air Operator Certificate (Certificate of Competency) |
| AOM | | Aeroplane Operating Manual |
| APV | | Approach with vertical guidance |
| ASDA | | Accelerate-Stop Distance Available |
| ATC | | Air Traffic Control |
| ATIS | | Automatic Terminal Information Service |
| ATPL | | Airline Transport Pilot Licence |
| ATS | | Air Traffic Service |
| BEM | | Basic Empty Mass |
| CAA | | Civil Aviation Authority |
| CAME | | Continuing Airworthiness Management Exposition |
| CDFA | | Continuous Descent Final Approach |
| CG | | Centre of Gravity |
| CMV | | Converted Meteorological Visibility |
| CPL | | Commercial Pilot Licence |
| CRE | | Class Rating Examiner |
| CRI | | Class Rating Instructor |
| CRM | | Crew Resource Management |
| DA | | Decision Altitude |
| DH | | Decision Height |
| DME | | Distance Measuring Equipment |
| DOM | | Dry Operating Mass |
| ELT | | Emergency Locator Transmitter |
| ETA | | Estimate Time of Arrival |
| ETOPS | | Extended Range Twin-Engine Operations |
| ELT | | Emergency Locator Transmitter |
| ETA | | Estimate Time of Arrival |
| ETOPS | | Extended Range Twin-Engine Operations |
| FAF | | Final Approach Fix |
| FDP | | Flight Duty Period |
| FE | | Flight Examiner |
| FL | | Flight Level |
| FI | | Flight Instructor |
| FMS | | Flight Management System |
| FSTD | | Flight Simulation Training Device |
| GLS | | GNSS Landing System |
| GNSS | | Global Navigation Satellite System |
| GPS | | Global Positioning System |
| (E)GPWS | | (Enhanced) Ground Proximity Warning System |
| GS | | Glideslope |
| HOT | | Holdover Time |
| ICAO | | International Civil Aviation Organization |
| IFR | | Instrument Flight Rules |
| ILS | | Instrument Landing System |
| IMC | | Instrument Met. Conditions |
| JAA | | Joint Aviation Authorities |
| JAR | | Joint Aviation Requirements |
| LC | | Line Check |
| LDA | | Landing Distance Available |
| LLZ | | Localizer |
| LOUT | | Lowest Operational Use Temperature |
| LPC | | Licence Proficiency Check |
| LVP | | Low Visibility Procedures |
| LVR | | Luftverkehrsregeln |
| LVTO | | Low Visibility Take-Off |
| Mapt | | Missed Approach Point |
| MDA | | Minimum Descent Altitude |
| MDH | | Minimum Descent Height |
| MEA | | Minimum Enroute Altitude |
| (M)MEL | | (Master) Minimum Equipment List |
| MLAM | | Maximum Landing Mass |
| MLS | | Microwave Landing System |
| MNPS | | Minimum Navigation Performance Specification |
| MOCA | | Minimum Obstacle Clearance Altitude |
| MORA | | Minimum Off Route Altitude |
| MSA | | Minimum Sector/Safe Altitude |
| MSL | | (Above) Mean Sea Level |
| MTOM | | Maximum Take-Off Mass |
| MZFM | | Maximum Zero Fuel Mass |
| NADP | | Noise Abatement Departure Procedure |
| NDB | | Non-directional Beacon |
| NOTAM | | Notice to Airmen |
| OCA | | Obstacle Clearance Altitude |
| OCH | | Obstacle Clearance Height |
| OCL | | Obstacle Clearance Level |
| OFP | | Operational Flight Plan |
| OM | | Operations Manual |
| OPC | | Operator Proficiency Check |
| OPS 1 | Common technical requirements for commercial transportation by aeroplanes |
| PAR | Precision Approach Radar |
| PAX | Passenger(s) |
| PDP | Pre-determined Point |
| PF | Pilot Flying |
| PIC | Pilot in Command |
| PNF | Pilot Non Flying |
| PNR | Point of No Return |
| POH | Pilots Operating Handbook |
| POR | Point of Reclearance |
| PPO | Prior Permission Obtained |
| PPR | Prior Permission Required |
| PVR | Pilot's Voyage Report |
| RM | Jeppesen Airway Manual (Route Manual) |
| RNAV | Area Navigation |
| RNP | Required Navigational Performance |
| RVR | Runway Visual Range |
| RVSM | Reduced Vertical Separation Minima |
| SID | Standard Instrument Departure |
| SOP | Standard Operating Procedure |
| SRA | Surveillance Radar Approach |
| STD | Synthetic Training Device |
| STI | Synthetic Training Instructor |
| TA | Traffic Advisory |
| TCAS | Traffic Alert and Collision Avoidance System |
| TDZ | Touch Down Zone |
| THR | Threshold |
| TKOF | Take-Off |
| TOC | Top Of Climb |
| TOD | Top Of Descent |
| TODA | Take-Off Distance Available |
| TOM | Take-Off Mass |
| TORA | Take-Off Run Available |
| UTC | Universal Time Coordinated |
| Vat | Speed at treshold (based on 1,3 Vs0) |
| VDF | VHF Direction Finder |
| VFR | Visual Flight Rules |
| VHF | Very High Frequency |
| VMC | Visual Met. Conditions |
| VOR | VHF Omnidirectional Radio-Range |
| WOCL | Window of Circadian Low |
| ZFBO | Zivilflugplatzbetriebs-ordnung |
| ZFM | Zero Fuel Mass |
| ZLLV | Zivilluftfahrzeug- und Luftfahrtgeräteverordnung |
| ZLPV | Zivilluftfahrt-Personalverordnung |
| ZMV | Zivilluftfahrt-Meldeverordnung |

## SYSTEM OF AMENDMENT AND REVISION

### RESPONSIBILITY FOR THE ISSUANCE AND INSERTION OF AMENDMENTS AND REVISIONS

Revisions of this manual will be issued as required from time to time and distributed by e-mail. A complete OM-A or if applicable OM-B will be distributed after a revision.

The OM must initially be approved by the Authority.

Employees will get a complete manual by E-Mail and have to confirm the receipt of changes by E-Mail.

### RECORD OF REVISIONS

This sheet, which is included as part II of this manual, includes all revisions of this manual by date and subject. Each revision has to be entered and noted on the revisions sheet showing the date of revision.

### HAND-WRITTEN AMENDMENTS

Hand-written amendments or revisions are not permitted except in situations which require immediate action in the interest of safety.

If a handwritten amendment or revision is considered necessary the CAA has to be informed as soon as possible. The writer of the handwritten amendment or revision is responsible for its content.

### ANNOTATION OF PAGES AND THEIR EFFECTIVE DATES

If a page contains revised information, it can be identified by the revision number and the effective date in the bottom line.

### LIST OF EFFECTIVE PAGES

This list is included as part III of this manual; it depicts all changes and revisions of this manual.

### ANNOTATION OF CHANGES

Changes with respect to the last revision will be outlined in Revision changes behind Record of Revisions .

### TEMPORARY REVISIONS

Temporary Revisions will be issued on pink colored paper; however, they will not be marked on the List of effective pages but nevertheless have to be approved by the Authority. Temporary Revisions are cancelled by either incorporation or withdrawal according to the revision instructions.

### DISTRIBUTION SYSTEM

Copies of this manual as well as of the amendments thereof have to be distributed by the flight operations department to all pilots and postholders of Mali Air and to CAA .

Amendments and revisions will normally be distributed by e-mail. A reply e-mail by the recipient confirming acknowledgement of the revision is stored..

The manual is initially presented to the CAA for approval.

Amendments and revisions are handled as follows:

According to Austrian law and OPS 1 amendments and revisions to the manual either require approval by the CAA, acceptance by the CAA or they may be issued without prior consultation of the CAA.

Approval by the CAA:

If one or more changes require approval, the revised manual must be submitted to the CAA and such approval must be obtained before it may become effective.

Acceptance by the CAA:

If the changes require acceptance by the CAA, the amendment or revision must be provided to the CAA at least 14 days before its effective date to give the CAA the possibility to object to the changed procedures or provisions, if in their opinion they are not suitable for the purpose intended.

Internal approval:

Changes requiring neither approval nor acceptance and all purely editorial changes (correction of spelling errors, minor re-formatting, detailing of issues) may be incorporated without prior notification of the CAA.

Revisions not requiring approval by the CAA shall bear the last revision number approved by the CAA followed by a letter identifying the internally approved revision (e.g. 6b).

Such revisions are issued by the Flight Operations Manager, approved by the Accountable Manager and released by the Quality Manager.

MEL amendment procedure:

The MEL forms part of the OM-B. The revision procedure is the same as for the OM and a paper copy is to be on board of the aircraft concerned.

Changes resulting only from revisions of the MMEL or the applicable guidance material ("TGL 26") and purely editorial changes may be approved internally as described above.

Only changes in the types of operation or resulting from conditions established by the CAA require approval by the CAA before becoming effective.

### AUTHORITY APPROVAL STATEMENT

Austro Control GmbH as the National Civil Aviation Authority has approved this Operations Manual for Austrian Airlines with AOC A-050.

This manual is established according to international and national rules and represents the Operations Manual Part A as laid down in EU OPS.

AUSTRO CONTROL

Österr. Gesellschaft für Zivilluftfahrt mbH

as the National Civil Aviation Authority

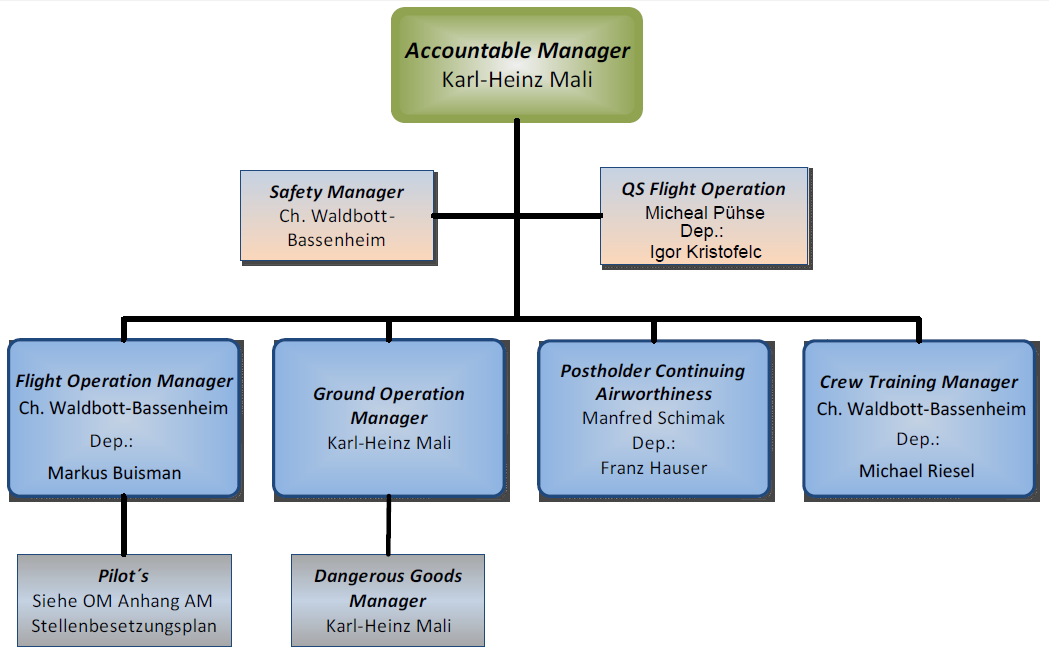
## ORGANIZATION AND RESPONSIBILITIES

### ORGANIZATIONAL STRUCTURE

#### GENERAL

The Organizational structure as shown below is applicable for all aircraft operated commercially by Mali Air.

#### OVERVIEW



### NOMINATED POSTHOLDERS - RESPONSIBILITIES AND DUTIES

#### OPERATIONAL PERSONAL

|  |  |  |  |
| --- | --- | --- | --- |
| **Title** | **Name** | **Phone** | **E-Mail** |
| Accountable Manager | Karl-Heinz Mali | +436645426661 | [karl.heinz.mali@maliair.com](mailto:karl.heinz.mali@maliair.com) |
| Postholder Quality Manager | Michael Pühse | +436641300597 | [mpuehse@ilux.at](mailto:mpuehse@ilux.at) |
| Deputy Quality Manager | Igor Kristofelc | +38641773219 | [igor.kristofelc@gmail.com](mailto:igor.kristofelc@gmail.com) |
| Flight Safety Manager | Christian Waldbott-Bassenheim | +436764034123 | [c-w-b@gmx.at](mailto:c-w-b@gmx.at) |
| Postholder Flight Operations | Christian Waldbott-  Bassenheim | +436764034123 | [c-w-b@gmx.at](mailto:c-w-b@gmx.at) |
| Deputy Flight Operations | Markus Buisman | +4369913708189 | [MarkusBuisman@hotmail.com](mailto:MarkusBuisman@hotmail.com) |
| Postholder Ground Operations | Karl-Heinz Mali | +436645426661 | [karl.heinz.mali@maliair.com](mailto:karl.heinz.mali@maliair.com) |
| Postholder Continuing Airworthiness | Manfred Schimak | +4367694661823 | [office@ms-aviation.at](mailto:office@ms-aviation.at) |
| Deputy Continuing Airworthiness | Franz Hauser | +436644341074 | [franz-hauser@gmx.at](mailto:franz-hauser@gmx.at) |
| Postholder Crew Training | Christian Waldbott-Bassenheim | +436764034123 | [c-w-b@gmx.at](mailto:c-w-b@gmx.at) |
| Deputy Crew Training | Michael Riesel | +43661022033 | [michael.riesel@hotmail.com](mailto:michael.riesel@hotmail.com) |
| Dangerous Goods Manager | Karl-Heinz Mali | +436645426661 | [karl.heinz.mali@maliair.com](mailto:karl.heinz.mali@maliair.com) |

### RESPONSIBILITIES AND DUTIES OF OPERATIONS MANAGEMENT PERSONNEL

The responsibilities of management related to Operations include at least the following main functions:

* Determination of the operator’s flight safety policy
* Allocation of responsibilities and duties and issuing instructions to individuals, sufficient for implementation of company policy and the maintenance of safety standards
* Monitoring of flight safety standards
* Evaluating the safety of the company in order to avoid the development of undesirable trends

Instructors and Examiners shall be permitted to perform assigned activities without inappropriate interference from management and/or external organizations.

### ACCOUNTABLE MANAGER

The Accountable Manager is the person who has the corporate authority for ensuring that all maintenance required by the aircraft operator can be financed and carried out to the standard required by the Authority.

The Accountable manager declares, that he will undertake his best efforts to ensure Maintenance and Operation of Company aircraft to the highest Standard possible to guarantee safe, efficient, economical on time Service.

The Accountable Manager must possess decision-making authority (manager, power of attorney)

### POSTHOLDER FLIGHT OPERATIONS

The Flight Operations Manager's responsibilities and competence include all activities pertaining to operational, legal and safe operation and the supervision of the flight operation.

He will bear full responsibility towards the company for all activities within his terms of reference and will not be bypassed in any respect of the flight operation.

The final decisions within the flight operation rest exclusively with the Flight Operations Manager.

#### DUTIES

* Study all laws, regulations or any other information pertaining to aviation activities.
* Study all available literature and keep himself informed about flight equipment, procedures, experience and development within aviation and bring relevant items to the attention of the company.
* Compilation of the Flight Operations Manual of Mali Air and the issuance of amendments from time to time deemed necessary to keep the company personnel informed on the latest policies, procedures and practices or any changes therein.
* Keep all Manuals in an up-to-date condition and make sure they are available for all personnel.
* Check the aircraft logs for hours flown and inform the company for billing purposes.
* Make sure that no ground or flight personnel are involved in aviation activities unless it is in the possession of valid licenses as well as other specific qualifications which may be required by law or regulations.
* Ensure cooperation of flight crew members and ground handling personnel to ensure the highest safety standard possible
* Report non-practicable procedures etc. to the competent authorities

#### QUALIFICATION REQUIREMENTS

* JAR ATPL or validation with appropriate type rating (current or non-current)
* practical experience and skills concerning operational standards and flight safety
* thorough knowledge on all Mali Air documentation, including the OM and EU-OPS regulations
* knowledge of national and international rules and regulations concerning operation of commercial aircraft
* appropriate managing experience
* knowledge of business economics, personnel management and industrial law

### DEPUTY TO THE FLIGHT OPERATIONS MANAGER

In case of absence of the Flight Operations Manager his deputy has to take over his authority, however, he has to confer with the Flight Operations Manager before making any essential decisions and keep him informed about any major irregularities in flight operation.

Qualification requirements are the same as for the Flight Operations Manager. If the Flight Operations Manager's rating has lapsed, the Deputy must possess a valid licence and rating.

### POSTHOLDER CONTINUING AIRWORTHINESS

Assure that the airworthiness of all aircraft is maintained at all times. This includes especially maintenance and repair work, any changes or exchanges performed on the aircraft and inspection.

In technical matters the Postholder Continuing Airworthiness is responsible for the coordination with the department Flight Operations. As far as technical subjects are concerned he is the primary link to the authorities. If the airworthiness of any airplane is not guaranteed the department Flight Operations is to be informed immediately.

Further details on the function, duties and responsibilities of the Postholder Continuing Airworthiness are laid down in the CAME.

### DEPUTY TO THE POSTHOLDER CONTINUING AIRWORTHINESS

* Assist the Postholder Continuing Airworthiness in his duties.
* Take decisions in case of absence of the Postholder Continuing Airworthiness

### POSTHOLDER CREW TRAINING

* Help all personnel to acquire the best possible training standard and achieve high proficiency.
* Imply the procedures laid down in Part D of this Operations Manual and ensure that they are adhered to.
* Design and develop the training syllabi for, draw up the curricula for, organise and supervise
* Operators Conversion Training
* Recurrent Training and Checking
* Upgrading to Commander
* Flight Instructor Training
* Other Training as defined in the OM-D
* Other Training as defined in the OM-A

in compliance with EU OPS, JAR FCL 1, national law and all applicable official and internal regulations for Flight Crew.

* Coordinate crew training and checking.

#### QUALIFICATION REQUIREMENTS

* TRE authorisation for a MPA of Mali Air , if only SPA are used in operation a TRE, CRE or FE authorization for an aircraft used in operation must be valid.
* practical experience and skills concerning operational standards and flight safety
* thorough knowledge on licensing regulations (ZLPV, JAR-FCL, JAR-STD)
* thorough knowledge on all Mali Air documentation, including the OM
* five years relevant work experience at least two of which must be in training for pilots or cabin crew
* practical experience concerning safety standards in flight operation

### POSTHOLDER GROUND OPERATIONS

The following duties and responsibilities are limited to the function Postholder Ground Operation as laid down in EU OPS. Other functions the same person might hold are not dealt with.

The Postholder Ground Operation shall

* Ensure safe ground handling
* Manage safety risks and security threats to aeroplane operations with regard to ground operations
* Ensure that all ground handling of aeroplanes, passengers and luggage is in compliance with EU OPS, The Operations Manual, Legal Requirements and Company Requirements
* Ensure that any contracted ground handling company meets the required standards,
* Develop, implement, adapt and supervise ground operations procedures to ensure safe operational practices
* Ensure ground de-/anti-icing for Mali Air aeroplanes taking into account all relevant regulations
* Organize and perform training of pilots regarding anti-/de-icing of Mali Air aircraft control and supervise the movement of Mali Air aeroplanes.

#### QUALIFICATION REQUIREMENTS

* practical experience and skills concerning operational standards and flight safety
* thorough knowledge on the company's ground operations including dangerous goods and security
* five years relevant work experience at least two of which must be in ground operations at a commercial operator
* thorough knowledge on all Mali Air documentation, including the OM

### QUALITY MANAGER

The Quality Manager shall

* Monitor compliance with EU-OPS, JAR-FCL, EASA Part M and any other standards specified by the company or the Authority to ensure safe operations
* Prepare and maintain the “Compliance Checklist” according to AOCV
* Monitor the adequacy of procedures required to ensure safe operational practices
* Coordinate quality matters with the nominated Postholders
* Prepare and maintain the annual audit plan, draw up audit programmes and define the criteria for auditing Flight Operations, Crew Training, Ground Operationsand the Maintenance System in compliance with EU OPS, EASA Part M, JAR-FCL and relevant legal regulations
* Draw up quality reports for submission to the Accountable Manager, the nominated Postholders (EU OPS and EASA Part M)
* Control the efficiency of implemented corrective actions
* Organize and coordinate audits

#### Powers and Authority

* In order to guarantee that all quality related requirements are complied with, he is obliged to point out all deviations from the requirements and their probable causes to the nominated Postholders in order to enable efficient and fast corrective actions to be taken
* If, however, he arrives at the conclusion that quality standards might be at risk and corrective action seems not to be taken in due time on Postholder level, it is his duty to immediately inform the Accountable Manager in order to initiate timely remedial measures
* The Quality Manager shall have access to all parts of the operator’s and, as necessary, any sub-contractor’s organisation
* In exercising his powers the Quality Manager is independent and not bound by any instructions

#### QUALIFICATION REQUIREMENTS

* practical experience and skills concerning maintainance, operational standards and flight safety
* thorough knowledge on content and function of quality systems, auditing and inspection techniques and all Mali Air documentation, including the OM
* thorough knowledge on Part M and Part 145 of VO(EG) Nr. 2042/2003,
* participation on training courses on quality assurance principles, auditing techniques and air operator quality systems.

### FLIGHT SAFETY MANAGER

The Flight Safety Manager shall

* Monitor the Flight Operations with regard to all flight safety related matters by evaluating the data stored on safety vision program
* Keep surveying whether all standards laid down for the Flight Operations are observed in compliance with the statutory rules (e.g. AOCV, EU OPS) and the inhouse guidelines, in order to ensure that flight safety is maintained.
* Write memorandums on safety matters to Flight Crew Members
* Prepare a summary analysis of all reports compiled from the anonymous and confidential reporting system collected by the confidential pilot (Vertrauenspilot).
* to be able to early detect undesired trends
* Investigate accidents, incidents and occurrences and participate in hearings which are to take place in above mentioned cases.
* Cooperate with Operational Departments in flight safety matters
* Work together with Ground Operations in questions of procedures and training measures
* Consult with the responsible official about exceptions in matters concerning transportation of inadmissible passengers, deportees or persons in custody
* Draw up flight safety reports for submission to nominated Postholders and pilots of Mali Air

### DANGEROUS GOODS MANAGER

The dangerous goods manager has to ensure and is responsible for:

* Correct classification of the Dangerous Goods
* Prohibited items are not shipped by air, unless exempted
* Correct packaging taking into account prescribed specifications and package quantity limitations
* All relevant staff have regular mandated job-specific training
* Correct declaration of the Dangerous Goods
* The Commander is advised of the location and fixation of the Dangerous Goods aboard the aeroplane
* Accepting of dangerous goods that meet the maximum allowable TI
* Arrangement of recurrent training every second year
* Validity of dangerous goods certificate for all pilots working for Mali Air

#### Qualification Requirements

* Dangerous Goods training for Acceptance Staff (personnel category 6).
* practical experience and skills concerning transport of dangerous goods, , operational standards and flight safety
* thorough knowledge on the company's ground operations including dangerous goods and security

### FLIGHT INSTRUCTOR

The Flight Instructor shall

* Carry out training and checking on order of the Postholder Crew Training
* Carry out Route- and Aerodrome Qualification training, briefing and checking
* Keep the Postholder Crew Training fully informed about individual and fleet wide performance of his Flight Crews
* Work on subject areas that are especially delegated to the Flight Instructor by the Postholder Crew Training
* Assist the Postholder Crew Training in maintaining and revising fleet specific topics of Route- and Aerodrome Briefing/Information and SOPs
* Act as Co-pilot when right hand seat training received.

## AUTHORITY; DUTIES AND RESPONSIBILITIES OF THE COMMANDER

### GENERAL

The PIC is commanding officer of the aircraft. He is the legal representative of Mali Air in contact with non company people as far as his authority is specified in the various regulations.

### AUTHORITY

The PIC has full authority over:

Crew members on duty

Crew members off duty when away from home base

Passengers. This responsibility commences when entering the parked aircraft or taking it over from the last crew and ends when the aircraft is handed over to the next crew or is parked, closed and locked as applicable. With respect to passengers and cargo the responsibility covers the whole period from the time when passengers and/or cargo enter the airside of the departure aerodrome until, after the flight, all passengers and/or cargo are again on the landside of the arrival aerodrome.

The liability of the PIC to his company and other persons is fixed in the working contract as well as in Governmental Regulations.

The PIC is responsible for:

Continuous discipline and order on board during flight.

The safety of passengers and crew as well as the safety and safeguard of the load on board.

The safety and proper servicing of the aircraft as well as the maintenance of airworthiness while executing the flight within the limitations and complying with the instructions as laid down in the OM.

Decisions with regard to maintenance of airworthiness shall be made only after due consideration of the advice of the Technical Department

* The Commander is responsible for the safe and economic execution of flights as assigned to him in cooperation with all relevant departments and authorities as well as for the safe operation of the aeroplane and safety of its occupants and cargo on board in accordance with the prescriptions of this OM, the relevant AFM and applicable checklists. This responsibility commences when entering the parked aircraft or taking it over from the last crew and ends when the aircraft is handed over to the next crew or is parked, closed and locked as applicable. With respect to passengers and cargo the responsibility covers the whole period from the time when passengers and/or cargo enter the airside of the departure aerodrome until, after the flight, all passengers and/or cargo are again on the landside of the arrival aerodrome.
* He must ensure that all passengers are briefed as described in chapter 8.3.16.
* The Commander shall ensure that all standard and emergency operational procedures are carried out in accordance with this Operations Manual, government regulations and common practices of good airmanship.
* Completion of all relevant forms and collection of all necessary information.
* He shall satisfy him/herself of the airworthiness and serviceability of the aircraft and its systems on ground and in flight.
* He shall carry out duties as PF or PNF at his discretion.
* The Commander must not permit any crew member to perform any duties not required for the safe operation of the aircraft during critical phases of flight such as take-off, initial climb, initial approach and landing.
* He shall not permit flight data recorders and CVRs (if installed) to be disabled or switched off during flight or any data erased in the event of a reportable accident or incident.
* In case political or military orders are given via ATC for an unscheduled landing the Commander, as normally not being in a position to judge whether the given reason is legal, is advised to comply with such imperative requests in order to avoid major difficulties as long as the aircraft proceeds over the territory of the state in question and only if the safety of operation permits.
* Defect or incidents shall be reported to the Flight Operations Manager in order to support the accident prevention and flight safety programme described under 2.3.
* The Commander shall control the appearance and conduct of the flight crew also when on the ground or during standby.
* All flights not carried out for Mali Air shall be reported to the department of Flight Operations

### DUTIES

#### PRIOR TO FLIGHT

The PIC shall:

perform the general preparation for his flight duty in accordance with the OM.

perform the special preparation for the actual flight in accordance with the OM.

perform technical acceptance and briefing of aircraft according to OM and AFM. Inform the Co-Pilot about technical conditions of the aircraft.

brief the passengers on the safety on board requirements, such as seat belts, smoking restrictions, usage of the emergency exits, oxygen masks, life vests and life raft, as applicable.

#### DURING FLIGHT

The PIC shall:

Operate the aircraft according to instructions laid down in the various Company regulations especially in the OM and the AOM.

Perform the flying or assisting Pilot's duties according to split-up of cockpit work.

Make sure that all required communications are carried out according to valid regulations and instructions.

Ensure that the whole flight crew is continuously informed about essential deviations from the planned flight or other irregularities.

#### AFTER FLIGHT

The PIC is responsible for:

post-flight duties, such as post-flight checking of the aircraft, closing of the OFP, ensure that the logbook and all papers necessary have been completed etc.

if a technical problem occurred during the flight, a note has to be entered in the Technical Aircraft Log; the technical department as well as the Managing Director have to be informed at once, who will then undertake all necessary steps.

### CREW IRREGULARITIES

The PIC must notify his superiors whenever the performance of a duty by a crew member is obviously not in accordance with current regulations as stated in Chapter 10 (Pilot's trip report)

To maintain safety and good order, the PIC may temporarily remove a crew member from his duty or off the aircraft, however, the Minimum Crew requirements have to be observed.

### PASSENGER IRREGULARITIES

In case of crime, death, birth on board or disappearance of persons from the aircraft during a flight operation, the PIC has to inform the local Police Authorities as well as the Aerodrome Authority and the Flight Operations Manager.

If deemed necessary, the PIC may refuse passengers for onward

transportation if after several requests they still do not follow the given orders. Persons obviously intoxicated with alcohol, drugs or narcotics shall be refused.

The aircraft commander may, when he has reasonable grounds to believe that a person aboard an aircraft has committed or is about to commit an offence against penal law or acts which may or do jeopardize the safety of the aircraft or of persons or property therein or which jeopardize good order and discipline on board, impose upon such person reasonable measures including restraint which are necessary to protect the safety of the aircraft, of persons or property therein, maintain good order and discipline on board or to enable him to deliver such person to competent authorities or to disembark him. (Tokyo Convention)

The commander may require or authorize the assistance of other crew members and may request or authorize the assistance of passengers to restrain any person whom he is entitled to restrain.

### HANDLING OF EMERGENCY SITUATIONS

In emergency situations the PIC is authorized to follow any course of action deemed necessary in the interest of safety. He may, in such situations, deviate from prescribed methods, procedures or minima in the extent required by considerations of safety.

The PIC has the authority and responsibility to declare an emergency situation whenever deemed necessary. When exercising his emergency authority, the PIC

shall keep the proper control station fully informed regarding the progress of the flight and actions taken.

Any emergency situation has to be reported to the Flight Operations Department without delay. Additional reports may be required or requested by the Authorities.

### POLITICAL/MILITARY ORDERS FOR UNSCHEDULED LANDINGS

Basically political or military orders via ATC for an unscheduled landing are only compulsory if the given reason is legal. The PIC and the Flight Operations Officer however, are normally not in a position to judge the legality in due time. In order to avoid major difficulties the PIC is advised to comply with such imperative requests

as long as the aircraft proceeds over the territory of the required state and

if the safety of operation permits (weight, navigation facilities, runway and airport conditions).

Mali Air will initiate the necessary diplomatic steps if such a landing is requested and thus caused prejudice to passengers and Company.

## DUTIES AND RESPONSIBILITIES OF CREW MEMBERS OTHER

## THAN THE COMMANDER

### CO-PILOT

The Co-Pilot shall take orders directly from the PIC and shall:

Act as the PIC’s deputy upon delegation or in the commander's absence

Act as the main assistant of the PIC and as a monitoring crew member during all phases of the flight

#### DUTIES

The Co-Pilot shall:

Handle all navigation material including Ship's library

Take care of the collection, completion and dispatch of all paper work such as OFP, Load-sheet, Balance-sheet, Met-Folder and all other important papers of the flight

Be especially well familiar with all technical problems of the flight.

#### PRIOR TO FLIGHT

The Co-Pilot shall:

Attend the pre-flight briefing

Compute the Company Flight Plan (if not completed by the Dispatch Office)

File the ATC Flight Plan, where necessary

Collect all necessary documents such as Flight Plans (Operational, ATS), Aeroplane Technical Log, Notams, Met-reports, Mass and Balance documentation, Dangerous Goods documentation, maps and charts, etc.

Make spot checks of emergency equipment for completeness and usefulness

Prepare the cockpit and perform the Checklists before starting the engines

#### DURING FLIGHT

The Co-Pilot shall:

Perform the flying Pilot's or assisting Pilot's duty according to the PIC's orders

Closely follow up the flight's progress and be prepared to take over controls at all times, especially on take-off and approach/landing whenever the PIC should issue such order or shows signs of incapacitation

Inform the PIC automatically and immediately if something in the operation of the aircraft is considered to become abnormal or if deviations from prescribed procedures, clearances or from the plan of operation show up

#### AFTER FLIGHT

The Co-Pilot shall:

Assist the PIC in performing the post-flight duties

Be responsible that the cockpit is left by the crew in good order (papers collected, other material properly stowed)

### CABIN CREW

**NOT APPLICABLE**

# OPERATIONAL CONTROL AND SUPERVISION

## SUPERVISION OF THE OPERATION BY THE OPERATOR

The list of operation personal has been moved to **1.3.2.1** of this manual.

### LICENSE AND QUALIFICATION VALIDITY

Mali Air tracks the validity of

* Flight Crew Licences
* Medical Certificates
* Flight Crew Competences
* Validity of certificates such as emergency training, CRM a.s.o.

But nevertheless it is the final responsibility of the individual flight crew member to ensure that she/he is in the possession of a valid and properly rated licence, appropriate to her/his function at all times when engaged in flight duties and to take all necessary action for the maintenance and renewal of her/his license.

Should a holder of the above listed licences, competences and certificates become aware that one or more might become invalid she/he shall inform the company in due time.

### COMPETENCE OF OPERATIONS PERSONNEL

In order to maintain the highest level of safety and proficiency, Mali Air supervises and monitors the operations personnel when performing their duties by means of training and checking.

An anonymous punitive free reporting system is maintained to gain benefit of information concerning safety and quality related deficiencies that would otherwise not be accessible.

The Flight Operations Manager must always be in a position to confirm that:

* the company employs sufficient properly trained personnel required to operate the numbers and types of aeroplanes involved,
* the requisite flight, personnel, training and maintenance records are being retained, analysed and stored for the statutory periods in order that the company's established quality control procedures may be effectively implemented,
* operations personnel is competent to perform their duties and their levels of competence are monitored and
* all operations personnel are familiar with those parts of the OM needed to perform their duties safely and efficiently.

### CONTROL, ANALYSIS AND STORAGE OF RECORDS; FLIGHT DOCUMENTS; ADDITIONAL INFORMATION AND DATA

The following information / documentation shall be retained for the periods shown below. Only one copy of each item needs to be retained.

Information used for the preparation and execution of the flight

|  |  |
| --- | --- |
| **Item** | **Retention period** |
| Operational flight plan | **3 months** |
| Aeroplane technical log | **36 months after date of last entry** |
| NOTAM / AIS briefing if edited by the operator | **3 months** |
| Mass- and Balance-sheet | **3 months** |
| Notification of special  loads, including dangerous goods | **3 months** |

Reports

|  |  |
| --- | --- |
| **Item** | **Retention period** |
| Journey log | **3 months** |
| Pilot’s Trip report / PVR | **3 months** |
| Reports on exceedances of duty and / or reducing rest periods | **3 months** |

Flight Crew Records

|  |  |
| --- | --- |
| **Item** | **Retention period** |
| Flight, Duty & Rest time records | **15 months** |
| Licence | **as long as the crew member is exercising the privileges of the licence for Mali Air** |

|  |  |
| --- | --- |
| **Item** | **Retention period** |
| Conversion training and checking | **3 years** |
| Command course | **3 years** |
| Recurrent training and checking | **3 years** |
| Training and checking to operate in either pilot's seat | **3 years** |
| Recent experience | **15 months** |
| Route and aerodrome competence | **3 years** |
| Training and qualification for specific operations | **3 years** |
| Dangerous goods training | **3 years** |

Records for other operations personnel

|  |  |
| --- | --- |
| **Item** | **Retention period** |
| Quality Control | **last 2 records** |
| Dangerous Goods | **last 2 records** |

Other records

|  |  |
| --- | --- |
| **Item** | **Retention period** |
| Records on cosmic and solar radiation dosage | **Until 12 months after the crew member has left the employ of the operator** |
| Quality system records | **5 years** |
| Ticket records | **3 years** |
| DG transport document | **3 months** |
| DG acceptance checklist | **3 months** |

### CONDUCT OF FLIGHT OPERATIONS

All flights under the jurisdiction of Mali Air shall be conducted in accordance with the following operating policy:

* Safety shall always have priority
* Depending on the actual situation and if safety is not infringed Economy, Environmental Considerations and Passenger Comfort have to be weighted carefully against each other.

At all times either the Flight operations Manager or Deputy should be available.

### PASSPORT AND VISA VALIDITY

The responsibility to keep passport and visa valid rests solely with the crew member concerned.

## SYSTEM OF PROMULGATION OF ADDITIONAL OPERATIONAL INSTRUCTIONS AND INFORMATIONS

### ADDITIONAL OR TEMPORARY INSTRUCTIONS

All relevant information such as Jeppesen RM or other pertinent information for flight operation are stored on the AVINOC Server and may be accessed by all crew members and other operational personnel of Mali Air. A detailed description is provided in the EFB attachment.

All important notices such as “ Flugbetriebsleiterweisung”, web based trainings, temporary revisions of manuals or other relevant information of Mali Air are distributed via E-mail and are stored additionally on AVINOC Server.

For confirmation of receipt and compliance a confirmation mail has to be sent to the sender by the recipient. All this conversations are to be stored.

### ADDITIONAL INSTRUCTIONS

Any additional information necessary for the safe and efficient conduct of a flight which is of an operational nature (e.g. special procedures for an airport, flights outside Europe, flights with special equipment on board etc.) may be distributed to the flight crew(s) of the respective flight by the Flight Operations Department either via E-mail or on hard copies.

## ACCIDENT PREVENTION AND FLIGHT SAFETY PROGRAMME

### GENERAL

Safety is the predominant factor in all considerations.

More than 80% of all aircraft accidents are caused by human faults. Human faults are risks which are possible to be minimized by careful planning and management of a company.

The following guidelines are established to ensure a maximum level of safety in flight operations and awareness amongst all Mali Air personnel:

* All information concerning flight safety will be analysed by the Flight Safety Manager to gain important knowledge for accident prevention.
* The Safety Manager shall record observed safety deficiencies and keep flight safety awareness alive by circulation of accident reports, flight safety bulletins and flight safety magazines. Information from reports by operations personnel, investigations, informal discussions or questioning and observation shall be brought to the attention of all crew members and discussion of such topics shall be encouraged by the Flight Safety Manager.
* There are some main faults that can seriously affect flight safety, which shall be given special attention:
  + Incomplete flight preparation and/or planning
  + Bad fuel management
  + Wrong interpretation of meteorological information
  + Weak consideration and interpretation of flight hazards
  + Outdated documentation and publications
  + Negligence during pre-flight checks and incorrect use of checklists
  + Wrong handling of mass and balance data
  + Omission of crew briefings
  + Exceedance of flight duty times
  + Insufficient knowledge on emergency equipment and procedures
* As a high percentage of aircraft accidents are caused by human factors, great emphasis in accident prevention shall be placed on such factors. The well-being of crew members is very important in view of accident prevention. A crew member must be able to respond any time in the correct way to any situation. Factors which adversely affect the well-being of crew members, such as fatigue, body rhythm disturbance or sleep deprivation shall be kept to a minimum. Free and unreserved communication between crew members is necessary for safe aeroplane operation. Adherence to CRM practises and SOPs is vital for ensuring an optimum flow of information. It is the Commander's responsibility to show good leadership qualities and employ good crew resource management.

### CONFIDENTIAL REPORTING SYSTEM

A confidential (anonymous) reporting system is installed within Mali Air. One pilot is tasked to collect and interpret all messages brought to attention to him by operational personnel of Mali Air.

A brief interpretation has to be submitted to the Flight Safety Manager if Flight Safety is concerned. If flight safety is not of concern such interpretation has to be brought to attention to the postholder involved.

Occasionally a staff member may be involved in, or become aware of, an incident, which should have been, but may not have been reported. Due to circumstances surrounding the event the holder of the information may not want to be identified. This information should be passed to the Confidential Pilot.

Any staff member may make confidential reports and may decide to submit such reports anonymously.

* All safety reports go to the Flight Operations
* The Flight Safety Manager is responsible for investigation of the reports and for the confidentiality of the reports,
* While maintaining confidentiality, the Flight Safety Manager must be able to follow-up on a report to clarify the details and the nature of the problem,
* Anyone submitting a safety report (non-anonymous) must receive acknowledgement and feedback,
* After investigations, the de-identified safety report and recommendations are made widely available for the benefit of all staff.

The Flight Operations Manager and Flight Safety Manager are authorized to accept confidential safety reports from any source and in any technical form and to retain the identification of the source to him personally. Under no circumstances may a confidential report be misused to attribute blame to any personnel.

The Flight Safety Manager makes decisions concerning specific risk acceptability and they have to be kept informed of all risk considerations. Hazards that were not adequately disposed are communicated to management for resolutions.

Reports are distributed to, as a minimum, the following persons:

* The person responsible for managing the flight safety program,
* The originator of the report,
* The Commander concerned.

## OPERATIONAL CONTROL

### DEFINITION

Operational Control comprises:

The exercise of authority over initiation, continuation, diversion, rerouting, termination and cancellation of a flight.

The exercise of authority to carry out the recovery from operational irregularities.

The Duties of operational control such as

* initiating, continuing, diverting, cancelling or delaying flights
* issuing general instructions concerning accommodation
* preparing flight documents such as OFP ,Notams etc.
* organisation of overflight permissions

are generally performed by Department Ground Control. In absence of Ground Control Department personnel the commander is responsible to get all documents necessary in time.

The final authority for operational control rests solely with the Commander. As soon as the Commander considers any development concerning a particular flight as beyond the normal procedures laid down in this manual (e.g. technical mishaps, delays, weather deterioration) the Flight Operations Manager shall be informed immediately. The Flight Operations Manager and other departments of Mali Air will then, within the operational limits of this manual, assist the Commander in seeking a solution.

## POWERS OF AUTHORITY

A representative of the Authority responsible for certification, licensing or inspection if this is required for the performance of his official duties is admitted to, or carried in, the flight deck.

Mali Air ensures that any person authorised by the Authority is permitted at any time to board and fly in any aeroplane operated in accordance with the AOC issued by that Authority and to enter and remain on the flight deck provided that the commander may refuse access to the flight deck, if in his opinion, the safety of the aeroplane would thereby be endangered.

The operator will give any person authorised by the Authority access to any documents and records which are related to flight operations or maintenance; and produce all such documents and records, when requested to do so by the Authority, within a responsible period of time.

# QUALITY SYSTEM

## INTRODUCTION

Offering a high quality product is the general policy of the Mali Air. The following most important aims will ensure this:

Safe flight operation

Passenger comfort

Economics

High quality can only be assured with the implementation of a Quality Management within the company. The Quality Management system contains regular audits and reviews.

To ensure, that the high quality policy is published, understood and maintained by all the members of the company, a quality assurance is implemented. A permanent guideline for all personal acting in the quality process is established.

This part of the OM prescribes the quality system and is primary the source of information related to quality.

## GENERAL

### TERMINOLOGY

The terms used in the context of the Quality Manual are based on ISO 8402 (Quality Management and Quality Assurance vocabulary) as well as the OPS 1.035 Quality System. The basic terminology in the following paragraphs is an excerpt of the documents mentioned above.

Quality

The totality of features and characteristics of a product or service that bear an is ability to satisfy started or implied needs.

Quality Assurance

All those planned and systematic actions necessary to provide adequate confidence that operational practices satisfy given requirements.

Quality Audit

A systematic and independent examination to determine whether quality activities and related results comply with planned arrangements and whether these arrangements are implemented effectively and are suitable to achieve objective.

Quality Control

The operational techniques and activities that are used to fulfil requirements for quality.

Quality Inspection

A Quality Inspection is the act of observing a particular event or action to ensure that correct procedures and requirements are followed during the accomplishment of that event.

Quality Management

The management responsible for the overall function and implementation of the quality policy.

Quality Manager

The manager, who is the Authority and responsible for the management of the Quality System.

Quality Manual

The document containing all the relevant information pertaining to the operator’s quality system and quality assurance program.

Quality Policy

The overall quality intentions and directions of a company expressed by the highest level of management.

Quality System

The organizational structure, responsibilities, procedures and resources for implementing quality management.

### QUALITY POLICY

Safety Standards

The safety of flight shall be the target; this shall be a coordinated interaction between the Quality Manager, the Technical Department and the Company’s Management. According OPS 1.035 and AOCV §7 the responsibility for the Quality Policy of Mali Air will be monitored by the Quality Manager.

The Safety standards in a company are determined on the basis of Authority regulations which present the minimum level, together with additional requirements laid down with the company's management. In order to ensure that laid down Safety standards are achieved the method of Quality Control shall be used.

Quality Standards

Fundamental to the functioning of the quality assurance system is that each company member executes his work professionally in accordance with the established standards. In this way Quality Control supports Quality Assurance and becomes a useful tool in the flight safety work, irrespective of the size of a company.

The most important function of quality assurance is to reduce or eliminate the number of deviations from policies and standards.

The Quality System is a means to

- ensure that the Quality policy is promulgated, understood and maintained by all members of the company, the quality assurance is implemented and a permanent guideline for all personnel acting in the quality process,

- prove the implementation of procedures for the Mali Air Quality System and the achievement and continued compliance with OPS 1.

This Chapter presents our principles in quality and according to these principles the procedures and systems which are used.

The whole company is bound to this quality management system.

Accountable Manager Quality Manager

Karl-Heinz Mali Michael Pühse

### PURPOSE OF THE QUALITY SYSTEM

The Quality System is an instrument for compliance to monitor all Austrian laws, ICAO-Annexes and the OPS 1. The Operational Manual and all other standards specify to ensure safe operation with airworthy aeroplanes. The Quality System guaranties a continuous improvement and efficiency of the service quality.

### QUALITY MANAGER

According to the OPS 1 the Quality Manager shall monitor the procedures to ensure a safe operational practices.

The primary role of the Quality Manager is to verify, by monitoring activity of flight operations, ground operations and crew training, that the standards required by the Authority and any additional requirements are being carried out. The Quality Manager has direct access to the Accountable Manager and as necessary to all parts of the organization.

The Quality Manager has the responsibility for

* Establishing, implementing and maintaining of the Quality Assurance Programme
* Conducting the periodic management review
* Establishing the audit schedule, monitoring deviations and evaluating corrective actions

The Quality Manager has unrestricted access to all parts of Mali Air.

## QUALITY POLICY

### STRUCTURE

In general all quality management activities at Mali Air will be carried out by the Quality Manager. He carries out audits in accordance with the schedule prescribed in Section 4 using the checklists presented in Section 7.

### SCOPE

The Quality System is intended to address the following issues:

* The provisions of OPS 1
* Mali Air's additional standards and operating procedures
* Mali Air Quality Policy
* Mali Air organisational structure
* Responsibility for the development, establishment and management of the Quality System
* Documentation, including manuals, reports and records
* Quality Procedures
* Quality Assurance Program
* The required financial, material, and human resources
* Training requirements

**Feedback system:**

The results of monitoring, auditing and inspection activities shall be reported to the Accountable Manager to ensure that corrective actions are both identified and properly addressed.

If required, corrective action will normally be taken by the Flight Operations or Maintenance Manager, as appropriate. The Quality Manager shall monitor such action and evaluate its effectiveness. In the event corrective action is not completed within the timeframe specified by the Quality Manager, he shall decide about further actions as seem appropriate in each individual case.

### RELEVANT DOCUMENTATION

**QUALITY SYSTEM DOCUMENT HIERACHY AND STRUCTURE**

**Quality Manual**

**(OM Chapter3)**

**Quality Documents**

**(OM, AOM, RM, JAR-Ops, ICAO-Annex’s, etc)**

Documentation relevant to the Quality System comprises the relevant parts of the OM and CAME including:

* Quality Policy
* Terminology
* Specified operational standards
* A description of the organisation
* The allocation of duties and responsibilities
* Operational procedures to ensure regulatory compliance
* Accident Prevention and Flight Safety Programme
* The Quality Assurance Programme, reflecting
  + 1. Schedule of the monitoring process
    2. Audit procedures
    3. Reporting procedures
    4. Follow-up and corrective action procedures
    5. Recording system
* The training syllabus
* Document control

## QUALITY ASSURANCE PROGRAMME

The Quality System complies with EU OPS 1.035 and JAR-FCL 1.055 and with all operational requirements, standards and procedures defined in Mali Air Operations Manual.

### INTRODUCTION

The Quality Assurance Programme includes all planned and systematic actions necessary to provide confidence that all operations and maintenance are conducted in accordance with all applicable requirements, standards and operational procedures.

These actions consist mainly of quality inspections, audits, and monitoring, corrective action and management evaluations as prescribed in the paragraphs below.

### QUALITY INSPECTION

The primary purpose of a Quality Inspection is to observe a particular event in order to examine whether established operational procedures and requirements are accomplished in accordance with all applicable requirements and standards.

Typical subjects for Quality Inspections are:

Actual flight operation

Ground De-icing / Anti-icing

Flight Support Service

Load Control

Maintenance

Technical Standards

Training Standards

### AUDIT

The Quality Manager has to check specific Tasks and / or Documents to get a picture of the Standards used. He then has to compare his observations with the prescribed values as given e.g. in this OM, Aeroplane Flight Manual, etc.

Such Quality Audits have to be accomplished at regular intervals, as specified in the Quality Audit plan, which also shows which tasks have to be checked.

The Observations of the Quality Audit Manager are laid down in the Quality Audit Report, which has to be presented to the Company’s Management Board and to the Accountable Manager.

There shall be established and maintained documented procedures for planning and implementing Quality Audits. The results of the Quality Audits shall be recorded and brought to the attention of the personnel having responsibility. Follow-up Quality Audits shall verify and record the effectiveness of the corrective actions.

### AUDITORS

In general audits will be carried out by the Quality Manager. The Quality Manager decides depending on the complexity of the operation whether to make use of a single auditor or a audit team.

If it seems appropriate the Quality Manager may delegate certain tasks to other persons who will then carry out audits under the supervision of the Quality Manager.

### AUDITOR'S INDEPENDENCE

The Quality Manager and any auditors he may select shall not have any day-to-day involvement in the area of the operation and/or maintenance activity, which is to be audited.

The persons directly responsible for the activities to be audited may not be selected as part of the audit team. Whenever external auditors are used, it is essential that any external specialist is familiar with the type of operation and/or maintenance conducted by Mali Air.

### AUDIT SCOPE

Mali Air will monitor the compliance with the procedures it has designed to ensure safe operations, airworthy aircraft and the serviceability of both operational and safety equipment. In doing so, the following aspects of the Company’s operations will be monitored:

1. Organisation,
2. Plans and Company objectives,
3. Operational Procedures,
4. Flight Safety,
5. Operator certification (AOC/Operations specification),
6. Supervision,
7. Aircraft Performance,
8. All Weather Operations,
9. Communications and Navigational Equipment and Practices,
10. Mass, Balance and Aircraft Loading,
11. Instruments and Safety Equipment,
12. Manuals, Logs and Records,
13. Flight and Duty Time Limitations, Rest Requirements, and Scheduling,
14. Aircraft Maintenance/Operations interface,
15. Use of the MEL,
16. Maintenance Programs and Continuing Airworthiness,
17. Airworthiness Directives management,
18. Maintenance Accomplishment,
19. Defect Deferral,
20. Flight Crew
21. Cabin Crew,
22. Dangerous Goods,
23. Security,
24. Training.

### AUDIT SCHEDULING

Audits covering all the above topics shall be carried out every 12 months.

The main audit periods are:

February Items a - f

May Items g - m

August Items n - s

November Items t - x.

However, this schedule shall not be adhered to rigidly. Unscheduled audits in case of suspected deficiencies or when trends are identified, as well as follow-up audits to verify that corrective action was carried out and that it was effective may be carried out at the discretion of the Quality Manager. Any changes to the management, organisation, operation or technologies as well as changes to the regulatory requirements may also constitute the need to carry out additional audits.

### MONITORING AND CORRECTIVE ACTION

The aim of monitoring within the Quality System is primarily to investigate and judge it’s effectiveness and thereby to ensure that the defined policy and operational standards are complied.

If any non-compliance is identified as the result of monitoring, the Manager of the department concerned is responsible for taking corrective actions. The non-compliance shall be recorded and be the subject of further investigation to determine the cause of the problem to enable the recommendation of appropriate corrections. The Accountable Manager has the responsibility to induce the corrective actions and to ensure through the Quality Manager that the corrective actions have re-established compliance with the required standard.

Subsequent to the quality inspection/audit, the Quality Manager shall establish:

* the seriousness of any findings and any need for immediate corrective action
* the origin of the finding
* what corrective actions are required to ensure that the non-compliance does not recur
* a schedule for corrective action
* the identification of individuals or departments responsible for implementing corrective action
* allocation of resources by the Accountable Manager, where appropriate

The Accountable Manager will have the ultimate responsibility for setting the corrective action and ensuring, through the Quality Manager, that the corrective action has re-established compliance with the standard required by the CAA, and any additional requirements defined by Mali Air.

The Quality Manager shall

* verify that corrective action is taken by the manager responsible in response to any finding of non-compliance
* verify that corrective action includes the elements outlined above
* monitor the implementation and completion of corrective action
* provide management with an independent assessment of corrective action, implementation and completion
* evaluate the effectiveness of corrective action through the follow-up process

### MANAGEMENT EVALUATION

A management evaluation is a comprehensive, systematic, documented review by the management of the quality system, operational policies and procedures, and should consider:

* the results of quality inspections, audits and any other indicators
* the overall effectiveness of the management organisation in achieving stated objectives

A management evaluation should identify and correct trends, and prevent, where possible, future non-conformities. Conclusions and recommendations made as a result of an evaluation should be submitted in writing to the responsible manager for action.

The Accountable Manager decides upon the frequency, format, and structure of internal management evaluation activities.

### RECORDING

Accurate, complete and reliable records documenting the results of the Quality Assurance Programme shall be maintained for a period of 5 years, including but not limited to

* Audit Schedules
* Inspection and Audit reports, including Quality assurance plan
* Responses to findings
* Corrective action reports
* Follow-up and closure reports
* Management Evaluation reports.

## QUALITY ASSURANCE RESPONSIBILITY FOR SUBCONTRACTORS

Mali Air may decide to sub-contract out certain activities to external agencies for the provision of services related to areas such as:

* De/Anti-icing;
* Maintenance,
* Ground handling;
* Flight support (such as performance calculations, etc.)
* Training;
* Manual preparations.

When using sub-contractors the responsibility for the quality of the product or service remains with Mali Air. A written agreement between the Company and the sub-contractor that clearly defines the responsibilities shall exist. That part of the sub-contractor's activity contained within the agreement shall be included in the Company's Quality Assurance Program.

Mali Air shall ensure that the sub-contractor has the necessary authorisation/approval when required and commands the resources and competence to undertake the task.

## QUALITY SYSTEM TRAINING

Personnel responsible for managing the Quality System shall receive training covering at least the following topics:

* An introduction to the concept of Quality System,
* Quality management,
* Concept of Quality Assurance,
* Quality manuals,
* Audit techniques,
* Reporting and recording
* The way in which the Quality System functions in the company.

The Quality Manager shall in addition demonstrate sufficient knowledge on the following topics:

* Mali Air organisation
* procedures and documentation in flight operations and maintenance
* all relevant Mali Air manuals
* national and international regulations
* other pertinent aeronautical publications

With due consideration regarding the size of Mali Air operations and the complexity of the task a quality management course shall be taken into account for personnel involved in quality management activities.

## QUALITY AUDIT REPORT AND INSPECTION CHECKLIST

see Part "AUDIT CHECK"

# CREW COMPOSITION

## CREW COMPOSITION

### FLIGHT CREW

#### MINIMUM STANDARD FLIGHT CREW

For all flights, the composition of the flight crew and the number of Flight Crew Members at designated crew stations are both in compliance with, and no less than the minimum specified in the AFM.

Flight crew personnel will be assigned to duties in accordance with the requirements set out in the following paragraphs.

It is the duty of all flight personnel to report for duty punctually in accordance with their duty assignments.

### TYPE OF AEROPLANE BEING USED

Mali Air operates Cessna 340, Cessna Citation C501 SP and Cessna Citation C525.

### AREA AND TYPE OF OPERATION

Mali Air operates within EUR. The operation is commercial transportation of passengers and freight.

### PHASE OF FLIGHT

The general allocation of cockpit crew duties during take-off, climb, cruise, descent, approach and landing is outlined in following paragraphs:

During all ground operations the Pilot in Command will act as flying pilot

The Co-pilot may act as the flying pilot as soon as the aircraft is in the line-up position before take off until the aircraft leaves the runway after landing. The handing-over of the controls has to be clearly confirmed by both pilots.

The Co-Pilot may only perform take-off, landing and instrument approaches if all of the following requirements are met:

* he is authorized by the Flight Operations Manager and
* the take-off, landing or approach conditions are satisfactory according to the PIC's judgement
* (Company) at least the following Meteorological Conditions exist:

**T/O: 400 m**

**Landing: 300 ft / 1200 m**

### FLYING PILOT (PF)

The flying pilot's main duties are the control of the aircraft and of the progress of the flight through its navigation. He shall continuously monitor the aircraft and be immediately ready to take over manually while the autopilot is engaged. He shall not perform other work such as paper work if this is not prescribed or absolutely necessary.

### ASSISTING PILOT (PNF)

The assisting pilot has to perform all non-flying pilot duties. He has to assist the flying pilot whenever possible in monitoring the flight instruments and in the look-out.

### SHARING OF FLIGHT TIME

In order to maintain and improve the Co-pilot's skill in handling the aircraft and to train him for a future position as a PIC he shall carry out part of the flying, particularly instrument flying, and part of the total number of landings (Co-Pilot as flying pilot).

The Co-Pilot shall be given the opportunity to act as the flying pilot from the right hand seat (including take-offs, landings, climb-outs and approaches) normally up to 50% but at least 25% of the total flight time.

### MINIMUM CREW REQUIREMENT AND FLIGHT DUTY PERIOD PLANNED

IFR operations in propeller driven single-pilot aeroplanes

**MINIMUM CREW OF 1 COMMANDER**

Provided:

- Single pilot operations must be permitted by the AFM

- The aircraft must be equipped with an autopilot coupled to the primary Nav-system and with altitude hold and heading mode.

- The pilot must have completed the conversion and recurrent training programme laid down in Part D.

- The last proficiency check has been carried out in the single pilot role using the procedures of Part D.

- The pilot has a minimum of 50 hours flight experience on the specific type or class of aeroplane under IFR as Commander.

- Recent experience must include at least 5 IFR flights with 3 actual instrument approaches on the specific aeroplane within the preceeding 90 days or an IFR instrument approach check on the specific aeroplane.

Other operations:

Otherwise the commercial carriage of persons or property on IFR operations is only permitted with a

**MINIMUM CREW OF 2 QUALIFIED PILOTS**

at least one of which must be qualified as Commander.

VFR operations may be performed, if the aircraft certification permits, by

**1 COMMANDER**

Flight duty periods must not exceed the limits specified in Chapter 7.

### EXPERIENCE, RECENCY AND QUALIFICATION OF THE CREW MEMBERS

Inexperienced pilots shall not be scheduled to operate together. Only an experienced First Officer shall be assigned to fly with a less experienced Commander.

A flight crew member is considered to be inexperienced until it has achieved on the type of aeroplane:

* 50 hours and 10 sectors for propeller driven aircraft of mass class A - C
* 100 hours and 20 sectors for other aircraft up to 10 tons MTOM and with a maximum approved passenger seating of 19.

RECENCY OF EXPERIENCE

A pilot shall not operate an aeroplane as part of the minimum certificated crew unless he has carried out at least three take-offs and landings as pilot flying in an aeroplane, or in a flight simulator, of the same type/class within the preceding 90 days.

The 90-day period may be extended up to a maximum of 120 days, provided within this period the crew member has completed at least one sector of line flying as pilot flying under the supervision and to the satisfaction of an examiner.

Otherwise re-qualification training as described in OM-D is required.

ROUTE AND AERODROME COMPETENCE

A Commander or pilot to whom the conduct of a flight may be delegated shall obtain sufficient knowledge of the route to be flown and of the aerodromes facilities and procedures to be used in accordance with the requirements set out in Part D.

### DESIGNATION AND RELIEF OF THE COMMANDER

see 4.2 and 5.2.

### SENIOR CABIN CREW MEMBER

not applicable

## DESIGNATION OF THE COMMANDER

### GENERAL

For each flight a pilot will be designated as PIC by the Flight Operations Manager considering the schedule, weather conditions, type of flight as well as qualification and route competency of the respective pilot.

The PIC will assume the duties and responsibilities for the flight as published in the OM.

The handling of the aeroplane or conduct of a flight may be delegated by the commander to another suitably qualified pilot.

The PNF shall always monitor the PF on signs of incapacitation especially during the critical stages of the flight such as take-off, approach and landing. A typical sign of incapacitation due to heart attack is the sudden and unmotivated attempt to move the seat back in order to rise.

## FLIGHT CREW INCAPACITATION

### SUCCESSION OF COMMAND

If the Commander should become incapable of holding command, the Co-pilot assumes command.

If the Commander is ill or otherwise indisposed and cannot continue his command of the flight, the flight will not depart from the aerodrome where it has landed or, if occurring during flight, from the next aerodrome at which it lands, unless another pilot who has been checked out by Mali Air as commander of the aeroplane type is included in the crew.

See also OM part 8. Incapacitation of crew members.

## OPERATION OF MORE THAN ONE TYPE

### FLIGHT CREW SCHEDULING

Mali Air pilots are authorised to operate on several different types of aircraft provided they lie within a single licence endorsement (e.g. MEP(land)) and the pilots complete all training requirements and checks for all types. If different types certificated for single pilot operations do not fall within one licence endorsement, pilots must not operate more than:

- three piston engined aeroplane types or variants, or

- three turbo-propeller aeroplane types or variants, or

- one turbo-propeller aeroplane type or variant and one piston engined aeroplane type or variant, or

- one turbo-propeller aeroplane type or variant and any aeroplane within a particular class.

Pilots operating on both single-pilot and multi-pilot aeroplanes, or two types of multi-pilot aeroplanes must:

- before exercising the privileges of two licence endorsemets

- have completed two consecutive operator proficiency checks and must have 500 hours in the relevant crew position with the operator,

- in the case of upgrading on one of the two types of aeroplane, have 6 months and 300 hours experience as commander and have passed two consecutive proficiency checks before again being eligible to exercise 2 licence endorsements

- before commencing type conversion training have completed at least 3 months and 150 hours flying on the base aeroplane including at least one proficiency check,

- after completion of the initial line check on the new type, operate at least 50 hours or 20 sectors solely on the new aeroplane type

- fulfil recency and proficiency requirements for each type

A pilot operating single- and multi-pilot aeroplanes must not perform single pilot operations.

The above restrictions do not apply for pilots operating only single pilot classes of piston engined aeroplanes under VFR by day.

However, no pilot may fly different aircraft on the same day or, if both aircraft are propeller driven single-pilot aeroplanes, more than 2 types of aircraft per day. For qualification requirements see also 5.2 for actual qualification of crew members see Stellenbesetzungsplan.

### CABINE CREW SCHEDULING

NOT APPLICABLE

# QUALIFICATION REQUIREMENTS

## DESCRIPTION OF LICENCE, QUALIFICATION/COMPETENCY, TRAINING, CHECKING REQUIREMENT ASO.

Flight crews are only allowed to perform flight duty, if the Operator has issued the flight order.

They have to carry their

* license with type rating and instrument rating
* a valid medical
* passport
* personal flight log book
* vaccination certificate (if required)
* spare glasses (if glasses required)
* and other permits as required to perform the flight duty

Pilots have to advise the Operator if it appears that any necessary checks or tests are due.

Prior to be assigned for duty, the pilot must have satisfied the requirements of the OM Part D (Training Manual) and demonstrated adequate knowledge of the OM Part C (Route to be flown and of the aerodromes and procedures to be used).

A crew member who has attained the age of 60 years shall only act as pilot

- as a member of a multi-pilot crew

- and provided that he/she is the only pilot in the flight crew who has attained age 60

Crew members having attained the age of 65 years shall not act as pilots during commercial air transport operations.

Crew members must hold a language proficiency certificate or endorsement for English Level 4 or higher issued in accordance with ICAO Doc 9835 or FCL 1.

## FLIGHT CREW QUALIFICATION

### LICENSE & RATINGS

#### PILOT IN COMMAND

**General**:

* valid medical certificate class 1
* English language proficiency level 4 or higher
* valid type or class rating as PIC, as appropriate
* Operator conversion course
* Command course
* all items of recurrent training and checking as required by OM D current and valid including Operator proficiency check and Line check
* differences and familiarization training as required, if operating another variant of an aeroplane or when changes of equipment and/or procedures require additional knowledge (see also Part D 2.5)
* route and aerodrome competence as required by OM D 2.5
* recent experience as described in 4.1.e

#### Single-pilot aeroplanes:

Qualification VFR:

* valid CPL
* 500 hours tt flying experience or valid IR
* 10 hours tt flying experience on type

Qualification IFR:

* valid CPL with valid IR
* 700 hours tt flying experience
* 400 hours tt flying experience as PIC of which 100 hours have been under IFR including 40 hours multi-engine operation. Those hours may be substituted by hours operating as co-pilot on the basis of two hours co-pilot is equivalent to one hour as pilot-in-command provided those hours were gained within an established multi-pilot crew system.
* 10 hours tt flying experience on type

For single-pilot IFR operations additionally:

* 50 hours experience on the particular type or class of aeroplane under IFR as Commander

#### Multi-pilot aeroplanes:

* valid ATPL with valid type rating as PIC
* 1500 hours tt flying experience
* 500 hours on multi-pilot aeroplanes or on single-pilot commuter aeroplanes in commercial operations
* 250 hours as PIC

Exemptions from these requirements are possible if approved by the Austrian Civil Aviation Authority.

#### Qualification to operate in either pilot's seat:

Additional training and checking is required in accordance with the prescriptions of Part D.

#### PILOT RELIEVING THE COMMANDER

The Commander may be relieved in flight of his duties at the controls by another qualified Commander. The analogous applies to the relief of First Officers.

###### **FIRST OFFICER**

**General:**

* valid class 1 medical certificate
* English language proficiency level 4 or higher
* valid type or class rating, as appropriate
* Operator conversion course (OM D 2.1.2)
* all items of recurrent training and checking as required by OM D 2.1.5 current and valid including Operator proficiency check and Line check
* differences and familiarization training as required, if operating another variant of an aeroplane or when changes of equipment and/or procedures require additional knowledge (see also Part D 2.5)

**Single-pilot aeroplanes:**

Qualification VFR:

* valid CPL
* 5 hours tt flying experience multi-engine

Qualification IFR:

* valid CPL with valid IR
* 5 hours tt flying experience multi-engine

**Multi-pilot aeorplanes:**

* valid CPL with valid multi-engine instrument rating
* recent experience as described in 4.1.5.

### PILOT UNDER SUPERVISION

Following completion of aeroplane/flight simulator training and checking as part of the operators’ conversion course or the command course, each flight crew member must operate a minimum number of sectors and /or flying hours under supervision of a flight crew member (Sup. CPT) nominated by the operator and acceptable to the Authority. The following minimum figures for details to be flown under supervision are guidelines and may be extended by the flight operations manager considering the crew member's previous experience and performance:

###### **All aeroplanes:**

1. For commander after type rating course and without company experience minimum 50 hours or 20 sectors.
2. For co-pilots upgrading to commander, minimum 50 hours or 20 sectors when converting to a new type, or minimum 25 hours or 10 sectors when already qualified on the aeroplane type.

###### **Additionally for Turbo-jet aeroplanes:**

1. For co-pilots undertaking their first conversion course minimum 100 hours or 40 sectors, whichever occurs first
2. For co-pilots with previous experience with another operator minimum 10 sectors when already qualified on the aeroplane type, or 20 sectors otherwise

For qualification of the Supervision Captain see chapter 5.4.

###### **SYSTEM PANEL OPERATOR**

NOT APPLICABLE

### OPERATION ON MORE THAN ONE TYPE OR VARIANT

The pilot must fulfil the requirements given on each type.

For requirements regarding recurrent training and checking as well as experience requirements before commencing conversion training, see 4.4 and OM part D.

## CABIN CREW

**NOT APPLICABLE**

## TRAINING, CHECKING AND SUPERVISION PERSONNEL

### FOR FLIGHT CREW

TRAINING

Trainings in our Company will be performed by suitable qualified FI, CRI or TRI.

PROFICIENCY CHECKS:

Proficiency checks shall be conducted by a suitably authorised CRE or an examiner authorised as FE and IRE or a TRE, qualified to give instructions on the respective type of aeroplane.

SUPERVISION PILOT

To conduct Line Checks or act as Supervising Pilot a Commander shall fulfil the following Qualifications:

1. Instructor License + 100 hrs on Type as PIC

OR

1. 2500 hours tt flying experience
2. 500 hrs on Type as PIC
3. R/H Seat qualification

### FOR CABIN CREW

NOT APPLICABLE

## OTHER OPERATIONAL PERSONNEL

**NOT APPLICABLE**

# CREW HEALTH PRECAUTIONS

## CREW HEALTH PRECAUTIONS

### GENERAL

For all flight duty, personnel must be in good mental and physical condition.

Flight duty is prohibited when the capacity for work is reduced due to illness or general physical condition. This may include the effects of disease, injury, alcohol, drugs, fatigue, mental stress, etc.

Crew members unable to perform their duty due to illness or bad health condition should report this to the Flight Operations Manager.

**NO PERSON SHALL ACT AS A FLIGHT CREW MEMBER IF HE FEELS TIRED OR UNWELL, AS THIS MAY ENDANGER THE SAFE CONDUCT OF THE FLIGHT.**

### ALCOHOL AND OTHER INTOXICATING LIQUOR

Medical research has proved that alcohol has a detrimental effect on the efficiency of an individual for some hours after it has been consumed.

Consumption of alcohol by flight crew personnel can therefore have a direct influence on the safety of flight operations.

Flight crew members must be aware that it is their personal responsibility to keep themselves fit for the execution of their duties and therefore avoid consumption of alcohol.

No crew member including dead heading crews shall consume alcohol while on flight duty or during standby.

No crew member shall consume alcohol while in uniform

No crew member shall consume alcohol of any nature within 8 hours prior to reporting time for flight duty or the commencement of standby. At reporting time the blood alcohol level shall not exceed 0.2 promille.

Crew members are reminded that according to Austrian law the misuse of alcohol can result in the loss of license (§ 32 LFG, § 4 ZLPV)

### NARCOTICS

No narcotics may be consumed by flight crew members prior to their flight duty. Due to extended effects the last consumption of narcotics must be longer than 12 hours before check-in for flight duty and during flight duty.

### DRUGS

The use of drugs is expressly forbidden at any time.

### SLEEPING TABLETS

On rare occasions the use of a sleeping pill may be considered necessary; however only mild, short acting sleeping pills may be used.

No sleeping pills shall be taken less than 9 hrs before flight.

To prevent any undesirable or unexpected individual reaction, the particular preparation must first be tried before a rest day.

### PHARMACEUTICAL PREPARATIONS

Flight duty and the taking of pharmaceutical preparations are, in principle, not mutually compatible and therefore forbidden. Flight personnel shall not take any medicaments at least 24 hours before and during the whole flight duty. Exceptions are only permitted under medical direction and supervision.

### IMMUNISATION

The advice of the physician should be requested prior to immunisation. The individual treatments should be performed long enough before commencement of a flight duty.

### DEEP DIVING

Due to the risk of decompression sickness, flight personnel must refrain from diving to depths below 4 meters within a period of 24 hrs before the flight duty.

Medical Service recommends that in any case diving should be restricted to a maximum depth of 30 meters and to maximum 2 dives per day.

### BLOOD DONATION

Crew members shall not take a flight duty earlier than 72 hrs following a blood donation

### MEAL PRECAUTION PRIOR TO AND DURING FLIGHT

Flight personnel shall have regular meals and drink sufficient amounts while on duty, especially when the FDP exceeds 6 hours.

It is recommended that the crew takes light refreshments between meals.

No other illness can put a whole crew out of action so suddenly and simultaneously as food poisoning, thereby immediately and endangering a flight. This justifies the particular care required in the avoidance of food poisoning among crew members.

Particular care is recommended when consuming cold, perishable goods (pastry, milk products, sauces and mayonnaise, meat, fish and seafood).

As a precaution against operational consequences of food poisoning, pilots shall have different meals, before and during flight duty.

### SLEEP & REST

Crew members must be physically and mentally fit for their flight duty; therefore a night's sleep of at least 6 to 8 hrs shall be observed. The prescribed rest time according to chapter 7 shall be used for relaxation purpose only.

### SURGICAL OPERATIONS

Before undergoing a surgical operation, a crew member has to advise the doctor about the profession as flight crew member and seek advice of the AMS, an AMC or an AME. The doctor must decide about the minimum period which is required after treatment before reporting for flight duty.

# FLIGHT TIME LIMITATIONS

## FLIGHT AND DUTY TIME LIMITATIONS AND REST REQUIREMENTS

### DEFINITIONS

Adequate facilities: Quiet and comfortable places not open to the public.

Block time: The time between an aeroplane's first moving from its parking place for the purpose of taking off until it comes to rest on the designated parking position or until all engines are stopped.

Break: A period free of all duties, being less than a rest period.

Duty: Any task that a crew member is required to carry out and which is associated with the business of an AOC holder. Other activities may also be regarded as duty times depending on the mental and physical stress involved.

Duty period: A period which starts when the crew member is required by an operator to report for a duty and ends when the crew member is free form all duties.

Flight duty period (FDP): A period which commences when an operating crew member is required to report for a duty period that includes a flight and which finishes at the end of the block time on the final flight on which the crew member is an operating crew member.

Home base: The place nominated by the operator to the crew member from where the crew member normally starts and ends a duty period or a series of duty periods and at which place, under normal conditions, the operator is not responsible for the accommodation of the crew member concerned.

Local day: A 24 hour period commencing at 0000 local time.

Notification time: The allowable time interval between the time a crew member on standby receives a call requiring him to report for duty and the time he is required to report for duty.

Positioning: The transferring of a crew member from place to place, excluding "travelling" as defined below.

Reporting time: The time at which a crew member is required to report for any duty.

Rest period: An uninterrupted and defined period of time during which a crew member is free of all duties and/or standby.

Split duty: A flight duty period which consists of two duties separated by a break.

Standby: A defined period of time during which a crew member has not been assigned to any duty, but during which he is required to be available to receive an assignment for duty without an intervening rest period.

Suitable accommodation: A suitable furnished bedroom, which is subject to minimum noise, is well ventilated and should have the facility to control the levels of light and temperature.

Time difference: The number of hours separating local standard time at two locations.

Travelling: All reasonably planned travelling time spent by a crew member in transit between his place of rest provided by the operator and the place of duty and vice versa.

Window of Circadian Low (WOCL): The time in which the psychological and physical performance levels are at their lowest. The WOCL is the period between 0200 and 0559 hours.

Within a band of three time zones the WOCL refers to home base time. Beyond these three time zones the WOCL refers to home base time for the first 48 hours after departure from home base time zone, and to local time thereafter.

### MAXIMUM DAILY FLIGHT DUTY PERIODS

Basic FDP:

The maximum basic daily FDP is 13 hours. These 13 hours are reduced by 30 minutes for each sector from the third sector onwards with a maximum total reduction of two hours. When the FDP starts in the WOCL, the maximum stated above will be reduced by 100% of its encroachment up to a maximum of two hours. When the FDP ends in or fully encompasses the WOCL, the maximum FDP stated above will be reduced by 50% of its encroachment.

For single-pilot operations the above times are reduced by 3 hours.

The flight duty period commences at the reporting time, but at least 30 minutes before block-off, and ends at block-on including the first 90 minutes of any breaks or waiting times.

The following times also contribute to the FDP:

- Positioning after reporting time 100 %

- Any duty preceding a flight without intervening

rest period 100 %

- Breaks, if:

- the time between block-on and block-off is greater than

90 minutes, but the break is 6 hours or less, any times

after the first 90 minutes after block-on 50 %

- the break is greater than 6 hours and suitable

accommodation is provided 1 hour

Extensions:

The maximum daily FDP can be extended by up to one hour. Extensions are not allowed for a basic FDP of six sectors or more. Where an FDP encroaches on the WOCL by up to two hours extensions are limited to up to four sectors. Where a FDP encroaches on the WOCL by more than two hours extensions are limited to up to two sectors. The maximum number of extensions is two in any seven consecutive days. Where a FDP is planned to use an extension pre and post flight minimum rest is increased by two hours or post flight rest only is increased by four hours. Where the extensions are used for consecutive FDPs the pre and post rest between the two operations shall run consecutively. When a flight duty with extension starts in the period 22:00 to 04:59 hours the FDP is limited to 11:45 hours.

### MAXIMUM DUTY PERIODS

The maximum duty period for any flight crew member within the prescribed intervals is:

* 2000 hrs in a calendar year
* 190 duty hours in any 28 consecutive days, spread as evenly as practicable throughout this period; and
* 60 duty hours in any seven consecutive days.

The following occupations contribute to the duty period:

Block time ± 30 min (or actual reporting

and post flight duty times if longer) 100 %

Simulator and conversion/recurrent

training flights / ground training 100 %

Positioning 100 %

Break 100 %

Airport Standby 100 %

Other Standby times 50 %

### MAXIMUM BLOCK TIMES

Maximum uninterrupted block time:

|  |  |
| --- | --- |
| **Reporting time** | **Max block time** |
| 0700 - 1459 | 11 hrs |
| 1500 - 1659 | 10 hrs |
| 1700 - 0559 | 9 hrs |

Limit on total block times:

* 900 block hours in a calendar year
* 300 block hours in any 90 consecutive days
* 100 block hours in any 28 consecutive days
* 50 block hours in any 7 consecutive days

### AUGMENTED CREW

No change in duty and rest time regulations.

### INCREASED FLIGHT DUTY PERIODS

When a flight duty period consists of duty periods separated by a break (split duty) the maximum allowable flight duty period may be extended under the following conditions:

* A maximum of 1 break is used within one flight duty period
* The time difference between the place of the beginning of the duty and the place at which the break is taken is not greater than two hours.
* Split duty may not be combined with augmented crew
* If the break is 6 hours or more, or covers 3 hours or more of the period 2200 - 0600 local time suitable accommodation must be provided. In all other cases adequate facilities are required.
* The increased rest requirements as specified below must be observed.

The break is counted towards the FDP as specified under b) above.

If not all of these conditions are met, any off-duty period forms part of the FDP.

### REST REQUIREMENTS

Single duty:

Before the start of a flight duty period a crew member must have completed a rest period at least as long as the preceding duty period, or

- 12 hours at home base,

- 10 hours away from home base,

whichever is the greater.

When rest periods are required away from home base, suitable accommodation must be provided.

Following split duty the minimum rest time is at least as long as the total previous flight duty period plus the length of the break, if no suitable accommodation was provided during the break.

After standby, if the crew member was not called for duty, a rest period of 10 hours must be completed before commencing the next duty or standby period.

If the time difference between the place where the duty period begins and ends is 4 hours or more, any rest time must be increased by 3 hours except when, after the rest period, the next flight duty period terminates in the original time zone, thus not necessitating adaptation to the time difference by the crew member.

Rest within longer intervals:

Once in a period of 7 consecutive days any crew member must have at least one uninterrupted rest period of 36 hours including two local nights such that there shall never be more than 168 hours between the end of one weekly rest period and the start of the next.

As an exception to definition of "local night" the second of those local nights may start from 20:00 hours if the weekly rest period has a duration of at least 40 hours.

Crew members must be given days free of all duty, which are notified in advance as follows:

* 7 local days per calendar month and
* 24 local days per calendar quarter.

These days may include required rest periods.

Reduced rest periods:

The rest period may be reduced to

* 8 hours at home base, provided the preceding duty period was 8 hours or less,
* 9 hours at home base, provided the preceding duty period was 9 hours or less and
* 9 hours away from home base including an 8 hour sleep opportunity, provided the preceding duty period was 8 hours or less,

if all below conditions are met:

* the previous rest period was not reduced,
* the reduction is added to the next rest period which must not be reduced,
* reduced rest must not be used prior to or after split duty.

### STANDBY

Maximum standby period:

|  |  |
| --- | --- |
| **Notification time** | **Maximum standby** |
| 0 - 6 hours | 12 hours |
| 6 hours or more | 18 hours |

If not otherwise communicated, a minimum notification time of 1 hour is assumed for Mali Air crews. Crew members must be notified of the time of start and end of a standby period.

If standby is required away from home base or at an airport, suitable accommodation must be provided.

If standby is required immediately after a duty period without intervening rest, the duty period must be calculated including the previous duty, the standby period and any immediately subsequent duty period.

### RECORDS

Individual records of

* Block times
* Flight duty periods
* Duty periods and
* Rest periods and local days free of duty
* must be maintained for each crew member. These records must be preserved according to 2.1.c.

Additionally, crew members must maintain an individual record of their

* block times
* start, duration and end of each duty or flight duty periods, and
* rest periods and days free of all duties,

since the records maintained by Mali Air cannot contain all flight duty performed by "free lance" pilots.

Crew members shall present these records on request to Mali Air before they commence a flight duty period.

During actual flight operations the limits prescribed above may be modified in the event of unforeseen circumstances subject to the conditions specified below. Any such modification must be acceptable to the Commander after consultation with the other crew member(s).

* The allowable flight duty period may be increased by a maximum of 2 hours.
* If on the final sector within a FDP unforeseen circumstances occur after take-off that will result in the permitted increase being exceeded, the flight may continue to the planned destination or alternate.
* The rest period may be reduced by a maximum of 2 hours but to not less than 10.5 hours provided that the previous rest period was not reduced and the reduction is added to the next rest period.
* In case of an unforeseen break, the crew members must be informed accordingly and the split duty requirements must be observed.
* The Commander shall, in case of special circumstances, which could lead to severe fatigue, and after consultation with the crew members affected, reduce the actual flight duty time and/or increase the rest time in order to eliminate any detrimental effect on flight safety.

Any reduction of rest periods or increase of FDPs must be reported by the Commander after the FDP using the PVR.

Where the increase of a FDP or reduction of a rest period exceeds one hour, a copy of the report, to which the Flight Operations Manager must add his/her comments, is sent to the CAA no later than 28 days after the event.

# OPERATING PROCEDURES

## FLIGHT PTRPARATION INSTRUCTIONS

### DEFINITIONS:

**Adequate Aerodrome:**  An aerodrome which Mali Air considers to be satisfactory, taking account of the applicable performance requirements and runway characteristics; at the expected time of use, the aerodrome will be available and equipped with necessary ancillary services such as ATS, sufficient lighting, communications, weather reporting, navaids and emergency services.

**Isolated aerodrome:** The destination aerodrome can be considered as an isolated aerodrome, if the fuel required (diversion plus final reserve) to the nearest adequate destination alternate aerodrome is more than

- for aeroplanes with turbine engines, fuel to fly for two hours at normal cruise consumption above the destination aerodrome, including final reserve fuel.

- for aeroplanes with reciprocating engines, fuel to fly for 45 minutes plus 15 % of the flight time planned to be spent at cruising level or two hours, whichever is less

**Critical phases of flight**: Critical phases of flight are the take-off run, the take-off flight path, the final approach, the landing, including the landing roll, go-around, and any other phases of flight at the discretion of the commander.

**Dispatch:** Dispatch is when the aircraft first moves under its own power for the purpose of taking off.

**Separate Runways:** Runways at the same aerodrome that are separate landing surfaces.

These runways may overlay or cross in such a way that if one of the run-ways is blocked, it will not prevent the planned type of operations from the other runway.

Each runway shall have a separate approach procedure based on a separate navigation aid.

**Circling:** The visual phase of an instrument approach to bring an aircraft into position for landing on a runway which is not suitably located for a straight-in approach.

**Low visibility procedures (LVP):** Procedures applied at an aerodrome for the purpose of ensuring safe operations during Lower than Standard Category I, Other than Standard Category II, Category II and III approaches and low visibility take-offs.

**Low visibility take-off (LVTO):** A take-off where the runway visual range (RVR) is less than 400 m.

**Visual approach:** An approach when either part or all of an instrument approach procedure is not completed and the approach is executed with visual reference to the terrain.

**Continuous descent final approach (CDFA):** A specific technique for flying the final approach segment of a non-precision instrument approach procedure as a continuous descent, without level-off, from an altitude/height at or above the Final Approach Fix altitude / height to a point approximately 15 m (50 feet) above the landing runway threshold or the point where the flare manoeuvre should begin for the type of aeroplane flown.

**Stabilised approach (SAp):** An approach which is flown in a controlled and appropriate manner in terms of configuration, energy and control of the flight path from a pre-determined point or altitude/height down to a point 50 feet above the threshold or the point where the flare manoeuvre is initiated if higher.

**Converted meteorological visibility (CMV):** A value (equivalent to an RVR) which is derived from the reported meteorological visibility, as converted in accordance with the requirements in this subpart.

**GNSS landing system (GLS):** An approach operation using augmented GNSS information to provide guidance to the aircraft based on its lateral and vertical GNSS position. (It uses geometric altitude reference for its final approach slope).

### FLIGHT PREPARATION

The Commander is responsible for a complete and correct flight preparation in accordance with the below procedures. He may delegate certain tasks to suitably qualified personnel (including the Copilot) but he must satisfy himself that all preparations have been completed correctly prior to flight.

**Route analysis including departure and approach procedures:**

* Ground facilities and services (including meteorological services) must be adequate
* The performance of the aeroplane shall comply with climb and enroute requirements
* sufficient aeroplane equipment to perform the intended operations
* appropriate maps and charts available
* for aeroplanes of performance class B without ETOPS approval the planned route must not contain a point further from a useable aerodrome than
  + the distance flown in 120 min at the one-engine-inoperative cruise speed (see Part B) or
  + 300 nm, whichever is less
* for aeroplanes of performance class A: without ETOPS approval the planned route must not contain a point further from a useable aerodrome than the distance flown in 120 min at the one-engine-inoperative cruise speed (see Part B)

**Operational preparations:**

* Overflight, entry and landing permissions; landing, departure slots
* Operational flight plan for each leg including weight and balance (see 8.1.10)
* ATS flight plan for each leg (see 8.1.9)
* Weather briefing:
  + departure weather: actual and forecast for time of departure
  + enroute wind and Sig Charts
  + enroute alternates: forecasts
  + destination and alternate: actual and forecast
  + SigMET and Advice
* NOTAMs for departure, enroute, destination and alternate

**Electronic navigation databases:**

Databases used for navigation shall be current (except for the exceptions covered in the MEL) and must be provided by a navigation database supplier holding a Type 2 Letter of Acceptance (LoA) or equivalent (e.g. Jeppesen, Honeywell, Collins).

**Serviceability of the aircraft:**

* exterior inspection according POH (FOM)
* all required instruments and equipment serviceable and as approved
* A/C documents including insurance
* A/C log: required inspections performed and time remaining to next inspection greater than or equal to the planned flight time.

**Emergency equipment:**

The required emergency equipment must be on board and easily accessible for immediate use.

When flying over water and at a distance of more than 50 nautical miles from the shore or when taking off or landing at an aerodrome where the take-off or approach path is so disposed over water that in the event of a mishap there would be a likelihood of a ditching, a life jacket equipped with a survivor locator light must be carried for each person on board. Each life jacket must be stowed in a position easily accessible from the seat or berth of the person for whose use it is provided. Life jackets for infants may be substituted by other approved flotation devices equipped with a survivor locator light.

For flights across areas in which search and rescue would be especially difficult the following equipment must be carried:

* Signalling equipment to make pyrotechnical distress signals
* At least one ELT(S)
* Additional survival equipment for the route to be flown taking account of the number of persons on board except that the aeroplane remains within a distance from an area where search and rescue is not especially difficult corresponding to 120 minutes at the one engine inoperative cruising speed or 400 nm whichever is less. In such cases details of the equipment to be carried will be promulgated by the Flight Operations Manager in accordance with OPS 1 Subpart K.

**Performance classes:**

For performance considerations, takeoff and landing minima all aircraft are divided into performance classes as specified below. Distinctions made in the following subsections will always refer to those performance classes.

Performance class A:

Multi-engined aeroplanes powered by turbopropeller engines with a maximum approved passenger seating configuration of more than 9 or a maximum take-off mass exceeding 5700 kg and all multi-engined turbojet aeroplanes.

Performance class B:

Propeller driven aeroplanes with a maximum approved passenger seating configuration of 9 or less and a maximum take-off mass of 5700 kg or less.

Performance class C:

Aeroplanes powered by reciprocating engines with a maximum approved passenger seating of more than 9 or a maximum take-off mass exceeding 5700 kg.

### MINIMUM FLIGHT ALTITUDES

Performance class A:

The one engine inoperative en-route net flight path must satisfy the following conditions:

- the net flight path must have a positive gradient 1500 ft above the aerodrome where the landing is assumed to be made after engine failure

- the gradient must be positive at least 1000 ft above all terrain and obstructions within 8 km on either side of the intended track

- the net flight path must permit the aeroplane to continue flight from the cruising altitude to a suitable aerodrome, clearing all terrain and obstructions within 8 km of the intended track by at least 2000 ft with the engine failing at the most critical point along the route and wind effects taken into account. Normally MEA and Grid-MORA will be used for establishing drift down procedures.

Performance class B:

For multi-engined aeroplanes the altitude must be chosen such that in the event of the failure of one engine the aeroplane is capable of continuing flight at or above the relevant minimum altitudes for safe flight to a point 1000 ft above a suitable aerodrome. However, the aeroplane must not be planned to fly at an altitude exceeding that at which the rate of climb equals 300 fpm with all engines operating with maximum continuous power. For calculations the assumed enroute gradient with one engine inoperative shall be the gross gradient of descent or climb, as appropriate, respectively increased by a gradient of 0,5% or decreased by a gradient of 0,5%.

#### **MINIMUM ALTITUDE FOR VFR FLIGHTS**

If the aircraft is operated over congested areas, over industrial areas susceptible to fire or explosions or over open-air assemblies of persons, a level which, in case of emergency, will permit a landing to be made without hazard to persons or property on the surface and at which undue annoyance by noise can be avoided.

This level must be at least

1000 feet above the highest obstacle within a radius of 2000 feet from the aircraft

500 feet above ground for flights other than those mentioned above

#### MINIMUM ALTITUDE FOR IFR FLIGHTS

All flights shall be planned and operated at or above minimum flight altitudes except for take-off, landing, approach and initial climb.

Minimum altitudes for IFR operations are published on aeronautical charts for airways or ATS-routes. The terrain clearance shall not be less than

**2000 feet** above the highest obstacle within a horizontal distance of 8 km from the course to be flown in designated mountainous areas

**1000 feet** above the highest obstacle within a horizontal distance of 8 km from the course to be flown in other than mountainous areas

or as assigned by ATC

**MINIMUM EN-ROUTE ALTITUDE (MEA)**

This 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.

**MINIMUM OFF ROUTE ALTITUDE (MORA)**

The MORA is based on a terrain clearance within 10 nm of the route centreline as follows:

Terrain with elevation up to 5000 feet: **1000 feet** above the highest terrain and obstructions

Terrain with elevation above 5000 feet: **2000 feet** above the highest terrain and obstructions

The **Grid-MORA** altitude provides reference point clearance within the section outlined by latitude and longitude lines.

**MINIMUM SECTOR ALTITUDE (MSA)**

During approach after passing the Transition level the MSA shall be applied.

This is the altitude that provides obstruction clearance of 1000 ft within a radius of 25 NM of the facility identified just to the lower right side of the circle. If the limits are other than 25 NM radius, they are stated on the approach plate. The bearings defining sectors are outbound. The facility used as center can be a VOR, NDB or DME with which the approach is conducted.

During a radar vectored instrument approach a clearance to descend below the MSA may be accepted, provided that the position of the aircraft can be accurately identified.

**CRUISING LEVEL**

A level maintained during a significant portion of the flight determined by the indication of a pressure altimeter set to a suitable reference date (normally 1013,25 hPa).

In selecting the cruising level the following shall be considered:

terrain clearance

ATC requirements

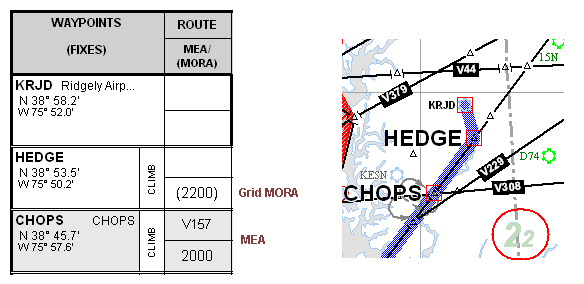
significant meteorological conditions

operational efficiency, aircraft performance

accuracy of determination of the aircraft's position and possible inaccuracies in aeronautical charts

**MORA/MEA used by Flight Star Flight Planning Software**

In the Navigation log, MORA is displayed in parenthesis under MEA. When an MEA is not present with a waypoint, FliteStar uses the Grid MORA where the waypoint resides. Grid MORAs provide an obstacle clearance altitude within a latitude and longitude grid block, usually one degree by one degree. On Jeppesen charts, all MORA altitudes which are 6000 feet or lower have an obstacle clearance of 1,000 feet. If the MORA altitudes are 7,000 feet or greater, the obstacle clearance is 2,000 feet.



**LOWEST USABLE CRUISING LEVEL**

This is the lowest cruising level that can be chosen from the route manual for a given flight, depending on the route and direction of flight, which is consistent with safety in the conditions pertaining.

As a matter for the determination of the lowest usable cruising level the Minimum Enroute Altitude (MEA) or the Grid-Minimum Off Route Altitude (MORA) shall be used.

In selecting the lowest usable cruising level the following factors shall be taken into account:

Aircraft performance. Inability to maintain the lowest cruising level with one engine-out may necessitate the selection of a higher level to permit the application of a drift-down procedure.

The limit of local airspace restrictions and limitations imposed by

regional procedures

Meteorological conditions expected with special reference to the effects of icing, turbulence and the vertical component of winds on aircraft performance.

Deviations from standard atmospheric conditions, especially lower than standard actual air pressure and/or temperature.

**CHECKING OF TERRAIN CLEARANCE**

The cruising level or altitude shall always be equal to or higher than the true minimum safe enroute altitude or minimum safe grid altitude.

When selecting cruising levels the following factors must be taken into account:

**actual QNH** ( 1 hPa = 30 ft )

**OAT** ( 10° ISA deviation = 4% altitude )

Example:

MEA between MUN-VIW 15000 ft

OAT ISA -20°C (= -35°C)

QNH 993 hPa

1. Temperature correction

ISA at 15000 ft = -15°C

Deviation = -20°C = 8% of altitude

15000 ft x 1,08 = 16200 ft

2. QNH correction

1013 - 993 = 20 hPa

20 hPa x 30 ft = 600 ft

16200 + 600 = 16800 ft

Lowest usable cruising level is FL 170 to VIW

### CRITERIA FOR DETERMINING THE USABILITY OF AERODROMES

Aerodromes are classified according to the following instructions (see chapter 4 and Part C, for route and aerodrome familiarization see also Part D):

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 1000 feet above aerodrome level; 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.
* e.g. Klagenfurt, most VFR aerodromes.

Category C:

An aerodrome which requires additional considerations to a Category B aerodrome (e.g. IFR operations in Bolzano or Lugano).

**An aerodrome is usable if:**

- In case the aerodrome is subject to restrictions (PNR, PPR or PPO) landing permission has been obtained.

- The available runway length is sufficient to meet aircraft performance requirements. When calculating the required runway length factors like the mass of the aeroplane, the runway pressure altitude, the ambient temperature, the runway slope in the direction of use, expected wind conditions (not more than 50% of the head-wind and not less than 150% of the tail-wind component) and runway surface condition and the type of runway surface must be taken into account (see below).

- The aircraft climb performance is such that the required obstacle clearance is ensured.

- The flight crew members have the required qualification, experience and documentation (Route Manual).

- The pavement strength is compatible with the aircraft mass (refer to Jeppesen Airway Manual).

- At the expected time of use, navaids, approach aids, lighting needed for the approved approaches are available.

- For international flight, police, custom and immigration services are available at the expected time of use.

- The meteorological conditions are above the applicable minima for the expected landing time and meet the approach, runway and aircraft capabilities and crew qualifications.

- The aircraft meets the performance class requirements specified in OPS 1, taking into account the mass of the aeroplane, the aeroplane configurations, environmental conditions and the approved performance data in the AFM.

- Fire fighting and rescue service availability has been taken into consideration.

Whenever doubt arises whether an aerodrome is useable and whether airport qualification requirements are fulfilled, crews shall seek advise by the Flight Operations Manager. Operations to and from aerodromes not adequate for the type of aeroplane and/or operation will not be authorised by the Flight Operations Manager.

#### Runway requirements performance class A:

Take-off:

- The accelerate-stop distance must not exceed the accelerate-stop distance available

- The take-off distance must not exceed the take-off distance available, with a clearway distance not exceeding half of the take-off run available.

- The take-off run must not exceed the take-off run available.

- Compliance with the above requirements shall be demonstrated using a single value of v1.

- When operating on a wet or contaminated runway, the take-off distance available shall not be less than the required take-off distance according to the AFM multiplied by a factor of 1,15.

- However, take-off from contaminated runways is not advised. The Commander shall in such cases consider the excess runway length available

- In all the above calculations the first 10 m of the runway are considered to be unavailable due to aircraft alignment on the runway.

Take-off obstacle clearance:

The net take-off flight path must clear all obstacles by a vertical distance of at least 35 ft or by a horizontal distance of at least 60m plus 0,125 D, where D is the horizontal distance the aeroplane has travelled from the end of the take-off distance available or the end of the take-off distance if a turn is scheduled before the end of the take-off distance available.

Landing:

- The landing mass of the aeroplane for the estimated time of landing must allow a full stop landing from 50ft above the threshold within 60% of the LDA for turbojet powered aeroplanes, on the most favourable runway in still air and on the runway most likely to be assigned considering the probable wind speed and direction as well as ground handling characteristics of the aeroplane, landing aids and terrain.

- If compliance with all of the above conditions is not possible a second alternate is required.

- For operations on a wet runway the landing distance required shall be multiplied by a factor of 1,15.

- In case the runway may be contaminated, the landing distance available must be at least the landing distance for wet runways or 115% of the landing distance determined from approved contaminated landing distance data, whichever is greater.

#### Runway requirements performance class B:

Take-Off:

- The unfactored take-off distance must not exceed

- when multiplied by a factor of 1,25: the take-off run available, or

- when a stopway and/or clearway is available:

- the take-off run available,

- when multiplied by 1,15: the take-off distance available and

- when multiplied by 1,3: the accelerate-stop distance available.

- For operations on a wet or contaminated paved runway an additional factor of 1,05 shall be applied.

- For operations on a grass runway an additional factor of 1,2, or, if the grass is wet, 1,3 shall be applied.

- Take-off from contaminated runways is not advised. The Commander shall in such cases consider the excess runway length available.

- The take-off distance shall be increased by 5% for each percent of upslope. Operations on runways with a slope in excess of 2% require the acceptance of the CAA.

Take-off obstacle clearance:

The net take-off flight path must clear all obstacles by a vertical distance of at least 50 ft or by a horizontal distance of at least 90m plus 0,125 D, where D is the horizontal distance the aeroplane has travelled from the end of the take-off distance available or the end of the take-off distance if a turn is scheduled before the end of the take-off distance available.

Landing:

- At the aerodrome it must be possible to make a full-stop landing from 50 ft above threshold within 70% of the landing distance available on the most favourable runway in still air and on the runway most likely to be assigned considering the probable wind speed and direction.

- If operating on a wet or grass runway the LDA must be greater or equal to the required landing distance multiplied by a factor of 1,15 (1,35 in case of wet grass), for contaminated runways a factor of 1,5 shall be applied.

- The landing distance shall be increased by 5% for each percent of downslope. Operations on runways with a slope in excess of 2% require the acceptance of the CAA.

#### All performance classes:

Obstacles in the take-off flight path:

Obstacles having a lateral distance greater than specified in the table below need not be considered:

|  |  |  |
| --- | --- | --- |
| track change required | without | with |
| track guidance | |
| < 15° | 600 m | 300 m |
| > 15° | 900 m | 600 m |

Track changes are not allowed up to the point at which the net take-off flight path has achieved a height equal to one half the wingspan but not less than 50 ft above the elevation of the end of the take-off run available. Thereafter, up to a height of 400 ft it is assumed that the aeroplane is banked by no more than 15°. Above 400 ft height bank angles greater than 15°, but not more than 25° may be scheduled.

For performance class B aeroplanes, failure of the critical engine is assumed at the point on the all engine take-off flight path where visual reference for the purpose of avoiding obstacles is expected to be lost. For calculation of the assumed engine failure height, see 8.1.5 (Take-off minima).

### METHODS FOR ESTABLISHING AERODROME OPERATING MINIMA

#### Concepts of minima:

- Aircraft capability given in the AFM defines the lowest minimum for which the aircraft has been certified.

- Aerodrome operating minima noted on the aerodrome chart are established in accordance with the national authorities of the aerodrome.

- Operator's minima are approved by the national authority of the operator. They are the lowest minima that the operator is allowed to use on a specified aerodrome. They cannot be lower than the aircraft capability and the minima published on the aerodrome chart except when specifically approved by the national authority of the aerodrome.

- Crew minima are the minima that the crew is authorized to operate. They are based upon the qualification of the flight crew members.

#### Applicability of minima:

All conditions for the application of a minimum must be met. In the event of known equipment deficiencies higher minima may be stipulated (according RM).

#### Conditions for the use of minima:

- all necessary ground equipment required is fully operative

- the necessary aircraft systems required fully operative

- crew composition correct and qualification sufficient and current

#### Establishment of minima:

Aerodrome operating minima are established based upon reported visibility/RVR.

The required RVR value must be achieved for all of the relevant RVR reporting points, which are

- for take-off: points up to the take-off distance required, or the accelerate-stop distance required, whichever is longer. The reported RVR/Visibility value representative of the initial part of the take-off run can be replaced by pilot assessment.

- for approach: those for parts of the runway required for the high speed phase of the landing down to approximately 60 kt.

If no RVR is reported for an approach, meteorological visibility may be converted to RVR using the table below (RVR/CMV)

|  |  |  |
| --- | --- | --- |
| **Lighting elements**  **in operation** | **RVR/CMV = Reported Met. Visibility ×** | |
| Day | Night |
| HI approach and runway lighting | 1,5 | 2,0 |
| Any type of lighting installation other than above | 1,0 | 1,5 |
| No lighting | 1,0 | n.a. |

RVR/CMV conversion may not be used for take-off, for calculating any required RVR minimum below 800m or when reported RVR is available (If the RVR is reported as being above the maximum value assessed by the aerodrome operator, e.g. more than 1500m, it is not considered to be a reported value for the purpose of RVR/CMV conversion).

#### Planning minima:

Based upon the type of approach available at the intended time of use, in addition to the required RVR/CMV/visibility, the ceiling must be at or above the applicable DH/MDH if a non-precision or circling approach is expected.

Destination:

Forecast for ETA ±1 hr (MET visibility and ceiling) must indicate weather conditions to be at or above the applicable minima.

Take-off alternate aerodromes:

A take-off alternate aerodrome is an aerodrome to which a flight can safely proceed whenever the aerodrome of departure is not available for a possible return.

A take-off alternate must be located within 1 hour flying time with one engine inoperative cruise-speed in still air standard conditions based on the actual take-off mass.

The terrain must be such that single-engine flight, approach, landing and go-around are not affected.

The forecast for the selected take-off alternate must be at least

- the applicable one-engine-inoperative landing minima

during a period commencing 1 hour before and ending 1 hour after the estimated time of arrival at the aerodrome.

Destination alternate, en-route alternate and isolated destination aerodromes:

Minima for ETA ±1 hr:

|  |  |
| --- | --- |
| **Type of approach** | **Planning minima** |
| Cat II and III | n/a |
| Cat I | Non-precision (Notes 1,2) |
| Non-precision | Non-precision (Notes 1,2) + 200 ft / 1000 m |
| Circling | Circling |

Note 1: RVR/CMV values have to be used (see conversion table if applicable).

Note 2: The ceiling must be at or above the MDH/DH.

Alternate aerodromes:

At least one destination alternate must be selected and specified in the OFP for each IFR flight unless:

(i) Both, the duration of the planned flight from take-off to landing does not exceed 6 hours and two separate runways are available at the destination and the meteorological conditions prevailing are such that, for the period from one hour before until one hour after the expected time of arrival at destination, the ceiling will be at least 2 000 ft or circling height + 500 ft, whichever is greater, and the visibility will be at least 5 km; or

(ii) the destination is isolated and no adequate destination alternate exists (for increased fuel requirements see 8.1.7).

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 hour after the estimated time of arrival the weather conditions will be below the applicable planning minima, or when no meteorological information is available.

En-route alternate aerodromes:

Operations must not contain a point along a route further from an adequate aerodrome (under standard conditions in still air) than the distance flown in 120 minutes at the one-engine-inoperative cruise speed specified in the OM-B.

If, at any point along the planned route, the distance to either the departure, destination or destination alternate aerodrome is greater than the distance specified above, or if it is not possible to continue flight to one of these aerodromes for meteorological or performance reasons, at least one suitable aerodrome must be selected as en-route alternate aerodrome and specified in the OFP.

### EN-ROUTE OPERATING MINIMA FOR VFR FLIGHTS OR VFR PORTIONS OF A FLIGHT

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Airspace** |  | **Flight altitude AMSL** | | |
| **class** |  | ≥ 3050 m | < 3050 m | ≤ 900m or 300 m AGL |
| **B, C,D,E,F** | Flight Visibility | 8 km | 5 km |  |
| Dist. from clouds horizontally | | 1.5 km | 1.5 km | not applicable |
| Dist. from clouds vertically | | 300 m | 300 m |  |
| **G** | Flight Visibility | 8 km | 5 km | 1.5 km |
| Dist. from clouds horizontally | | 1.5 km | 1.5 km | clear of clouds and |
| Dist. from clouds vertically | | 300 m | 300 m | in sight of the surface |

Special VFR flights must not be commenced when the visibility is less than 3 km and not otherwise conducted when the visibility is less than 1.5 km.

### PRESENTATION AND APPLICATION OF AERODROME AND ENROUTE OPERATING MINIMA

In determining the applicable minimum the ICAO aircraft approach category has to be considered.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Aircraft | Vat | Range of Speeds for | Range of Final | MAX SPEEDS for Visual | MAX SPEEDS for Missed Approach | |
| Category |  | Initial Approach | Approach Speeds | Manoeuvring (Circling) | Inter-mediate | Final |
| A | <91 | 90/150 | 70/100 | 100 | 100 | 110 |
| B | 91/120 | 120/180 | 85/130 | 135 | 130 | 150 |
| C | 121/140 | 160/240 | 115/160 | 180 | 160 | 240 |
| D | 141/165 | 185/250 | 130/185 | 205 | 185 | 265 |
| E | 166/210 | 185/250 | 155/230 | 240 | 230 | 275 |

Applicable minima are the highest value of

- the minima specified in the AFM/POH,

- the minima presented in the RM,

- the minima to which a particular flight crew is authorized to operate, and

- the minima specified below.

#### Take-off minima:

Performance class A:

For multi-engined aeroplanes whose performance is such that, in the event of a critical power unit failure at any point during take-off, the aeroplane can either stop or continue the take-off to a height of 1500 ft AAL while clearing obstacles by the required margins, the take-off RVR/visibility must not be below the values specified in the table below. For RVR values below 400m (Low visibility take-off, LVTO) Low Visibility Procedures must be in operation at the aerodrome concerned and additional training and checking according to the provisions of Part D is required.

|  |  |
| --- | --- |
| **Take-off RVR / Visibility** | |
| **Facilities** | **RVR/Visibility** (Note 1) |
| Nil (Day only) | 500 m |
| Runway edge lighting and/or centreline marking | 250/300 m (Note 2) |
| Runway edge and centreline lighting | 200/250 m |
| Runway edge and centreline lighting and multiple RVR information | 150/200 m (Note 3) |

Note 1: The reported RVR/Visibility value representative of the initial part of the take-off run can be replaced by pilot assessment.

Note 2: For night operations at least runway edge and runway end lights are required.

Note 3: The required RVR value must be achieved for all of the relevant RVR reporting points with the exception given in Note 1 above.

When reported RVR, or meteorological visibility is not available, the commander shall not commence take-off unless he/she can determine that the actual conditions satisfy the applicable take-off minima.

Performance class B:

Multi-engine aeroplanes in performance class B aeroplanes cannot comply with the above requirements, and there may be a need to re-land immediately and to see and avoid obstacles in the take-off area. Such aeroplanes may be operated to the following take-off minima provided they are capable of complying with the applicable obstacle clearance criteria assuming engine failure at the height specified (assumed engine failure height).

The RVR minima used may not be lower than either of the values given in the table above or the table below:

|  |  |
| --- | --- |
| **Take-off RVR/Visibility - flight path** | |
| **Assumed engine failure height above the take-off runway** | **RVR/Visibility** (Note 2) |
| < 50 ft | 400 m |
| 51 - 100 ft | 400 m |
| 101 - 150 ft | 400 m |
| 151 - 200 ft | 500 m |
| 201 - 300 ft | 1000 m |
| > 300 ft | 1500 m (Note 1) |

Note 1: 1500 m is also applicable if no positive take-off flight path can be constructed.

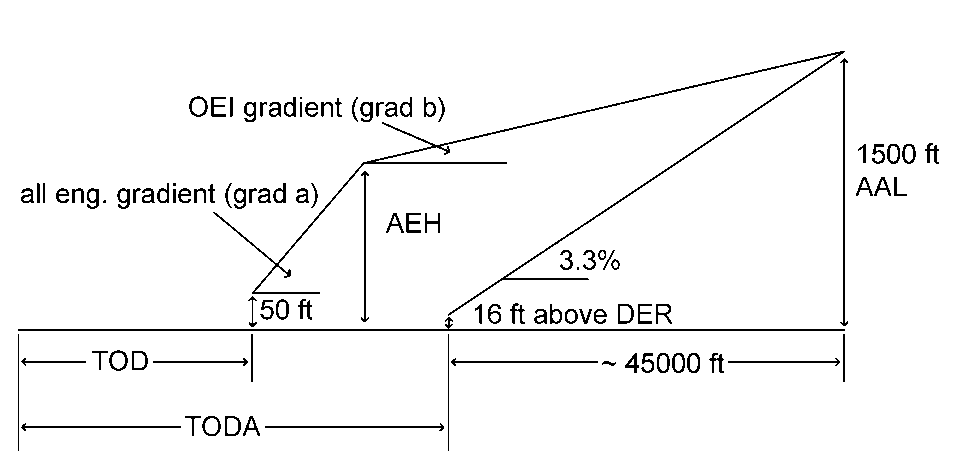
Note 2: The reported RVR/Visibility value representative of the initial part of the take-off run can be replaced by pilot assessment.

In case no reported meteorological visibility or RVR is available the Commander may only commence take-off if he/she can determine that the required minima are met.

Obstacle clearance for multi-engined aeroplanes:

Published flight procedures are constructed in such a way as to meet the applicable obstacle clearance requirements. If these procedures can not be followed or if no procedures have been established additional considerations concerning aeroplane performance or weather minima are applicable as described in Part C 1.l.

Example calculation of the assumed engine failure height:





Assumed engine failure height (AEH)

Note: Not applicable for AEHs of less than 50 ft!

Assumed conditions:

- A design gradient of 3,3 % from the departure end of the runway (DER) is valid up to 1500 ft AGL.

- The departure route and the actual flight path assuming engine failure at the height specified coincide at 1500 ft AGL.

- Failure of the critical engine occurs at the point on the all engine take-off flight path where visual reference for the purpose of avoiding obstacles is expected to be lost,

- The gradient of the take-off flight path from 50 ft to the assumed engine failure height is equal to the average all-engine gradient during climb and transition to the en-route configuration, multiplied by a factor of 0,77 (grad a) and thereafter equal to the one-engine inoperative enroute climb gradient shown in the AFM (grad b).

**Take-off below landing minima:**

Take-off in MET conditions below the applicable landing minima may only be made if a usable take-off alternate is available.

#### Conditions for Approach minima:

Classification of approach light configurations:

|  |  |
| --- | --- |
| **OPS Class of Facility** | **Length, configuraiton and intensity of approach lights** |
| FALS (full approach light system) | ICAO: Precision approach BAT I lighting system  (HIALS ≥720 m) distance coded centreline, barrette centreline |
| IALS (intermediate approach light system) | ICAO: Simple approach lighting system (HIALS 420 - 719 m) single source, barrette |
| BALS (basic approach light system) | Any other approach lighting system (HIALS, MIALS or ALS 210 - 419 m) |
| NALS (no approach light system) | Any other approach lighitng system (HIALS, MIALS or ALS < 210 m) or no approach lights |

For night operations or for any operation where credit for runway and approach lights is required, the lights must be on and serviceable except as provided for below.

System Minima:

|  |  |
| --- | --- |
| **System minima for non-precision approach aids** | |
| **Facility** | **Lowest DH/MDH** |
| Localiser with or without DME | 250 ft |
| SRA (terminating at ½ nm) | 250 ft |
| SRA (terminating at 1 nm) | 300 ft |
| SRA (terminating at 2 nm) | 350 ft |
| RNAV/LNAV | 300 ft |
| VOR | 300 ft |
| VOR/DME | 250 ft |
| NDB | 350 ft |
| NDB/DME | 300 ft |
| VDF | 350 ft |

Effects of failed or downgraded equipment:

|  |  |
| --- | --- |
| **Equipment failure** | **Effect on CAT I or Non-precision minima** |
| Approach lights (except the last 210 m or complete failure) | minima as for NALS |
| Approach lights except the last 420 m | minima as for IALS |
| Runway lighting system | Day - minima as for NALS  Night - not allowed |
| Runway edge lights | Day - no effect  Night - not allowed |

Other failures have no effect on CAT I or Non-precision operations.

Decision Height (DH):

The DH for an approach must not be lower than

(i) the minimum height to which the approach aid can be used without the required visual reference,

(ii) the OCH for the category of aeroplane,

(iii) the published approach procedure decision height where applicable,

(iv) 200 ft for Category I approach operations,

(v) the system minimum stated above, or

(vi) the lowest decision height specified in the AFM, if stated

(vii) the MDH/DH increased by a height loss margin, as follows: when a non-precision approach is flown using the CDFA technique, + 30 ft must be added to the published MDH/DH to cater for the height loss during the initiation of a go-around and to prevent descent below the OCH

whichever is higher.

Minimum Descent Height (MDH):

The MDH for an approach must not be lower than

(i) the OCH/OCL for the category of aeroplane,

(ii) the system minimum (see above), or

(iii) the minimum descent height specified in the AFM, if stated.

Criteria for application of the lowest RVR or RVR/CMV values:

In order to qualify for the lowest values specified in the tables below an approach must meet the following criteria:

- a final approach track offset by not more than 15° for category A and B aeroplanes or by not more than 5° for category C aeroplanes,

- a vertical profile ≤ 4,5° for Category A and B or ≤ 3,77° for Category C, and

- the facilities are either ILS, MLS, GLS, PAR or APV

- or the facilities are NDB, NDB/DME, VOR, VOR/DME, LLZ, LLZ/DME, VDF, SRA or -RNAV/LNAV, where

- the final approach segment is at least 3 nm,

- the FAF or another appropriate fix where descent is initiated is available, or distance to THR is available by FMS/RNAV or DME,

- if the MAPt is determined by timing, the distance from FAF to THR is ≤ 8 nm, and

- the approach is flown using the CDFA technique

A RVR of less than 750 m may only be used

- for Category I approach operations to runways with FALS, touchdown zone lights and centreline lights, provided that the DH is not more than 200 ft, or

- for Category I approach operations to runways without touchdown zone and centreline lights when conducting a coupled approach or flight-director-flown approach to a DH equal to or greater than 200 ft, when the ILS is not promulgated as a restricted facility.

The missed approach, after an approach has been flown using the CDFA technique, shall be executed when reaching the decision altitude (height) or the MAPt, whichever occurs first. The lateral part of the missed approach procedure must be flown via the MAPt unless otherwise stated on the approach chart.

When a final approach is flown with a level flight segment at or above the MDA/H (not using the CDFA technique), 200 m shall be added for category A and B aeroplanes and 400 m for category C aeroplanes to the minimum specified in the tables below, but not to result in a value exceeding 5000 m.

The tables below are to be used as follows:

The minimum RVR/CMV/Visibility shall be the higher of the values derived from the two tables below but not greater than the maximum value shown in the second table, where applicable.

Instrument Approach Minima:

RVR or RVR/CMV vs. DH/MDH

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| DH or MDH | Class of Lighting Facility | | | |
| FALS | IALS | BALS | NALS |
| Feet | Metres | | | |
| ≤ 210 | 550 | 750 | 1000 | 1200 |
| - 220 | 550 | 800 | 1000 | 1200 |
| - 230 | 550 | 800 | 1000 | 1200 |
| - 240 | 550 | 800 | 1000 | 1200 |
| - 250 | 550 | 800 | 1000 | 1300 |
| - 260 | 600 | 800 | 1100 | 1300 |
| - 280 | 600 | 900 | 1100 | 1300 |
| - 300 | 650 | 900 | 1200 | 1400 |
| - 320 | 700 | 1000 | 1200 | 1400 |
| - 340 | 800 | 1100 | 1300 | 1500 |
| - 360 | 900 | 1200 | 1400 | 1600 |
| - 380 | 1000 | 1300 | 1500 | 1700 |
| - 400 | 1100 | 1400 | 1600 | 1800 |
| - 420 | 1200 | 1500 | 1700 | 1900 |
| - 440 | 1300 | 1600 | 1800 | 2000 |
| - 460 | 1400 | 1700 | 1900 | 2100 |
| - 480 | 1500 | 1800 | 2000 | 2200 |
| - 500 | 1500 | 1800 | 2100 | 2300 |
| - 520 | 1600 | 1900 | 2100 | 2400 |
| - 540 | 1700 | 2000 | 2200 | 2400 |
| - 560 | 1800 | 2100 | 2300 | 2500 |
| - 580 | 1900 | 2200 | 2400 | 2600 |
| - 600 | 2000 | 2300 | 2500 | 2700 |
| - 620 | 2100 | 2400 | 2600 | 2800 |
| - 640 | 2200 | 2500 | 2700 | 2900 |
| - 660 | 2300 | 2600 | 2800 | 3000 |
| - 680 | 2400 | 2700 | 2900 | 3100 |
| - 700 | 2500 | 2800 | 3000 | 3200 |
| - 720 | 2600 | 2900 | 3100 | 3300 |
| - 740 | 2700 | 3000 | 3200 | 3400 |
| - 760 | 2700 | 3000 | 3300 | 3500 |
| - 800 | 2900 | 3200 | 3400 | 3600 |
| - 850 | 3100 | 3400 | 3600 | 3800 |
| - 900 | 3300 | 3600 | 3800 | 4000 |
| - 950 | 3600 | 3900 | 4100 | 4300 |
| - 1000 | 3800 | 4100 | 4300 | 4500 |
| - 1100 | 4100 | 4400 | 4600 | 4900 |
| - 1200 | 4600 | 4900 | 5000 | 5000 |
| > 1200 | 5000 | 5000 | 5000 | 5000 |

**Minimum and maximum applicable RVR or RVR/CMV**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Facility/conditions | RVR/ CMV (m) | Aeroplane category | | |
| A | B | C |
| ILS, MLS, GLS, PAR and APV | Min | according to the table above | | |
| Max | 1500 | 1500 | 2400 |
| NDB, NDB/DME, VOR, VOR/DME, LLZ, LLZ/DME, VDF, SRA, RNAV/LNAV with a procedure which fulfils the criteria above | Min | 750 | 750 | 750 |
| Max | 1500 | 1500 | 2400 |
| Procedures not fulfilling the criteria above or with a DH or MDH ≥ 1200 ft | Min | 1000 | 1000 | 1200 |
| Max | according to the table above, plus increment if not flown using the CDFA technique | | |

#### Circling Minima:

The MDH shall be the higher of

(i) the published circling OCH for the aeroplane category,

(ii) the minimum circling height derived from the table below, or

(iii) the DH/MDH of the preceding instrument approach procedure

The minimum visibility shall be the higher of

(i) the circling visibility for the aeroplane category, if published,

(ii) the minimum visibility derived form the table below, or

(iii) the RVR/CMV derived form the tables above for the preceding instrument approach procedure

|  |  |  |  |
| --- | --- | --- | --- |
|  | Aeroplane category | | |
|  | A | B | C |
| MDH | 400ft | 500 ft | 600 ft |
| Minimum met. visibility | 1500 m | 1600 m | 2400 m |

The same visibility requirements apply for visual approaches.

### INTERPRETATION OF METEOROLOGICAL INFORMATION

**PROB 30/40 CONDITIONS TO BELOW MINIMA**

If the forecast or an added PROB 30 or 40 gives weather conditions below destination or alternate minima for the period of the ETA the respective aerodromes shall be considered below minima for flight planning purposes.

**BECMG OR FM DETERIORATION**

If the forecast indicates a BECMG or FM deterioration from conditions above to conditions below minima, the aerodrome shall be considered below minima for flight planning purposes, starting with the time when the deterioration begins.

**BECMG IMPROVEMENT**

If the forecast indicates a BECMG improvement from conditions below to conditions above minima, the aerodrome shall for flight planning purposes be considered below minima for an ETA up to the end of the entire period and above minima for an ETA after the end of this period.

It should be realized that the company policy regarding a BECMG improvement includes an extra safety margin. In judging whether a particular aerodrome will be above or below limits at ETA, the "actuals" shall be checked if available.

If the actual weather reports indicate that the required landing limits have been reached or where it may be safely assumed from the sequence of actuals that they will have surpassed the required minima at ETA, the aerodrome concerned may be considered above minima for flight planning purposes.

**TEMPO DETERIORATION**

In case where a weather deterioration from conditions above to below minima at or near ETA is given as a TEMPO variation, the aerodrome may be considered above minima for flight planning purposes but extra fuel for at least 30 mins shall be carried unless a suitable enroute alternate aerodrome is available.

**PROB, TEMPO IMPROVEMENTS**

In cases where a weather improvement from conditions below to conditions above minima at or near ETA is expressed as a PROB or TEMPO variation, the aerodrome shall be considered below minima for flight planning purposes.

**TREND FORECAST**

The above policies also apply to TREND forecasts. Where available the TREND forecast overrules the "aerodrome forecast" (TAF) for 2 hours following the time of issue.

### DETERMINATION OF THE QUANTITIES OF FUEL AND OIL CARRIED

#### GENERAL POLICY

The aircraft shall not take off unless the fuel and oil carried are sufficient to ensure that it can safely complete the flight, considering meteorological conditions as well as any delays that may be expected during the flight. In addition a reserve shall be carried to provide for contingencies and to enable the aircraft to proceed to the alternate aerodrome.

The fuel calculation shall be based on current aeroplane specific data and the operating conditions, under which the flight is to be conducted, including

Realistic aeroplane consumption data

Anticipated masses

Expected meteorological conditions

Air traffic services and restrictions

The total fuel required (block fuel) shall be calculated as follows:

Taxi / Run-up fuel

+ Trip fuel

-------------------------------------------

+ Contingency fuel

+ Alternate fuel, if required

+ Final reserve fuel

+ Additional fuel, if required

-------------------------------------------

Minimum Block fuel

+ Extra fuel

-------------------------------------------

Block fuel

=========================

**TAXI / RUN-UP FUEL**

The fuel required for run-up and taxi shall be regarded as consumed before take-off and shall not be included in the computation of the maximum take-off weight.

The amount of taxi / run-up fuel required is specified in the AFM. This amount may be increased on the discretion of the pilot in command for flights out of crowded airfields.

**TRIP FUEL**

The fuel required to fly from the aerodrome of departure to the aerodrome of planned destination. It shall include fuel required for take-off and climb in accordance with locally established departure procedures, fly to the aerodrome of destination via specified inbound routes and the fuel required for approach and landing.

**CONTINGENCY FUEL**

This additional fuel is intended to provide the following contingencies:

Unforecast Meteorological conditions

Air traffic control re-routings and traffic delays

Inaccuracy in en-route navigation

Individual variations in the operational characteristics of the aircraft

any other not anticipated condition that may delay the landing of the aircraft

The amount of fuel shall correspond to an amount of fuel equal to

**5% OF THE TRIP FUEL REQUIRED**

but shall not be less than the quantity required to fly for 5 minutes at holding speed 1500 feet above the destination aerodrome in standard atmospheric conditions.

**ALTERNATE FUEL**

The amount of fuel required to execute a missed approach from the applicable (M)DA/DH and follow the published missed approach procedure at the destination aerodrome, climb in accordance with the published procedures to the minimum altitude or flight level required (or higher if more economical), fly at this level to the alternate airport via specified inbound routes and the fuel required for the approach and landing at the destination alternate aerodrome.

Calculations shall be based on the temperature conditions of the

international standard atmosphere (ISA).

If two alternate aerodromes are required the above calculation shall be based on that alternate that requires the greater amount of alternate fuel.

**FINAL RESERVE FUEL**

Fuel required holding for a period of

**45 MINUTES**

Calculation shall be based on standard temperature, holding power setting, gear up and zero flaps.

For aircraft with Turbo-Jet engines, fuel required to hold for a period of

**30 MINUTES**

at holding speed at 1500 feet MSL in standard atmospheric conditions.

**THE FINAL RESERVE FUEL MUST NEVER BE CONSUMED DURING FLIGHT**

If for any reason the Final Reserve Fuel has to be consumed during flight, a Pilot’s Trip Report has to be submitted to the Flight Operations Department.

**ADDITIONAL FUEL**

Provided the sum of Trip Fuel, Contingency fuel, Alternate fuel (if required) and Final reserve is not sufficient for such an event, additional fuel is required to permit

- the aeroplane to descend as necessary and proceed to an adequate alternate aerodrome in the event of engine failure or loss of pressurisation, whichever requires the greater amount of fuel based on the assumption that such a failure occurs at the most critical point along the route, and

- hold there for 15 minutes at 1500 ft   
(450 m) above MSL in standard conditions, and

- make an approach and landing

- holding for 15 minutes at 1500 ft (450 m) above MSL in standard conditions, when a flight is operated without a destination alternate aerodrome

**EXTRA FUEL**

An additional amount of fuel may be carried at the discretion of the commander:

If expected conditions indicate that a delay at the destination is likely to occur.

For economic reasons on any route segment where the fuel price difference between the stations concerned justifies the carriage of extra fuel.

For any other reason, subject to the discretion of the PIC; for the purpose of determining endurance the extra fuel shall be converted into flight time using fuel consumption figures.

**LUBRICATION FLUIDS, WATER METHANOL**

Sufficient fluids according to AFM have to be carried.

**IN-FLIGHT REPLANNING**

In case of in-flight re-planning the crew shall satisfy themselves that the remaining fuel on board is not less than

Trip Fuel for the remainder of the flight +

Contingency Fuel +

Alternate Fuel (if required) +

Final Reserve + Additional Fuel (if required) +

Extra Fuel (if desired)

### MASS AND CENTER OF GRAVITY

**GENERAL**

During each stage of flight all weights and the center of gravity (CG) of the aircraft have to be within the limits laid down in the AFM to ensure a proper amount of in-flight stability and to avoid excessive load to the aircraft structure.

The mass of all operating items, such as catering or the crew are included in the aeroplane dry operating mass. The traffic load must be determined by weighing or by using standard masses. The influence of their position on the aeroplane center of gravity must be determined.

It is the responsibility of the Pilot-in-Command that the aircraft is loaded properly. This includes that aisles and the required emergency exits, as well as access to the emergency equipment are not obstructed.

1. **DEFINITIONS**

**Dry Operating Mass** - The total mass of the aeroplane ready for a specific type of operation excluding all usable fuel and traffic load. This mass includes items such as crew and crew baggage, catering and removable passenger service equipment, potable water etc.

**Traffic Load** - The total mass of passengers, baggage and cargo, including any non-revenue loads

1. **METHODS, PROCEDURES AND RESPONSIBILITIES FOR PREPARATION AND ACCEPTANCE OF MASS AND CENTER OF GRAVITY CALCULATION**

For each flight the center of gravity (CG) has to be calculated. Standard planning may be used in using pre-calculated weight and balance forms.

The actual Empty Mass or Dry Operating Mass of the respective aeroplane is stated in Part B.

The Commander shall be advised of the method used for the determination of the mass of the load.

A crew member shall supervise all loading to ensure that the load is properly secured and the distribution corresponds to the mass and balance sheet. The mass and balance documentation must be acceptable and signed by the Commander.

1. **THE POLICY FOR USING STANDARD AND/OR ACTUAL MASSES**

**STANDARD WEIGHTS FOR PASSENGERS & BAGGAGE**

If for planning purposes the approximate weight of the passenger and the luggage is not known, Standard figures for the weight of passengers including their luggage may be used according to OPS 1.620, unless actual mass are known or expected to deviate significantly from the standard masses:

The standard mass values specified include all hand baggage and the weight of any infant under the age of 2 years carried by an adult on one passenger seat.

A Mass of 13 lbs may be subtracted from the Passenger’s Mass for the calculation of flights, on which it is certain that no hand baggage is carried, or when hand baggage is accounted for separately.

If there is any doubt on the weight of a piece of baggage it has to be weighed.

1. **METHOD FOR DETERMINING THE APPLICABLE PASSENGER, BAGGAGE AND CARGO MASS**

**STANDARD CREW WEIGHT**

Two methods for calculation of standard crew weight for flight crew members are possible:

The actual mass including any crew baggage

The standard mass, including hand baggage of 185 lbs.

The approximate weight of the passengers and crew members will be used. Otherwise the Standard Masses have to be taken.

**PASSENGER MASSES**

Actual passenger and baggage masses may be established by a verbal statement by or on behalf of each passenger or by weighing immediately prior boarding at an adjacent location.

A predetermined constant of 10 kg to allow for clothing and hand baggage must be added when determining passenger masses by verbal statement.

Normally, standard masses as tabulated below are used.

1. **APPLICABLE PASSENGER AND BAGGAGE MASSES FOR VARIOUS TYPES OF OPERATIONS AND AEROPLANE TYPE**

|  |  |  |
| --- | --- | --- |
| Passenger | Passenger Seats | |
| 1-5 | 6-9 |
| Male | 229 Ibs | 212 Ibs |
| Female | 190 Ibs | 172 Ibs |
| Children (2-12 years) | 77 Ibs | 77 Ibs |

1. **GENERAL INSTRUCTION AND INFORMATION NECESSARY FOR VERIFICATION OF THE VARIOUS TYPES OF MASS AND BALANCE DOCUMENTATION IN USE**

One copy of the Mass- and Balance sheet must be carried on board, whilst another, as accepted by the commander, must be available on the ground for the duration of the flight.

The Mass and Balance sheet as presented in the Part B Chapter 6 (Mass & Balance) shall be used for calculating the load and its distribution for each flight.

The Mass- and Balance sheet must contain the following information:

Aeroplane registration and type

Flight number (if applicable) and date

The identity of the Commander

The identity of the person who prepared the document

The dry operating mass and the CG position or the Dry Operating Index of the aeroplane

The mass of the fuel

The mass of consumables other than fuel

The components of the load including passengers, baggage, freight and ballast

The take-off Mass, Landing Mass and Zero Fuel Mass

The load distribution and CG position or MAC

1. **LAST MINUTE CHANGES**

In case of loading changes after preparation of the mass and balance sheet, the Commander may manually correct the mass and balance sheet, if the load changes do not exceed

- 50 kg of baggage or cargo mass

- embarkation or disembarkation of 1 person.

The Commander shall correct the values for take-off and landing mass and check that the centre of gravity will remain within the prescribed limits.

In all other cases (including combined changes of passengers and baggage/cargo), a new mass and balance sheet must be prepared.

For details and a sample of a corrected mass and balance sheet, see Part B.

1. **SPECIFIC GRAVITY OF FUEL, OIL AND WATER METHANOL**

For the conversion of the mass of fuel the following specific gravities shall be applied:

Jet 1.79 lbs/lt. 6.77 lbs/USG 0.80 kg/lt.

Avgas 1.59 lbs/lt. 6.0 lbs/USG 0.72 kg/lt.

Fuel indication for all company aircraft is by capacitance type gauges and temperature compensated to some degree. This and the limited amounts of fuel carried make weight changes due to specific gravity variations negligible in temperate climates. Care has to be taken to observe the gauge indications and make adjustments to the range and the actual mass of the aeroplane when refuelling in very hot places from bowers which have been parked in the sun for extended periods of time.

1. **SEATING POLICY/PROCEDURES**

The Aeroplane loading is performed under the supervision of the crew. The passengers must be seated according to the computed or hand made "Mass and Balance Sheet" in order to stay in a safe CG position. Also the baggage has to be loaded according to the "Mass and Balance Sheet".

### ATS FLIGHT PLAN

GENERAL

An ATS flight plan shall be submitted for every flight whenever possible. The ATS flight plan shall be submitted on the appropriate forms designated by each state.

a) Information submitted in the ATS flight plan shall be based on the operational flight plan prepared for the respective flight.

b) Unless otherwise required by the appropriate authority the ATS flight plan shall be submitted to the appropriate ATS unit at least 30 minutes prior to the estimated block-off time.

c) The ATS flight plan shall be completed, signed and submitted by the Dispatch Office, the Pilot-in-Command, and a crew member designated by him or another designated person.

d) Subsequent changes which happen between the time of submission of the flight plan and the actual time of departure such as change of routing, flight level, ETD or persons on board shall be reported to the appropriate ATS unit immediately.

e) In order to facilitate crew duties at transit stations with short intermediate stops and unless otherwise prescribed by the appropriate authority, several ATS flight plans for consecutive route segments may be submitted at an aerodrome of departure.

f) Details of the ATS flight plan filed shall be retained in the flight folder.

### OPERATIONAL FLIGHT PLAN

**GENERAL**

An operational flight plan shall be completed either by the flight operations personnel or the Co-Pilot for every intended flight indicating that the flight can be safely conducted, considering en route weather and terminal weather with respect to company weather minima and operating restrictions as well as fuel on board.

The flight plan shall be approved and signed by the PIC. After the flight it shall be returned to the Operational control office for reference and must be retained at least for 3 months.

All entries must be made currently and permanent in nature.

**CONTENTS**

The following points shall be included:

Aeroplane registration

Aeroplane type and variant

Date of flight

Flight number or Flight identification

Names and duty assignments of flight crew members

Place of departure and arrival (planned and actual)

Time of departure and arrival (actual take-off / landing time and actual block-off / block-on time)

Hours of flight

Type of operation (VFR, Ferry flight, ETOPS, etc.)

Route and Route segments with checkpoints, waypoints, distances, time and tracks

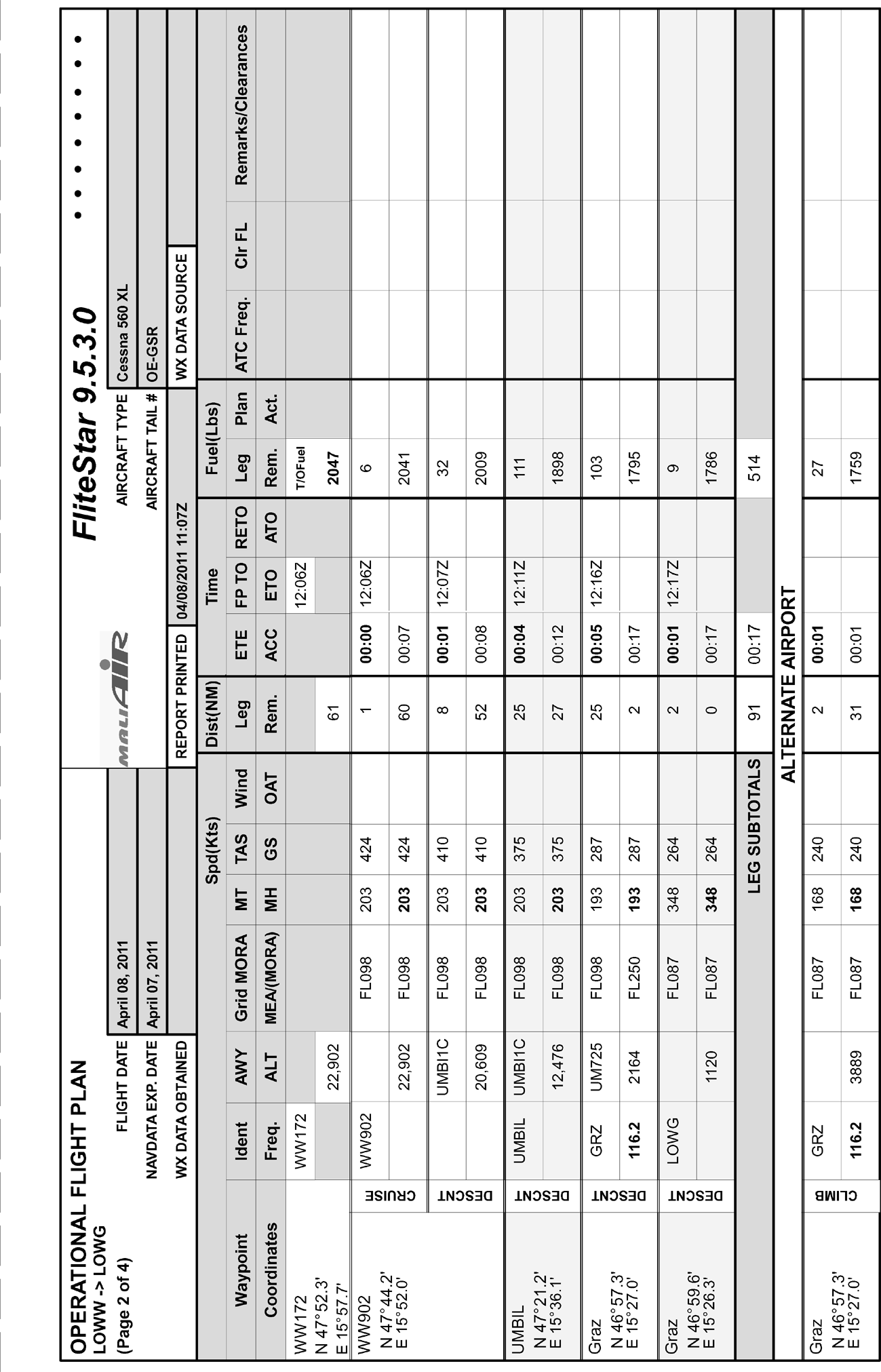
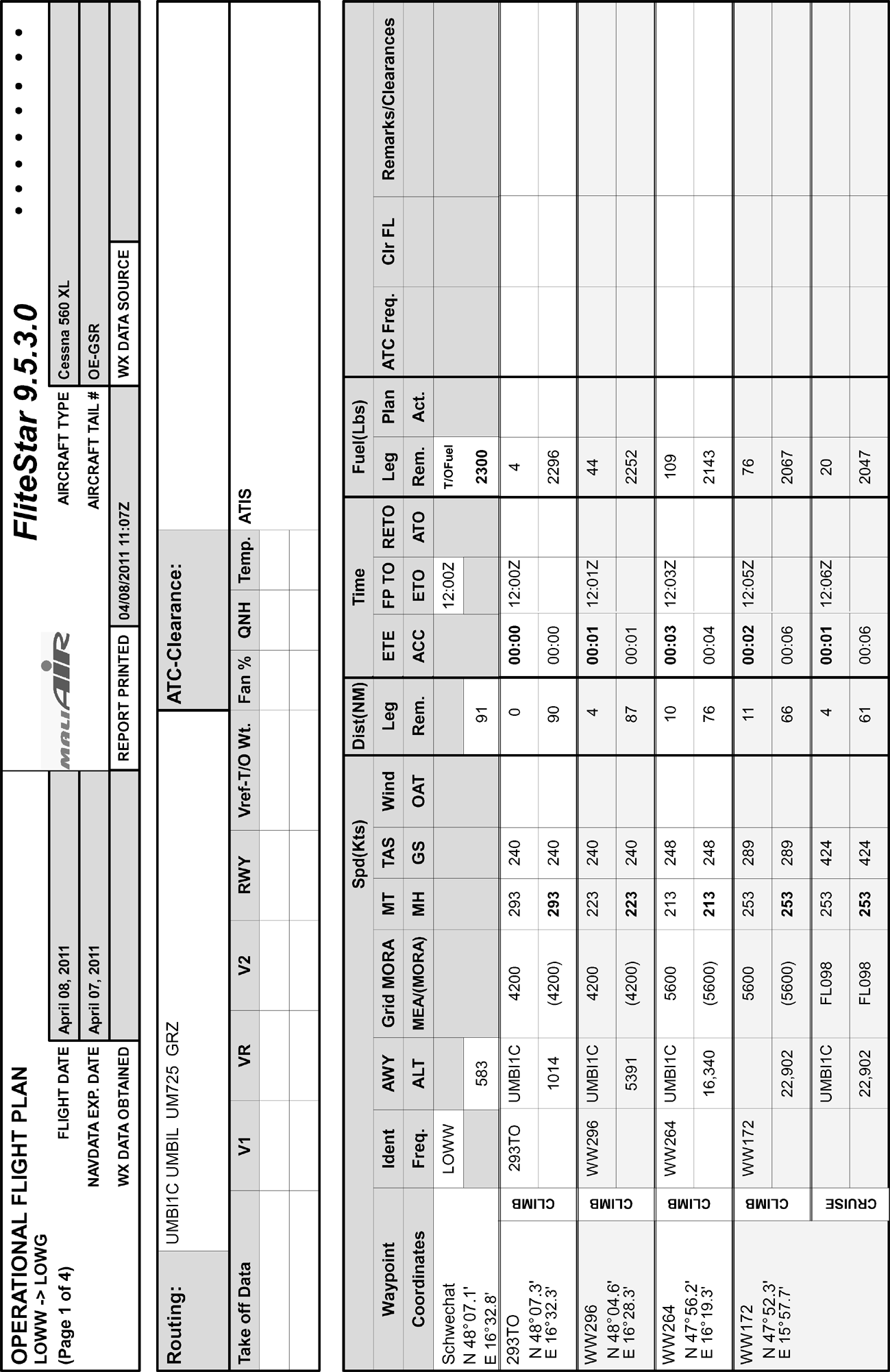
Planned cruising speed and flying times between checkpoints / waypoints; estimated and actual times overhead

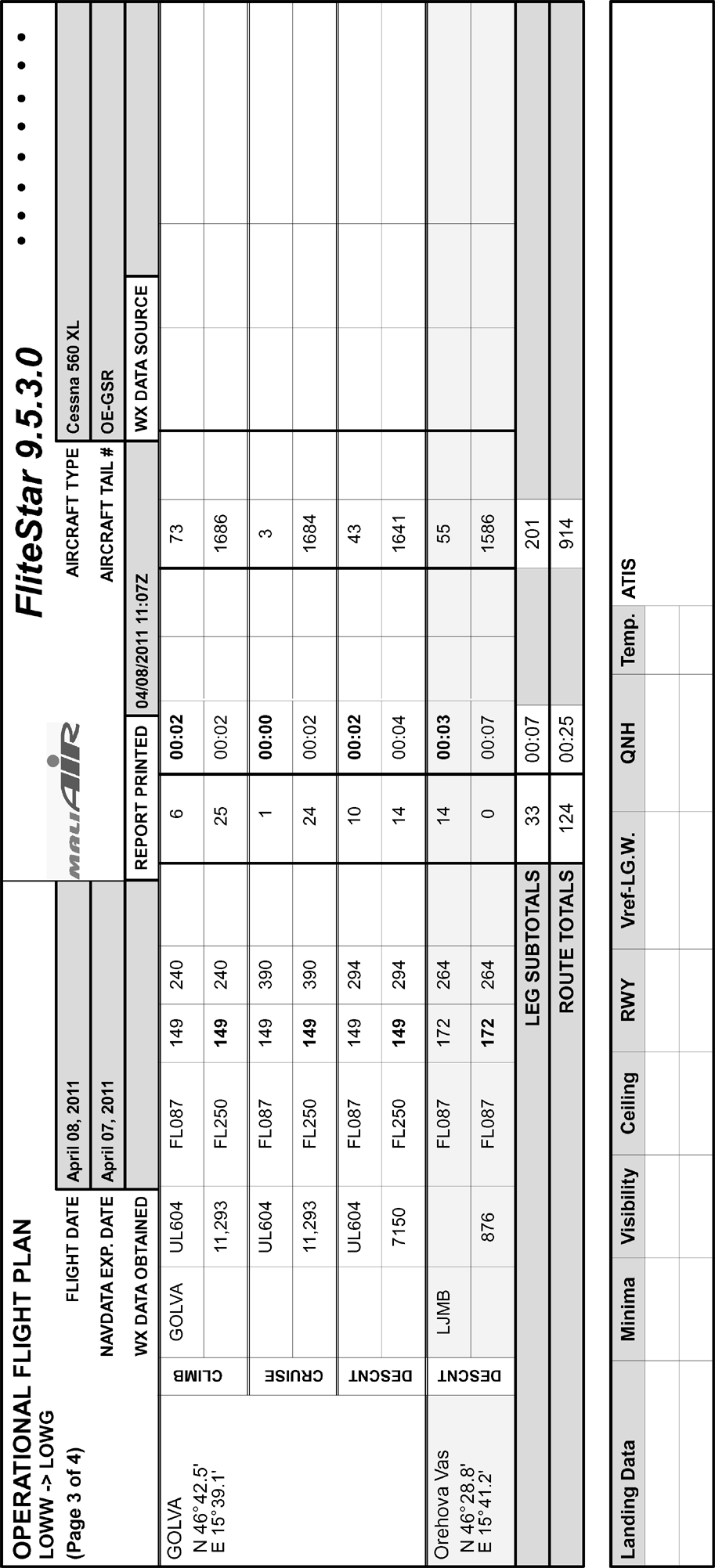
Safe altitudes and minimum level

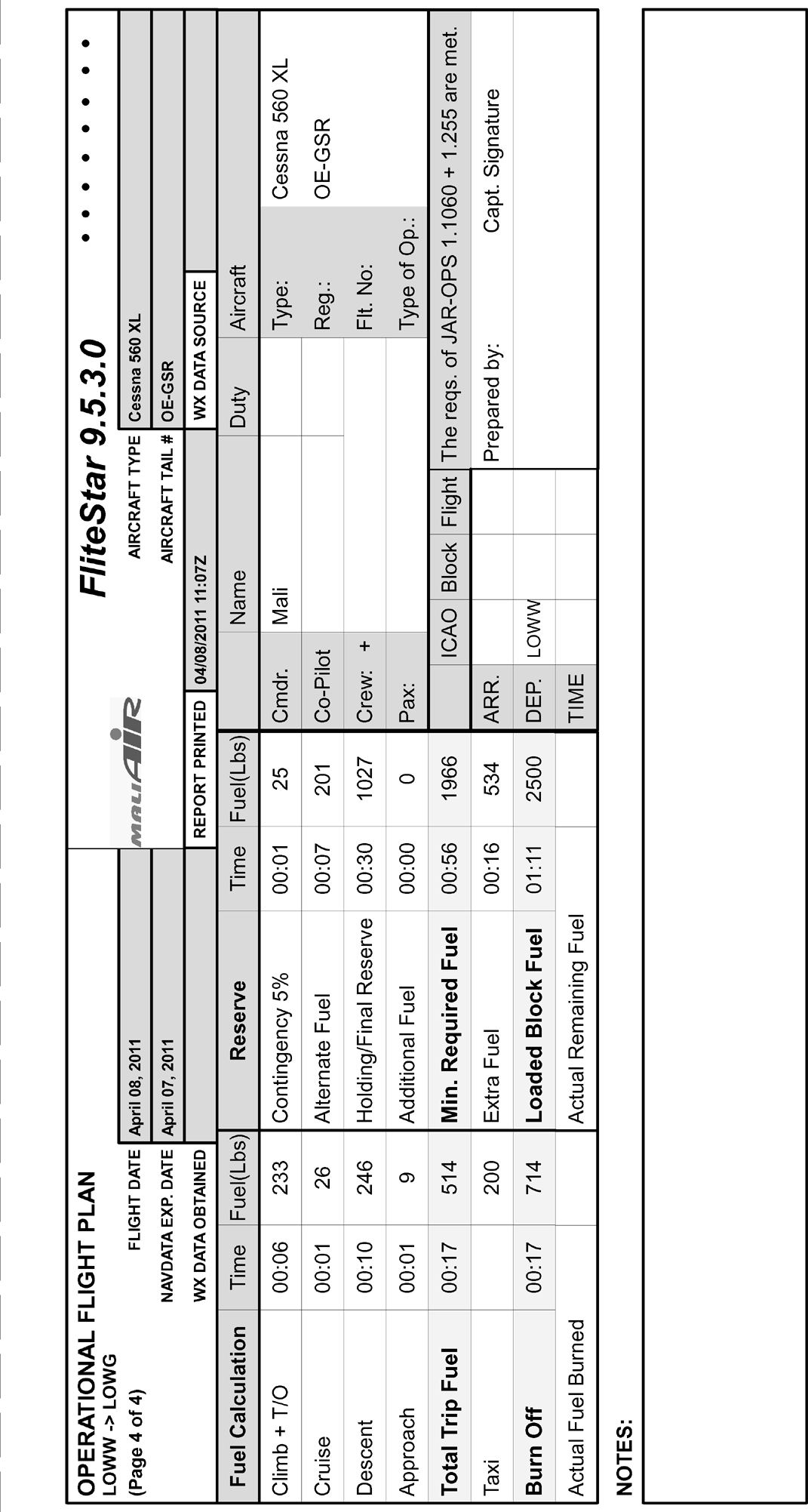
**OFP FORM**

The OFP may either be completed manually, or by using the Jeppesen Flight Star / Flight AVINOC software or ordered from Caeroscene company or Air Ops.

For sample Jeppesen forms see next pages







**Sample**

### OPERATORS AEROPLANE TECHNICAL LOG

For each aeroplane a Technical Log has to be filed and to be carried on board. The responsible authorities may any time demand to see the Technical Logbook.

The Commander is responsible for the entries into the technical logbook for his individual flight.

**Preflight:**

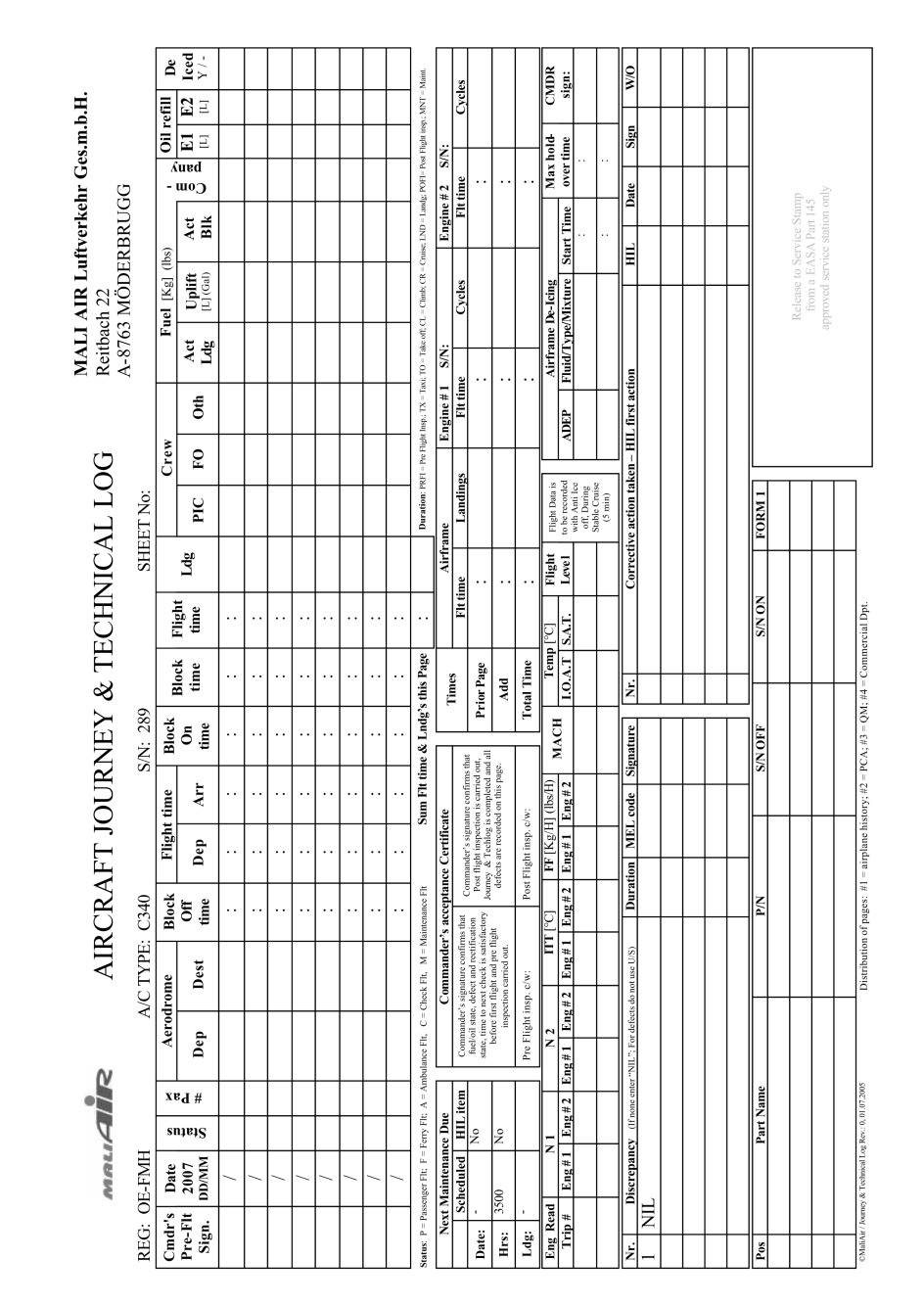
1. Consecutive sheet number (preceeding number on TEC LOG provided with Flight papers)
2. Leg number and sign
3. Date of flight
4. Status and pax number
5. ICAO Code for Departure Aerodrome
6. Initials for PIC
7. Initials for COPI
8. Initials for additional crew or flight inspection personnel
9. Amount of fuel uplift
10. Actual block fuel
11. Oil uplift if applicable
12. Aircraft deficiencies and mel code for release if any
13. Aircraft deiced Y / N
14. Fill in all fields concerning deicing
15. Sign acceptance of aircraft preflight

**During flight**

1. Engine reading if required by mainainance

**Post flight**

1. ICAO Code for Destination aerodrome
2. Fill in all fields concerning flight- and block times and amount of landings
3. Actual fuel on board after shut down
4. Aircraft deficiencies if any otherwise NIL has to be inserted
5. Sign post flight field ( commander confirms post flight inspection completed, all form completed and defects entered in aircraft log)



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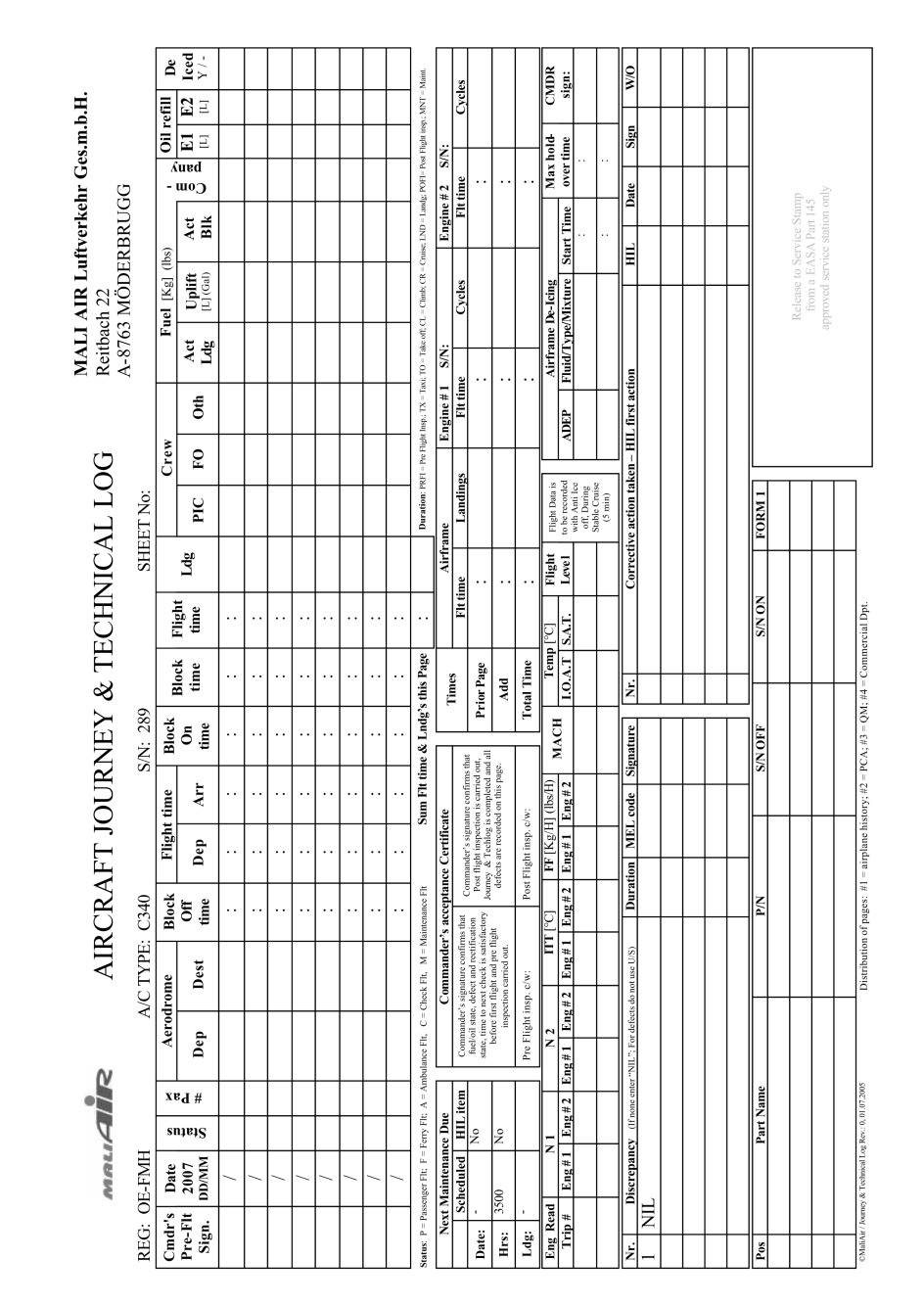
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### LIST OF DOCUMENTS, FORMS AND ADDITIONAL INFORMATION TO BE CARRIED

Aircraft documents:

* Certificate of registration
* Certificate of airworthiness
* Noise certificate
* Insurance certificate
* Aircraft radio station licence
* Airworthiness inspection certificate
* Aircraft flight log
* AFM / POH
* Check lists

In case of loss or theft of the above documents continued operation is permitted until the flight reaches a place where a replacement can be provided.

Operational documentation:

* Declaration of competency (AOC)
* Operations manual (easily accessible during flight)
* Aircraft technical log
* Operational flight plan
* Details of the filed ATS flight plan
* Load sheet (mass and balance)
* Weather information
* Notams / briefing documentation
* Notification of special loads including Dangerous Goods and NOTOC (if applicable)
* Journey log (consisting of Duty time list, aircraft logbook and technical log)
* Notification of special categories of passengers
* Current maps and charts
* Other documentation as required by the States concerned

Other:

* Crew licence (including any relevant attachments) and medical
* Radiotelephony licence
* Passport
* Company ID card (must be visibly worn whenever on duty)
* Pilots voyage report
* Bird strike report
* Route Manual (Jeppesen)
* Essential information pertinent to the flight concerning search and rescue services must be easily accessible on the flight deck. Such information includes the number of passengers and/or type and amount of cargo on board and a list containing all emergency and survival equipment carried on board (life-rafts, pyrotechnics, medical supplies, water supplies, emergency portable radios, ...)

At least for the duration of the flight or a series of flights a copy of the following information must be retained on the ground:

* Operational flight plan and aircraft technical log
* NOTAMS if specifically edited by Mali Air.
* Mass and balance documentation
* Special loads notifications

## GROUND HANDLING

### FUELLING PROCEDURE

**SUPERVISION**

The fuelling procedure should always be observed by a member of the crew, checking fuel type and grade delivered.

The quantity delivered shall be the same as stated on the Company flight plan.

1. **SAFETY PRECAUTIONS**

No Smoking within 45 m of the airplane

Fire fighting equipment must be quickly and easily available

Bonding connections airplane - fuel truck - ground must be established before fuelling commences.

Fuelling/De-fuelling is prohibited inside a hangar

Fuelling/De-fuelling is not permitted if there is a risk of lightning in the airport area (Thunderstorm)

Ground power units shall not be disconnected or switched off before fuelling is completed.

Objects liable to cause sparks must not be dragged over or dropped on a hard surface in the fuelling area. Working with tools producing sparks is prohibited.

1. Over-fuelling and spillage must be avoided. If spillage occurs the Airport Fire Brigade must be informed.
2. Fuelling with a Running engine (except APU) is not authorized
3. **REFUELLING AND DEFUELLING WHEN PASSENGES ARE EMBARKING, ON BOARD OR DISEMBARKING**

**Fuelling / Defuelling with Avgas or wide cut type fuel (e.g. Jet-B) when passengers are embarking, on board or disembarking is prohibited.**

If in all other cases than the above the passengers stay aboard the aircraft (e.g. during transit stops) the following precautions shall be taken:

One flight crew member must remain on the flight deck during fuelling operations with passengers on board to ensure two-way communication.

Staff and passengers must be warned that fuelling will take place and therefore ensure that any aisles and emergency doors remain unobstructed to ensure a quick emergency evacuation, if necessary.

1. The "Fasten Seat Belts" sign must be off
2. The "No Smoking" sign must be on, together with interior lighting to ensure that emergency exits can be easily identified and the Passengers must be briefed that Smoking is not permitted
3. The Fire Brigade has to be informed and must be in close proximity to the aircraft on standby
4. Only the Fuel tank in the Right Hand wing may be refuelled
5. If fuel vapour or any other potential hazard is detected in the aeroplane interior, fuelling must be stopped immediately.

* Ground servicing activities and work inside the aeroplane, such as catering and cleaning shall be conducted in such a manner that they do not create a hazard and that the aisles and emergency doors are unobstructed.

1. **PRECAUTIONS TO BE TAKEN TO AVOID MIXING FUELS**

In case of using normally Jet A-1 fuel, a re/de-fuelling with Avgas or widecut fuel (e.g. Jet B or equivalent) or a mixture of these types of fuel is not permitted, unless if this is permitted in the OM Part B and a procedure to the use is described.

### AEROPLANE, PASSENGER AND CARGO HANDLING PROCEDURES RELATED TO SAFETY

**PASSENGERS**

Passengers have to be guided by a member of the crew or personnel of an authorized handling agent when embarking or disembarking the aircraft or when moving about on the apron or any area on the airport which is not open to the public.

Passengers shall be seated so in a seat that is designed for the accommodation of a person, that in the event of an emergency evacuation of the aircraft they may best assist and not hinder evacuation from the aircraft. Passengers shall be seated in accordance with the requirements on the Mass- and Balance sheet.

**SAFETY AND SAFEGUARDING OF AIRCRAFT**

The PIC is responsible for the safe and efficient conduct of the following functions, which are normally performed by ground personnel, and for which he assigns crew members or other personnel at his disposal

Safety, safeguarding of passengers and load

Safety, safeguarding and servicing of aircraft

Ground operations, such as Passenger Service (meals, Hotel accommodation, etc.), Communication with the home base regarding the progress of the flight, Mail and cargo handling where necessary

1. **CHILDREN, INFANTS, SICK PASSENGERS AND PERSONS WITH REDUCED MOBILITY**

The Commander should satisfy him that the carriage of such passengers will not cause inconvenience or discomfort to other passengers and that emergency evacuation and safety during the flight will be guaranteed. Only ONE infant under 2 years of age may be carried together with an adult in one seat. The Seat-belt shall be used for the adult only; the infant shall be fastened with the infant’s loop-belt.

Handicapped passengers shall be seated as close as possible to an emergency exit, but not adjacent to an emergency exit or in an emergency exit row.

Whenever possible, handicapped passengers shall be boarded before general boarding commences.

The Commander has to be informed when handicapped passengers are to be carried on board. He may also refuse or restrict the transport of handicapped passengers for safety reasons.

1. **TRANSPORTATION OF INADMISSIBLE PASSENGERS, DEPORTEES OR PERSONS IN CUSTODY**

The transportation of inadmissible passengers, deportees or persons in custody is only allowed if the respective person is accompanied by a security guard to ensure the safety of the aeroplane and its occupants.

The Commander must be informed of the intended carriage and the reason for the carriage prior to departure. He may also refuse or restrict the transport of such passengers for safety reasons.

1. **PERMISSIBLE SIZE AND WEIGHT OF HAND BAGGAGE**

A weight of 6kg is included in the standard adult passenger weight. Masses greater than 6kg must be taken into account separately.

The baggage must be securely stowed in the baggage compartments; hand baggage carried in the cabin must not exceed a weight of 10 kg's. It is however the PIC's discretion to allow or refuse a specific piece of baggage to be carried in the cabin.

1. **LOADING AND SECURING OF ITEMS IN THE AREOPLANE**

All baggage items must be secured against movement during flight.

Whenever possible the baggage of the passengers should be collected in the airport terminal and transferred to the aircraft by the crew or any authorized handling agent before the passengers in order to minimize the passenger's waiting-time on the apron.

On arrival the passenger's baggage should be carried up to customs only; Crew members are not allowed to clear customs for any passenger's belongings.

It is strictly forbidden for Crew members and Staff to accept any items for carriage which are not clearly identifiable as Company Mail. Such carriage does not only violate Company and Postal Regulations but may also be a Safety Risk.

**CARGO IN CABIN**

Cargo may be carried in the aft cabin baggage area only, provided the cargo is restrained and is loaded as follows:

1. It is properly secured by a safety belt or other tie down to eliminate the possibility of shifting
2. It is packaged or covered in a manner to avoid possible injury to passengers or occupants
3. It does not restrict access to any emergency exit or the aisle
4. The location does not obstruct the passenger’s view of the „Seat belt“ or „No smoking“ sign
5. Any cargo containing liquids is transported in a suitable box to prevent spillage.
6. **SPECIAL LOADS**

Unusual loads shall receive special attention by the crew. In addition to the normal provisions possible incompatibilities (e.g. life animals should not be loaded next to each other) or the possibility of damage caused by high or low temperatures or low air pressure in baggage compartments shall be taken into consideration when loading such cargo.

Electronic devices as far as they may adversely affect the performance of aeroplane systems and equipment shall not be used on board (see also 8.3.16).

Be aware that several goods which would otherwise be considered as dangerous goods are excluded from the regulations for transporting dangerous goods if:

* they are required to be aboard the aeroplane for operating reasons
* they are carried as catering or cabin supplies, for veterinary aid or medical aid for a patient or if carried by passengers or crew members.

For regulations regarding carriage of dangerous goods see chapter 9.

1. **POSITION OF GROUND EQUIPMENT**

All ground equipment not required for starting must be withdrawn from the aircraft prior to starting engines. All equipment should be at least 30m away from the prolonged longitudinal axis of the aircraft. The actual extension of the blast area can be looked up in the Operating Manual of the type concerned.

The use of a GPU requires the availability of a ground crew. The GPU, if used, shall be positioned behind the wing and clear of the empennage. However, some form of communication between the cockpit and the GPU personnel.

Equipment should be positioned so that it does not block the initial path of the aircraft.

1. **OPERATION OF AEROPLANE DOORS**

Only a member of the crew is allowed to open or close the aircraft door(s). In case of emergency this authority may be transferred to a passenger on the PIC's discretion.

(Company) The Cabin door may only be opened by the Crew after the left hand Engine has completely stopped.

1. **SAFETY ON THE RAMP, INCLUDING FIRE PREVENTION, BLAST AND SUCTION AREAS**

Due to the nature of company's business, ground crew are available only sporadically and if so they are not trained for the type of aircraft and operation. Pilots should exercise extreme caution when relying on signals of ground crew and verify every move from the cockpit.   
  
**Fire Prevention**

Company aircraft shall not intentionally use an airport where no fireguard is available. This means when there is a NOTAM announcing that the fireguard is unavailable, the airport is off limits for company aircraft. Detailed procedures as to the positioning of the fireguard, however, depend on the regulations of the country and airport concerned.

Blast and Suction Areas

The commander shall, during his walk-around, ensure that blast and suction areas are clear of debris and equipment. This includes any possible precaution against vehicles or personnel entering the blast area after the doors have been closed.

1. **Start-up, ramp departure and arrival procedures**

The commander shall verify during the walk-around that the aircraft is on chocks, the blast area is clear and the GPU (if used) is clear of the aircraft as outlined above.

**Start-up with ground crew**

Prior to starting engines the brakes should be set to facilitate chock removal. Starting engines should be communicated with the ground crew by the customary visual signals. The GPU should be signalled to be removed when the first or both engine are running, depending on aircraft type. Taxiing should not be commencing before a thumbs up signal is received from the ground attendant.

**Start-up without ground crew**

Prior to closing cabin doors the Commander should be set the parking brakes and signal the removal of the chocks by the F/O. Prior starting the engine the corresponding area should be checked clear.   
The engine opposite the side of the main entrance door should be started first. This assures that the main exit is available in case of engine fire during start-up. After completion of the "After Starting Engines" checklist and obtaining taxi clearance the parking brake is released and the wing clearance is checked by both crewmembers.

1. **SERVICING OF AEROPLANE**

All servicing of company aeroplane away from the home-base shall be supervised by one flight crew member.

During transit or night stops the PIC will ascertain that the aircraft is serviced by the Co-pilot through the special or regular pre-/or post-flight checks according to the AFM or the respective Maintenance Manual.

If faults are discovered on inspecting the aircraft, their presence shall be reported to the technical department and action decided in accordance with the minimum requirements laid down in the respective AFM or Minimum equipment list.

1. **DOCUMENTS / FORMS FOR AEROPLANE HANDLING**

The Pilot in command is responsible that all papers as stated under 8.1.12 are carried aboard the aircraft, however, the flight folder is usually compiled by the handling personnel or the Co-Pilot as applicable.

1. **MULTIPLE OCCUPANCY OF AEROPLANE SEATS**

Multiple occupancy of seats is only permitted when one occupant is an infant under 2 years old and the other responsible adult aged 16 years or more.

### PROCEDURES FOR THE REFUSAL OF EMBARKATION

**GENERAL**

Unruly passengers are persons failing to observe relevant instructions and causing annoyance and problems to other passengers or staff. Handling of those persons is rather delicate and requires tact, but also firmness.

Under certain conditions the need to refuse a passenger from embarkation or to deplane a passenger may arise. Those persons shall be refused either by the ground handling personnel or by the crew supervising the embarkation progress.

**POLICY**

It is company policy not to carry any passenger who may constitute a nuisance or danger to himself or to other passengers, whether as a result of his refusal to obey instructions, his personnel behaviour or excessive interference with other passengers of in-flight service etc. Any person whose behaviour is such as to jeopardize or be likely to jeopardize the safety of the aeroplane, of persons or property on board or good order and discipline on board should not be carried.

**AUTHORITY**

It is implicit in the contract of carriage that the passenger will conduct himself in such a manner as not to affect the safety of the aircraft or give offence to other passengers or crew. The breach of such implied term will entitle the carrier to refuse onward transportation.

The Pilot in Command has the final decision whether he can or can’t accept a passenger for transportation in the interest of safety or good order on board, subject to specific justification.

The following persons will not be accepted to enter or be in an aeroplane:

1. A person who violate against any applicable law, regulation or order on any state or country to be flown from, into or over.
2. A person under influence of alcohol or drugs where the safety of the aeroplane, its occupants or the good order is likely to be endangered.
3. A person who may endanger his own or another passenger’s health, safety or comfort because he is unruly, disorderly or obnoxious.
4. A person who has a contagious disease.
5. Infants less than one week old unless with a medical certificate.
6. Pregnant women may only be accepted up to 30 days before date of birth unless with a medical certificate.
7. Persons without shirt and/or shoes, or persons in a malodorous condition.
8. Persons who refuse to present Visa, Passport, ID, etc.
9. Persons who refuse to undergo security screening procedures.

### DE-ICING AND ANTI-ICING ON THE GROUND

**GENERAL**

Ice and other deposits on airfoil surfaces may adversely affect aircraft performance. The thrust, lift, drag and control characteristics of aircraft may be impaired resulting in an increased stalling speed and take-off distance and a decrease in rate of climb. Deposits on control surfaces may affect aerodynamic and mass balance, leading to flutter and   
severe structural damage. Therefore, it is emphasized that fuselage, wings, tail surfaces, control surfaces and hinges thereof must be thoroughly cleaned and visually inspected before departure.   
Also wheel trims must be cleaned to prevent unbalance and attention should be given to snow on the nose section as this may loosen during take-off and impair visibility. Whenever conditions are favourable for the formation of frost, snow or ice, it is strongly recommended on stops of   
extended duration, that protective covers be used or the aircraft be parked in hangar.

Take-off in freezing rain or at a braking coefficient of 0,25 (Braking action poor) is prohibited. Landings during both conditions should be avoided whenever possible!

Ice coverage or Clear Ice, Snow or Harsh on the aircraft's external surfaces can reduce its performance drastically due to decreased lift, increased drag resulting from disturbed airflow and the weight of the cover. Furthermore freezing snow, slush and water can block movable parts like Elevators, Ailerons, Flap Actuating mechanisms etc. and may thereby lead to dangerous conditions. Snow or ice which is sucked in can lead to a stall or damage of the compressor and thereby reduce engine power drastically.

The most critical temperatures are between +3°C and -10°C. Nevertheless Ice can also form at far higher temperatures of +15°C or more if the tanks are filled with large amounts of cold fuel. AFM-Restrictions - if published - regarding the thickness / locations of the icing have to be considered.

**De-icing -** is a procedure by which ice, snow or frost is removed from the airplane by applying hot water (Two-Step De-icing) or a hot mixture of water and de-icing / anti-icing fluid (One-Step De-icing).

**Anti-icing -** consists of the application of an anti-icing fluid or a mixture of anti-icing fluid and water to the airplane to protect against the accumulation and adherence of ice, snow or frost to airplane surfaces - before such conditions exist.

**DEFINITIONS**

**Icing conditions** - Whenever the temperature is below 8°C and the Visibility is less than 1000 m or in conditions of precipitation

**Hoar frost** - A uniform white deposit of frost

**Thin hoar frost** - The characters and placards on the wings and fuselage can be read but are covered with a thin layer of frost (less than 3 mm)

**Rime and glaze ice or rain ice** - Has an opaque appearance caused by air being tapped in the water droplets as they freeze instantly

**Dry snow** - A condition when snow can be blown if loose or if compacted by hand will fall apart upon release

**Wet snow** - If the snow is compacted by hand it will stick together and form a snowball

**Slush** - Is a water saturated snow which will be displaced with a splatter when stepping firmly on the ground

1. **PROPRIETARY OR COMMERCIAL NAMES**

Type I fluids:

|  |  |
| --- | --- |
| Manufacturer | Product |
| ABAX Industries | ABAX DE-950 |
| ABAX DE-950 Colorless |
| Arcton Ltd. | Arctica DG ready-to-use |
| Aviation Shaanxi | Cleanwing I |
| Aviation Xi'an | KHF-1 |
| Beijing Phoenix | CBSX-1 |
| Beijing Wangye | KLA-1 |
| Clariant Produkte GmbH | Safewing MP I 1938 ECO |
| Safewing EG I 1996 |
| Safewing MP I ECO PLUS |
| Cryotech Deicing | Polar Plus |
| Dow Chemical Company | UCAR ADF Concentrate |
| UCAR ADF XL 54 |
| UCAR PG ADF |
| UCAR PG ADF Dilute 55/45 |
| Harbin Aeroclean | HJF-1 |
| HOC Industries | Safe Temp ES Plus |
| Kilfrost Ltd. | DF Plus |
| DF sustain |
| Newave Aeroch. | FCY-1A |
| Octagon Process, Inc | EcoFlo |
| Octaflo EF |
| Octaflo EG |

Type II fluids:

|  |  |
| --- | --- |
| Manufacturer | Product |
| ABAX Industries | Ecowing 26 |
| Aviation Shaanxi | Cleanwing II |
| Clariant Produkte GmbH | Safewing MP II 1951 |
| Safewing MP II FLIGHT |
| Kilfrost | ABC-3 |
| ABC-2000 |
| ABC-K PLUS |
| Newave Aeroch. | FCY-2 |

Type III fluids:

|  |  |
| --- | --- |
| Manufacturer | Product |
| Clariant Produkte | Safewing MP III 2031 ECO |

Caution: The LOUT is -16,5° C for aircraft with rotation speeds less than 100 knots or -29° C for aircraft with higher rotation speeds.

Type IV fluids:

|  |  |
| --- | --- |
| Manufacturer | Product |
| ABAX Industries | AD-480 |
| Ecowing AD-49 |
| Clariant Produkte | Safewing MP IV LAUNCH |
| Cryotech Deicing | Polar Guard |
| Dow Chemical Company | UCAR Endurance EG106 |
| UCAR FlightGuard AD-480 |
| UCAR FlightGuard AD-49 |
| Kilfrost | ABC-4 |
| ABC-S |
| ABC-S PLUS |
| Lyondell Chem. | ARCTIC Shield |
| Octagon Process | Max-Flight 04 |
| MaxFlo |

1. **CHARACTERISTICS**

**SAE TYPE I FLUIDS:** These fluids in the concentrated form contain a minimum of 80% glycol and are considered "unthickened" because of their relatively low viscosity. These fluids are used for de-icing or anti-icing, but provide very limited anti-icing protection.

Note: It is the heat contained by the Type l (de-ice) fluid and the hydraulic forces that removes the frozen contaminants. The glycol provides some protection during precipitation conditions until Type ll, III or IV fluid is applied.

**SAE TYPE II FLUIDS:** SAE Type II fluids are considered "thickened" because of added thickening agents that enable the fluid to be deposited in a thicker film and to remain on the aircraft surfaces until the time of take-off. These fluids are used for de-icing when heated, and anti-icing. Type II fluids provide greater protection (holdover time) than do Type I fluids against frost, ice or snow formation in conditions conducive to aircraft icing on the ground. These fluids are effective anti-icers because of their high viscosity and pseudo-plastic behaviour. They are designed to remain on the wings of an aircraft during ground operations, thereby providing anti-icing protection. However, when these fluids are subjected to shear stress, such as that experienced during a take-off run, their viscosity decreases drastically, allowing the fluids to flow off the wings and causing little

adverse effect on the aircraft's aerodynamic performance.

**SAE TYPE III FLUIDS:** Type III is a thickened fluid that has properties that lie between Types I and II. Therefore, it provides a longer holdover time than Type I but less than Type II. Its shearing and flow off characteristics are designed for aircraft that have a shorter time to rotation making it acceptable for some aircraft that have a Vr exceeding 60 knots.

**SAE TYPE IV FLUIDS:** Type IV anti-icing fluids meet the same fluid specifications as the Type II fluids and have a significantly longer HOT. Therefore, SAE Type IV fluids should be used on aircraft with rotation speeds (Vr) above 100 knots. In recognition of the above, holdover time guidelines are available for Type IV fluids. The product is dyed emerald green as it is believed that the green product will provide for application of a more consistent layer of fluid to the aircraft and will reduce the likelihood that fluid will be mistaken for ice. However, as these fluids do not flow as readily as conventional Type II fluid, caution should be exercised to ensure that enough fluid is used to give uniform coverage.

1. **EFFECTS ON AEROPLANE PERFORMANCE**

De-icing/Anti-icing fluids do flow off the wings during initial take-off ground roll. However, the residual fluid is sufficient to cause a temporary decrease in lift and increase in drag during rotation and initial climb-out. These effects are more significant at lower temperatures (below -20°C)

Takeoffs during freezing rain shall be avoided whenever possible due to the very short holdover times, sometimes as low as 3 minutes!

1. **HOLDOVER TIMES**

**The Holdovertime starts when the deicing process begins.**

Note: The following tables are generic as published by Transport Canada for the winter 2010-2011. Higher holdover times may apply for certain commercial fluids and may be used provided such information is available. Information published by the aircraft manufacturer takes precedence over these figures, for details consult the applicable AFM/POH.

Table 0 - Active Frost Holdover Guidelines

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **OAT (°C)** | **Concentration Neat Fluid % / Water %** | **Approximate Holdover Times - Active Frost**  **(hours : minutes)** | | | |
| Type I1,2 | Type II3 | Type III3 | Type IV3 |
| -1 and above | 100/0 | 0:45  (0:35)4 | 8:00 | 2:00 | 12:00 |
| 75/25 | 5:00 | 1:00 | 5:00 |
| 50/50 | 3:00 | 0:30 | 3:00 |
| -1 to -3 | 100/0 | 8:00 | 2:00 | 12:00 |
| 75/25 | 5:00 | 1:00 | 5:00 |
| 50/50 | 1:30 | 0:30 | 3:00 |
| -3 to -10 | 100/0 | 8:00 | 2:00 | 10:00 |
| 75/25 | 5:00 | 1:00 | 5:00 |
| -10 to -14 | 100/0 | 6:00 | 2:00 | 6:00 |
| 75/25 | 1:00 | 1:00 | 1:00 |
| -14 to -21 | 100/0 | 6:00 | 2:00 | 6:00 |
| -21 to -25 | 100/0 | 2:00 | 2:00 | 4:00 |

Notes:

1 Type I Fluid / Water Mixture is selected so that the freezing point of the mixture is at least 10°C below outside air temperatures.

2 May be used below -25°C provided the lowest operational use temperature (LOUT) of the fluid is respected.

3 These fluids may not be used below -25°C in active frost conditions.

4 Value in parentheses is for composite surfaces.

Table 1 - SAE type I fluid holdover guidelines1

**Aluminium Surfaces**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **OAT (°C)2** | **Approximate Holdover Times (minutes)** | | | | | | | |
| **Freezing Fog** | **Snow, Snow Grains or Snow Pellets** | | | **Freezing Drizzle4** | **Light Fz Rain** | **Rain on Cold Soaked Wing**5 | **Other6** |
| **Very lt.3** | **Light3** | **Mod.** |
| ≥ -3 | 11 - 17 | 18 | 11 - 18 | 6 - 11 | 9 - 13 | 4 - 6 | 2 - 5 |  |
| -3 to -6 | 8 - 13 | 14 | 8 - 14 | 5 - 8 | 5 - 9 | 4 - 6 | CAUTION: |  |
| -6 to -10 | 6 - 10 | 11 | 6 - 11 | 4 - 6 | 4 - 7 | 2 - 5 | No holdover time | |
| below  -10 | 5 - 9 | 7 | 4 - 7 | 2 - 4 |  | | guidelines exist | |

**Composite Surfaces**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **OAT (°C)2** | **Approximate Holdover Times (minutes)** | | | | | | | |
| **Freezing Fog** | **Snow, Snow Grains or Snow Pellets** | | | **Freezing Drizzle4** | **Light Fz Rain** | **Rain on Cold Soaked Wing**5 | **Other6** |
| **Very lt.3** | **Light3** | **Mod.** |
| ≥ -3 | 9 - 16 | 12 | 6 - 12 | 3 - 6 | 8 - 13 | 4 - 6 | 1 - 5 |  |
| -3 to -6 | 6 - 8 | 11 | 5 - 11 | 2 - 5 | 5 - 9 | 4 - 6 | CAUTION: |  |
| -6 to -10 | 4 - 8 | 9 | 5 - 9 | 2 - 8 | 4 - 7 | 2 - 5 | No holdover time | |
| below -10 | 4 - 7 | 7 | 4 - 7 | 2 - 4 |  | | guidelines exist | |

Notes:

1 Type I Fluid / Water Mixture is selected so that the freezing point of the mixture is at least 10°C (18°F) below outside air temperature.

2 Ensure that the lowest operational use temperature (LOUT) is respected.

3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.

4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.

5 No holdover times guidelines exist for this condition of 0° C and below.

6 Heavy snow, ice pellets, moderate and heavy freezing rain, and hail.

Table 2 - SAE type II fluid holdover guidelines1

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **OAT (°C)**2 | **Concentra-tion Neat Fluid % / Water %** | **Approximate Holdover Times (hours : minutes)** | | | | | |
| **Freezing**  **Fog** | **Snow, Snow Grains or Snow Pellets3** | **Freezing**  **Drizzle4** | **Lt. Fz**  **Rain** | **Rain on Cold Soaked Wing**5 | **Other6** |
| -3 and above | 100/0 | 0:35 - 1:30 | 0:20 - 0:45 | 0:30 - 0:55 | 0:15 - 0:30 | 0:05 - 0:40 |  |
| 75/25 | 0:25 - 1:00 | 0:15 - 0:30 | 0:20 - 0:45 | 0:10 - 0:25 | 0:05 - 0:25 |
| 50/50 | 0:15 - 0:30 | 0:05 - 0:15 | 0:05 - 0:15 | 0:05 - 0:10 |  |  |
| -3 to -14 | 100/0 | 0:20 - 1:05 | 0:15 - 0:30 | 0:20 - 0:457 | 0:10 - 0:207 | CAUTION: | |
| 75/25 | 0:25 - 0:50 | 0:10 - 0:20 | 0:15 - 0:307 | 0:05 - 0:157 | No holdover time | |
| -14 to -25  or LOUT5 | 100/0 | 0:15 - 0:35 | 0:15 - 0:30 |  | | guidelines exist | |

Notes:

1 Based on the lowest holdover times of the fluids listed under a) above.

2 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I when Type II fluid cannot be used.

3 Use light freezing rain holdover times in conditions of light snow mixed with light rain.

4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.

5 No holdover guidelines exist for this condition for 0° C and below.

6 Heavy snow, ice pellets, moderate and heavy freezing rain, and hail.

7 These holdover times only apply to outside air temperatures to -10°C (14°F) under freezing drizzle and light freezing rain.

Table 3 - SAE type III fluid holdover guidelines

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **OAT (°C)1** | **Concentra-tion Neat Fluid % / Water %** | **Approximate Holdover Times (minutes)** | | | | | | | |
| **Freezing Fog** | **Snow, Snow Grains or Snow Pellets** | | | **Freezing Drizzle3** | **Light Fz Rain** | **Rain on Cold Soaked Wing**4 | **Other5** |
| **Very lt.2** | **Light2** | **Mod.** |
| -3 and above | 100/0 | 20 - 40 | 35 | 20 - 35 | 10 - 20 | 10 - 20 | 8 - 10 | 6 - 20 |  |
| 75/25 | 15 - 30 | 25 | 15 - 25 | 8 -15 | 8 - 15 | 6 - 10 | 2 - 10 |
| 50/50 | 10 - 20 | 15 | 8 -15 | 4 - 8 | 5 - 9 | 4 - 6 |  |  |
| -3 to -10 | 100/0 | 20 - 40 | 30 | 15 - 30 | 9 - 15 | 10 - 20 | 8 - 10 | CAUTION: | |
| 75/256 | 15 - 30 | 25 | 10 - 25 | 7 - 10 | 9 - 12 | 6 - 9 | No holdover time | |
| below -10 | 100/0 | 20 - 40 | 30 | 15 - 30 | 8 - 15 |  | | guidelines exist | |

Notes:

1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I when Type III fluid cannot be used.

2 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.

3 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.

4 No holdover guidelines exist for this condition for 0° C and below.

5 Heavy snow, ice pellets, moderate and heavy freezing rain, and hail.

6 For aircraft with rotation speeds less than 100 knots, these holdover times only apply to outside air temperatures of -9° C and above.

Table 4 - type IV fluid holdover guidelines1

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **OAT (°C)** | **Concentra-tion Neat Fluid % / Water %** | **Approximate Holdover Times (hours : minutes)** | | | | | |
| **Freezing**  **Fog** | **Snow, Snow Grains or Snow Pellets3** | **Freezing**  **Drizzle4** | **Lt. Fz**  **Rain** | **Rain on Cold Soaked Wing**5 | **Other6** |
| above -3 | 100/0 | 1:15: - 2:30 | 0:35 - 1:15 | 0:40 - 1:10 | 0:25 - 0:40 | 0:10 - 1:05 |  |
| 75/25 | 1:00 - 1:45 | 0:20 - 0:55 | 0:35 - 0:50 | 0:15 - 0:30 | 0:05 - 0:40 |
| 50/50 | 0:15 - 0:35 | 0:05 - 0:15 | 0:10 - 0:20 | 0:05 - 0:10 |  |  |
| -3 to -14 | 100/0 | 0:20 - 1:20 | 0:20 - 0:40 | 0:20 - 0:457 | 0:10 - 0:257 | CAUTION: | |
| 75/25 | 0:25 - 0:50 | 0:15 - 0:35 | 0:15 - 0:307 | 0:10 - 0:207 | No holdover time | |
| -14 to -25  or LOUT5 | 100/0 | 0:15 - 0:405 | 0:15 - 0:305 |  | | guidelines exist | |

Notes:

1 Based on the lowest holdover times of the fluids listed under a) above.

2 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I when Type IV fluid cannot be used.

3 Use light freezing rain holdover times in conditions of light snow mixed with light rain.

4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.

5 No holdover guidelines exist for this condition for 0° C and below.

6 Heavy snow, ice pellets, moderate and heavy freezing rain, and hail.

7 These holdover times only apply to outside air temperatures to -10°C (14°F) under freezing drizzle and light freezing rain.

Procedures for application of De-/Anti-icing fluids:

Cautions:

- Wing skin temperatures may differ an din some cases may be lower than outside air temperatures; a stronger mix (more glycol) may be needed under these conditions.

- Whenever frost or ice occurs on the lower surface of the wing in the area of the fuel tank, indicating a cold soaked wing, the 50/50 dilutions of Type II, III or IV shall not be used for the anti-icing step because fluid freezing may occur.

- An insufficient amount of anti-icing fluid may cause a substantial loss of holdover time. This is particularly true when using a Type I fluid mixture for the first step in a two-step procedure.

Table 5 - SAE type I deicing fluid application procedures

|  |  |  |  |
| --- | --- | --- | --- |
| **OAT (°C)1** | **One-step procedure**  **De-icing/anti-icing** | **Two-step procedure** | |
| **1st step: de-icing** | **2nd step: anti-icing2** |
| -3 and above | Heated mix of fluid and water with a freezing point of at least 10°C below OAT | Heated water or a heated mix of fluid and water | Heated mix of fluid and water with a freezing point of at least 10°C below OAT |
| below -3 | Freezing point of heated fluid mixture shall not be more than 3°C above OAT |
| 1 Fluids must not be used at temperatures below their lowest operational use temperature (LOUT).  2 To be applied before first step fluid freezes, typically within 3 minutes. | | | |

Notes:

- Temperature of water or fluid/water mixtures shall be at least 60°C (140°F) at the nozzle. Upper temperature limit shall not exceed fluid and aircraft manufacturers’ recommendations.

- To use Type I holdover time guidelines, at least 1 litre/m² (~ 2 gal./100 sq. ft.) must be applied to the deiced surfaces.

- This table is applicable for the use of Type I Holdover Time Guidelines. If holdover times are not required, a temperature of 60°C (140°F) at the nozzle is desirable.

- The lowest operational use temperature (LOUT) for a given fluid is the higher of:

a) The lowest temperature at which the fluid meets the aerodynamic acceptance test for a given aircraft type; or

b) The actual freezing point of the fluid plus its freezing point buffer of 10°C (18°F).

Table 6 - SAE type II, III and IV anti-icing fluid application procedures

|  |  |  |  |
| --- | --- | --- | --- |
| **OAT (°C) 1** | **Concentration fluid/water by volume (fluid % / water %)** | | |
| **One-step procedure**  **De-icing/anti-icing** | **Two-step procedure** | |
| **1st step: de-icing** | **2nd step: anti-icing2** |
| -3 and above | 50/50  Heated3 type II/III/IV | Heated water or a heated mix of Type I, II, III or IV with water | 50/50  Type II/III/IV |
| -14 and above | 75/25  Heated3 type II/III/IV | Heated suitable mix of Type I, Type II/III/IV and water with FP not more than 3°C above actual OAT | 75/25  Type II/III/IV |
| -25 and above | 100/0  Heated3 type II/III/IV | 100/0  Type II/III/IV |
| Below -25 | Type II/III/IV fluid may be used below -25°C provided that the OAT is at or above the LOUT. Consider the use of Type I when Type II/III/IV fluid cannot be used (see Table 5). | | |
| 1 Fluids must not be used at temperatures below their lowest operational use temperature (LOUT).  2 To be applied before first step fluid freezes, typically within 3 minutes.  3 Clean aircraft may be anti-iced with unheated fluid. | | | |

Notes:

- For heated fluids, a fluid temperature not less than 60° C (140° F) at the nozzle is desirable. When the first step is performed using a fluid/water mix with a freezing point above OAT, the temperature at the nozzle shall be at least 60° C and at least 1 litre/m2 (2 gal./100 sq. ft.) shall be applied to the surfaces to be de-iced.

- Upper temperature limit shall not exceed fluid and aircraft manufacturers' recommendations.

- The lowest operational use temperature (LOUT) for a given fluid is the higher of:

a) The lowest temperature at which the fluid meets the aerodynamic acceptance test for a given aircraft type; or

b) The actual freezing point of the fluid plus its freezing point buffer of 7°C (13°F).

1. **PRECAUTIONS DURING USAGE**

The following precautions shall be taken during the de-icing process:

1. All engines must be off and propellers standing
2. Bleed Air Closed
3. Air Condition Off

The Pilot in command is responsible for the co-ordination of the de-icing/anti-icing process with the ground crew to ensure proper application of the fluid to the surfaces of the aircraft.

Take-off shall not commence unless the external surfaces are clear of any deposit which might adversely affect the performance and / or controllability of the aeroplane.

**The Commander has the final decision for the acceptance prior to departure.**

**LOG ENTRY**

An entry into the Technical Aircraft Log or the Journey Log (as applicable) has to be made; this entry shall contain the following information:

1. Type of Fluid used (or De-icing Code)
2. Time, when the de-icing process started (Holdover time)

## FLIGHT PROCEDURES

### VFR/IFR POLICY

Normally all route flights shall be operated under IFR; if the weather information indicates VMC enroute, the flight may also be conducted under VFR if passenger-comfort and economy can be increased.

All VFR flights shall:

1. Maintain communication with the appropriate ATS unit
2. At least Communication with one appropriate ground station from any point of the route must be assured
3. Communicate with appropriate traffic control facilities from any point within the lateral boundaries of the surface areas of Class B, C, D or Class E airspace designated for an airport in which flights are intended
4. Receive meteorological information from any point en route by either of two independent Systems (e.g. Comm or VOR)
5. Request essential traffic information, if available
6. Maintain a continuous look-out

**CHANGE OF FLIGHT RULES**

Special considerations shall be taken if the departure is VFR and an IFR clearance has to be obtained after take-off, as the flight has to maintain VMC until the respective clearance is received.

IFR may only be cancelled if operational reasons demand so and if the flight can be continued in VMC.

### NAVIGATION PROCEDURES

1. **STANDARD NAVIGATION PROCEDURES**

**GENERAL**

Navigation tasks shall always be performed with double-checks which means that the most suitable combination of independent navigation aids or equipment shall be used.

a) Every Mali Air flight has to be operated in accordance with national, international and company regulations, and has to remain within the designated airspace or authorized route width, as close as possible to the published centerline.

b) If the navigation becomes inaccurate due to defective or unreliable equipment on board, this has to be reported to ATC immediately to make full use of Radar assistance.

c) The aircraft must be equipped adequate to the route to be flown according to the Austrian ZLLV

**DEPARTURE**

Full use shall be made of all available navigation aids / equipment to comply with the specified cleared departure procedures.

Navigation equipment not required for departure shall be set to the primary approach and / or to the appropriate holding fix serving the aerodrome of departure.

**ENROUTE**

The flying pilot shall always inform the assisting pilot in due time about the setting / checking of navigation aids or equipment for the enroute navigation.

Changes of navigation aid / equipment setting shall only be made upon order or with consent of the flying Pilot.

**NAV-AIDS**

A navigation aid shall not be used for navigational purposes:

If it is reported to be "on maintenance", "unreliable", "flight/ground checked only" or "on test"

If the proper identification is not received

In all such cases the respective navigation aid may only serve as additional information.

**THE LANDING MINIMA ARE BASED ON THE UNRESTRICTED AVAILABILITY OF APPROACH AIDS**

**COVERAGE OF NAVIGATION AIDS**

a) The coverage of Enroute Navigation Facilities, such as NDB and VOR is depending on power output, location and mutual disturbances. These enroute navigation facilities are expected to provide reliable indication from at least half way between the navigation aids of the published route structure.

b) Locators, normally in TMA's only, provide proper guidance signals within 25 NM

c) The ILS coverage should be fully utilized for approach and departure procedures

**USE OF DME**

DME Information for position fixing or terrain clearance requirements may be made if:

DME is co-located with a VOR or ILS facility

The station is clearly identified (DME identification and VOR or ILS coding)

DME distances for an approach procedure are defined on the respective chart for position fixing.

**USE OF ILS**

SYSTEM CHARACTERISTICS

In principle two types of ILS ground installations are in use:

The omnidirectional or broad beam localizer (Cat I)

The directional or narrow beam localizer (Cat II)

The localizer provides course guidance throughout the descent path to the runway threshold from a distance of 18 NM from the antenna between an altitude of 1000 ft above the highest terrain along the course line and 4500 ft above the elevation of the antenna site.

Proper off-course indications are provided throughout the following angular areas of the operational service volume:

to 35° either side of the course along a radius of 17 NM from the antenna, and

to 10° either side of the course along a radius of 17 to 25 NM.

The distances may be reduced to 10 respectively 18 NM where topographical problems dictate.

The ILS beam is not guaranteed outside the above mentioned coverage sectors with the exception of the omnidirectional type of localizer which may provide signals for a back-beam approach.

SYSTEM LIMITATIONS

The ILS may suffer from false beams outside the coverage sectors due to radiation characteristics and / or reflections from terrain and / or obstacles. For that reason the ILS signals shall be considered unreliable outside these sectors, although a flag warning may not appear.

The ILS beams may be subject to fluctuations due to reflections from moving vehicles and aircraft in the vicinity of the transmitting antennas. Such fluctuations normally show up as localizer needle oscillations and are of short duration.

Though technical criteria are laid down as records the quality of the ILS radiation, certain variations in the beam pattern may be observed from one installation to the other and even on the same installation from time to time. Such discrepancies, even if within established tolerances, may adversely affect the aircraft system performance in the auto-coupled mode.

GROUND MONITORS

The ILS beams are automatically and continuously monitored to ensure radiation within prescribed tolerances.

ILS FRONT BEAM

Since the ILS coverage sector is limited, it is essential that navigation in a terminal area is carried out on available VOR, VOR / DME, NDB or by Radar vectoring until in a position where unambiguous ILS signals are received.

The Autopilot and / or Flight Director system should not be armed for ILS until such a position has been verified.

**NOISE ABATEMENT DEPARTURE PROCEDURE**

The procedures described below shall be flown whenever a need for noise abatement departure procedures (NADP) has been determined and specified by the aerodrome operator.

However, flight safety always has priority over noise abatement, and thus the Commander may decide to deviate from the below procedures if flight safety so dictates.

NADP 1 - noise sensitive areas in close proximity to the departure end of the runway:

- climb with V2 + 10 kt to not less than 800 ft AGL (a higher height may be required to meet obstacle clearance criteria)

- at this height, reduce to climb thrust

- maintain the flaps in the take-off configuration

- continue climb with V2 + 10 to 20 kt

- at 3000 ft AGL, while maintaining a positive rate of climb, accelerate to en-route climb speed and retract the flaps on schedule

NADP 2 - noise sensitive areas more distant from the runway end:

- climb with V2 + 10 to 20 kt to not less than 800 ft AGL (a higher height may be required to meet obstacle clearance criteria)

- at this height, accelerate to flap retraction speed (usually at least V2 + 20 kt)

- after flap retraction, reduce to climb thrust

- maintain a positive rate of climb and accelerate to flap retraction speed + 10 to 20 kt

- at 3000 ft AGL accelerate to en-route climb speed

1. **MNPS and POLAR NAVIGATION**

NOT APPLICABLE

1. **RNAV**

**1. RNP:** The required navigational performance (RNP) is defined as a statement of required navigation accuracy in the horizontal plane necessary for operation in a defined airspace. RNP types are identified by a value indicating the navigational accuracy in nautical miles. For example RNP 5 refers to a required navigation performance accuracy within 5.0 nm of the desired flight path at least 95% of the time flying.

**2. RNAV:** RNAV is the primary means of meeting RNP requirements. RNAV operations within the RNP concept permit flight in any airspace within prescribed accuracy tolerances without the need to fly directly over ground-based facilities. Basic RNAV (B-RNAV) is equal to RNP 5.

**3. Areas of operation:** The flight crew shall assure that RNP requirements for the route to be flown can be met. Unless notified by the department of Flight Operations for flight planning purposes, this may be assumed for the area covered by the on board navigation database, since regular updates of navigation databases is provided by Mali Air.

It is the responsibility of the Flight Operations Manager to ascertain that only current database versions are used for navigation (see MEL for exceptions). Outside the above areas RNP requirements will, in general, not be met.

**4. Flight procedures:**

- Whenever possible the flight plan shall be programmed into the GPS/FMS unit prior to departure. On the one hand this will minimise the workload during flight and thus increase the safety of operation and provide a high level of accuracy. On the other hand it will help achieve a maximum amount of flexibility whenever changes of the routing should occur during flight.

- During flight with the autopilot engaged, the PF will usually perform any necessary changes and notify the PNF of the changes made. The PNF will then verify and acknowledge the current settings.

- Whenever changing the active waypoint on the FMS care shall be take when the autopilot is operating in the NAV or APPR mode, since this may result in abrupt manoeuvres. Instead, the HDG mode may be used during changes of the active waypoint.

- Continuous monitoring of the RNAV equipment performance is necessary to maintain the accuracy required. This also comprises cross-checks using other equipment such as VOR/DME or NDB signals. In particular, common mistakes like insertion errors, unintentional de-coupling of the autopilot and continued usage of faulty equipment must be avoided by a continuous flow of information between crew members and frequent checks of the RNAV equipment.

- Whenever RNAV/GPS equipment is not used as primary navigational equipment it shall be used as an additional aid to monitor A/C navigation performance.

**5. Contingency procedures:** If, as a result of a failure of the RNAV system or degradation of it below the required accuracy, an aircraft is unable to either enter the designated airspace or continue operations in accordance with the current air traffic control clearance, the appropriate air traffic control unit shall be notified without delay and, whenever possible, a revised clearance shall be obtained.

When a verbal coordination process is being used, the phrase "NEGATIVE-RNAV" shall be included by the pilot immediately following the aircraft call sign, whenever initial contact on an ATC unit frequency is established.

1. **INFLIGHT REPLANNING**

If necessary, a flight may be re-planned in-flight to proceed along a route or to an aerodrome other than originally planned if the Company Flight plan is amended and the following provisions are met:

a) Requirements prescribed in accordance with 8.1.7, Usability of aerodromes, Weather minima and In-flight fuel-planning

b) Performance requirements

1. **PROCEDURE IN THE EVENT OF SYSTEM DEGRADATION**

In case of system degradation such as failure of Navigation equipment aboard the aircraft, failure of Ground stations, etc. the following steps shall be taken, depending on the remaining navigational capability:

Request Radar assistance

Divert to another suitable aerodrome (alternate) or continue VFR, if possible

Declare an Emergency

1. **RVSM**

Reduced Vertical Separation Minimum in the EUR RVSM Airspace permit the application of a 1000 ft vertical separation minimum between suitably equipped aircraft in the level band FL290-FL410 (inclusive). The purpose of RVSM is to increase airspace capacity and provide airspace users with more flight levels and thus optimized fight profiles.

APPROVAL FOR RVSM OPERATIONS

Only RVSM approved aircraft are permitted to operate within the EUR RVSM Airspace. The approval is issued to aircraft operators by the responsible authority once an operator has achieved the following:

* Each aircraft type has received airworthiness approval demonstrating compliance with the RVSM Minimum Aircraft System Performance Specification (MASPS).
* The state's approval of both the operations manual and the maintenance procedures specific to RVSM operations.

HEIGHT MONITORING PRINCIPLES

A comprehensive means of monitoring the height-keeping performance of aircraft in the EUR RVSM Airspace has been developed utilizing two types of monitoring equipment:

1. Height Monitoring Units (HMUs) - fixed ground based height monitoring facilities at Linz, Nattenheim & Geneva which monitor passing aircraft normally without action from aircraft operators;
2. GPS Monitoring Units (GMUs) - portable monitoring units carried on board aircraft to supplement HMUs & monitor aircraft which are not normally flying over HMUs RVSM compliant aircraft are required to participate in the monitoring programme which will commence in Spring 2000. In some cases, aircraft may request a re-routing so that they may be height monitored.

RVSM PROCEDURES IN TRANSITION AREAS

A number of FIR/UIRs in the EUR RVSM Airspace have been designated to handle the transition of aircraft from an RVSM to a non-RVSM environment and vice-versa. Within this ,,EUR RVSM Transition Airspace", special procedures will allow ATC to transition both RVSM and non-RVSM Civil aircraft. Flight crews may expect to change from Conventional Flight Levels to RVSM Flight Levels and vice-versa. ATC will continue to provide a 2,000 feet VSM between a non-RVSM approved aircraft and any other aircraft.

AIRCRAFT EQUIPMENT

The minimum equipment fulfilling the MASPS consists of:

1. Two independent altitude measurement systems each equipped with:

* cross-coupled static/source system with ice protection if located in areas subject to ice accretion
* display of the computed pressure altitude to the flight crew
* digital encoding of the displayed altitude
* signals referenced to a pilot selected altitude for automatic altitude control and alerting
* Static source error correction.

1. One SSR transponder with an attitude reporting system in use for altitude keeping.
2. An altitude alerting system.
3. An automatic altitude control system.

FLIGHT PLANNING

The flight crew shall pay particular attention to conditions that may affect operation in RVSM airspace:

* verifying that the aircraft is RVSM approved, i.e. compliant with the MEL
* analyzing the reported and forecast weather that may affect RVSM requirements (turbulence, icing ...)
* reviewing the manufacturer’s and the operator’s restrictions concerning RVSM operations
* ICAO FPL: the letter W shall be inserted in Field 10 if RVSM approved
* RPL: the letter W shall be inserted in Item EQPT/ if RVSM approved, regardless of the requested FL

PRE-FLIGHT PROCEDURES

Flight crews shall verify:   
the condition of the equipment required for RVSM operations and that maintenance actions have been taken to correct defects

* the condition of static sources
* the altimetry accuracy by setting the QNH or the QFE. The reading should then agree with the altitude of the apron   
  or the zero height indication within a 75 ft (23m) tolerance.

IN-FLIGHT FROCEDURES

* all the required equipment shall be monitored to ensure satisfactory operation before and within RVSM airspace
* when changing levels, the aircraft should not overshoot or undershoot the cleared flight level by more than 150ft(45m)
* the automatic altitude control system shall be engaged during level cruise by reference to one of the two altimeters.  
  If fitted, the altitude capture feature shall be used whenever possible for the level off.
* cross checks of the primary altimeters shall be made at intervals of approximately one hour. These primary altimeters shall agree within 200 ft (60 m)

Failure to meet that condition will require the altimetry system to be reported as defective and immediately notified to ATC. An initial check shall be recorded just before entering the EUR RVSM Airspace.

CONTINGENCY PROCEDURES ‘

the pilot shall notify ATC of any contingency (equipment failure, weather hazards such as severe turbulence etc...) which affect the ability to maintain the cleared level or the RVSM requirements (e.g. MEL)

* ATC may take appropriate tactical actions to ensure that safe separation is maintained, including reversion to a 2000ft separation minimum
* when notified by ATC of an assigned altitude deviation of more than 300 ft (90 m), the pilot shall take action to return to the cleared level as quickly as possible. If unable to notify ATC, the pilot shall follow established contingency procedures and obtain ATC clearance asap

|  |  |
| --- | --- |
| **CIRCUMSTANCE** | **PHRASOLOGY** |
| ATC wish to know RVSM status of flight | CONFIRM RVSM APPROVED |
| Pilot indication that flight is RVSM approved | AFFIRM RVSM |
| Pilot indication that flight is NON RVSM approved | NEGATIVE RVSM |
| ATC denial of clearance into RVSM Airspace | UNABLE CLEARANCE INTO RVSM AIRSPACE, MAINTAIN (or DESCEND TO, or CLIMB TO) FL |
| Pilot reporting severe turbulence /  weather affecting ability to maintain  RVSM height. keeping requirements | UNABLE RVSM DUE TURBULENCE |
| Pilot reporting equipment degraded below RVSM requirements | UNABLE RVSM DUE EQUIPMENT |
| ATC requesting pilot to report when  able to resume RVSM | REPORT ABLE TO RESUME RVSM |
| Pilot ready to resume RVSM after  equipment/weather contingency | READY TO RESUME RVSM |

### ALTIMETER SETTING PROCEDURES

**GENERAL**

The three types of altimeter settings used are:

|  |  |
| --- | --- |
| Altimeter setting | Altimeter indicates |
| 1013,25 hpa  or 29,92 in | Flight levels |
| QNH | Altitude above approximate sea level |
| QFE | Altitude above QFE reference level |

Each setting of the altimeter will result in an indication which provides a measure of the vertical distance with regard to the ICAO Standard Atmosphere, in accordance with the table above.

However, the term "altimeter indication" means the readout of the

instrument and is seldom the true vertical distance.

**PROCEDURES**

The Altimeters are set to the local QNH and compared with the elevation of the airport during the Before Start-up Check after the ATIS has been received and during descent when the aircraft passes the Transition level (or QFE when passing the transition height; however, both altimeters have to be set either to QNH or QFE). The setting is confirmed during the Cruise check as well as the Approach check and the Outer Marker Check during descent.

The altimeter setting is extremely important during approaches, especially when no other vertical information such as a Glidepath in connection with a distance from touchdown (e.g. Marker, Locator) is available.

In all cases the correct altimeter setting shall be double-checked before starting an approach, or before levelling off on a cruising level.

**RADAR ALTIMETER**

The radio altimeter is used to determine height with respect to the decision height (DH) as published for precision approaches, and for terrain proximity warning during climb, cruise, descent and approach.

The radio altimeter is sensitive to terrain and to compact structure, but will not respond to isolated obstacles (e.g. radio masts, single trees, etc.). Radio altimeters have been known to respond to nearby aeroplanes.

The radio altimeter must be set at the applicable decision height (RA) as published for precision approaches. For other approaches, the following specific procedures are applicable for backup:

Non-precision approach 300ft

### ALTITUDE ALERTING SYSTEMS PROCEDURES

**GENERAL**

The altitude alerting system warns the crew if a diversion from an altitude of more than 300 feet is suspected.

The system shall therefore always be set to the cleared altitude or flight level; during an approach it shall be set to the pattern altitude or other vital altitudes for the missed approach.

Additional to the system above the assisting pilot shall warn the crew when 1000 feet within or approaching a cleared altitude.

### GROUND PROXIMITY WARNING SYSTEM PROCEDURES

The GPWS provides visual and aural alerts in case of dangerous flight path conditions. Normally six different alert/warning envelopes are designed to provide the advisory signals and command messages.

The GPWS system must be "ON" from take-off until landing unless the system and it's installation in a particular aircraft, does not require any other procedure.

Detailed instructions of the relevant type may be found in the OM B.

As a general policy no GPWS warning signals/announcements shall be ignored, proper action shall be taken immediately! However, there may, for instance, be airports located in difficult terrain where one or more warning envelopes may be exceeded - resulting in constant warnings at a given approach position or then at take-off. For such airports, the GPWS must be included in the take-off and approach briefing. Only with the consent of the Manager Flight Operations and when published in the airport briefing data, the GPWS system may temporarily be deactivated or muted.

**RADAR ALTIMETER**

The Radar Altimeter may be used as ground warning system; The Radar Altimeter shall therefore be initially set to 2000 feet as a ground warning. After illumination of the "DH" light the pointer shall be set to the final Decision height.

### POLICY AND PROCEDURES FOR THE USE OF TCAS / ACAS

TCAS provides information about other traffic operating a transponder. It alerts the crew that other traffic is within a specific range and/or vertical distance, thus posing a potential threat.

Information is presented visually and by aural commands as

- Traffic Advisory (TA), and

- Resolution Advisory (RA).

In response to a TA, the crew shall visually search for other traffic and be prepared for a possible RA following the TA. Evasive manoeuvres based on a TA are not recommended, unless the Commander deems such action necessary in the interest of flight safety.

Should a RA occur the crew shall immediately adjust the airplane flight path to comply with the RA, unless the conflicting traffic can be identified visually and evasive action would be in conflict with flight safety.

Whenever an ATC clearance is in conflict with a RA, the RA takes precedence until the conflict has been resolved.

Any flight path modifications deviating from the assigned ATC clearance and all RAs shall be reported to ATC immediately. After flight, a PVR shall be filed detailing the circumstances and reasons for the deviation.

### POLICY AND PROCEDURES FOR IN-FLIGHT FUEL MANAGEMENT

Fuel checks shall be performed at the TOC and the TOD and regularly between these points during cruise flight and shall consist of a comparison between the planned values according to the OFP and the actual amount of fuel on board according to the fuel gauges and/or a calculation based on the fuel consumption since start-up.

At any time in flight the expected usable fuel remaining on arrival at the destination aerodrome shall not be less than:

- alternate fuel (if a destination alternate is required) plus

- final reserve fuel.

If during flight the expected usable fuel remaining on arrival at the destination aerodrome is less than

- the required alternate fuel plus final reserve fuel, the Commander must take into account the traffic and the operational conditions prevailing at the destination aerodrome, at the destination alternate aerodrome and at any other adequate aerodrome, in deciding whether to proceed to the destination aerodrome or to divert so as to perform a safe landing with not less than final reserve fuel, or

- the final reserve fuel, the commander must take appropriate action and proceed to an adequate aerodrome so as to perform a safe landing with not less than final reserve fuel.

An emergency shall be declared when calculated usable fuel on landing, at the nearest adequate aerodrome where a safe landing can be performed, is less than final reserve fuel.

Pre-determined point procedure:

To proceed to the destination aerodrome, the usable fuel at the PDP must be at least the sum of:

- trip fuel from the PDP to the destination aerodrome,

- contingency fuel from the PDP to the destination aerodrome, and

- additional fuel

In-flight replanning:

In case of in-flight replanning, the fuel remaining on board must be in accordance with 8.1.9 for the remainder of the lfight.

### ADVERSE AND POTENTIALLY HAZARDOUS ATMOSPHERIC CONDITIONS

**GENERAL**

Flights through areas with forecast or reported conditions of severe turbulence or thunderstorm areas shall be avoided whenever possible due to the hazards involved, such as gusts, up/down draughts, g-loads, structural damage, hail, lightning strikes etc.

Mutual information on development and position of thunderstorms by pilots and ATC as well as careful weather watch is of great importance for the early and adequate avoidance of such severe weather areas.

1. **THUNDERSTORMS**

Do not take off during heavy thunderstorm activity over the departure aerodrome. With TS in the vicinity of the aerodrome, request radar vectoring through thunderstorm free-areas and arrange the climbout to provide ample safety distance from active Cb-clouds.

Delay the approach or divert to an alternate aerodrome rather than attempt to penetrate a severe thunderstorm in a let-down area.

When flying in a thunderstorm area is anticipated or unavoidable the following preparations should be made:

Monitor airborne weather radar closely

Secure cabin

Switch the cockpit lighting to high intensity to avoid dazzling by lightning.

Reduce to turbulence penetration speed or to va according to AFM

Operate anti-icing equipment as required

1. **ICING CONDITIONS**

Flights into known or forecast light or moderate icing conditions may only be performed if the airplane has functioning de-icing / anti-icing equipment for each

1. Propeller/Engines
2. Windshield
3. Wing
4. Stabilizing or Control Surfaces
5. Airspeed, Altimeter, Rate of Climb, Flight Attitude Instrument System

Flights into known or forecast severe icing conditions are prohibited.

If current weather reports and briefing information indicate that forecast icing condition that would otherwise prohibit the flight will not be encountered during the flight because of the changed weather conditions since the forecast, the above restrictions do not apply

1. **TURBULENCE**

Whenever possible the following preparation shall be made:

Secure cabin (Fasten seat belts etc.)

Secure all loose items in the cockpit

Fly the recommended turbulence speed according to AFM

When penetrating turbulence the following rules shall be followed:

**DO NOT CHASE AIRSPEED**

**MAINTAIN CONSTANT ATTITUDE**

**DO NOT CHASE ALTITUDE**

**DO NOT CHANGE STABILIZER TRIM**

**A/P IN ATTITUDE-HOLD MODE**

1. **WINDSHEAR**

Windshear may be defined as a change in wind direction and/or speed relative to distance. It can be encountered either as horizontal or vertical windshear and need not necessarily be accompanied by turbulence.

No operationally usable techniques exist to measure windshears reliably, particularly along the glidepath in approach. Aircraft observations represent the main source of information.

There are several meteorological factors producing windshear:

Thunderstorms

Frontal shear

Lee wave, rotor shear

Temperature inversions

Ground effects

Turbulence and/or windshear can present a potential hazard during take-off and approach or landing. With strong shears, aircraft can experience a large fluctuation of airspeed and lift in a very short time. Pilots should be most cautious about possible windshear because such situation requires timely corrective action to avoid high sink rates near the ground.

Good monitoring of thrust, attitude, vertical speed and IAS as well as prompt action are the best insurance against the effects of windshear.

1. **JETSTREAM**

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 that can be experienced. It may be possible to avoid jetstreams by changing route and/or altitude.

1. **VOLCANIC ASH CLOUDS**

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

The NOTAM system now 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 indicate 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.

1. **HEAVY PRECIPITATION**

The ignition shall be turned on. If icing conditions exist, additionally the engine anti-ice shall be turned on. The resulting loss of power must be taken into account.

1. **SAND STORMS**

Avoid flying in active sandstorms whenever possible. When on the ground, aeroplanes should ideally be kept under cover if dust storms are forecast or in progress. Alternatively, all engine blanks and cockpit covers should be fitted, as well as the blanks and `gloves' for the various system and instrument intakes and probes. These should be carefully removed before flight to ensure that accumulations of dust are not deposited in the orifices which the covers are designed to protect.

1. **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 ex-tend to 10 or 20 000 feet above the range and for up to 200 or 300 miles downwind.

Encounter with mountain waves can be recognised by long-term variations in aeroplane speed and pitch attitude in level cruise. Variations may be large. Altitude can usually be maintained by the autopilot height-lock, but in severe cases, it may be necessary to change power if speed alters dangerously. Bear in mind that at cruise height the margin between low and high speed limits can be relatively small.   
  
The effect of mountain waves reduces with increased height. At normal cruise altitudes, mountain waves are usually free from clear-air turbulence, unless associated with jet-streams or thunderstorms.   
  
Near the ground in a mountain wave area, however, 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. Take-off or landing is not advisable in a strong lee-wave rotor, and should not be attempted. If severe turbulence is encountered at low level in the lee of a mountain range, the quickest way out is up. If unable to climb, the next best is directly away from the range.

1. **SIGNIFICANT TEMPERATURE INVERSIONS**

All ambient temperature variations have an effect on aeroplane performance. Inversions will usually adversely affect the performance. The significance of this will vary according to aeroplane type and operating mass. Examples of inversion effects include those shown below.

* Large temperature inversions encountered shortly after take-off can seriously degrade an aeroplane's climb performance, particularly at high operating mass. Similarly if the aeroplane 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 aeroplane can be significantly reduced if a temperature inversion of even small magnitude exists in the upper levels. This may prevent an aeroplane reaching its preferred cruising altitude. Should an aeroplane encounter an area of inversion once in the cruise at limiting altitude its buffet margins may be so eroded that a descent is necessary.
* Temperature inversions at lower levels in the atmosphere are frequently associated with deteriorating visibility and can prevent the clearance of fog for prolonged periods.

### WAKE TURBULENCE

**DEFINITION**

Wake turbulence consists of a pair of vortices trailing from the wingtips of an aircraft.

They are caused by the differential pressure between the top and bottom surfaces of the lift-producing wing. Vortices have a counter rotating flow; the direction is from under the wing, where the pressure is high around the wingtip to the top of the wing where the pressure is low.

The vortices descend up to 900 ft below the altitude of the generating aircraft and settle at that altitude. If generated near the ground they descend to 100 - 200 ft above the ground and spread out at a speed of approximately 5 kt in calm air.

A slight crosswind may keep the windward vortex on the runway for more than 2 minutes. The intensity of the vortices increases with the weight of the generating aircraft, the wing loading and the configuration.

Especially strong wake turbulence must be expected from all departing and landing large jet aircraft.

**EFFECTS ON AIRCRAFT**

The effect on the following aircraft depends on the distance to the generating aircraft and their relative wingspan. The most violent wake turbulence is encountered about 3 miles behind the heavy aircraft.

Turbulence might also be expected where 2 parallel runways less than 2500 ft apart are being used. The turbulence risk is greatly increased if the following aircraft is approaching the downwind runway in crosswind conditions.

**OPERATIONAL CONSIDERATIONS**

The three basic effects of wake turbulence on a following aircraft are imposed 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 final approach area, its impact is increased as the following aircraft is in a critical state with regard to speed, thrust, altitude and reaction time. However, if in doubt a go-around shall be executed.

Whenever possible a minimum separation during Take-off of at least 3 minutes shall be maintained, except if it is definitely possible to avoid the wake vorticies of the preceding aircraft (steep climb, strong crosswind, etc.)

### CREW MEMBERS AT THEIR STATIONS

**GENERAL**

During take-off and landing and whenever deemed necessary all crew members must be at their stations with seat belts and shoulder harness fastened.

During the cruise portion of the flight with two pilots one crew member at a time may leave his/her station if necessary.

**USE OF HEADSET**

Each flight crew member when at his/her station shall wear the required headset and use it as the primary device to listen to the voice communications with air traffic services

- on ground:

- when receiving the ATC departure clearance via voice communication,

- whenever the engines are running,

- in flight

- below transition altitude or 10.000 ft, whichever is higher,

- and whenever deemed necessary by the Commander

**CONTROLLED REST ON FLIGHT DECK:**

Upon discretion of the Commander, one active crew member at a time may take controlled rest under the following provisions:

- Controlled rest is only permitted in cruise until 30 minutes prior to reaching the TOD.

- The maximum duration of a period of controlled rest is 45 minutes to avoid sleep inertia.

- The other crew member must be aware of controlled rest and shall keep alert by using bright cockpit illumination and other means such as intellectual and/or physical activities.

- During controlled rest no activities requiring actions or cross checks by the resting crew member are allowed. In case of any irregularities or necessary actions, the resting crew member shall be woken up immediately.

- After controlled rest the resting crew member must be briefed on the status of the flight and any occurrences during the resting period.

- A minimum period of 20 minutes shall be allowed between rest periods of different crew members to overcome the effects of sleep inertia and to allow for adequate briefing.

**SEATING POSITIONS**

The Pilot-in-command (according to Part 1.2.) shall always sit in the left hand seat except for the purpose of Co-Pilot upgrading when he occupies the right hand seat and acts as supervising Pilot for the upgrading Co-Pilot, who is seated in the left hand seat.

During take-off and landing each crew member shall be seated on the respective duty station; during the cruise portion of the flight with two pilots one crew member at a time may leave his station if necessary.

**THE PIC ALWAYS REMAINS IN COMMAND**

By being ready at the controls he will, in case of an emergency be in a position to instantly take necessary actions.

**CAPTAIN IN CO-PILOT'S SEAT**

If the crew consists of 2 PIC-qualified pilots, the pilot in the left seat acts generally as the PIC the other acts generally as Copilot.

See Chapter 4 and Part D for additional requirements for supervision personnel and training to operate in either pilot's seat.

### USE OF SAFETY BELTS FOR CREW AND PASSENGERS

**CREW**

The occupant of the flying pilot's seat shall always have the seat belts fastened. The shoulder-harness shall be worn during take-off and landing unless the occupant cannot perform any duties required with the shoulder harness fastened.

All other crew members must be seated with the seat belt fastened:

during take-off

during flying in turbulent air

during landing

**PASSENGERS**

The passengers must be seated with the seat belts fastened during take-off and landing and whenever deemed necessary by the PIC. It is however recommended that the passengers remain seated with their seat belts fastened throughout the duration of the flight.

If the seat is equipped with a shoulder harness or a combined safety belt and a harness, it must be fastened during take-off and landing.

At each unoccupied seat, the safety belt and the shoulder harness, if installed, must be secured to avoid any interference with the crewmember’s performance of their duties or with the rapid egress of occupants in an emergency.

### ADMISSION TO FLIGHT DECK

Any person standing in the doorway or engaging into conversation with the cockpit crew is considered to be on the flight deck. The final decision regarding the admission to the flight deck shall be the responsibility of the commander. Pilots are advised not to succumb to pressures of influential passengers who want their offspring or cronies in one of the pilot's seats. This is a critical safety matter and not open to discussion.

Personnel listed below is automatically admitted to the flight deck:

* Operating crew members
* Representatives of the authority responsible for certification, licensing or inspection if this is required for the performance of their official duty.

The commander may admit any passenger to the flight deck provided:

* The flight is neither in climb nor descent nor any other phase of increased cockpit workload;
* Weather conditions are such that the "Fasten Seatbelts" sign is off; and
* The presence of the additional personal does not cause any interference with flight operation or distraction of the cockpit crew.

### USE OF VACANT CREW SEATS

**GENERAL**

Vacant Crew Seats may only be occupied by Passengers if all of the following Conditions are met:

1. A Co-pilot is not required by OM 4.1. (Minimum Crew)
2. The Captain does not require a Co-pilot
3. The Captain is authorized by the Flight Operations Manager for Single Pilot Operations
4. The Passenger has received a Special Briefing on what to do (such as not to touch anything, operation of the door(s), etc.)

### INCAPACITATION OF CREW MEMBERS

**GENERAL**

Medical examinations ensure that crew members are physically and mentally able to do their job. From experience, however, we learn that incapacitation for cockpit crew members is not an uncommon cause of incidents and can occur in all age groups and all phases of flight. Since incapacitation may be either obvious or subtle, the most important preventive measure is to maintain a high standard of ALERTNESS. Routine adherence to standard operating procedures and cockpit discipline is stressed because a procedural deviation might provide the first indication for arising problems.

A good means for detection is to follow the TWO WAY COMMUNICATION RULE, i.e. any time a cockpit crew member does not respond appropriately to two verbal communications, or, any time a cockpit crew member does not respond to any verbal communication associated with a significant deviation from the intended flight path, an incapacitation must be suspected.

**TYPES OF INCAPACITATION**

**SUBTLE INCAPACITATION**

Subtle incapacitation is considered a more significant operational hazard, because it is difficult to detect and the effects can range from partial loss of function to complete unconsciousness. Among the possible causes might be minor brain seizures, hypoglycaemia (low blood sugar), other various medical disorders or preoccupation with personal problems. Because a cockpit crew member may not be aware or capable of rationally evaluating his situation, this type of incapacitation is the more dangerous one.

**OBVIOUS INCAPACITATION**

Obvious incapacitation means total functional failure and loss of capabilities. It will generally be easily detectable and of prolonged occurrence. Among the possible cause are heart disorders, severe brain disorders, severe internal bleeding, etc.

**ACTIONS TO BE TAKEN BY THE REMAINING PILOT**

The remaining pilot should take the following actions:

Take over controls; engage the autopilot

Assure a safe condition of flight

Inform ATC

Take care of the incapacitated flight crew member; depending on the circumstances the help of passengers will be required.

Try to provide first aid

Arrange a landing as soon as possible after consideration of all pertinent factors

Prepare the cockpit for landing, do not perform a hasty approach

**INFORMATION OF HOME BASE**

The Flight Operations Manager must be kept informed at all times regarding the above circumstances.

### CABIN SAFETY REQUIREMENTS

1. **CABIN PREPARATION FOR FLIGHT**

Before take-off:

Every effort shall be made to avoid any situations which could endanger the safe conduct of the flight. Therefore the following rules shall be adhered to:

Hand baggage, meal trays as well as any other small, sharp or edged objects which may hurt any person shall be securely stowed during take-off and landing or whenever turbulence is suspected.

The writing tables, if installed, shall only be used unless in level flight and when no turbulence is expected

Before takeoff the Co-pilot or any other crew member shall check that the aircraft's door(s) are closed and latched and that all passengers are seated with the seat belts fastened and report "Cabin secure" to the Commander.

**The Captain / Copilot must ensure before departure that all handbaggage is securely stowed and does not block an emergency exit.**

Cruise:

Observe that the no smoking and fasten seat belt signs are observed or such orders of the Commander are followed. If turbulence is expected ensure that all baggage is stowed, all seat belts fastened, drinks are stowed and all passengers refrain from smoking.

Before landing:

Before landing it shall be assured that all passengers have their seatbelts fastened and remain seated with their seat belts fastened until the engines have been shut down. Recheck the same items as before take-off.

1. **PASSENGER SEATING**

Ensure that only passengers able to open doors or emergency exits are seated in the respective seats. Passengers shall be seated as is necessary to load the aircraft within the mass and balance limits.

1. **PASSENGER EMBARKATION / DISEMBARKATION**

Passengers shall be embarked and disembarked under the supervision of the crew.

1. **REFUELLING WITH PASSENGERS EMBARKING, ON BOARD OR DISEMBARKING**

See 8.2.1.b.

1. **SMOKING ON BOARD**

Smoking on board is permitted only when the "No Smoking" sign is not illuminated. The commander shall illuminate the "No Smoking" sign:

* Whenever he deems it necessary in the interest of safety;
* While the airplane is on the ground, and
* When oxygen is being used.

He shall ensure that passengers are instructed not to smoke in lavatories, in the aisle or in any cargo or baggage compartment.

On aircraft equipped for ambulance duty smoking is prohibited.

### PASSENGER BRIEFING PROCEDURES

Passengers shall be verbally briefed about safety matters and shall receive a safety briefing card. As far as is appropriate safety measures such as use of seatbelts, oxygen and life vests shall also be demonstrated.

Passenger briefing must be completed before take-off and must contain:

* smoking regulations
* back of the seat to be in the upright position and tables stowed
* location of emergency exits
* stowage of hand baggage
* restrictions on the use of portable electronic devices (i.e. All such devices have to be disabled during take-off and landing, their use during the cruise portion of a flight requires approval by the commander)
* use of seat belts
* use of passenger door
* use of oxygen; briefing is compulsory before flights above fl 130.
* use of lifejackets
* if a flight includes overwater operations, passengers shall be briefed on the use of lifejackets. If the aircraft proceeds directly over water after take-off, this briefing must be conducted before take-off.
* location of first aid kits
* location and contents of safety briefing cards

After take-off passengers shall be reminded of the smoking regulations and the use of safety belts.

Before landing a briefing on smoking regulations, use of seat belts, back of the seat to be in the upright position and tables stowed, stowage of hand baggage and restrictions on the use of portable electronic devices shall be performed.

After landing remind passengers of smoking regulations and the use of seat belts.

In case of an emergency passengers shall be instructed in such emergency action as is appropriate to the circumstances.

In case of single-pilot operations under VFR all briefings after take-off can be omitted if they would mean distraction of the sole pilot from his flying duties. If such flights are operated below FL100 briefing on the use of oxygen is also not required.

**Portable electronic devices**

Passengers shall be briefed that the use of any portable electronic devices is prohibited during takeoff, approach and   
landing. Portable computers and video cameras may be used in the cruise phase provided the cockpit crew is informed about their use and can establish that there is no interference with onboard navigation and communication equipment. Portable phones or other communication devices must be not used throughout the flight.

Medical equipment carried has been checked for safety with regard to interference with navigation and control equipment. However, if it becomes necessary to use a defibrillator in flight the cockpit crew shall be notified and take precautions as follows:

* If the aeroplane has a dual bus system remove power from one of the buses deactivating all systems on one side of the aircraft;
* If this is not possible remove power from all redundant navigation and control equipment;
* Deactivate the autopilot and fly by hand.

### PROCEDURES WHEN COSMIC OR SOLAR RADIATION DETECTION EQUIPMENT IS CARRIED

**NOT APPLICABLE**

### POLICY ON THE USE OF THE AUTOPILOT

In order to reduce the workload for the flight crew, use of the autopilot is recommended whenever possible. For operational limitations see Part B.

When neither passengers nor cargo is being carried, the PF may decide not to engage the autopilot for portions of the flight to practise his skills in flying by hand.

# DANGEROUS GOODS

## INFORMATION, INSTRUCTIONS AND GENERAL GUIDANCE ON THE TRANSPORT OF DANGEROUS GOODS

### Policy

Dangerous goods can be transported safely by air transport provided according to ICAO 9284 and IATA Dangerous Goods Regulations. These principles and procedures include:

- Correct classification of the dangerous goods

- Ensuring that prohibited items are not shipped by air, unless exempted

- Use of packaging that meets the prescribed specifications, and ensuring quantity per package limitations are observed

- All relevant staff receive regular job specific training

- Correct declaration of the dangerous goods

- The Commander is advised of the location of the dangerous goods aboard the aeroplane

**RESTRICTIONS:**

Mali air may only transport dangerous goods of UN numbers 2915 (Radioactive material, Type A package) and 2908 (Radioactive material, excepted package - empty packaging) according IATA Section 10 – Radioactive Material.

The Commander has the right to refuse carriage of such cargo.

The Dangerous Goods Manager is responsible for the compliance to ensure with OM-A Chapter 9. The Flight Operations Manager and Flight Operations Manager Deputy acts as deputy of the Dangerous Goods Manager.

### Guidance on the requirements for acceptance, labelling, handling, stowage and segregation of dangerous goods

**DEFINITIONS:**

*Acceptance Check List:* A document used to assist in carrying out a check on the external appearance of packages of dangerous goods and their associated documents to determine that all appropriate requirements have been met.

*Cargo Aircraft:* Any aircraft which is carrying goods or property but not passengers. In this context the following are not considered to be passengers:

(i) A crew member;

(ii) An operator's employee permitted by, and carried in accordance with, the instructions contained in the Operations Manual;

(iii) An authorised representative of an Authority; or

(iv) A person with duties in respect of a particular shipment on board.

*Approval*: The State of Origin and the State of the Operator may grant an approval to permit the transport of dangerous goods.

*Dangerous Goods Accident:* An occurrence associated with and related to the transport of dangerous goods which results in fatal or serious injury to a person or major property damage.

*Dangerous Goods Incident:* An occurrence, other than a dangerous goods accident, associated with and related to the transport of dangerous goods, not necessarily occurring on board an aircraft, which results in injury to a person, property damage, fire, breakage, spillage, leakage of fluid or radiation or other evidence that the integrity of the packaging has not been maintained. Any occurrence relating to the transport of dangerous goods which seriously jeopardises the aircraft or its occupants is also deemed to constitute a dangerous goods incident.

*Dangerous Goods Transport Document:* A document which is specified by the Technical Instructions. It is completed by the person who offers dangerous goods for air transport and contains information about those dangerous goods. The document bears a signed declaration indicating that the dangerous goods are fully and accurately described by their proper shipping names and UN numbers (if assigned) and that they are correctly classified, packed, marked, labelled and in a proper condition for transport.

*Exemption*: In instances of extreme urgency or when other forms of transport are inappropriate or full compliance with the prescribed requirements is contrary to the public interest, the States concerned may grant exemption from the provisions of the Regulations provided that in such instances an over-all level of safety in transport which is at least equivalent to the level of safety provided for in these Regulations is achieved.

*Freight Container:* A freight container is an article of transport equipment for radioactive materials, designed to facilitate the transport of such materials, either packaged or unpackaged, by one or more modes of transport. (Note: see Unit Load Device where the dangerous goods are not radioactive materials).

*Handling Agent:* An agency which performs on behalf of the operator some or all of the latter's functions including receiving, loading, unloading, transferring or other processing of passengers or cargo.

*Overpack:* An enclosure used by a single shipper to contain one or more packages and to form one handling unit for convenience of handling and stowage. (Note: a unit load device is not included in this definition.)

*Package:* The complete product of the packing operation consisting of the packaging and its contents prepared for transport.

*Packaging:* Receptacles and any other components or materials necessary for the receptacle to perform its containment function and to ensure compliance with the packing requirements.

*Proper Shipping Name:* The name to be used to describe a particular article or substance in all shipping documents and notifications and, where appropriate, on packaging.

*Serious Injury:* An injury which is sustained by a person in an accident and which:

(i) Requires hospitalisation for more than 48 hours, commencing within seven days from the date the injury was received; or

(ii) Results in a fracture of any bone (except simple fractures of fingers, toes or nose); or

(iii) Involves lacerations which cause severe haemorrhage, nerve, muscle or tendon damage; or

(iv) Involves injury to any internal organ; or

(v) Involves second or third degree burns, or any burns affecting more than 5% of the body surface; or

(vi) Involves verified exposure to infectious substances or injurious radiation.

*State of Origin:* State or country from which a product originates.

*Technical Instructions:* The latest effective edition of the Technical Instructions for the Safe Transport of Dangerous Goods by Air (Doc 9284-AN/905), including the Supplement and any Addendum, approved and published by decision of the Council of the International Civil Aviation Organization.

*UN Number:* The four-digit number assigned by the United Nations Committee of Experts on the Transport of Dangerous Goods to identify a substance or a particular group of substances.

*Unit Load Device:* Any type of aircraft container, aircraft pallet with a net, or aircraft pallet with a net over an igloo. (Note: an overpack is not included in this definition; for a container containing radioactive materials see the definition for freight container.)

#### DANGEROUS GOODS:

Dangerous goods are articles or substances which are capable of posing a risk to health, safety, property or the environment and which are shown in the list of dangerous goods in the Technical Instructions or which are classified according to these Regulations.

Note that most dangerous goods can be found in the Dangerous Goods List (Technical Instructions Part 3). Goods not listed there may still be dangerous goods depending on their physical or chemical properties. Such goods must be properly classified by the shipper prior to shipping and shall be refused from loading by the commander. Only dangerous goods of UN numbers 2915 (Radioactive material, Type A package) and 2908 (Radioactive material, excepted package - empty packaging) may be accepted.

The mandatory security check will ensure that no Dangerous Goods will get on board.

#### Hidden Dangerous Goods:

Cargo declared under a general description may contain hazardous articles that are not apparent. Such articles may also be found in baggage. With the aim of preventing undeclared dangerous goods from being loaded on an aircraft and passengers from taking on board those dangerous goods, which they are not permitted to have in their baggage, cargo and passenger acceptance staff should seek confirmation from shippers and passengers about the contents of any item of cargo or baggage where there are suspicions that it may contain dangerous goods. If dangerous good can be confirmed after investigation by the commander such cargo must not be loaded on the aircraft.g Typical examples of such goods are:

**Aircraft On Ground (AOG) Spares** — see Aircraft Spare Parts/Aircraft Equipment.

**Aircraft Spare Parts/Aircraft Equipment** — may contain explosives (flares or other pyrotechnics), chemical oxygen generators, unserviceable tyre assemblies, cylinders of compressed gas (oxygen, carbon dioxide, nitrogen or fire extinguishers), paint, adhesives, aerosols, life-saving appliances, first aid kits, fuel in equipment, wet or lithium batteries, matches, etc.

**Automobiles, Automobile Parts** — (car, motor, motorcycle) may contain ferro-magnetic material which may not meet the definition for magnetized material but which may be subject to special stowage requirements due to the possibility of affecting aircraft instruments. May also contain engines, carburettors or fuel tanks which contain or have contained fuel, wet batteries, compressed gases in tyre inflation devices, fire extinguishers, shocks/struts with nitrogen, air bag inflators/air bag modules, etc.**Breathing Apparatus** — may indicate cylinders of compressed air or oxygen, chemical oxygen generators or refrigerated liquefied oxygen.

**Camping Equipment** — may contain flammable gases (butane, propane, etc.), flammable liquids (kerosene, gasoline, etc.), flammable solids (hexamine, matches, etc.) or other dangerous goods.

**Cars, Car Parts** — see Automobiles, etc.

**Chemicals** — may contain items meeting any of the criteria for dangerous goods, particularly flammable liquids, flammable solids, oxidizers, organic peroxides, toxic or corrosive substances.

**Comat (Company Materials)** — such as aircraft parts, may contain dangerous goods as an integral part, e.g. chemical oxygen generators in a passenger service unit (PSU), various compressed gases such as oxygen, carbon dioxide and nitrogen, gas lighters, aerosols, fire extinguishers, flammable liquids such as fuels, paints and adhesives, and corrosive material such as batteries. Other items such as flares, first aid kits, life-saving appliances, matches, magnetized material, etc.

**Consolidated Consignments (Groupages)** — may contain any of the defined classes of dangerous goods.

**Cryogenic (Liquid)** — indicates refrigerated liquefied gases such as argon, helium, neon and nitrogen.

**Cylinders** — may indicate compressed or liquefied gas.

**Dental Apparatus** — may contain flammable resins or solvents, compressed or liquefied gas, mercury and radioactive material.

**Diagnostic Specimens** — may contain infectious substances.

**Diving Equipment** — may contain cylinders (such as scuba tanks, vest bottles, etc.) of compressed gas (air, oxygen, etc), high intensity diving lamps which can generate extremely high heat when operated in air. In order to be carried safely, the bulb or battery must be disconnected.

**Drilling And Mining Equipment** — may contain explosive(s) and/or other dangerous goods.

**Dry Shipper (Vapour Shipper)** — may contain free liquid nitrogen. Dry shippers are subject to these Regulations when they permit the release of any free liquid nitrogen irrespective of the orientation of the packaging.

**Electrical Equipment** — may contain magnetized materials or mercury in switch gear and electron tubes or wet batteries.

**Electrically Powered Apparatus** — (wheel chairs, lawn mowers, golf carts, etc.) may contain wet batteries.

**Expeditionary Equipment** — may contain explosives (flares), flammable liquids (gasoline), flammable gas (propane, camping gas) or other dangerous goods.

**Film Crew Or Media Equipment** — may contain explosive pyrotechnic devices, generators incorporating internal combustion engines, wet batteries, fuel, heat producing items, etc.

**Frozen Embryos** — may contain refrigerated liquefied gas or Carbon dioxide, solid (dry ice).

**Frozen Fruit, Vegetables, etc.** — may be packed in Carbon dioxide, solid (dry ice).

**Fuels** — may contain flammable liquids, flammable solids or flammable gases.

**Fuel Control Units** — may contain flammable liquids.

**Hot Air Balloon** — may contain cylinders with flammable gas, fire extinguishers, engines internal combustion, batteries, etc.

**Household Goods** — may contain items meeting any of the criteria for dangerous goods including flammable liquids such as solvent based paint, adhesives, polishes, aerosols (those not permitted for passengers), bleach, corrosive oven or drain cleaners, ammunition, matches, etc.

**Instruments** — may conceal barometers, manometers, mercury switches, rectifier tubes, thermometers, etc. containing mercury.

**Laboratory/Testing Equipment** — may contain items meeting any of the criteria for dangerous goods, particularly flammable liquids, flammable solids, oxidizers, organic peroxides, toxic or corrosive substances.

**Machinery Parts** — may contain adhesives, paints, sealants, solvents, wet and lithium batteries, mercury, cylinders of compressed or liquefied gas, etc.

**Magnets And Other Items Of Similar Material** — may individually or cumulatively meet the definition of magnetized material.

**Medical Supplies** — may contain items meeting any of the criteria for dangerous goods, particularly flammable liquids, flammable solids, oxidizers, organic peroxides, toxic or corrosive substances.

**Metal Construction Material, Metal Fencing, Metal Piping** — may contain ferro-magnetic material, which may be subject to special stowage requirements due to the possibility of affecting aircraft instruments.

**Parts Of Automobile (Car, Motor, Motorcycle)** — may contain wet batteries, etc.

**Passengers Baggage** — may contain items meeting any of the criteria for dangerous goods. Examples include fireworks, flammable household liquids, corrosive oven or drain cleaners, flammable gas or liquid lighter refills or camping stove cylinders, matches, ammunition, bleach, aerosols (those not permitted for passengers), etc.

**Pharmaceuticals** — may contain items meeting any of the criteria for dangerous goods, particularly radioactive material, flammable liquids, flammable solids, oxidizers, organic peroxides, toxic or corrosive substances.

**Photographic Supplies** — may contain items meeting any of the criteria for dangerous goods, particularly heat producing devices, flammable liquids, flammable solids, oxidizers, organic peroxides, toxic or corrosive substances.

**Promotional Material** — see Passenger Baggage.

**Racing Car Or Motorcycle Team Equipment** — may contain engines, carburettors or fuel tanks which contain fuel or residual fuel, flammable aerosols, cylinders of compressed gases, nitromethane, other fuel additives or wet batteries, etc.

**Refrigerators** — may contain liquefied gases or an ammonia solution.

**Repair Kits** — may contain organic peroxides and flammable adhesives, solvent based paints, resins, etc.

**Samples For Testing** — may contain items meeting any of the criteria for dangerous goods, particularly infectious substances, flammable liquids, flammable solids, oxidizers, organic peroxides, toxic or corrosive substances.

**Semen** — may be packed with Carbon dioxide, solid (dry ice) or refrigerated liquefied gas. See also Dry Shipper.

**Ships' Spares** — may contain explosives (flares), cylinders of compressed gas (life rafts), paint, lithium batteries (emergency locator transmitters), etc.

**Show, Motion Picture, Stage And Special Effects Equipment** — may contain flammable substances, explosives or other dangerous goods.

**Swimming Pool Chemicals** — may contain oxidizing or corrosive substances.

**Switches In Electrical Equipment Or Instruments** — may contain mercury.

**Tool Boxes** — may contain explosives (power rivets), compressed gases or aerosols, flammable gases (butane cylinders or torches), flammable adhesives or paints, corrosive liquids, etc.

**Torches** — micro torches and utility lighters may contain flammable gas and be equipped with an electronic starter. Larger torches may consist of a torch head (often with a self-igniting switch) attached to a container or cylinder of flammable gas.

**Unaccompanied Passengers Baggage/ Personal Effects** — may contain items meeting any of the criteria for dangerous goods, such as fireworks, flammable household liquids, corrosive oven or drain cleaners, flammable gas or liquid lighter refills or camping stove cylinders, matches, bleach, aerosols, etc.

**Vaccines** — may be packed in Carbon dioxide, solid (dry ice).

The mandatory security check will ensure that no hidden Dangerous Goods will get on board.

#### Exceptions for Dangerous Goods:

Articles and substances which would otherwise be classed as dangerous goods are excluded from the requirements for dangerous goods, to the extent specified in the Technical Instructions, provided:

- They are required to be aboard the aeroplane in accordance with the relevant JARs or for operating reasons, i.e. they are required for

- The airworthiness of the aeroplane;

- The safe operation of the aeroplane; or

- The health of passengers or crew.

Such dangerous goods include but are not limited to:

- Batteries;

- Fire extinguishers;

- First-aid kits;

- Insecticides/Air fresheners;

- Life saving appliances; and

- Portable oxygen supplies.

Articles and substances intended as replacements for those above shall be transported on an aeroplane as specified in the Technical Instructions.

- They are carried as catering or cabin service supplies;

- They are carried for use in flight as veterinary aid or as a humane killer for an animal. These goods may also be carried on a flight made by the same aeroplane or preceding the flight on which the animal is carried and/or on a flight made by the same aeroplane after that animal has been carried when it is impracticable to load or unload the goods at the time of the flight on which the animal is carried.

- They are carried for use in flight for medical aid for a patient, provided that:

(i) Gas cylinders have been manufactured specifically for the purpose of containing and transporting that particular gas;

(ii) Drugs, medicines and other medical matter are under the control of trained personnel during the time when they are in use in the aeroplane;

(iii) Equipment containing wet cell batteries is kept and, when necessary secured, in an upright position to prevent spillage of the electrolyte; and

(iv) 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.

Gas cylinders, drugs, medicines, other medical material (such as sterilising 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 aeroplane. These dangerous goods may also be carried on a flight made by the same aeroplane 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.

Dangerous Goods Carried by Passengers or Crew:

The Technical Instructions exclude some dangerous goods from the requirements normally applicable to them when they are carried by passengers or crew members, subject to certain conditions.

The goods concerned and the requirements are tabulated below.

Veterinary aid shall be carried under the authority of the commander.

The operating crew has to ask the passengers about possible dangerous goods carried in baggage additionally to the mandatory security check.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Permitted in or as carry-on baggage | | | | | |
|  | Permitted in or as checked baggage | | | | |
|  |  | Permitted on one's person | | | |
|  |  |  | The approval of the operator is required | | |
|  |  |  |  | The Commander must be in formed of the location | |
| NO | NO | NO | n/a | n/a | **Disabling devices** such as mace, pepper spray, etc. containing an irritant or incapacitating substance are prohibited on the person, in checked and carry-on baggage. |
| NO | NO | NO | n/a | n/a | **Electro shock weapons** (e.g. Tasers) containing dangerous goods such as explosives, compressed gases, lithium batteries, etc. are forbidden in carry-on baggage or checked baggage or on the person. |
| NO | NO | NO | n/a | n/a | **Security-type attaché cases, cash boxes, cash bags,** etc. incorporating dangerous goods, such as lithium batteries and/or pyrotechnic material, except if the equipment complies with the following:  - the equipment must be equipped with an effective means of preventing accidental activation;  - if the equipment contains an explosive or pyrotechnic substance or an explosive article, this article or substance must be excluded from Class 1 by the appropriate national authority of the State of Manufacture;  - if the equipment contains lithium cells or batteries, these cells or batteries must comply with the following restrictions:  a) for a lithium metal cell, the lithium content is not more than 1 g;  b) for a lithium metal or [lithium alloy] battery, the aggregate lithium content is not more  than 2 g;  c) for lithium ion cells, the Watt-hour rating is not more than 20 Wh;  d) for lithium ion batteries, the Watt-hour rating is not more than 100 Wh;  e) each cell or battery is of the type proven to meet the UN test requirements;  - if the equipment contains gases to expel dye or ink, only gas cartridges and receptacles, small, containing gas with a capacity not exceeding 50 mL, containing no constituents subject to these Instructions other than a Division 2.2 gas, are allowed. The release of gas must not cause extreme annoyance or discomfort to crew members so as to prevent the correct performance of assigned duties. In case of accidental activation, all hazardous effects must be confined within the equipment and must not produce extreme noise.  - security type equipment that is defective or that has been damaged is forbidden for transport. |
| NO | YES | NO | YES | NO | **Ammunition (cartridges for weapons), securely packaged** (in Division 1.4S, UN0012 or UN014 only), in quantities not exceeding 5 kg (11 lb) gross weight per person for that person's own use, excluding ammunition with explosive or incendiary projectiles. Allowances for more than one passenger must not be combined into one or more packages. |
| NO | YES | NO | YES | NO | **Camping stoves and fuel containers that have contained a flammable liquid fuel,** with empty fuel tank and/or fuel container. To nullify the danger, the empty fuel tank and/or container must be allowed to drain for at least 1 hour, the fuel tank and/or container must then be left uncapped for a minimum of 6 hours to allow any residual fuel to evaporate. Alternative methods, such as adding cooking oil to the fuel tank and/or container to elevate the flash point of any residual liquid above the flash point of flammable liquid and then emptying the fuel tank and/or container, are equally acceptable. The fuel tank, and/or container must then have the cap securely fastened and be wrapped in an absorbent material such as paper towel and placed in a polyethylene or equivalent bag. The top of the bag must then be sealed or gathered and closed with an elastic band or twine. |

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| Permitted in or as carry-on baggage | | | | | |
|  | Permitted in or as checked baggage | | | | |
|  |  | Permitted on one's person | | | |
|  |  |  | The approval of the operator is required | | |
|  |  |  |  | The Commander must be in formed of the location | |
| NO | YES | NO | YES | NO | **Battery-powered wheelchairs or other similar mobility devices with non-spillable batteries** which comply with Packing Instruction 872 or Special Provision A67, provided the battery terminals are protected from short circuits, e.g. by being enclosed in a battery container, and the battery is securely attached to the wheelchair or mobility aid. |
| NO | YES | NO | YES | YES | **Battery-powered wheelchairs or other mobility devices with spillable batteries or with lithium batteries** provided that the below conditions are met.  A wheelchair or mobility aid with a **spillable battery** must be loaded, stowed, secured and unloaded always in an upright position and the battery terminals must be protected from short circuits (e.g. by being enclosed within a battery container) and the battery must be securely attached to the wheelchair or mobility aid. The operator(s) must ensure that wheelchairs or other battery-powered mobility aids are carried in such a manner so as to prevent unintentional activation and that they are protected from being damaged by the movement of baggage, mail, stores or other cargo. If the wheelchair or mobility aid cannot be loaded, stowed, secured and unloaded always in an upright position, the battery must be removed and the wheelchair or mobility aid may then be carried as checked baggage without restriction. The removed battery must be carried in strong, rigid packagings as follows:  - these packagings must be leak-tight, impervious to battery fluid and be protected against upset by securing them to pallets or by securing them in cargo compartments using appropriate means of securement (other than by bracing with freight or baggage) such as by the use of restraining straps, brackets or holders;  - batteries must be protected against short circuits, secured upright in these packagings and surrounded by compatible absorbent material sufficient to absorb their total liquid contents; and  - these packagings must be marked “Battery, wet, with wheelchair” or “Battery, wet, with mobility aid” and be labelled with a “Corrosive” label and with a package orientation label.  The pilot-in-command must be informed of the location of a wheelchair or mobility aid with an installed battery or the location of a packed battery.  A wheelchair or other similar mobility aid with a **lithium-ion battery** may be loaded, provided  - the batteries must be of a type which meets the UN test requirements;  - battery terminals must be protected from short circuits (e.g. by being enclosed within a battery container) and securely attached to the mobility aid;  - the operator(s) must ensure that such mobility aids are carried in a manner so as to prevent unintentional activation and that they are protected from being damaged by the movement of baggage, mail, stores or other cargo; and  - the pilot-in-command must be informed of the location of the mobility aid. |
| YES | NO | NO | YES | YES | **Mercury barometer or thermometer** carried by a representative of a government weather bureau or similar official agency. |
| YES | NO | YES | YES | NO | **Lithium ion batteries** with a Watt-hour rating exceeding 100 Wh but not exceeding 160 Wh for portable electronic devices. No more than two spare batteries may be carried in carry-on baggage only. These batteries must be individually protected to prevent short circuits. Equipment containing such batteries may be in checked or carry-on baggage. |

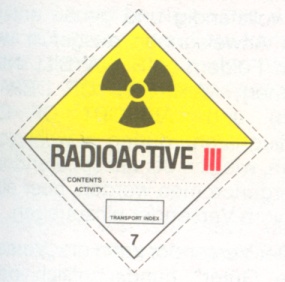
|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Permitted in or as carry-on baggage | | | | | |
|  | Permitted in or as checked baggage | | | | |
|  |  | Permitted on one's person | | | |
|  |  |  | The approval of the operator is required | | |
|  |  |  |  | The Commander must be in formed of the location | |
| YES | YES | NO | YES | NO | **Avalanche rescue backpack,** one (1) per passenger, equipped with a pyrotechnic trigger mechanism containing less than 200 mg net of Div. 1.4S and less than 250 mL of compressed gas in Div. 2.2. The backpack must be packed in such a manner that it cannot be accidentally activated. The airbags within the backpacks must be fitted with pressure relief valves. |
| YES | YES | NO | YES | NO | **Chemical Agent Monitoring Equipment,** when carried by staff members of the Organization for the Prohibition of Chemical Weapons on official travel. |
| YES | YES | NO | YES | NO | **Heat producing articles** such as underwater torches (diving lamps) and soldering irons. |
| YES | YES | NO | YES | NO | **Carbon dioxide, solid (dry ice),** in quantities not exceeding 2.5 kg (5 lb) per passenger when used to pack perishables not subject to the Technical Instructions in checked or carry-on baggage, provided the baggage (package) permits the release of carbon dioxide gas. Each item of checked baggage must be marked "dry ice" or "carbon dioxide, solid" and with the net weight of dry ice or an indication that there is 2.5 kg or less dry ice. |
| YES | YES | NO | YES | NO | **Insulated packagings containing refrigerated liquid nitrogen** (dry shipper), fully absorbed in a porous material and intended for transport, at low temperature, of non-dangerous products are not subject to the Technical Instructions provided the design of the insulated packaging would not allow the build-up of pressure within the container and would not permit the release of any refrigerated liquid nitrogen irrespective of the orientation of the insulated packaging. |
| YES | YES | YES | YES | NO | **Non-flammable gas cylinder fitted into a life jacket** containing carbon dioxide or other suitable gas in Division 2.2, up to two (2) small cylinders per passenger, and up to two (2) spare cartridges. |
| YES | YES | NO | YES | YES | **Oxygen or air, gaseous, small cylinders** required for medical use. The cylinder must not exceed 5 kg gross weight.  ***Note: Liquid oxygen systems are forbidden for transport.*** |
| YES | YES | YES | YES | NO | **Portable medical electronic devices** (Automated External Defibrillators (AED), Nebulizer, Continuous Positive Airway Pressure (CPAP), etc.) containing lithium metal or lithium ion cells or batteries may be carried. No more than two spare batteries may be carried. Spare batteries must be individually protected so as to prevent short circuits (by placement in original retail packaging or by otherwise insulating terminals, e.g. by taping over exposed terminals or placing each battery in a separate plastic bag or protective pouch) and carried in carry-on baggage only. Each installed or spare battery must be of a type which meets the UN test requirements;  In addition, each installed or spare battery must not exceed the following:  - for lithium metal batteries, a lithium content of not more than 8 grams; or  - for lithium ion batteries, a watt-hour rating of not more than 160 Wh. |
| NO | YES | NO | NO | NO | **Aerosols in Division 2.2,** with no subsidiary risk, for sporting or home use.  and |
| YES | YES | YES | NO | NO | **Non-radioactive medicinal or toilet articles** (including aerosols) such as hair sprays, perfumes, colognes and medicines containing alcohol.  The total net quantity of all above mentioned articles must not exceed 2 kg (4.4 lb) or 2 L (2 qt), and the net quantity of each single article must not exceed 0.5 kg (1 lb) or 0.5 L (1 pt). Release valves on aerosols must be protected by a cap or other suitable means to prevent inadvertent release of the contents. |
| YES | YES | YES | NO | NO | **Alcoholic beverages,** when in retail packagings, containing more than 24% but not more than 70% alcohol by volume, in receptacle not exceeding 5 L, with a total net quantity per person of 5 L. |

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| --- | --- | --- | --- | --- | --- |
| Permitted in or as carry-on baggage | | | | | |
|  | Permitted in or as checked baggage | | | | |
|  |  | Permitted on one's person | | | |
|  |  |  | The approval of the operator is required | | |
|  |  |  |  | The Commander must be in formed of the location | |
| YES | YES | YES | NO | NO | **Energy efficient light bulbs** when in retail packaging intended for personal or home use. |
| YES | YES | YES | NO | NO | **Non-flammable, non-toxic gas cylinders** worn for the operation of mechanical limbs. Also, spare cylinders of a similar size if required to ensure an adequate supply for the duration of the journey. |
| YES | YES | YES | NO | NO | **Portable electronic devices containing lithium metal or lithium ion cells or batteries,** such as watches, calculating machines, cameras, cellular phones, lap-top computers, camcorders, etc., when carried by passengers or crew for personal use. |
| YES | NO | YES | NO | NO | **Spare lithium metal or lithium ion cells or batteries,** for such portable electronic devices may be carried in carry-on baggage only. These batteries must be individually protected to prevent short circuits. |
| YES | YES | NO | NO | NO | **Hair curlers containing hydrocarbon gas,** up to one (1) per passenger or crew-member, provided that the safety cover is securely fitted over the heating element. These hair curlers must not be used on board the aircraft at any time. Gas refills for such curlers are not permitted in checked or carry-on baggage. |
| YES | YES | YES | NO | NO | **Medical or clinical thermometer,** which contains mercury, one (1) per passenger for personal use, when in its protective case. |

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| --- | --- | --- | --- | --- | --- |
| Permitted in or as carry-on baggage | | | | | |
|  | Permitted in or as checked baggage | | | | |
|  |  | Permitted on one's person | | | |
|  |  |  | The approval of the operator is required | | |
|  |  |  |  | The Commander must be in formed of the location | |
| YES | NO | YES | NO | NO | **Fuel cell systems, and spare fuel cartridges** powering portable electronic devices (e.g. cameras, cellular phones, laptop computers, and camcorders) under the following conditions:  - fuel cells and fuel cell cartridges may only contain flammable liquids, corrosive substances, liquefied flammable gas, water reactive substances or hydrogen in metal hydride;  - refuelling of fuel cells on board an aircraft is not permitted except that the installation of a spare cartridge is allowed;  - the maximum quantity of fuel in any fuel cell or fuel cell cartridge must not exceed:  a) for liquids 200 mL;  b) for solids 200 grams;  c) for liquefied gases, 120 mL for non-metallic fuel cells or fuel cell cartridges or 200 mL for metal fuel cells or fuel cell cartridges;  For hydrogen in metal hydride, the fuel cell cartridges must have a water capacity of 120 mL or less;  - each fuel cell and each fuel cell cartridge must conform to IEC PAS 62282-6-1 Ed. 1, and must be marked with a manufacturer’s certification that it conforms to the specification. In addition, each fuel cell cartridge must be marked with the maximum quantity and type of fuel in the cartridge;  - fuel cell cartridges containing hydrogen in metal hydride must comply with the legal requirements.  - no more than two spare fuel cell cartridges may be carried by a passenger, as follows:  a) fuel cell cartridges containing flammable liquids, corrosive substances, liquefied flammable gas or hydrogen in metal hydride in carry-on baggage, in checked baggage or on the person; and  b) fuel cell cartridges containing water-reactive substances in carry-on baggage or on the person;  - fuel cells containing fuel are permitted in carry-on baggage only;  - interaction between fuel cells and integrated batteries in a device must conform to IEC PAS 62282-6-1 Ed. 1. Fuel cells whose sole function is to charge a battery in the device are not permitted;  - fuel cells must be of a type that will not charge batteries when the portable electronic device is not in use and must be durably marked by the manufacturer: “APPROVED FOR CARRIAGE IN AIRCRAFT CABIN ONLY” to so indicate; and  - in addition to the languages which may be required by the State of Origin for the markings specified above, English should be used. |
| NO | NO | YES | NO | NO | **Radioisotopic cardiac pacemakers** or other devices, including those powered by lithium batteries, implanted into a person, or radiopharmaceuticals contained within the body of a person as the result of medical treatment. |
| NO | NO | YES | NO | NO | **Safety matches (one small packet) or a cigarette lighter** that does not contain unabsorbed liquid fuel, other than liquefied gas, intended for use by an individual when carried on the person. Lighter fuel and lighter refills are not permitted on one's person or in checked or carry-on baggage.  ***Note:*** *"Strike anywhere" matches, "Blue flame" or "Cigar" lighters are forbidden.* |

#### CLASSIFICATION, PACKING, LABELLING, MARKING:

All dangerous goods transported by Mali Air must be classified, packed, labelled and marked as specified in the Technical Instructions. Correct classification, packing, labelling and marking is the sole responsibility of the shipper. Whenever any doubt arises if a shipment contains dangerous goods or if dangerous goods are properly classified, packed, labelled or marked the Commander shall seek the advice of the Dangerous Goods Manager. Any shipment which does not meet all requirements will not be transported.



Transport of Dangerous Goods with other labelling is prohibited.

#### TRANSPORT DOCUMENTATION:

Dangerous goods must be accompanied to their final destination by a correct Shipper's Declaration for Dangerous Goods. In addition, one copy of the document must be retained at a location on the ground, where it will be possible to obtain access to it within a reasonable period until the shipment has reached its final destination.

Where dangerous goods are carried on a flight which takes place wholly or partly outside the territory of a State, the English language must be used for the dangerous goods transport document in addition to any other language requirements. The same applies to labelling and marking of the dangerous goods shipment.

#### ACCEPTANCE OF DANGEROUS GOODS:

Personnel accepting shipments of dangerous goods must be adequately trained (Personnel Category 6) in the performance of their duties and to assist them in identifying and detecting dangerous goods presented as general cargo.

Acceptance staff should seek confirmation from shippers about the contents of any item of cargo where there are suspicions that it may contain dangerous goods, with the aim of preventing undeclared dangerous goods from being loaded on an aircraft as general cargo.

Many innocuous-looking items may contain dangerous goods, and a list of general descriptions which, experience has shown, are often applied to such items is shown above (Hidden Dangerous Goods).

Only Dangerous Goods UN2915 and UN2908 are allowed to be carried with the aircraft. A crew member with Dangerous Goods course level 6 is responsible for the acceptance. The crew member and the handling agent have to act according the IATA regulations.

#### Acceptance by Mali Air Staff:

Mali Air will not accept for transport aboard an aircraft a package or overpack containing dangerous goods or a freight container containing radioactive material or a unit load device or other type of pallet containing the dangerous goods unless it is accompanied by two copies of Shipper's Declaration for Dangerous Goods.

One copy of the Shipper's Declaration must accompany the consignment to final destination and one copy must be retained by the operator at a location on the ground where it will be possible to obtain access to it within a reasonable period; the document must be retained at this point until the goods have arrived at final destination, after which time it may be stored elsewhere.

#### Acceptance Check:

Mali Air will not accept for transport aboard an aircraft a package or overpack containing dangerous goods or a freight container containing radioactive material or a unit load device or other type of pallet containing dangerous goods unless, by use of a checklist, it could be verified, that the shipment and the documentation provided is in compliance with the applicable regulations and the package is considered in all respects to be safe for transport.

The package must be properly marked and labelled and it must be determined that there is no leakage or other indication that its integrity has been compromised.

A UN2915 sample check list can be found below. This checklist may be completed by properly trained Mali Air staff or the handling agent. For UN 2908 is no checklist required. A delivery note is required.

**DANGEROUS GOODS CHECKLIST FOR A RADIOACTIVE SHIPMENT OF**

**UN 2915 TYPE A PACKAGE**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **SHIPPERS DECLARATION FOR DANGEROUS GOODS** | | | | |
|  | Y | N |  | n/a |
| 1. Two copies in English |  |  |  |  |
|  |  |  |  |  |
| 2. Full name and address of Shipper and Consignee |  |  |  |  |
|  |  |  |  |  |
| 3. If the Air Waybill number is not shown, enter it. |  |  |  |  |
|  |  |  |  |  |
| 4. The number of pages shown |  |  |  |  |
|  |  |  |  |  |
| 5. The non-applicable Aircraft Type deleted |  |  |  |  |
|  |  |  |  |  |
| 6. If full name of Airport or City of Departure or Destination is not shown, enter it. |  |  |  |  |
|  |  |  |  |
|  |  |  |  |  |
| 7. The word "Non-Radioactive" deleted |  |  |  |  |
|  |  |  |  |  |
| **Identification** |  |  |  |  |
| 8. UN number, preceded by prefix "UN" |  |  |  |  |
|  |  |  |  |  |
| 9. Proper Shipping Name |  |  |  |  |
|  |  |  |  |  |
| 10. Class 7 |  |  |  |  |
|  |  |  |  |  |
| **Quantity and Type of Packing** |  |  |  |  |
| 11. Name or Symbol of Radionuclide(s) |  |  |  |  |
|  |  |  |  |  |
| 12. A description of the physical and chemical form if in other form |  |  |  |  |
|  |  |  |  |
|  |  |  |  |  |
| 13. The number and type of packages and the activity in becquerel or multiples thereof in each package. |  |  |  |  |
|  |  |  |  |
|  |  |  |  |  |
| 14. Activity ≤ 600 GBq. |  |  |  |  |
|  |  |  |  |  |
| **Packing Instructions** |  |  |  |  |
| 15. Category of package(s) |  |  |  |  |
|  |  |  |  |  |
| 16. Transport Index and dimensions |  |  |  |  |
|  |  |  |  |  |
| **Additional Handling Information** |  |  |  |  |
| 17. The air certification statement included |  |  |  |  |
|  |  |  |  |  |
| 18. Name and Title of Signatory, Place and Date indicated |  |  |  |  |
|  |  |  |  |
|  |  |  |  |  |
| 19. Signature of Shipper |  |  |  |  |
|  |  |  |  |  |
| 20. Amendment or alteration signed by Shipper |  |  |  |  |
|  |  |  |  |  |
| **AIR WAYBILL - HANDLING INFORMATION** |  |  |  |  |
| 21. The statement: "Dangerous Goods as per attached Shipper's Declaration / DGD" |  |  |  |  |
|  |  |  |  |
|  |  |  |  |  |
| **PACKAGE(S) AND OVERPACKS** |  |  |  |  |
| 22. Same number and type of packagings delivered as shown on DGD |  |  |  |  |
|  |  |  |  |
|  |  |  |  |  |
| 23. Unbroken transportation seal and package in proper condition for carriage |  |  |  |  |
|  |  |  |  |
|  |  |  |  |  |
| **Markings** |  |  |  |  |
| 24. The UN number |  |  |  |  |
|  |  |  |  |  |
| 25. The Proper Shipping Name |  |  |  |  |
|  |  |  |  |  |
| 26 The full Name and Address of Shipper and Consignee |  |  |  |  |
|  |  |  |  |
|  |  |  |  |  |
| 27. Type A packages marked |  |  |  |  |
|  |  |  |  |  |
| **Labelling** |  |  |  |  |
| 28. Two correctly completed Radioactive Hazard labels on opposite sides |  |  |  |  |
|  |  |  |  |
|  |  |  |  |  |
| 29. All labels correctly affixed and all irrelevant marks and labels removed |  |  |  |  |
|  |  |  |  |
|  |  |  |  |  |
| **GENERAL** |  |  |  |  |
| 30. State and Operator variations complied with |  |  |  |  |
|  |  |  |  |  |

Comments:

Checked by

Place:

Date:

Time:

Signature:

If any box is checked "no", do not accept the shipment and give a duplicate copy of this completed form to the shipper.

## DANGEROUS GOODS INFORMATION, INSTRUCTIONS AND GUIDANCE

### LOADING AND SEGREGATION:

Packages, overpacks and freight containers must be inspected for evidence of leakage or damage immediately prior to loading on an aeroplane or into a unit load device. A unit load device must not be loaded on an aeroplane unless it has been inspected and was found free from any evidence of leakage from, or damage to, the dangerous goods contained therein.

Leaking or damaged packages, overpacks or freight containers will not be loaded on an aeroplane.

Any package of dangerous goods found on an aeroplane and which appears to be damaged or leaking is removed or arrangements made for its removal by an appropriate authority or organisation. In this case the remainder of the consignment shall be inspected to ensure it is in a proper condition for transport and that no damage or contamination has occurred to the aeroplane or its load; and

Packages, overpacks and freight containers are inspected for signs of damage or leakage upon unloading from an aeroplane or from a unit load device and, if there is evidence of damage or leakage, the area where the dangerous goods were stowed is inspected for damage or contamination.

Loading Restrictions:

Dangerous goods must not be carried in an aircraft cabin occupied by passengers or on the flight deck of an aircraft, except for those goods which are exempted from the requirements of the Technical Instructions, for items carried by passengers or crew and for radioactive material in excepted packages.

Dangerous Goods bearing the "Cargo Aircraft Only" label must not be carried on an aircraft carrying passengers.

During the course of air transport, a package of dangerous goods bearing the package orientation label must be loaded and stowed aboard an aircraft and handled at all times in accordance with such a label. Single packaging with end closures containing liquid dangerous goods must be loaded and stowed aboard an aircraft with those closures upwards, notwithstanding that such single packages may also have side closures.

Packages or overpacks of dangerous goods bearing the "Cargo Aircraft Only" label must be loaded in such a manner that a crew member or other authorized person can see, handle and, where size and mass permit, separate such packages or overpacks from other cargo in flight.

Dangerous goods must be secured in a manner that will prevent any movement in flight which would change the orientation of the packages. For packages or overpacks containing radioactive materials, the securing must be adequate to ensure that the separation requirements are met at all times.

Packages containing dangerous goods which might react dangerously with each other must not be stowed next to each other (such combinations are marked with "x" in the below table):

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 1.4S | 2 | 3 | 4.2 | 4.3 | 5.1 | 5.2 | 8 |
| 1.4S | - | - | - | - | - | - | - | - |
| 2 | - | - | - | - | - | - | - | - |
| 3 | - | - | - | - | - | x | - | - |
| 4.2 | - | - | - | - | - | x | - | - |
| 4.3 | - | - | - | - | - | - | - | x |
| 5.1 | - | - | x | x | - | - | - | - |
| 5.2 | - | - | - | - | - | - | - | - |
| 8 | - | - | - | - | x | - | - | - |

For combinations not listed in the table consult the Technical Instructions.

### Loading of radioactive materials:

The practice should be followed of keeping exposure to radiation as low as reasonably achievable. The separation distances shown below are minimum values irrespective of carriage duration. Greater distances should be used where feasible.

The maximum total sum of the Transport Indexes in an aircraft not under exclusive use is 50 for passenger aircraft and 200 for cargo aircraft, with a maximum Transport Index of 10 per package.

|  |  |  |  |
| --- | --- | --- | --- |
| TI | Minimum distance (meters) | TI | Minimum distance (meters) |
| 0.1 - 1.0 | 0.30 | 13.1 - 14.0 | 2.05 |
| 1.1 - 2.0 | 0.50 | 14.1 - 15.0 | 2.15 |
| 2.1 - 3.0 | 0.70 | 15.1 - 16.0 | 2.25 |
| 3.1 - 4.0 | 0.85 | 16.1 - 17.0 | 2.35 |
| 4.1 - 5.0 | 1.00 | 17.1 - 18.0 | 2.45 |
| 5.1 - 6.0 | 1.15 | 18.1 - 20.0 | 2.60 |
| 6.1 - 7.0 | 1.30 | 20.1 - 25.0 | 2.90 |
| 7.1 - 8.0 | 1.45 | 25.1 - 30.0 | 3.20 |
| 8.1 - 9.0 | 1.55 | 30.1 - 35.0 | 3.50 |
| 9.1 - 10.0 | 1.65 | 35.1 - 40.0 | 3.75 |
| 10.1 - 11.0 | 1.75 | 40.1 - 45.0 | 4.00 |
| 11.1 - 12.0 | 1.85 | 45.1 - 50.0 | 4.25 |
| 12.1 - 13.0 | 1.95 |  |  |

Where Part B contains specific loading instructions for dangerous goods in Chapter 7, these instructions must be followed.

### Special notification requirements in the event of an accident or occurrence when dangerous goods are being carried

In case of a dangerous goods incident or accident:

- Inform ATS immediately including the proper shipping name, UN number and the quantity of the dangerous goods carried.

- A written report (incident report) to the authority containing all relevant information has to be filed a soon as possible but at the latest within 72 hours of the incident.

The report should be as precise as possible and contain all data known at the time the report is made including, as applicable:

- Date of the incident or accident;

- Location of the incident or accident, the flight number and flight date, if applicable;

- Description of the goods and the reference number of the airway bill, pouch, baggage tag, ticket, etc;

- Proper shipping name (including the technical name, if appropriate) and UN number, where known;

- Class or division and any subsidiary risk;

- Type of packaging, if applicable, and the packaging specification marking on it;

- Quantity involved;

- Name and address of the shipper, passenger, etc;

- Any other relevant details;

- Suspected cause of the incident or accident;

- Action taken;

- Any other reporting action taken; and

- Name, title, address and contact number of the person making the report.

If necessary, a subsequent report shall be made as soon as possible when additional relevant details become known.

### Dangerous Goods Occurrence Report

Mark type of occurrence: Accident ❑ Incident ❑ Other Occurrence ❑

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 1. Operator: | | 2. Date of occurrence: | | 3. Local time of occurrence: | |
| 4. Flight date: | | 5. Flight no.: | | | |
| 6. Departure airport: | | 7. Destination airport: | | | |
| 8. Aircraft type: | | 9. Aircraft registration: | | | |
| 10. Location of occurrence: | | 11. Origin of the goods: | | | |
| 12. Description of the occurrence, including details of injury, damage, etc. (if necessary continue on back side) | | | | | |
| 13. Proper shipping name (including the technical name): | | | | | 14. UN/ID no. (when known): |
| 15. Class/division (when known): | 16. Subsidiary risk(s): | | 17. Packing group: | | 18. Category (class 7 only): |
| 19. Type of packaging: | 20: Packaging specification marking: | | 21. No. of packages: | | 22. Quantity (or transport index, if applicable): |
| 23. Reference no. of Air Waybill: | | | | | |
| 24: Reference no. of courier pouch, baggage tag, or passenger ticket: | | | | | |
| 25. Name and address of shipper, agent, passenger, etc.: | | | | | |
| 26. Other relevant information (including suspected cause, any action taken): | | | | | |
| 27. Name and title of person making report: | | | 28. Telephone no.: | | |
| 29. Company/dept. code, E-mail of InfoMail code: | | | 30. Reporter ref.: | | |
| 31. Address: | | | 32. Date/Signature: | | |

It is the responsibility of the Commander to file an Occurrence Report to the AM, FOM and DGM.

The commander has to decline undeclared or misdeclared Dangerous Good.

### Procedures in emergency situations

In case of an aeroplane incident any information required to minimise the hazards created by any dangerous goods carried shall be provided upon request.

If an aeroplane is involved in an aeroplane accident the appropriate authority of the State, in which the aeroplane accident occurred, shall be informed as soon as possible of any dangerous goods carried. Wherever possible this information should include the proper shipping name and/or UN number, the class/division, subsidiary risk for which labels are required, for Class 1 the compatibility group and the quantity and location on board the aeroplane.

The crew must try to stop any leakage and must carefully evaluate the situation in case the dangerous good is on fire. Due consideration must be given if the fire can be extinguished. Halon or water will aggravate the situation. In order to make the right decision the crew shall try to get as much information about the substance as possible. Damage to electrical cables, hydraulic lines etc. should be prevented. After such an emergency situation a Part 145 organisation has to confirm that no damage and contamination has occurred to the aeroplane and release it for the next flight.

The ICAO Emergency Response Guide for Aircraft Incidents involving Dangerous Goods is carried on board every aircraft and must be ready available during flight when transporting dangerous goods.

**In case of any leakage or radioactive contamination call the emergency number +43 664 830 94 96 for further instructions. In flight, land as soon as practicable.**

### Duties of all personnel involved

#### Mutual Provision of Information:

Ground Staff: Information shall be provided to enable ground staff to carry out their duties with regard to the transport of dangerous goods, including the actions to be taken in the event of incidents and accidents involving dangerous goods. Where applicable, this information is also provided to the handling agent.

Passengers and Other persons: Information concerning types of dangerous goods which are excluded from transport and allowed quantities of dangerous goods in passengers baggage is provided as an attachment to the passenger tickets.

Crew Members: All crew members shall be informed about the nature of the dangerous goods transported. In addition they shall receive information as is appropriate to enable them to carry out their duties including actions to be taken in emergency situations.

#### Information to Commander:

The Commander shall receive written information concerning the transport of dangerous goods either in form of a Notification to Captain (NOTOC) or by receiving a copy of the Shipper's Declaration. This information must be readily available during flight and must contain at least:

- the air waybill number (when issued)

- the proper shipping name and UN number

- the class or division and subsidiary risk(s) and in the case of Class 1, the compatibility group

- the packing group shown on the DGD

- the number of packages and their exact loading location

- the net quantity, or gross mass if applicable, of each package as is required on the DGD

- for radioactive material the category of packages and their transport index

- whether the package must be carried on cargo aircraft only

- the aerodrome at which the package is to be unloaded

- where applicable, an indication that the dangerous goods are being carried under a State exemption

If the Commander has not participated in inspecting and loading of the dangerous goods he must receive signed confirmation, or some other indication, from the person responsible for loading the aircraft that there was no evidence of any damage to or leakage from the packages loaded on the aircraft.

In such case, the Commander shall indicate on a copy of the NOTOC or equivalent information form that the information has been received. This signed copy must then be retained on the ground until the flight has reached its final destination.

### TRAINING:

See Part D

### Carriage of the operator's employees

is permitted if the necessary ICAO regulations are observed.

## CONDITIONS UNDER WHICH WEAPONS, AMMUNITION OF WAR AND SPORTING WEAPONS MAY BE CARRIED

It is Mali Air's policy not to transport weapons of war and ammunition of war.

Just for information:

Sporting weapons unloaded and ammunition for such weapons may be carried without an approval from an authority, provided they are properly packed and stowed inaccessible to passengers and the appropriate regulations for transportation by passengers or crew members are observed.

# SECURITY

## SECURITY INSTRUCTIONS AND GUIDANCE

### GENERAL

Details of the Security Programme and of the procedures to be applied as required by the National Security Programme (NaSP) are contained in a separate document which is kept confidential.

The Security program has been compiled in order to

prevent or deter the unauthorized carriage of any firearm, weapon, and ammunition, explosive or incendiary device aboard an aircraft, either stowed in baggage, cargo, and mail or on the person of a passenger.

prevent or deter unauthorized access to aircraft owned or operated by Mali Air

ensure that baggage including unaccompanied baggage, cargo and mail is accepted only in accordance with the aviation security program

prevent baggage, cargo and mail being loaded aboard a flight except in accordance with the requirements of the aviation security program

ensure that adequate inspections of aircraft are conducted in the event of bomb or other threats being received

### PASSENGERS

No person may be exempted from screening procedures. Appropriately sealed diplomatic pouches need not be screened, however, diplomatic couriers and their diplomatic baggage must undergo screening.

### REPORTING REQUIREMENT

Following an act of unlawful interference the Commander shall submit a report of such an act to the designated local authority, as well as to the ACG without delay.

**HI-JACKING**

In the event of an attempt to hi-jack an airplane crew members shall take a passive attitude in order to avoid endangering the safety of passengers and crew members. Where necessary for this reason, the demands of hi-jackers shall be complied with.

Whenever an airplane is being hi-jacked, and when it is impossible or appears inadvisable to inform ATC by radiotelephony, the PIC shall endeavour to set the transponder to Mode A

**Code 7500**

to alert ATC. Where no means are provided to automatically display this code on the radar scopes, ATC will attempt to verify the assumption of code 7500 selection upon disappearance of the normal SSR signal, but will not inquire on radiotelephony about the situation.

Pilots should use extreme caution not to select code 7500 inadvertently as this may result in extensive security measures being taken by the appropriate authorities.

### BOMB SEARCH PROCEDURES

In case of Bomb threat on the ground the respective authorities have to be informed (“Entminungsdienst”). The Flight Operations Department has to be notified as soon as possible.

## Preventative security measures and training

### UNIDENTIFIED LUGGAGE

Unless it can be clearly established why a certain piece of luggage is in excess of the normal luggage which has been accounted for, it has to be assumed that the passenger deliberately missed the flight. In such case the non identified luggage has to undergo the same treatment as unaccompanied suspicious luggage. Should there be any additional reasons (such as hijacking and/or bomb threat) the local authorities (police, civil aviation authorities) have to be notified.

### AIR FREIGHT

Any air freight of Mali Air will be kept in storage in such a manner that unauthorized manipulation is impossible. In case any personnel will accompany the freight, Mali Air will make the same security check as with other passengers.

### PARKED AIRCRAFT

Mali Air will make sure that the aircraft is properly secured during parking periods at airports.

Throughout the parking period of an aircraft at airports an Mali Air representative has to be present either on board of the aircraft or in the vicinity thereof. The presence of such a representative is not necessary if

all entrances and access doors of the aircraft are properly secured or

the aircraft is parked in a closed aircraft hangar

After prolonged parking periods without security guards the cockpit as well as the aircraft cabin shall be properly inspected prior to passenger boarding.

Aeroplane search procedure checklist

After all passengers have left the aircraft our staff searches the aircraft. The search includes:

* all storage places for hand (cabin) baggage
* all lockers
* all seat bags
* all lavatories including waste deposits and other places which are usable as hiding places
* all space underneath the seats and the floor

# HANDLING OF ACCIDENTS & INCIDENTS

## DEFINITION AND RESPONSIBILITY

The following procedures have been established to govern the handling of emergency Situation by both ground and flight personnel.

These procedures shall apply in so far as the circumstances of an emergency situation do not require deviations therefrom. It must be understood that it is impracticable to establish rules, governing every possible type of emergency, and personnel concerned are therefore to act according to their best judgement in each individual situation.

It is of prime importance that all flight and ground operations personnel have a thorough knowledge of the action to be taken when an emergency situation arises. It is therefore necessary to frequently reread and study all material describing the emergency actions.

As emergency situations may develop at any time, crew members must be mentally prepared for immediate action. Emergency action by ground personnel shall be initiated in the event information received from any reliable source, or lack of information from the aircraft.

Emergencies subject to application of emergency procedures are those incidents involving Company aircraft in which the airworthiness of the aircraft is limited to such a degree that continuation of the flight is impossible and the Pilot-in-Command has declared an emergency.

Accidents are those incidents involving Company aircraft in which one or more persons suffer severe injury or death or in which the aircraft suffers severe damage (e. g. overshooting upon takeoff, landing with retracted gear, etc.) or damage to third party's property.

In emergency situations which require immediate decision and action, the commander is authorized to resolve upon a course of action which is required by the circumstances and information available.

He may, in such situation, deviate from the procedures established by, or instructions required by, the appropriate authority to that extent required by consideration of safety. When such emergency authority is exercised, the commander shall keep the appropriate authorities fully informed regarding the progress of the flight and action being taken.

### DEFINITIONS

#### Accident:

An occurrence associated with the operation of an aircraft which takes place between the time any person boards the aircraft with the intention of flight until such time as all such persons have disembarked, in which:

- a person is fatally or seriously injured as a result of being in the aircraft, or

- direct contact with any part of the aircraft, including parts which have become detached from the

aircraft, or direct exposure to jet blast,

except when the injuries are from natural causes, self-inflicted or inflicted by other persons, or when the injuries are to stowaways hiding outside the areas normally available to the passengers and crew, or

- the aircraft sustains damage or structural failure which

- adversely affects the structural strength, performance or flight characteristics of the aircraft, and

- would normally require major repair or replacement of the affected component,

except for engine failure or damage, when the damage is limited to the engine, its cowlings or accessories; or for damage limited to propellers, wing tips, antennas, tires, brakes, fairings, small dents or puncture holes in the aircraft skin, or

- the aircraft is missing or is completely inaccessible.

#### Incident:

An occurrence, other than an accident, associated with the operation of an aircraft which affects or could affect the safety of operation.

#### Serious Incident:

An incident involving circumstances indicating that an accident nearly occurred.

#### Serious Injury:

An injury which is sustained by a person in an accident and which

- required hospitalization for more than 48 hours, commencing within seven days from the date the

injury was received, or

- results in a fracture of any bone (except simple fractures of fingers, toes or nose), or

- involves lacerations which cause severe haemorrhage, nerve, muscle or tendon damage, or

- involves injury to any internal organ, or

- involves second or third degree burns, or any burns affecting more than 5 % of the body surface, or

- involves verified exposure to infectious substances or injurious radiation.

### RESPONSIBILITIES:

- All crew members are responsible for reporting all observations to the Commander which may affect

the airworthiness or safe operation of the aeroplane including emergency systems.

- The Commander is responsible for appropriate notifications to the relevant ATS units and for

completion of all required reports and submission to the Flight Operations Manager.

- The Flight Operations Manager is responsible for distribution of information concerning occurrences

within the company and for forwarding all reports to the CAA and the Authority where the incident

occurred, if applcable.

### REPORTABLE INCIDENTS:

The following incidents are considered reportable.

#### Flight Operations:

- evasive manoeuvres

- occurrences during take-off and landing including precautionary and emergency landings, runway

excursions, use of closed, engaged or unassigned runways

- loss of performance during take-off or initial climb

- fuel quantity requiring the declaration of an emergency by the crew

- loss of control, irrespective of duration and cause

- unintentional significant deviations from the expected or assigned airspeed, course or altitude

- loss of orientation

- interruption of communications within the crew or with ATS units

- misunderstandings or misinterpretation of radio messages

- improper setting of transponders or altimeters

- erroneous setting of navigation equipment or flight management systems

- unintentional or improper operation of flight controls

- activation of a primary warning system (except for erroneous or intentional activation) such as stick

shaker, stall warning, ...

- GPWS warnings and alerts except when they may be disregarded in accordance with 8.3.5

- any resolution advisory (RA) issued by the ACAS system

- undershooting DH or MDH without the required visual reference

- technical failures and occurrences such as rejected take-off, tail strike, hard landing, exceeding of any

limitations according to the AFM, abnormal vibrations

- any other circumstances or condition (whether accidentally or deliberately caused) that leads or may

lead to a dangerous situation

#### Emergencies:

- any situation leading to an emergency or a state of urgency being declared by the flight crew

- deviation from promulgated procedures by the Commander in order to deal with or avoid an

emergency situation in accordance with 0.1.b and 1.4

- loss of pressurization, use of emergency oxygen by the flight crew

- emergency evacuation

- use or loss of emergency equipment or systems

- flight crew incapacitation

#### Injuries:

- serious injures to passengers or crew members

#### Human Factors:

- CRM issues compromising flight safety

#### Weather:

- lightning strikes or hail, inflicting damage to the aeroplane

- severe turbulence affecting the aeroplane structure or injuring passengers or crew

members

- extraordinary wind shear

- icing that leads to damage or control problems

#### Security:

- unlawful interference

- unruly passenger incidents of level 2 or higher

- discovery of a stowaway

#### Other Occurrences:

- recurring malfunctions or circumstances, which would otherwise not be considered reportable, but

pose a risk due to the frequency of their occurrence

- bird strike

- unexpected wake turbulence

#### Technical Occurrences affecting:

- aeroplane structure

- aircraft systems

- propulsion systems to the extent that they have or may have an impact on the safe operation of the

aeroplane, its systems or on normal/abnormal/emergency procedures

#### Ground Handling:

- significant fuel spills during fuelling

- improper fuelling having significant effects on flight duration, performance or mass and balance

- incorrect loading of passengers, baggage or cargo, including dangerous goods, having an effect on flight safety or emergency procedures

- dangerous goods incidents and accidents as defined under 9.1

#### Air Navigation Services:

- near miss

- unsafe proximity to the ground or obstacles

- runway incidents requiring evasive manoeuvres

- deviations from clearances

- Any other incident considered reportable by the flight crew

## **FORMS, INSTRUCTIONS, ADDRESSES**

Reporting of incidents and special events to the OZB is required within 24 hours, regardless of the geographical location at which the accident etc. occurred.

In order to enable the Company to judge whether or not a report to the appropriate authority is required, all Pilots-in-Command are expressively ordered to report all deviations from normal flying routine to the Company, either by filling in the appropriate forms, by special report, or by Captain's Voyage Report or Non-conformity Report form .

It remains, however, the commander's responsibility to inform the FO Mgr. through the designated channels, that a report has been filed, any time it is suspected that more than 24 hours might elapse before the report will reach its destination. This will normally require a message by telephone, telex or telefax.

The report from the company to the Authority must be numbered, starting with No 1 in every year (e.g. 99/1).

Near misses , ATC problems and bird strike have to be reported to the Austro Control to OZB.

All alerting and accident reports which are reported by phone have to be reconfirmed in written (Telex, Fax etc.) immediately.

### Alert message:

* Address
* Time of alert (additional. Marking UTC)
* Date, Station
* Aircraft Registration
* Crew Names
* Number of passengers
* Phase of flight
* last position report of the aircraft and time in UTC
* Time, from which on the aircraft's fuel must be considered as consumed
* Reason of alert
* all other helpful details

Addresses:

Fire Dept. Tel.: 122   
Police Tel.: 123   
  
RCC Wien   
Schnirchgasse 11

A-1030 Wien   
Tel.: +43 (0) 1 798 83 80   
Fax.: +43 (5) 1703-76

Mali Air Luftverkehr Ges.m.b.H.

Reitbach 22

A-8783 Möderbrugg

Tel.: +43 664 2065040

Fax.: +43 35712632

### PILOTS TRIP REPORT FORM



## NOTIFICATION IN THE EVENT OF AN ACCIDENT

In case of an accident, the Flight Operations Manager shall seek close co-ordination via telephone with the Rescue Coordination Centre of the CAA.

The Flight Operations Manager, the Quality Manager and the Accountable Manager form the Emergency Response Team and will keep in permanent contact.

At least one postholder shall occupy the office at the company's headquarters to provide a single point of contact for all information and inquiries, irrespective of date or time.

If the situation will require the attention of the emergency response team for a prolonged period of time (more than 12 hours) a plan shall be established to sequentially relieve the persons involved from their duties and provide some rest, provided

- the company's headquarters are continuously occupied, and

- at least two members of the emergency response team are available at any time.

The Flight Operations Manager shall aim to gather the following information and provide it to the flight crew (as applicable), the Postholder Continuing Airworthiness and the other members of the emergency response team:

- Time and location of the accident

- Status of the aeroplane

- Provider of initial information (including name and telephone number)

- Crew and passengers on board

- Known information on injuries or fatalities

- Save all flight preparation data available (copy of OFP, NOTAM and MET information, fuel calculation, Loadsheet)

- Actions initiated by local rescue organisations and authorities

Information shall be provided in the following sequence:

- support for search and rescue activities as required or requested by the Authority where the accident occurred

- advice to the flight crew concerning the further course of action and possible support from local authorities and service providers

- exchange of information with the CAA (Rescue Coordination Centre)

- notification of the department Continuing Airworthiness

The Emergency Response Team shall then decide whether a team of Mali Air shall be dispatched to the accident site, by what means and who will be part of such a team. If possible, such a decision shall be coordinated with the Authority responsible for the investigation of the accident.

Any information to the public or the media will only be provided by the Accountable Manager.

### VERBAL NOTIFICATION

When exercising his emergency authority, the PIC shall keep ATC fully informed regarding the progress of the flight. He shall also mention the exercise of emergency authority on the Trip Report.

**IF POSSIBLE, EMERGENCY AUTHORITY SHOULD BE EXERCISED BEFORE A SITUATION OR CONDITION BECOMES CRITICAL.**

An "emergency situation" can mean any unexpected occurrence or condition requiring immediate action to meet its danger. Under certain circumstances this could include e.g. an icing condition, engine or structural failure, weather conditions, danger of collision etc.

The PIC is authorized to exercise his emergency authority when he believes that an emergency exists or will be created, after evaluating the factors and information available to him. However, the following guidelines shall be observed:

Landing shall normally be made at the nearest available aerodrome in accordance with the OM.

In case of complete communications failure proceed in accordance with ICAO and national regulations as stated in the RM.

Crew duties for almost any emergency are laid down in the respective checklist.

The Emergency Response Team shall then decide whether a team of Mali Air shall be dispatched to the accident site, by what means and who will be part of such a team. If possible, such a decision shall be coordinated with the Authority responsible for the investigation of the accident.

Any information to the public or the media will only be provided by the Accountable Manager.

## SUBMISSION OF REPORTS

### Pilot's Trip Report:

A preliminary report by phone or e-mail may be given to the Flight Operations Manager immediately after the occurrence. The PVR shall then be submitted to the Flight Operations Manager within 24 hours. The Flight Operations Manager forwards the report to the PCA.

For dangerous goods incidents the "Dangerous Goods Occurrence Report" form shall be used (see Chapter 9).

### Reportable Incidents:

In this case the report shall be forwarded to the address given on the reporting form within 72 hours of the occurrence.

If the report contains any reference to the technical status of the aeroplane, insofar as

- the incident was directly or indirectly caused by technical problems or observations, or

- in the course of the incident, the airworthiness of the aeroplane may have been

affected, it shall be forwarded to the PCA by the Flight Operations Manager.

In the case of unlawful interference and for air traffic incidents, the report shall also be submitted to the designated local authority.

## ADDITIONAL SAFETY REPORTING PROCEDURES

Crew members are required to report all observations to the Commander which may affect the airworthiness or safe operation of the aeroplane including emergency systems.

Whenever desired, crew members may make use of the confidential reporting system described under 2.3.

# RULES OF THE AIR

**GENERAL**

This chapter contains a compilation of Standards and Recommended Practices for Air Navigation Services extracted from various ICAO Annexes and Documents, as far as they may be of direct interest to Mali Air Operations. They may however be supplemented by additional rules and procedures, or may be overruled by different provisions, applicable on a regional, national or local basis as published in the Jeppesen Route Manual.

## FLIGHT RULES

### VISUAL FLIGHT RULES

Except when operating as a special VFR flight, VFR flights shall be conducted so that the aircraft is flown in conditions of visibility and distance to clouds equal to or greater than those specified in the table below:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Airspace** |  | **Flight altitude AMSL** | | |
| **class** |  | ≥ 3050 m | < 3050 m | ≤ 900m or 300 m AGL |
| **B, C,D,E,F** | Flight Visibility | 8 km | 5 km |  |
| Dist. from clouds horizontally | | 1.5 km | 1.5 km | not applicable |
| Dist. from clouds vertically | | 300 m | 300 m |  |
| **G** | Flight Visibility | 8 km | 5 km | 1.5 km |
| Dist. from clouds horizontally | | 1.5 km | 1.5 km | clear of clouds and |
| Dist. from clouds vertically | | 300 m | 300 m | in sight of the surface |

Except when a clearance is obtained from an air traffic control unit, VFR flights shall not take-off or land at an aerodrome with a control zone, or enter the aerodrome traffic zone or traffic pattern:

when the ceiling is less than 1500 ft or

when the ground visibility is less than 5 km

VFR flights between sunset and sunrise, or such other period between sunset and sunrise as may be prescribed by the appropriate ATS authority, shall be operated in accordance with the conditions prescribed in such authority.

Unless authorized by the appropriate ATS authority, VFR flights shall not be operated

above flight level 200

at transonic and supersonic speeds

Except when necessary for take-off or landing, or except by permission from the appropriate authority, a VFR flight shall not be flown

over the congested areas of cities, settlements or over open air assemblies of persons at a height of less than **1000 ft** above the highest obstacle within a radius of 2000 ft from the aircraft;

elsewhere than specified above, at a height of less than **500 ft** above ground or water

Except where otherwise indicated in air traffic control clearances or specified by the appropriate ATS authority, VFR flights in cruising level flight when operated above 3000 ft from the ground or water, or a higher datum as specified by the appropriate ATS authority, shall be conducted at a flight level appropriate to the track as specified in the table of cruising levels for VFR flights.

VFR flights shall comply with the provisions of the Air Traffic Control Service

when operated in Class B, C and D airspace

when forming part of aerodrome traffic at controlled aerodromes

when operated as special VFR flights

A VFR flight operating within or into areas, or along routes, designated by the appropriate ATS authority to facilitate the provision of flight information, alerting and search and rescue service or coordination with military units or air traffic services units in adjacent States in order to avoid the possible need for interception for the purpose of identification, shall maintain continuous listening watch on the appropriate radio frequency of, and report it's position as necessary to, the air traffic services unit providing flight information service.

When it becomes evident that due to weather deterioration flight in VMC in accordance with the current flight plan will not be practicable, a VFR flight operated as a controlled flight shall:

request an amended clearance enabling the aircraft to continue in VMC to destination or to an alternate aerodrome, or to leave the airspace within which an ATC clearance is required, or

if no such clearance can be obtained, continue to operate in VMC and notify the appropriate ATC unit of the action being taken either to leave the airspace concerned or to land at the nearest suitable aerodrome, or

if operated within a control zone, request authorization to operate as a special VFR flight, or

request clearance to operate in accordance with the instrument flight rules.

### INSTRUMENT FLIGHT RULES

Aircraft shall be equipped with suitable instruments and with navigation equipment appropriate to the route to be flown.

Except when necessary for take-off or landing, or except when specifically authorized by the appropriate authority, an IFR flight shall be flown at a level which is not below the minimum flight altitude established by the State whose territory is overflown, or, where no such minimum flight altitude has been established:

over high or in mountainous areas, at a level which is at least **2000 ft** above the highest obstacle located within 8 km of the estimated position of the aircraft

elsewhere than specified above, at a level which is at least **1000 ft** above the highest obstacle located within 8 km of the estimated position of the aircraft.

### CHANGE FROM IFR TO VFR FLIGHT

An aircraft electing to change the conduct of it's flight from compliance with the instrument flight rules to compliance with the visual flight rules shall, if a flight plan was submitted, notify the appropriate air traffic services unit specifically that the IFR flight is cancelled and communicate thereto the changes to be made to it's current flight plan.

When an aircraft operating under the instrument flight rules is flown in or encounters visual meteorological conditions it shall not cancel it's IFR flight unless it is anticipated, and intended, that the flight will be continued for a reasonable period of time in uninterrupted visual meteorological conditions.

### CHANGE FORM VFR TO IFR FLIGHT

An aircraft operated in accordance with the visual flight rules which wishes to change to compliance with the instrument flight rules shall:

if a flight plan was submitted, communicate the necessary changes to be effected to its current flight plan, or

submit a flight plan to the appropriate air traffic services unit and obtain a clearance prior to proceeding IFR when in controlled airspace.

## TERRITORIAL APPLICATION

The rules of the air shall apply to aircraft bearing the nationality and registration marks of a member state of the ICAO wherever they may be to the extent that they don't conflict with the rules published by the State having the jurisdiction over the territory being overflown.

For purposes of flights over those parts of the high seas where a Contracting State has accepted, pursuant to the regional air navigation agreement, the responsibility of providing air traffic services, the "appropriate ATS authority" referred to in this chapter is the relevant authority designated by the State responsible for providing those services.

## COMMUNICATION PROCEDURES INCLUDING COM-FAILURE PROCEDURES

If a radio failure precludes compliance with e) in this chapter the aircraft shall comply with the appropriate COM-failure procedures. In addition the aircraft, when forming part of the aerodrome traffic at a controlled aerodrome, shall keep a watch for such instructions as may be issued by visual signals.

If in **Visual Meteorological Conditions** the aircraft shall:

continue to fly in VMC

land at the nearest suitable aerodrome

report its arrival by the most expeditious means to the appropriate air traffic control unit.

If in **Instrument Meteorological Conditions** or when weather conditions are such that it does not appear feasible to complete the flight in accordance with the above the aircraft shall:

a. unless otherwise prescribed on the basis of regional air navigation agreement, in airspace where radar is not used in the provision of air traffic control, maintain the last assigned speed and level, or minimum flight altitude if higher, for a period of 20 minutes following the aircraft’s failure to report its position over a compulsory reporting point and thereafter adjust level and speed in accordance with the filed flight plan;

b. in airspace where radar is used in the provision of air traffic control, maintain the last assigned speed and level, or minimum flight altitude if higher, for a period of 7 minutes following:

1. the time the last assigned level or minimum flight altitude is reached, or

2. the time the transponder is set to Code 7600, or

3. the aircraft's failure to report its position over a compulsory reporting point,

whichever is later, and thereafter adjust level and speed in accordance with the filed flight plan;

c. when being radar vectored or having been directed by ATC to proceed offset using RNAV without a specified limit, rejoin the current flight plan route no later than the next significant point, taking into consideration the applicable minimum flight altitude;

d. proceed according to the current flight plan route to the appropriate designated navigation aid or fix serving the destination aerodrome and, when required to ensure compliance with e. below, hold over this aid or fix until commencement of descent;

e. commence descent from the navigation aid or fix specified in d. at, or as close as possible to, the expected approach time last received and acknowledged; or, if no expected approach time has been received and acknowledged, at, or as close as possible to, the estimated time of arrival resulting from the current flight plan;

f. complete a normal instrument approach procedure as specified for the designated navigation aid or fix; and

g. land, if possible, within thirty minutes after the estimated time of arrival specified in e. or the last acknowledged expected approach time, whichever is later.

### AIR-GROUND COMMUNICATIONS FAILURE

When an aircraft station fails to establish contact with the aeronautical station on the designated frequency, it shall attempt to establish contact on another frequency appropriate to the route. In addition an aircraft operating within a network shall monitor the appropriate VHF frequency for calls from nearby aircraft.

If the attempts above fail, the aircraft station shall transmit its message twice on the designated frequency(ies), preceded by the phrase "TRANSMITTING BLIND" and, if necessary, include the addressee(s) for which the message is intended.

### RECEIVER FAILURE

When an aircraft station is unable to establish communication due to receiver failure, it shall transmit reports at the schedules times, or positions, on the frequency in use, preceded by the phrase "TRANSMITTING BLIND DUE TO RECEIVER FAILURE". The aircraft station shall transmit the intended message, following this by a complete repetition. During this procedure, the aircraft shall also advise the time of its next intended transmission.

An aircraft which is provided with air traffic control or advisory service shall, in addition to the above, transmit information regarding the intention of the PIC with respect to the continuation of the flight of the aircraft.

When an aircraft is unable to establish communication due to airborne equipment failure it shall, when so equipped, select the appropriate SSR code to indicate radio failure.

### TRANSPONDER PROCEDURES - COM FAILURE

The pilot of an aircraft losing two way communications shall set the Transponder to

**Mode A Code 7600**

A controller observing a response on the radio communications failure code will ascertain the extent of the failure by instructing the pilot to operate the special position indicator (SPI) feature or to change code. Where it is determined that the aircraft receiver is functioning, further control of the aircraft will be continued using code changes or SPI transmission to acknowledge receipt of clearances issued.

## INTERCEPTION OF CIVIL AEROPLANES

An aircraft which is intercepted by another aircraft shall immediately:

follow the instructions given by the intercepting aircraft, interpreting and responding to visual signals in accordance with the specifications in this chapter.

notify, if possible, the appropriate air traffic services unit

attempt to establish radiocommunication with the intercepting aircraft or with the appropriate intercept control unit, by making a general call on the emergency frequency 121,5 MHz, giving the identity of the intercepted aircraft and the nature of the flight; and if no contact has been established and if practicable, repeating this call on the emergency frequency 243,0 MHz

if equipped with SSR transponder, select Mode A, Code 7700, unless otherwise instructed by the appropriate air traffic services unit.

If those instructions received by radio from any sources conflict with those given by the intercepting aircraft by visual signals, the intercepted aircraft shall request immediate clarification while continuing to comply with the visual instructions given by the intercepting aircraft.

## SIGNALS FOR THE USE IN EVENT OF INTERCEPTION

### INTERCEPTION:

Signal: DAY or NIGHT - Rocking aircraft and flashing navigational lights at irregular intervals (and landing lights in case of a helicopter) from a position slightly above and ahead of, and normally to the left of, the intercepted aircraft and, after acknowledgement, a slow level turn, normally to the left onto the desired heading.

Respond: DAY or NIGHT - Rocking aircraft, flashing navigational lights at irregular intervals and following.

**RELEASE:**

Signal: DAY or NIGHT - An abrupt breakaway manoeuvre from the intercepted aircraft consisting of a climbing turn of 90 degrees or more without crossing the line of flight of the intercepted aircraft.

Respond: DAY or NIGHT - Rocking the aircraft.

**FORCED LANDING:**

Signal: DAY or NIGHT - Lowering landing gear (if fitted), showing steady landing lights and overflying runway in use. In case of helicopters, the intercepting helicopter makes a landing approach, coming to hover near to the landing area.

Respond: DAY or NIGHT - Lowering the landing gear (if fitted) showing steady landing lights and following the intercepting aircraft and, if, after overflying the runway in use, landing is considered safe, proceeding to land.

**AERODROME INADEQUATE:**

Signal: DAY or NIGHT - Raising the landing gear (if fitted) and flashing landing lights while passing over runway in use at a height exceeding 1000 ft but not exceeding 2000 ft above the aerodrome level, and continuing to circle the runway in use. If unable to flash landing lights flash any other lights available.

Respond: DAY or NIGHT - If it is desired that the intercepted aircraft follow the intercepting aircraft to an alternate aerodrome, the intercepting aircraft raises its landing gear (if fitted) and uses the signals prescribed for intercepting aircraft. If it is decided to release the aircraft intercepted, the intercepting aircraft uses the signals for releasing intercepted aircraft.

**INABILITY TO COMPLY**

Signal: DAY or NIGHT - Regular switching on and off of all available lights but in such a manner as to be distinct from flashing lights.

Respond: DAY or NIGHT - Uses signals prescribed for releasing aircraft, meaning "Understood"

**DISTRESS**

Signal: DAY or NIGHT - Irregular flashing of all available lights

Respond: DAY or NIGHT - Uses signals prescribed for releasing aircraft, meaning "Understood"

## RADIO LISTENING WATCH

An aircraft operated as a controlled flight shall maintain continuous listening watch on the appropriate radio frequency of, and establish two-way communication as necessary with, the appropriate air traffic control unit, except as may be prescribed by the appropriate ATS authority in respect of aircraft forming part of aerodrome traffic at a controlled aerodrome.

SELCAL or other automatic signalling devices satisfy the requirement to maintain a listening watch.

## SIGNALS

Upon observing or receiving any of the signals given herein, aircraft shall take such action as may be required by the interpretation of that signal.

The signals shall when used, have the meaning indicated therein. They shall be used only for the purpose indicated and no other signals likely to be confused with them shall be used.

### DISTRESS & URGENCY SIGNALS

are given in 12.12 of this chapter

### SIGNALS IN CASE OF INTERCEPTION

are given in 12.7.2 of this chapter

### SIGNALS FOR AERODROME TRAFFIC

The following Light signals are directed from the Aerodrome Control to the aircraft concerned:

|  |  |  |
| --- | --- | --- |
| **LIGHT SIGNAL** | **IN FLIGHT** | **ON GROUND** |
| Steady green | Cleared to land | Cleared for take-off |
| Steady red | Give way to other  aircraft and continue circling | Stop |
| Series of green | Return for landing | Cleared to taxi |
| Series of red flashes | Aerodrome unsafe, do not land | Taxi clear or landing area in use |
| Series of white flashes | Land at this aerodrome and proceed to apron | Return to the starting point on the aerodrome |
| Red Pyrotechnic | Notwithstanding any previous instructions, do not land for the time |  |

**ACKNOWLEDGEMENT BY AIRCRAFT**

During the hours of daylight by rocking the aircraft's wings or when on the ground, moving the aircraft's ailerons or rudder

During the hours of darkness by flashing on and off twice the aircraft's landing lights, or if not so equipped, by switching on and off twice it's navigation lights.

## TIME SYSTEM

Co-ordinated Universal Time (UTC) shall be used and shall be expressed in hours and minutes of the 24-hour day beginning at midnight.

A time check shall be obtained prior to operating a controlled flight and at such other times during the flight as may be necessary.

Such time check is normally obtained from an air traffic services unit unless other arrangements have been made by the operator or by the appropriate ATS authority.

## ATC CLEARANCES & ADHERENCE TO FLIGHT PLAN

### CLEARANCES

An air traffic control clearance shall be obtained prior to operating a controlled flight, or a portion of a flight as a controlled flight. Such clearance shall be requested through the submission of a flight plan to an air traffic control unit.

A flight plan may, however, cover only part of a flight, as necessary, to describe that portion of the flight or those manoeuvres which are subject to air traffic control. A clearance may cover only part of a current flight plan, as indicated in a clearance limit or by reference to specific manoeuvres such as taxiing, landing or taking-off.

If an air traffic control clearance is not satisfactory to a Pilot in command of an aircraft, he may request and, if practicable, will be issued an amended clearance. Whenever an aircraft has requested a clearance involving priority, a report explaining the necessity for such priority shall be submitted, if requested by the appropriate air traffic control unit.

### RECLEARANCE IN FLIGHT

If prior to departure it is anticipated that depending on fuel endurance and subject to re-clearance in flight, a decision may be taken to proceed to a revised destination aerodrome, the appropriate air traffic control units shall be so notified by the insertion in the flight plan of information concerning the revised route (where known) and the revised destination.

An aircraft operated on a controlled aerodrome shall not taxi on the manoeuvring area without clearance from the aerodrome control tower and shall comply with any instructions given by that unit.

### ADHERENCE TO FLIGHT PLAN

Except as provided for in the above paragraph an aircraft shall adhere to the current flight plan or the applicable portion of a current flight plan submitted for a controlled flight unless a request for a change has been made and a clearance obtained from the appropriate air traffic control unit, or unless an emergency situation arises which necessitates immediate action by the aircraft, in which event as soon as circumstances permit, after such emergency authority is exercised, the appropriate air traffic services unit shall be notified of the action taken and that this action has been taken under emergency authority.

Unless otherwise authorized or directed by the appropriate air traffic control unit, controlled flights shall, in so far as practicable:

when on an established ATS route, operate along the defined center line of that route, or

when on any other route operates directly between the navigation facilities and/or points defining that route.

Subject to the overriding requirement above, an aircraft operating along an ATS route segment defined by reference to very high frequency omnidirectional radio ranges (VORs) shall change over for it's primary navigation guidance from the facility behind the aircraft to that ahead of it at, or as close as operationally feasible to, the change-over point, where established. Deviations shall be notified to the appropriate air traffic services unit.

### INADVERTENT CHANGES

In the event that a controlled flight inadvertently deviates from its current flight plan, the following action shall be taken:

Deviation from Track: If the aircraft is off track, action shall be taken forthwith to adjust the heading of the aircraft to regain track as soon as practicable.

Variation in True Airspeed: If the average true airspeed at cruising level between reporting points varies or is expected to vary by plus or minus 5% of the true airspeed, from that given in the flight plan, the appropriate air traffic services unit shall be so informed.

Change in Time Estimate: If the time estimate for the next applicable reporting point, flight information boundary or destination aerodrome, whichever comes first, is found to be in error in excess of 3 minutes from that notified to air traffic services, or such other period of time as is prescribed by the appropriate ATS authority or on the basis of air navigation regional agreements, a revised estimated time shall be notified as soon as possible to the appropriate air traffic services unit.

### POSITION REPORTS

Unless exempted by the appropriate ATS authority or by the appropriate air traffic services unit under conditions specified by that authority, a controlled flight shall report to the appropriate air traffic services unit , as soon as possible, the time and level of passing each designated compulsory reporting point, together with any other required information. Position reports shall similarly be made in relation to additional points when requested by the appropriate air traffic services unit. In the absence of designated reporting points, position reports shall be made at intervals prescribed by the appropriate ATS authority or specified by the appropriate air traffic services unit.

### TERMINATION OF CONTROL

A controlled flight shall, except when landing at a controlled aerodrome, advise the appropriate ATC unit as soon as it ceases to be subject to air traffic control service.

## SIGNALS TO AVOID RESTRICTED, DANGEROUS & PROHIBITED AIRSPACE

By day and by night, a series of projectiles discharged from the ground at intervals of 10 seconds, each showing, on bursting, red and green lights or stars will indicate to an unauthorized aircraft that it is just flying in or about to enter a restricted, prohibited or danger area, and that the aircraft is to take such remedial action as may be necessary.

### PROCEDURES FOR PILOTS OBSERVING AN ACCIDENT OR RECEIVING A DISTRESS TRANSMISSION

When a PIC observes that either another aircraft or a surface craft is in distress he shall, unless he is unable or considers it is unreasonable or unnecessary:

Keep that craft in sight until such time as his presence is no longer necessary.

If his position is not known certainly, take such action as will facilitate the determination of it

Report to the rescue coordination center or ATS unit as much of the following information as possible:

a) Type of craft in distress, it's identification and condition

b) Its position expressed in geographical coordinates or in distance and true bearing from a distinctive landmark or from a radio navigational aid

c) Time of observation expressed in hours and minutes UTC

d) Number of persons observed

e) Whether persons have been seen to abandon the craft in distress

f) Number of persons observed to be afloat

Act as instructed by the rescue coordination center or the air traffic services unit. However, if the first aircraft to reach the scene of an accident is not a search and rescue aircraft it shall take charge of on-scene activities of all other aircraft subsequently arriving until the first SAR aircraft reaches the scene of the accident.

## GROUND / AIR VISUAL CODES

The signals described herein shall, when used, have the meaning indicated. They shall be used only for the purpose indicated and no other signals likely to be confused with them shall be used.

Upon observing any of the signal described herein, aircraft shall take such action as may be required by the interpretation of the signals given.

### SIGNAL WITH SURFACE CRAFT

The following manoeuvres performed in sequence by an aircraft mean that the aircraft wishes to direct a surface craft towards an aircraft or a surface craft in distress:

Circling the surface craft at least once;

Crossing the projected course of the surface craft close ahead at low altitude and rocking the wings;

Heading in the direction in which the surface craft is to be directed;

The following replies may be made by a surface craft to the signals described above:

**ACKNOWLEDGING** receipt of signal:

The hosting of the "Code pennant" (vertical red and white stripes" close up (meaning understood);

The flashing of a succession of "T's" by a signal lamp in Morse code;

The changing of heading to follow the aircraft

For indicating **INABILITY** to comply:

The hoisting of the international flag "N" (blue and white chequered square);

The flashing of a succession of "N's" in the Morse code

### SIGNAL CODE FOR USE BY SURVIVORS

The symbols described in the following table shall be at least 2,5 meters (8 feet) long and shall be made as conspicuous as possible. They may be formed by any means available such as strips of fabric, pieces of wood, stones, aircraft parts, by marking the surface by tramping or staining with oil etc.

Attention to the signals may be attracted by other means such as radio, flares, smoke, reflected light etc.

-----------------------------------------------------------------

No. Message Code Symbol

-----------------------------------------------------------------

1 Require assistance V

-----------------------------------------------------------------

2 Require medical assistance X

-----------------------------------------------------------------

3 No or Negative N

-----------------------------------------------------------------

4 Yes of Affirmative Y

-----------------------------------------------------------------

5 Proceeding in this direction

-----------------------------------------------------------------

### AIR-TO-GROUND SIGNALS

The following signals by aircraft mean that the ground signals have been understood:

During daylight: rocking the aircraft's wings

During night: Flashing the aircraft's landing lights on and off twice or if by switching the navigation lights on and off twice.

Lack of the above signals indicates that the ground signal is not understood.

## DISTRESS & URGENCY SIGNALS

An aircraft is in a distress condition when it is threatened by grave and imminent danger and requires immediate assistance. The RTF distress signal is the word "MAYDAY" preferably spoken three times on the air/ground frequency in use.

Other ways of indicating a distress condition are:

the activation of the appropriate SSR mode and code, which means Mode A, Code 7700

Transmitting the distress message on the emergency frequency 121,5 MHz

Circumstances and time permitting the following information should be given in the distress message:

name of the station addressed

identification of the aircraft

nature of distress condition

intentions of the person in command

present position, level and heading

PRIORITY

Distress communications have absolute priority over all other radio traffic; other stations shall not transmit on the frequency concerned until the distress communication is ended or transferred to an other frequency unless a station has to render assistance.

CANCELLATION

As soon as the distress condition is ended the aircraft or the controlling station shall cancel the distress phase.

## URGENCY COMMUNICATION

This type of communication concerns the safety of an aircraft or other vehicle, of a person on board or in sight, not requiring immediate assistance.

The RTF urgency signal is the word "PAN", preferably spoken three times on the air/ground frequency in use.

The following information should be given in the urgency message:

name of station addressed

identification of aircraft

nature of urgency condition

intentions of the person in command

present position, level and heading

any other useful information

### PRIORITY

Urgency communications have priority over all other communications, except distress communications; other stations shall not interfere with the transmissions of urgency communications.

# LEASING

**NOT APPLICABLE**