

Military Aviation Requirements - Operations

MAR-OPS 1

Fixed wing transport, tanker and maritime surveillance operations

Military Aviation Authority – The Netherlands

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| Amendment to version 3 | – Incorporation of Subpart R |
| Amendments to version 4 | – Terminology transferred to MAR-11 |
| | – Quality System and Safety Program amended to SMS |
| | – Multiple editorial changes |
| | – Incorporation of general responsibility article |
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| | – Amendment of Subpart R |

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TERMINOLOGY

Terms used in this MAR-OPS 1 are explained in the MAR-11.

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SUBPART A – APPLICABILITY AND ENTRY INTO FORCE

MAR-OPS 1.001 Applicability and entry into force

(a) MAR-OPS 1 prescribes requirements and conditions applicable to the operation of any fixed wing transport, tanker and maritime surveillance aircraft operated by Netherlands military Operators.

(b) This requirement shall enter into force on the day of signing by the Director of the Military Aviation Authority of the Netherlands. Operators who are in the process for certification for a Military Air Operator certificate will only be issued a certificate when they comply with this requirement. Operators certified as Military Air Operator need to show compliance, including adapting their (safety) management system, no later than 01 January 2019.

SUBPART B – GENERAL

MAR-OPS 1.002	Privileges
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Appendix 1 to MAR-OPS 1.030 MEL - application and usage

MAR-OPS 1.002 Privileges

The holder of a MAOC is privileged to conduct fixed wing transport, tanker and maritime surveillance operations in accordance with terms and conditions of the MAOC.

MAR-OPS 1.003 Responsibilities

(a) The requirements in this MAR-OPS do not absolve any person from using their best judgement to ensure the safety of the aircraft, personnel and surroundings. Where safety or operational imperatives demand, the requirements may be deviated from provided that a convincing case can be offered in retrospect. Where authorised individuals issue their own amplifying orders or instructions, they must be based on these requirements and on a sound risk analysis.

(b) Nothing in these requirements shall exonerate an accountable manager, postholder, pilot in command, crewmember or other operations personnel from the consequences of any neglect to comply with these requirements, or of the disregard of any precaution which may be required by the ordinary practise of airmen, or by the special circumstances of the case.

(c) In construing and complying with these requirements due regard shall be had to any special circumstances, including those originating from the specific military context, which may make a deviation from the requirements necessary to avoid immediate danger.

MAR-OPS 1.005 General

(a) The Operator shall operate any aircraft listed on his MAOC in accordance with this MAR-OPS 1.

(b) The Operator shall ensure that at all times clear and unambiguous instructions are issued to all crew members regarding the requirements, procedures and conditions applicable to the operation to be conducted. These instructions shall be substantiated by a formal authorisation.

(c) For requirements in this MAR-OPS 1 that require alternative implementation by an Operator -if deemed necessary 'due to the nature of the operation'- the Operator shall include a verifiable decision-making procedure in his Operations Manual.

(d) The Operator shall operate any aircraft in compliance with the terms of its Certificate of Airworthiness and within the approved limitations contained in its Aircraft Flight Manual.

(e) All synthetic training devices (STD) replacing an aircraft for training and/or checking purposes are to be approved by the MAA. Approval can be obtained by following the recommendations as written down in the Advisory Circular FSTD or equivalent.

(f) The Operator shall have a passenger policy for transport of persons other than crew members with aircraft types operated under the terms of his MAOC. This passenger policy must be approved by the Military Aviation Authority.

MAR-OPS 1.010 Exemptions

(a) When satisfied that there is a need, the Military Aviation Authority may exceptionally and temporarily grant an exemption from the provisions of MAR-OPS 1. The exemption may include any supplementary condition the Military Aviation Authority considers necessary in order to ensure an acceptable level of safety in the particular case.

(b) When the Operator has a need to deviate from any MAR-OPS 1 requirement, a petition for exemption from the specific requirement shall be submitted to the Military Aviation Authority in accordance with MAR-11. The formal Military Aviation approval shall be obtained before deviating from the requirement.

(c) When time does not permit compliance with sub-paragraph (b) above, deviation from specific MAR-OPS 1 requirements is only permitted in case of operational necessity and shall be based on an operational risk assessment. Subsequently, the Operator shall ensure that a report is submitted to the Military Aviation Authority as soon as possible, describing the:

- (1) MAR-OPS 1 requirements deviated from;
- (2) Operational circumstances and necessity to deviate;
- (3) Results from the operational risk / safety assessment; and
- (4) Any supplementary conditions and/or measures applied.

MAR-OPS 1.015 Operational directives

(a) The Military Aviation Authority may direct by means of an operational directive that an operation shall be prohibited, limited or subject to certain conditions, in the interest of safe operations (reference MAR-11).

(b) Operational Directives state:

- (1) The reason for issue;
- (2) Applicability and duration; and
- (3) Action required by the Operator.

(c) Operational directives are supplementary to the provisions of this MAR-OPS 1.

MAR-OPS 1.020 Laws, regulations and procedures – Operator's responsibilities

The Operator shall ensure that:

(a) All operations personnel are made aware that they shall comply with the laws, regulations and procedures of those States in which operations are conducted and which are pertinent to the performance of their duties; and

(b) Crew members are familiar with the laws, regulations and procedures pertinent to the performance of their duties.

MAR-OPS 1.025 Common language

- (a) The Operator shall ensure that all crew members are able to communicate in a common language.
- (b) The Operator shall ensure that all operations personnel are able to understand the language in which those parts of the Operations Manual which pertain to their duties and responsibilities, are written.

MAR-OPS 1.030 Minimum Equipment Lists

(See appendix 1 to MAR-OPS 1.030 MEL - application and usage)

- (a) The Operator shall:

Apply and use the MEL in accordance with appendix 1 to this MAR-OPS 1 requirement.

- (b) The Operator shall not operate an aircraft:

(1) Other than in accordance with the applicable MEL unless permitted by the Military Aviation Authority; or

(2) After expiry of the rectification interval specified in the applicable MEL, unless:

(i) The defect has been rectified; or

(ii) The rectification interval is extended in accordance with appendix 1 to this MAR-OPS 1 requirement.

- (c) Where there is a conflict between the MEL and an Airworthiness Directive or any other mandatory requirement issued by the Military Aviation Authority, the data or information contained in the Airworthiness Directive or the mandatory requirement shall prevail.

MAR-OPS 1.034 Managerial requirements

- (a) The Operator shall set up and manage his organisation according to a structure that supports the safe, efficient and continuous provision of flight operations under the terms of this MAR-OPS.

- (b) The Operator shall setup a management structure that ensures at least the following:

(1) An accountable manager is appointed who, on behalf of the organisation, has corporate authority to ensure that all required activities can be carried out to the standard required by this MAR-OPS. The accountable manager shall:

(i) establish and promote the management systems specified in MAR-OPS 1.035 & 1.037;

(ii) ensure that, in support of the Operator's approval, all necessary resources are available to accomplish the activities;

(iii) demonstrate a basic understanding of the MAR-OPS;

(2) A quality manager is appointed with the responsibility for monitoring the quality management system, including the associated feedback system as required by MAR-OPS 1.035. The appointed person shall have direct access to the accountable manager to ensure that the accountable manager is kept properly informed about issues related to quality and compliance. The appointed person shall have access to all parts of the organisation and, as applicable, any (sub)contracted organisation;

(3) For flight operations under the terms of this MAR-OPS, the Military Aviation Authority may accept the nomination of two quality manager functions, one for operations and one for maintenance management, provided that the quality system is applied uniformly throughout the entire operation.

(4) A safety manager is appointed responsible to monitor compliance with, and adequacy of, procedures to ensure safe operational practices. The appointed person shall have direct access to the accountable manager to ensure that the latter is kept properly informed about safety affairs, compliance and improvement measures;

(5) Nominated postholders are appointed, whose job responsibilities includes ensuring that the organisation complies with this MAR-OPS. Such persons shall ultimately be responsible to the accountable manager. The nominated postholders:

- (i) shall represent the management structure of the organisation;
- (ii) shall be able to demonstrate relevant knowledge, background and satisfactory experience related to the flight operations executed under the terms of this MAR-OPS;
- (iii) shall demonstrate a basic active understanding of this MAR-OPS;

(6) For flight operations under the terms of this MAR-OPS, postholders responsible for the management and supervision of the following areas are required:

- (i) Flight operations;
- (ii) Maintenance management;
- (iii) Crew training; and
- (iv) Ground operations;

(7) A person may hold more than one of these nominated posts if acceptable to the Military Aviation Authority, but a minimum of two persons are required to cover the four areas of responsibility.

(c) The organisational structure shall define:

(1) the authority, duties and responsibilities of the accountable manager, the nominated post holders and in particular of the management personnel in charge of safety, quality, security and human resources related functions;

(2) the relationship and reporting lines between different parts and processes of the organisation.

(d) Personnel requirements:

(1) The Operator shall employ appropriately skilled personnel to ensure the provision of its services in a safe, efficient and continuous manner.

(2) The Operator shall have a man-hour plan showing that the organisation has sufficient personnel to plan, perform, supervise, inspect, and quality monitor the organisation in accordance with the approval.

(3) The Operator shall have a procedure to reassess work intended to be carried out when actual staff availability is less than the planned staffing level for any particular work shift or period or the work load is higher than expected.

(4) The Operator shall establish and control the competence of all personnel involved in provision of its services in accordance with a procedure and to a standard acceptable to the MAA-NLD. In addition to the necessary expertise related to the job function, the competence must include an understanding of the application of human factors and human performance issues appropriate to that person's function in the organisation.

(5) The Operator shall ensure that all personnel receive sufficient and appropriate continuation training according with a procedure and standard acceptable to the MAA-NLD.

(6) The Operator shall ensure that technical personnel including personnel of subcontracted operating organisations who operate and maintain equipment approved for its operational use have and maintain sufficient knowledge and understanding of the services they are supporting, of the actual and potential effects of their work on the safety of those services, and of the appropriate working limits to be applied.

MAR-OPS 1.035 Quality system

(a) The Operator shall develop a functional and effective system to manage quality such that it assures that products and services meet the required specification.

(b) The system shall include the following:

(1) A quality policy that meets the needs of different users as closely as possible;

(2) Procedures, taking into account human factors and human performance, to ensure good practices and compliance with this MAR-OPS. The procedures developed or to be developed shall address all aspects dealing with the performance of the activities and shall contain the standards which the organisation intends to meet;

(3) Independent checks, by means of audits, inspections, or investigations, in order to ensure the required standards and the adequacy of procedures according this MAR-OPS;

(4) A quality feedback reporting system to the nominated postholder and ultimately to the accountable manager that ensures proper and timely corrective actions are taken in response to reports resulting from the independent checks performed;

(5) Documentation and registration system.

(c) The Operator shall describe the system and procedures in the Operations Manual or Organisation Exposition.

(d) The Operator shall provide and keep up-to-date operations manuals relating to the provision of its services for the use and guidance of operations personnel. The Operator shall ensure that:

- (1) operations manuals contain instructions and information required by operations personnel to perform their duties;
- (2) relevant parts of the operations manuals are accessible to the personnel concerned; and
- (3) operations personnel are expeditiously informed of the amendments to the operations manual applying to their duties as well as of their entry into force.

MAR-OPS 1.036 Subcontracting

(a) The Operator may make arrangements with a sub-contractor organisation to carry out any task and/or activity within the scope of its MAOC.

(b) Arrangements between the Operator and a sub-contractor organisation as mentioned in sub-paragraph (a) above, including all amendments to it, shall:

- (1) Be in the form of a verifiable agreement acceptable to the Military Aviation Authority;
- (2) Clearly define the products and/or services and quality to be provided; and
- (3) Clearly define the subcontractor's authorization/approval required to conduct the sub-contracted task and/or activity.

(c) The ultimate responsibility for the product and/or service provided by the sub-contractor always remains with the Operator. Therefore the Operator shall ensure that:

- (1) The subcontractor's safety related activities relevant to the agreement shall be included in the Operator's Quality Monitoring Program (reference appendix 1 to MAR-OPS 1.035);
- (2) The subcontractor has the necessary authorization/approval to conduct to sub-contracted task and/or activity;
- (3) The subcontractor commands the resources and has the competence to conduct the sub-contracted task and/or activity; and
- (4) In the event that the Operator requires the subcontractor to conduct activities which exceed the subcontractor's authorization and approval, the subcontractor's quality assurance takes account of additional requirements.

MAR-OPS 1.037 Safety Management System

(a) The Operator shall develop an effective, explicit and proactive system to manage safety that comprises the following components:

- (1) Safety policy and objectives;
- (2) Safety assurance providing continuous monitoring and regular analysis of the safety level achieved;

(3) Risk management to identify hazards and to ensure that remedial actions necessary to maintain an acceptable level of safety are implemented;

(4) Safety improvement aiming to make continuous improvement to the overall level of safety.

(b) Regarding safety policy and objectives, the system shall contain the following elements:

(1) a statement of the safety policy defining the Operator's fundamental approach to managing safety;

(2) Safety strategy and planning, such as setting safety performance targets, allocating priorities for implementing safety initiatives and ensuring that the principal safety objective is to minimise the organisation's contribution to the risk of an aircraft accident as far as reasonably practicable.

(c) Regarding safety assurance, the system shall contain the following elements:

(1) Staff training and competence, including the review and evaluation of the adequacy of training provided to staff on safety-related duties;

(2) Documentation, registration and monitoring of all safety-related infrastructure, facilities and equipment;

(3) The enforcement of an adequate justification of the safety of the externally provided services and supplies;

(4) Safety surveys that are carried out as a matter of routine, to recommend improvements where needed, to provide assurance to managers of the safety of activities within their areas and to confirm compliance with the relevant parts of the safety management system.

(d) Regarding risk management, the system shall contain the following elements:

(1) Registration, analysis, and handling of accidents, incidents, defects, faults, and discrepancies, including internal and external complaints with respect to safety, and ensure that any necessary corrective action is taken;

(2) Demonstration of the implementation of the requirements on the reporting and assessment of safety occurrences in accordance with applicable national and international law and SMAR-1;

(3) The identification, assessment and mitigation of risks to an appropriate level to ensure that due consideration is given to all aspects of the provision of its services including for changes to the functional system;

(4) Methods are in place to detect changes in functional systems or operations which may suggest any element is approaching a point at which the acceptable level of safety can no longer be met, and that corrective actions have to be taken.

(5) A flight data monitoring program which shall be systematic and allow pro-active use of (digital) flight data from routine operations to improve aviation safety within an intrinsically non-punitive and just Safety Culture. This flight data monitoring program shall contain adequate safeguards to protect the source(s) of the data and shall allow the Operator to:

- (i) Identify areas of operational risk and quantify current safety margins;
- (ii) Identify and quantify changing operational risks by highlighting when nonstandard, unusual or unsafe circumstances occur; and
- (iii) Use the flight data monitoring program information on the frequency of occurrence, combined with an estimation of the level of severity, to assess the safety risks and to determine which are or may become unacceptable if the discovered trend continues; and
- (iv) put in place appropriate risk mitigation to provide remedial action once an unacceptable risk (either actually present or predicted by trending) has been identified; and
- (v) confirm the effectiveness of any remedial action by continued monitoring.

(e) Regarding safety improvement, the system shall contain the following elements:

- (1) All personnel is aware of the potential safety hazards connected with their duties;
- (2) The lessons arising from safety occurrence investigations and other safety activities are disseminated within the organisation at management and operational levels;
- (3) All personnel is actively encouraged to propose solutions to identified hazards, and changes are made to improve safety where they appear needed.

(f) The Operator shall systematically document the safety management system in the Operations Manual or Organisation Exposition in a manner which provides a clear linkage to the organisation's safety policy.

(g) Accident and incident data requirements specified in MAR-OPS 1.160 shall take precedence over the requirements of a flight data monitoring program. In these cases the recorded data shall be retained as part of the investigation data, regardless of the Operators de-identification policy regarding the flight data monitoring program.

MAR-OPS 1.039 Facilities

(a) The Operator shall ensure that operational support and ground handling facilities are appropriate for the area and type of operation and ensure the safe handling of its flights.

(b) The Operator must provide sufficient and suitable office accommodation at appropriate locations for all operations personnel. Consideration must be given to the needs of ground staff, those concerned with exercising control over daily operations, the storage and display of essential records, and flight planning by crewmembers.

(c) Office services must be capable, without delay, of distributing operational instructions and other information to all concerned.

MAR-OPS 1.040 Crew members

(a) The Operator shall ensure that crew members have been trained in, and are competent to perform, their assigned duties on board of an aircraft.

(b) The Operator shall specify in the Operations Manual the qualifications of crew members, their corresponding duties and responsibilities, and their continuation and checking program.

MAR-OPS 1.050 Search and rescue information

The Operator shall ensure that crew members are familiar with the essential information pertinent to the intended flight concerning (combat) search and rescue services.

MAR-OPS 1.055 Information on emergency and survival equipment carried

The Operator shall ensure that lists containing information on the emergency and survival equipment carried on board of all of his aircraft, are available for immediate communication to (combat) rescue coordination centres.

MAR-OPS 1.075 Method of carriage of persons

The Operator shall take all reasonable measures to ensure that no person is in any part of an aircraft in flight which is not a part designed for the accommodation of persons unless temporary access has been granted by the Pilot in Command:

(a) For the purpose of taking action necessary for the safety of the aircraft or of any person, animal or goods therein; or

(b) In which cargo or stores are carried, being a part which is designed to enable a person to have access thereto while the aircraft is in flight.

MAR-OPS 1.080 Dangerous goods for transport by air

The Operator shall take all reasonable measures to ensure that no person accepts dangerous goods for transport by air unless the person has been trained and the goods are:

(a) Properly classified, documented, certificated, described, packaged, marked, labelled and in a fit condition for transport as required by the ICAO Technical Instructions; and

(b) In accordance with the conditions and requirements of Subpart R of this requirement.

MAR-OPS 1.085 Crew responsibilities

(a) A crew member shall be responsible for the proper execution of his duties which are:

(1) Related to the safety of the aircraft and its occupants; and

(2) Specified in the instructions and procedures laid down in the Operations Manual.

(b) A crew member shall:

(1) Report to the Pilot in Command any fault, failure, malfunction or defect which he believes may affect the airworthiness or safe operation of the aircraft including emergency systems;

(2) Report to the Pilot in Command any incident that endangered, or could have endangered, the safety of operation; and

(3) Make use of the Operator's occurrence reporting schemes in accordance with MAR-OPS 1.037(a)(2). In all such cases, a copy of the report(s) shall be communicated to the Pilot in Command concerned.

(c) Nothing in paragraph (b) above shall oblige a crew member to report an occurrence which has already been reported by another crew member.

(d) A crew member shall not perform duties in an aircraft:

(1) While under the influence of any substance that may affect his faculties in a manner contrary to safety;

(2) After scuba diving until 24 hours have elapsed;

(3) After blood donation until 72 hours have elapsed;

(4) If he is in any doubt of being able to accomplish his assigned duties;

(5) If he knows or suspects that he is suffering from fatigue, or feels unfit to the extent that the flight may be endangered; or

(6) After high altitude safety training or being exposed to an actual rapid aircraft decompression situation while at high altitude until 12 hours have elapsed or in case of symptoms of decompression are experienced 24 hours have elapsed.

(e) A crew member shall not:

(1) Consume alcohol less than 10 hours prior to the specified reporting time for flight duty or the commencement of standby;

(2) Commence a flight duty period with a blood alcohol level in excess of 0,2 promille; and/or

(3) Consume alcohol during the flight duty period or whilst on standby.

(f) The Pilot in Command shall:

(1) Be responsible for the safety of any occupants on board when operating the aircraft;

(2) Be responsible for the operation and safety of the aircraft from the moment he accepts the aircraft for operations until he releases the aircraft back to maintenance;

(3) Have authority to give all commands he deems necessary for the purpose of securing the safety of the aircraft and any occupant carried therein;

(4) Have authority to disembark any person, or any part of the cargo, which, in his opinion, may represent a potential hazard to the safety of the aircraft or its occupants;

(5) Not allow any occupant to be carried in the aircraft who appears to be under the influence of alcohol or any other substance, unless authorised by a medical authority or related to a medical transport;

- (6) Have the right to refuse transportation of inadmissible passengers, deportees or persons in custody if their carriage poses any risk to the safety of the aircraft or its occupants;
- (7) Ensure that all occupants are briefed or trained on the safety and emergency procedures and the location and use of relevant safety, emergency and survival equipment. In case of transporting troops, the Pilot in Command may consider this requirement fulfilled if his mission assignment indicates that these troops have received adequate briefing and training on safety and emergency aspects in advance of embarking the aircraft;
- (8) Ensure that all operational procedures and checklists are complied with in accordance with the Operations Manual;
- (9) Not permit any crew member to perform any activity during take-off, initial climb, final approach and landing except those duties required for mission execution and the safe operation of the aircraft;
- (10) Not permit, unless necessary for reasons of military security, the recording equipment (reference MAR-OPS 1.700, 1.715, 1.720, 1.725, and 1.727) to be disabled, switched off or erased during flight nor permit recorded voice communications and/or flight data to be erased after flight in the event of an accident or an incident subject to mandatory reporting;
- (11) Decide whether or not to accept an aircraft with unserviceabilities allowed by the Operator's Minimum Equipment List or Configuration Deviation List, if available; and
- (12) Ensure that the applicable pre, thru or post-flight inspection has been carried out.

MAR-OPS 1.090 Authority of the Pilot in Command

The Operator shall take all reasonable measures to ensure that any aircraft occupant or ground staff, involved in ground operations, obey all lawful commands given by the Pilot in Command for the purpose of securing the safe operation of the aircraft.

MAR-OPS 1.095 Authority to taxi an aircraft

The Operator shall take all reasonable steps to ensure that an aircraft in his charge is not taxied on the movement area of an aerodrome by a person other than a flight crew member, unless that person, seated at the controls:

- (a) Has been duly authorised by the Operator or a designated agent and is competent to:
 - (1) Taxi the aircraft; and
 - (2) Use the radio telephone; and
- (b) Has received instruction in respect of aerodrome layout, routes, signs, marking, lights, air traffic control signals and instructions, phraseology and procedures, and is able to conform to the operational standards required for safe aircraft movement at the aerodrome.

MAR-OPS 1.100 Admission to cockpit

(a) The Operator must ensure that no person, other than a flight crew member assigned to a flight, is admitted to, or carried in, the cockpit unless that person is:

- (1) An operating crew member;
- (2) A representative of the Military Aviation Authority responsible for certification, licensing or inspection if this is required for the performance of his official duties; or
- (3) Permitted by, and carried in accordance with instructions contained in the Operations Manual.

(b) The Pilot in Command shall ensure that:

- (1) In the interests of safety, admission to the cockpit does not cause distraction and/or interfere with the flight's operation; and
- (2) All persons carried in the cockpit are made familiar with the relevant safety procedures.

(c) The final decision regarding the admission to the cockpit shall be the responsibility of the Pilot in Command.

MAR-OPS 1.105 Unauthorised carriage

The Operator shall take all reasonable measures to ensure that no person secretes himself or items on board an aircraft.

MAR-OPS 1.110 Portable electronic devices

The Operator shall not permit any person to use, and take all reasonable measures to ensure that no person does use on board an aircraft, portable electronic devices which can adversely affect the performance of the aircraft's systems and equipment.

MAR-OPS 1.115 Alcohol and drugs

The Operator shall take all reasonable measures to ensure that no person enters or is in an aircraft when under the influence of alcohol, drugs or any other substance, unless authorised by a medical authority or related to a medical transport.

MAR-OPS 1.120 Endangering safety

The Operator shall take all reasonable measures to ensure that no person recklessly or negligently acts or omits to act, so as to:

- (a) Endanger an aircraft or person therein; or
- (b) Cause or permit an aircraft to endanger any person or property.

MAR-OPS 1.121 Aircraft protection

The Operator shall, as applicable:

- (a) Establish protective measures and security procedures in the Operations Manual to ensure that aircraft, when not operated, are protected against unlawful interference such as sabotage;
- (b) Establish a training program in the Operations Manual which enables flight crew to take appropriate action to minimise the consequences of sabotage of the aircraft when operated; and/or
- (c) Ensure that, following act of unlawful interference on board an aircraft, the Pilot in Command, or in his absence the Operator, shall submit, without delay, a report of such an act to the designated local authority and the Military Aviation Authority (reference SMAR-1, Special Military Aviation Requirements dealing with occurrence reporting).

MAR-OPS 1.122 Flight and duty time limitations and minimum periods of rest

The Operator shall include in the Operations Manual an arrangement for flight and duty time limitations and minimum periods of rest for all operations personnel, to include a reporting system with respect to violation of these arrangements. These arrangements shall be compliant with the Dutch Working Hour Act (ATW) and the subsidiary Working Hours Decree (ATB) and General Military Officials Regulations (AMAR).

MAR-OPS 1.125 Documents to be carried

(a) Unless it is undesirable for reasons of military security:

(1) The Operator shall ensure that the following documents are carried on each flight:

- (i) The (Military) Certificate of Registration;
- (ii) The (Military) Certificate of Airworthiness;
- (iii) The original or a copy of the Noise Certificate (if applicable); and
- (iv) The original or a copy of the Radio Station licences (if applicable); and

(2) Each flightcrew member shall, on each flight, carry a valid Flight Crew Licence with appropriate rating(s) for the purpose of the flight and a valid Military Medical Certificate.

(b) The Operator shall include a procedure in the Operations Manual by which the prevailing security situation as meant by sub-paragraph (a) above has to be assessed.

MAR-OPS 1.130 Manuals to be carried

(a) The Operator shall ensure that crew members operating an aircraft have access to all relevant normal and emergency operating procedures as laid down in the latest version of the Aircraft Flight Manual and the Operations Manual.

(b) The Military Aviation Authority may permit the information detailed in sub-paragraph (a) above, or parts thereof, to be presented in a form other than on printed paper. An acceptable standard of accessibility, usability and reliability must be assured.

MAR-OPS 1.135 Additional information and documentation to be carried

(a) Unless it is undesirable for reasons of military security, the Operator shall ensure that, in addition to the documents and manuals prescribed in MAR-OPS 1.125 and MAR-OPS 1.130, the following information and documentation, relevant to the type and area of operation, are carried on each flight:

- (1) Operational Flight Plan containing at least the information required in MAR-OPS 1.1060(a);
- (2) Aircraft Technical Log containing at least the information required in MAR-OPS 1.920(a);
- (3) Mass and balance documentation as specified in Subpart J.
- (4) Notification of special categories of passenger such as security personnel, if not considered as crew, handicapped persons, inadmissible passengers, deportees and persons in custody;
- (5) Notification of special loads including dangerous goods with written information to the Pilot in Command;
- (6) Current maps and charts and associated documents as prescribed in MAR-OPS 1.290(c)(5); and
- (7) Any other documentation required by the States concerned with this flight.

(b) The Military Aviation Authority may permit the documentation and information detailed in sub-paragraph (a) above, or parts thereof, to be presented in a form other than on printed paper. A standard of accessibility, usability and reliability, acceptable to the Military Aviation Authority must be assured.

(c) The documentation and information mentioned in (a)(1), (2) and (3) need not to be carried on board during local operations.

(d) The Operator shall include a procedure in the Operations Manual by which the prevailing security situation as meant by sub-paragraph (a) has to be assessed.

MAR-OPS 1.140 Information retained on the ground

(a) The Operator shall ensure that:

- (1) At least for the duration of each flight or series of flights:
 - (i) Information relevant to the flight and appropriate for the type of operation is preserved on the ground; and
 - (ii) The information is retained until it has been duplicated at the place at which it will be stored in accordance with MAR-OPS 1.1065; or

(2) If compliance with sub-paragraph (a)(1)(i) above is impracticable, the mentioned information is carried in a fireproof manner on board of the aircraft.

(b) The information referred to in sub-paragraph (a) above includes, at least a copy of:

(1) The operational flight plan in accordance with MAR-OPS 1.1060(a) where appropriate;

(2) The relevant part(s) of the Aircraft Technical Log;

(3) NOTAM documentation if specifically edited by the Operator;

(4) Mass and balance documentation;

(5) Special loads notification;

(6) Passenger manifest; and

(7) Any other documentation required by the States concerned with this flight.

MAR-OPS 1.145 Power to inspect

The Operator shall ensure that a Flight Operations inspector of the Military Aviation Authority is permitted to witness an actual flight operated in accordance with the terms and conditions of his MAOC. The Pilot in Command may refuse access to the cockpit if, in his opinion, the safety of the aircraft would thereby be endangered.

MAR-OPS 1.150 Production of documentation and records

(a) The Operator shall:

(1) Give any person authorised by the Military Aviation Authority access to any documents and records as prescribed by this MAR-OPS 1; and

(2) Produce all such documents and records, when requested to do so by the Military Aviation Authority, within a reasonable period of time.

(b) The Pilot in Command shall within a reasonable time produce to a person authorised by the Military Aviation Authority, the documentation required to be carried on board.

MAR-OPS 1.160 Preservation, production and use of flight recorder recordings

(a) *Preservation of recordings*

(1) Following an accident, the Operator of an aircraft on which a flight recorder is carried shall, to the extent possible, preserve the original recorded data pertaining to that accident, as retained by the recorder for a period of 60 days unless otherwise directed by the investigating authority.

(2) Following an incident that is subject to mandatory reporting, the Operator of an aircraft on which a flight recorder is carried shall, to the extent possible, preserve the original recorded data pertaining to that incident, as retained by the recorder for a period of 60 days, unless otherwise directed by the investigating authority.

(3) Additionally, when the Military Aviation Authority so directs, the Operator of an aircraft on which a flight recorder is carried shall preserve the original recorded data, as retained by the recorder for a period of 60 days unless otherwise directed by the investigating authority.

(4) When a flight data recorder is required to be carried aboard an aircraft, the Operator of that aircraft shall:

(i) Save recordings for the period of operating time as required by MAR-OPS 1.715, 1.720 and 1.725 except that, for the purpose of testing and maintaining flight data recorders, up to one hour of the oldest recorded material at the time of testing may be erased; and

(ii) Keep a document which presents the information necessary to retrieve and convert the stored data into engineering units.

(b) *Production of recordings.* The Operator of an aircraft on which a flight recorder is carried shall, within a reasonable time after being requested to do so by the Military Aviation Authority, produce any recording made by a flight recorder which is available or has been preserved.

(c) *Use of recordings*

(1) The cockpit voice recorder recordings may not be used for purposes other than for the investigation of an accident or incident subject to mandatory reporting except with the consent of all crew members concerned or for the purpose of operational debriefing.

(2) The flight data recorder recordings may not be used for purposes other than for the investigation of an accident or incident subject to mandatory reporting except when such records are:

(i) Used by the Operator for safety management, airworthiness or maintenance purposes only;

(ii) Disidentified; or

(iii) Disclosed under secure procedures.

MAR-OPS 1.165 Leasing– transfer of aircraft

(a) *Leasing - transfer of aircraft - between MAR-OPS approved Operators*

(1) *Wet lease-out.* An Operator providing an aircraft and flightcrew to another Operator, and retaining all the functions and responsibilities related to his MAOC, shall remain the Operator of the aircraft.

(2) *All leases except wet lease-out*

(i) Except as provided by sub-paragraph (a)(1) above, an Operator utilising an aircraft from, or providing it to, another approved operator, must obtain prior approval for the operation from the Military Aviation Authority. Any conditions which are part of this approval must be included in a formal verifiable agreement between both operators.

(ii) Those elements of formal agreements concerning the transfer of aircraft which are approved by the Military Aviation Authority, other than formal agreements in which an aircraft and complete crew are involved and no transfer of functions and responsibilities is intended, are with respect to the transferred aircraft all to be regarded as variations of the MAOC under which the flights will be operated.

(b) Leasing – transfer of aircraft - between an operator and any entity other than an MAR-OPS approved Operator

(1) Dry lease-in

(i) The Operator shall not dry lease-in an aircraft from an entity other than a MAR-OPS accredited Operator or an Operator organisation within an aviation oversight system, recognised by the Netherlands Military Aviation Authority, unless approved by the Military Aviation Authority. Any conditions which are part of this approval must be included in the formal verifiable agreement between both Operators concerning the transfer of aircraft.

(ii) The Operator shall ensure that, with regard to aircraft that are dry leased-in, any differences from the requirements prescribed in Subparts K and L, and occupants safety requirements, if applicable, are notified to and are acceptable to the Military Aviation Authority.

(2) Wet lease-in

(i) The Operator shall not wet lease-in an aircraft from an entity other than an MAR-OPS accredited operator or an Operator organisation within an aviation oversight system, recognised by the Netherlands Military Aviation Authority, without the approval of the Military Aviation Authority.

(ii) The Operator shall ensure that, with regard to aircraft that are wet leased-in:

(A) The safety standards of the other Operator with respect to maintenance management and flight operations are equivalent to MAR-requirements; and

(B) Any requirement made applicable by the Military Aviation Authority is complied with.

(3) Dry lease-out

(i) The Operator may dry lease-out an aircraft to any Operator within an aviation oversight system, recognised by the Netherlands Military Aviation Authority, provided that the following conditions are met:

(A) The Military Aviation Authority has exempted the Operator from the relevant provisions of MAR-OPS 1;

(B) The Military Aviation Authority has removed the applicable aircraft from its MAOC, after the recognised foreign military or civil regulatory authority has accepted responsibility in writing for surveillance of the maintenance and operation of the aircraft; and

(C) A formal verifiable agreement between both Operators concerning the transfer of aircraft ensures that:

(a) The aircraft is maintained in accordance with a Military Aviation Authority approved aircraft maintenance program;

(b) The maintenance organisation contracted by the other Operator to conduct aircraft maintenance, is obligated to use any applicable aircraft maintenance data submitted by the applicable (supplementary) type certificate holder;

(c) The user requirements applicable to the other Operator, pertaining to the continuing airworthiness of the aircraft, are not less restrictive than the applicable MAR-OPS 1 requirements; and

(d) The transferred aircraft maintenance records will be kept up to date by the other Operator.

(ii) The Operator may dry lease-out an aircraft to any Operator, provided that the following conditions are met:

(A) The Military Aviation Authority has exempted the Operator from the relevant provisions of MAR-OPS 1;

(B) The Military Aviation Authority has, after the applicable foreign maintenance and Operator organisations are accredited by the Netherlands Military Aviation Authority, removed the applicable aircraft from its MAOC; and

(C) A formal verifiable agreement between both Operators concerning the transfer of aircraft ensures that:

(a) The aircraft is maintained according with a maintenance program approved by the Netherlands Military Aviation Authority;

(b) The maintenance organisation contracted by the other Operator to conduct aircraft maintenance, is obliged to use any applicable aircraft maintenance data submitted by the applicable (supplementary) type certificate holder;

(c) The user requirements applicable to the other Operator pertaining to the continuing airworthiness of the aircraft, are not less restrictive than the applicable MAR-OPS 1 requirements; and

(d) The transferred aircraft maintenance records will be kept up to date by the other Operator.

(4) *Wet lease-out*

An Operator providing an aircraft and crew to another entity and retaining all the functions and responsibilities related to his MAOC, shall remain the Operator of the aircraft.

Appendix 1 to MAR-OPS 1.030 MEL – application and usage

(a) General

- (1) The MEL is applicable up to the commencement of the flight.
- (2) All items related to the type certificate of the aircraft type considered or required by operational regulations or the operating procedures as specified in the Operations Manual and not included in the MEL are automatically required to be operative.
- (3) The Operator shall establish an effective decision making process in the Operations Manual for failures that are not listed to determine if they are related to the type certificate and/or operational regulations and/or operational procedures in the Operations Manual.

(b) Operational and Maintenance procedures

- (1) Operational procedures as specified in the MEL shall be accomplished in planning for and / or operating with the listed item inoperative. These procedures shall be accomplished by the flight crew. However, the Operator may qualify and authorise other personnel to perform certain functions. The satisfactory accomplishment of all procedures, regardless of who performs them, is the responsibility of the Operator. Appropriate procedures with respect to the accomplishment of the mentioned operational procedures are required to be published as a part of, or referenced in, the Operations Manual.
- (2) Maintenance procedures as specified in the MEL shall be accomplished prior to operating with the listed item inoperative. These procedures shall be accomplished by appropriately licensed and authorised maintenance personnel. The satisfactory accomplishment of all maintenance procedures, regardless of who performs them, is the responsibility of the Operator. Appropriate procedures with respect to the accomplishment of the mentioned maintenance procedures are required to be published as a part of, or referenced in, the Operations Manual.
- (3) When dispatching an aircraft, an inoperative item may not be removed from that aircraft, unless specifically permitted in the applicable maintenance procedures.

(c) Rectification Interval (RI) management programs

- (1) The Operator shall establish an effective rectification program that includes tracking of the inoperative items and coordinating parts, personnel, facilities, and procedures in the Operations Manual necessary to ensure timely rectification within the specified Rectification Interval.
- (2) The Operator shall establish a program to reduce future unserviceabilities of MEL-items as much as possible based on analysis of historic trends in the occurrence of inoperative items and rectification times achieved.

(d) Rectification Interval Extensions (RIE)

- (1) Subject to the approval of the Military Aviation Authority, the Operator may grant a one-time extension of the applicable Rectification Intervals B, C or D for the same duration as specified in the MEL, provided:
 - (i) The type certificate holder for the aircraft type has explicitly declared that Rectification Interval Extensions have been taken into account in the determination of the rectification intervals;

(ii) A completed Military Aviation Authority RIE request form (see Military Aviation Authority intranet website) is submitted to the Military Aviation Authority, including a motivation of the operational necessity and the actions taken to comply with sub-paragraph (d)(1)(iii)below; and

(iii) Rectification is accomplished at the earliest opportunity.

(2) Subject to the approval of the Military Aviation Authority, the Operator may use an internal procedure for the extension of the applicable rectification intervals B, C or D for the same duration as specified in the MEL, provided:

(i) The type certificate holder for the aircraft type has explicitly declared that rectification interval extensions have been taken into account in the determination of the rectification intervals;

(ii) A description of specific duties and responsibilities for controlling extensions is established by the Operator and accepted by the Military Aviation Authority;

(iii) The Operator only grants a one-time extension of the applicable rectification interval;

(iv) The Military Aviation Authority is notified on a monthly basis of all extensions granted including a motivation of the operational necessity and the actions taken to comply with sub-paragraph (d)(2)(v) below, in a format acceptable to the Military Aviation Authority; and

(v) Rectification is accomplished at the earliest opportunity.

(e) Procedures related to MEL application and usage

The Operator shall establish procedures in the Operations Manual acceptable to the Military Aviation Authority, regarding:

(1) The accomplishment of operational and maintenance procedures as specified in the MEL;

(2) Rectification interval management programs;

(3) Rectification interval extensions;

(4) The deferral of MEL items, comprising a method for:

(i) Deferral and/or rectification of inoperative equipment;

(ii) Placarding of items as required in the MEL;

(iii) Dispatching of aircraft with deferred MEL items;

(iv) Using a remote deferral system; and

(v) Controlling the deferral times; and

(5) The review of deferred MEL items by the maintenance management and flight operations departments, in order to ensure that accumulated deferred items neither conflict with each other nor present an unacceptable increase in the workload of the flight crew or the Crew Member.

SUBPART C – OPERATOR CERTIFICATION

- MAR-OPS 1.175 General rules for MAR-OPS 1 certification
- MAR-OPS 1.185 Application for a MAOC, or a variation on, or a renewal of a issued MAOC
- MAR-OPS 1.190 Issue, variation and continued validity of an issued Special Approval
- MAR-OPS 1.194 Application for a Special Approval or a variation on an issued Special Approval

MAR-OPS 1.175 General rules for MAR-OPS 1 certification

- (a) The Operator shall not operate an aircraft otherwise than under, and in accordance with, the terms and conditions of a Military Air Operator Certificate (MAOC) and applicable Special Approvals.
- (b) An applicant for a MAOC, or a variation on an issued MAOC, shall allow the Military Aviation Authority to examine all safety aspects of the operation or proposed change(s).
- (c) The Operator shall grant the Military Aviation Authority access to his organisation and aircraft and shall ensure that, with respect to maintenance, access is granted to any contracted maintenance organisation, in order to determine continued compliance with this MAR-OPS 1.
- (d) Notwithstanding the provisions of MAR-OPS 1.185(h), the Operator must notify the Military Aviation Authority as soon as practicable of any changes to the information submitted in accordance with MAR-OPS 1.185(a).

MAR-OPS 1.185 Application for a MAOC, or a variation on, or a renewal of an issued MAOC

- (a) The Operator shall ensure that the following information is included in the initial application for a MAOC and, when applicable, any variation or renewal applied for:
 - (1) The official name, contact information and business locations of the applicant;
 - (2) A description the scope of the operation applied for, to include any special approval, if applicable;
 - (3) A description of the operational environment(s);
 - (4) A description of the management organisation;
 - (5) The nominated function and name of the designated person to fulfil the function of accountable manager;
 - (6) The nominated function(s) and name(s) of the designated person(s) to fulfill the function of quality manager;
 - (7) The nominated functions and names of the designated persons to fulfil the function of major post holders, including those responsible for flight operations, maintenance management, crew training and ground operations;
 - (8) The aircraft type(s) and variants to be operated; and
 - (9) Registration marking(s).
- (b) The Operator shall ensure that the following documentation is included in the initial application for a MAOC and, when applicable, any variation or renewal applied for:
 - (1) Operations Manual, Part A;
 - (2) Operations Manual, Part B for each aircraft type to be operated;
 - (3) Operations Manual, Part C, if applicable;

- (4) Operations Manual, Part D;
 - (5) Operations Manual, Part E;
 - (6) Operations Manual, Part F;
 - (7) The Operator's customized Aircraft Maintenance Program for each aircraft type to be operated;
 - (8) The Aircraft Technical Log system for each aircraft type to be operated;
 - (9) Where appropriate, the technical specification(s) of the formal agreement with a contracted maintenance organisation;
 - (10) Where appropriate, the technical specification(s) of the formal agreement with any sub-contracted maintenance organisation;
 - (11) A copy of the self-evaluation report;
 - (12) A MAR-OPS 1 compliance checklist, to include a specific MAR-OPS 1 subpart K and L compliance checklist for each individual aircraft to be operated;
 - (13) A copy of Certificate(s) of Registration for the aircraft to be operated;
 - (14) A copy of Certificate(s) of Airworthiness for the aircraft to be operated;
 - (15) A copy of the Noise Certificate(s) for the aircraft to be operated, if applicable; and
 - (16) A copy of the radio station licence(s) for the aircraft to be operated, if applicable.
- (c) The application for an initial issue of a MAOC or any variation on an issued MAOC shall be made on a form and in a manner established by the Military Aviation Authority (see Military Aviation Authority intranet website).
- (d) The application for an initial issue of a MAOC must be submitted at least 90 days before the intended certification date.
- (e) The application for the variation on an issued MAOC must be submitted at least 30 days, or as otherwise agreed to by the Military Aviation Authority, before the date of intended approval.
- (f) The application for the renewal of an issued MAOC must be submitted at least 30 days, or as otherwise agreed to by the Military Aviation Authority, before the end of the existing period of validity.
- (g) Other than in exceptional circumstances, the Military Aviation Authority must be given at least 10 days prior notice of a proposed change of any job requirement as meant in MAR-OPS 1.034(b) and MAR-OPS 1.035(c)(2).
- (h) Other than in exceptional circumstances, the Military Aviation Authority must be given at least 10 days prior notice of a proposed change to the nominated functions or names of the accountable manager, post holder and/or quality manager, as meant in MAR-OPS 1.185 (a)(5), (6) and (7).

MAR-OPS 1.190 Issue, variation and continued validity of a Special Approval

(a) The Operator will not be granted a Special Approval, a variation on an issued Special Approval, or that Special Approval will not remain valid unless he has demonstrated to the Military Aviation Authority that:

- (1) The applicable MAR-OPS 1 subpart T requirement(s) are complied with;
- (2) The aircraft and required equipment comply with the applicable airworthiness requirements and approvals;
- (3) A training program has been established for all operations personnel involved in these operations; and
- (4) Operating procedures in accordance with the applicable requirement(s) have been specified in the Operations Manual.

(b) The Military Aviation Authority may require to witness one or more actual flights, operated as applied for.

(c) The Operator shall notify the Military Aviation Authority of any change to the items listed in sub-paragraph (a) above before such change takes place.

(d) Special Approvals remain valid subject to the Operator remaining in compliance with this sub-paragraph (a) above and MAR-OPS 1.175 (d).

(e) A Special Approval will be varied, suspended or revoked if the Military Aviation Authority is no longer satisfied that the Operator can execute operations under the terms of the Special Approval safely.

(f) The scope of activity that the Operator is approved to conduct under the terms of the issued Special Approval shall be specified on and added to the MAOC by the Military Aviation Authority.

MAR-OPS 1.194 Application for a Special Approval or a variation on an issued Special Approval

(a) The Operator shall ensure that the following information is included in the initial application for a Special Approval and, when applicable, any variation applied for:

- (1) The official name, contact information and business locations of the applicant;
- (2) A description of the proposed operation; and
- (3) The Operations Manual, or relevant (amended) parts thereof, and all other documentation relevant to the Special Approval applied for.

(b) An application for a Special Approval or any variation on an issued Special Approval shall be made using a form and in manner established by the Military Aviation Authority (see Military Aviation Authority intranet website).

(c) The application for an initial issue of a Special Approval must be submitted at least 90 days before the intended certification date, except that the Operations Manual may be submitted later but not less than 60 days before the intended certification date.

(d) The application for the variation of an issued Special Approval must be submitted at least 30 days, or as otherwise agreed to by the Military Aviation Authority, before the date of intended approval.

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SUBPART D – OPERATIONAL PROCEDURES

MAR-OPS 1.195	Operator's responsibility
MAR-OPS 1.200	Operations Manual
MAR-OPS 1.205	Competence of operations personnel
MAR-OPS 1.210	Establishment of procedures
MAR-OPS 1.215	Use of Air Traffic Services and Tactical Control Services
MAR-OPS 1.220	Authorization of aerodromes and landing sites by the Operator
MAR-OPS 1.225	Aerodrome and landing site operating minima
MAR-OPS 1.228	VFR departure and approach procedures
MAR-OPS 1.230	IFR departure and approach procedures
MAR-OPS 1.235	Noise abatement procedures
MAR-OPS 1.240	Routes and areas of operation
MAR-OPS 1.241	Operations in airspace with Reduced Vertical Separation Minima
MAR-OPS 1.243	Operations in areas with specified navigation performance
MAR-OPS 1.244	Extended range operations with two-engined aircraft
MAR-OPS 1.248	Establishment of minimum VFR flight altitudes
MAR-OPS 1.250	Establishment of minimum IFR flight altitudes
MAR-OPS 1.255	Fuel policy
MAR-OPS 1.260	Carriage of persons with reduced mobility
MAR-OPS 1.265	Carriage of inadmissible passengers, deportees or persons in custody
MAR-OPS 1.270	Stowage of baggage and equipment
MAR-OPS 1.280	Passenger seating
MAR-OPS 1.285	Passenger briefing
MAR-OPS 1.290	Flight preparation
MAR-OPS 1.292	Formation flying
MAR-OPS 1.295	Selection of destination and alternate aerodromes and landing sites
MAR-OPS 1.296	Planning minima - VFR flights
MAR-OPS 1.297	Planning minima - IFR flights
MAR-OPS 1.300	Submission of ATS Flight Plan
MAR-OPS 1.303	Ground procedures - Pre,- thru- and postflight inspections
MAR-OPS 1.304	Ground procedures - Loading/reloading/unloading
MAR-OPS 1.305	Ground procedures - Refuelling/defuelling
MAR-OPS 1.307	Ground procedures - Arming/dearming
MAR-OPS 1.308	Ground procedures - Other
MAR-OPS 1.315	Assisting means for emergency evacuation
MAR-OPS 1.320	Seats, safety belts and harnesses
MAR-OPS 1.321	Carriage of weapons, munitions, expendables and external stores
MAR-OPS 1.322	In-flight dispensing
MAR-OPS 1.323	Use of electro-magnetic systems
MAR-OPS 1.325	Securing of exit(s) and escape path(s)
MAR-OPS 1.327	Safety rules
MAR-OPS 1.330	Accessibility of emergency equipment
MAR-OPS 1.340	Meteorological conditions
MAR-OPS 1.345	Ice and other contaminants – Ground procedures
MAR-OPS 1.346	Ice and other contaminants – Flight procedures
MAR-OPS 1.348	Adverse operating conditions – Ground and flight procedures
MAR-OPS 1.350	Mission and aircraft acceptance
MAR-OPS 1.355	Take-off and departure conditions
MAR-OPS 1.365	Minimum flight altitudes
MAR-OPS 1.370	Simulated abnormal situations in flight
MAR-OPS 1.375	In-flight fuel management
MAR-OPS 1.385	Use of supplemental oxygen
MAR-OPS 1.395	Ground proximity detection
MAR-OPS 1.396	Use of aircraft lighting
MAR-OPS 1.398	Use of Airborne Collision Avoidance System (ACAS)

MAR-OPS 1.400 Approach and landing conditions
MAR-OPS 1.415 Flight registration book and aircraft technical log
MAR-OPS 1.420 Occurrence reporting
MAR-OPS 1.425 Parachute dropping
MAR-OPS 1.433 Internal carriage of cargo
MAR-OPS 1.437 Alternative disembarkation of passengers
MAR-OPS 1.439 Aerial photography and filming
MAR-OPS 1.441 Use of night vision systems
MAR-OPS 1.447 Demonstration flying
MAR-OPS 1.449 Low level flying
MAR-OPS 1.455 Operational Testing

MAR-OPS 1.195 Operator's responsibility

(a) The Operator is, in the interest of safety, responsible for the operation of any aircraft operated under the terms of his MAOC.

(b) The Operator shall establish and maintain a method for exercising the responsibility in subparagraph (a) above. This method is to be included in the Operations Manual.

MAR-OPS 1.200 Operations Manual

The Operator shall provide an Operations Manual in accordance with MAR-OPS 1 subpart P for the use and guidance of operations personnel.

MAR-OPS 1.205 Competence of operations personnel

The Operator shall ensure that personnel assigned to, or directly involved in, ground and flight operations, crew training and maintenance management, are properly instructed, have demonstrated their abilities in their particular duties and are aware of their responsibilities and the relationship of such duties to the operation as a whole.

MAR-OPS 1.210 Establishment of procedures

The Operator shall:

(a) Establish procedures and instructions containing managerial, supervisors', ground staff and crew members' responsibilities and duties for all types of operation on the ground and in flight;

(b) Establish a checklist system to be used by crew members for all phases of operation of the aircraft under normal, abnormal and emergency conditions as applicable, to ensure that the relevant operating procedures in the Operations Manual and Aircraft Flight Manual are followed. The design, contents and utilisation of checklists shall observe human factors and crew resource management principles;

(c) Make arrangements for the production of manuals, amendments and other documentation; and

(d) Ensure that no crew member performs any activity during take-off, initial climb, final approach and landing except those duties required for mission execution and the safe operation of the aircraft.

MAR-OPS 1.215 Use of Air Traffic Services and Tactical Control Services

The Operator shall ensure that Air Traffic Services and/or Tactical Control Services are used for all flights requiring such services.

MAR-OPS 1.220 Authorization of aerodromes and landing sites by the Operator

The Operator shall only authorise use of aerodromes and landing sites that are adequate for the type(s) of aircraft and operation(s) concerned,

(a) By ensuring that all available documentation and information is used to establish adequacy for use, before commencement of the flight;

or, in case of undocumented aerodromes and landing sites,

(b) By establishing procedures in the Operations Manual for the operations personnel involved to assess the adequacy of a location for safe landing and take-off, before or during the flight. In these instructions, special attention should be given to:

- (1) Lateral dimensions of the location to be used for landing, maneuver and take-off;
- (2) Obstacle accountability;
- (3) Surface condition;
- (4) Aircraft performance; and
- (5) Crew composition, competency, and recency.

MAR-OPS 1.225 Aerodrome and landing site operating minima

(a) The Operator shall establish a method in the Operations Manual to determine aerodrome and landing site operating minima for use as place of departure, destination or alternate authorised to be used in accordance with MAR-OPS 1.220. Such minima shall not be lower than any that may be established for such aerodromes and landing site by the State in which they are located, except when specifically approved by that State, and shall take full account of:

- (1) The type, performance and handling characteristics of the aircraft;
- (2) Pilot's experience;
- (3) The dimensions and characteristics of the runways and sites which may be selected for use;
- (4) The adequacy and performance of the available visual and non-visual ground and navigation aids;
- (5) The equipment available on the aircraft for the purpose of navigation and/or control of the flight path, as appropriate, during the take-off, the approach, the landing, and the missed approach;
- (6) The obstacles in the approach, missed approach and the climb-out areas required for the execution of contingency procedures and necessary clearance;
- (7) The obstacle clearance altitude and or height for the instrument approach procedures; and
- (8) The means to determine and report meteorological conditions.

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

- (1) The ground equipment shown on the respective chart required for the intended procedure is operative;

- (2) The aircraft systems required for the type of approach are operative;
- (3) The required aircraft performance criteria are met; and
- (4) The crew is qualified accordingly.

(c) The Operator shall specify in relation to the method of determining aerodrome operating minima as mentioned in sub-paragraph (a) above:

- (1) Applicable aircraft categories in accordance with tabel 1 below; and.

Tabel 1 - Aircraft categories corresponding to V_{AT} values

Aircraft Category	V_{AT}
A	Less than 91 kt
B	From 91 to 120 kt
C	From 121 to 140 kt
D	From 141 to 165 kt
E	From 166 to 210 kt

- (2) The corresponding landing configuration which is to be taken into consideration.

(d) If the Operator desires a permanent change of the aircraft category as defined in tabel 1 above:

- (1) The Operator may impose a permanent, lower, maximum landing mass, and use this mass for determining the V_{AT} if approved by the Military Aviation Authority; and
- (2) The category defined for a given aircraft shall be a permanent value and thus independent of the changing conditions of day-today operations.

MAR-OPS 1.228 VFR departure and approach procedures

- (a) The Operator shall ensure that VFR departure and approach procedures established by the State in which the aerodrome or landing site is located are used.
- (b) Notwithstanding sub-paragraph (a) above, a Pilot in Command may accept an ATC clearance to deviate from a published VFR departure or arrival route, provided obstacle clearance criteria are observed and full account is taken of the operating conditions.

MAR-OPS 1.230 IFR departure and approach procedures

- (a) The Operator shall ensure that IFR departure and approach procedures are used which are designed in accordance with ICAO DOC 8168 vol 2 or equivalent, acceptable to the Military Aviation Authority.
- (b) Different procedures to those required in sub-paragraph (a) above may be implemented by the Operator provided they have been coordinated with the State in which the aerodrome or landing site is located, and they are acceptable to the Military Aviation Authority.

(c) Notwithstanding sub-paragraph (a) above, a Pilot in Command may accept an ATC clearance to deviate from a published IFR departure or arrival route, provided obstacle clearance criteria are observed and full account is taken of the operating conditions. The final approach must be flown visually or in accordance with the established approach procedure.

MAR-OPS 1.240 Routes and areas of operation

(a) The Operator shall ensure that operations are only conducted along such routes or within such areas, for which:

- (1) Air navigation facilities and services, including meteorological services, are provided which are adequate for the planned operation;
- (2) The performance of the aircraft is adequate to comply with minimum flight altitude requirements;
- (3) The equipment of the aircraft intended to be used meets the minimum requirements for the planned operation;
- (4) Appropriate maps and charts are available; and
- (5) If two-engined aircraft are used for carrying passengers, adequate aerodromes are available within the time/distance limitations of MAR-OPS 1.1340(a).

(b) In case operations have to be conducted in an adverse environment, the Operator shall take all possible precautions to ensure an acceptable level of safety for all aircraft occupants.

MAR-OPS 1.241 Operations in airspace with Reduced Vertical Separation Minima

The Operator shall not operate an aircraft in designated airspace with reduced vertical separation minima, under the terms and conditions applicable to that airspace, unless holding a Special Approval issued by the Military Aviation Authority for this type of operation (reference MAR-OPS 1.1335).

MAR-OPS 1.243 Operations in areas with specified navigation performance

The Operator shall not operate an aircraft in designated airspace with specified navigation performance, under the terms and conditions applicable to that airspace, unless holding a Special Approval issued by the Military Aviation Authority for this type of operation (reference MAR-OPS 1.1330).

MAR-OPS 1.244 Extended range operations with two-engined aircraft

The Operator shall not operate a two-engined aircraft carrying passengers over a route which contains a point further from an adequate aerodrome than the distance flown in 120 minutes or up to 180 minutes for turbo-jet aircraft, at a predetermined one-engine-inoperative cruise speed, unless holding a Special Approval issued by the Military Aviation Authority for this type of operation (reference MAR-OPS 1.1340).

MAR-OPS 1.248 Establishment of minimum VFR flight altitudes

(a) The Operator shall establish a method in the Operations Manual to determine VFR minimum flight altitudes, which provide the required terrain clearance taking into account the requirements of subparts G of this MAR-OPS 1. These minimum flight altitudes shall be compliant with 'Besluit Luchtverkeer 2014, article 19' and the subsequent 'Regeling minimale VFR vlieghoogten en VFR-vluchten buiten UDP voor militaire vliegtuigen en helikopters'.

(b) Where minimum VFR flight altitudes established by States are higher than those established by the Operator, the higher values shall apply.

MAR-OPS 1.250 Establishment of minimum IFR flight altitudes

(a) The Operator shall establish a method in the Operations Manual to determine IFR minimum flight altitudes, which provide the required terrain clearance taking into account the requirements of subparts G of this MAR-OPS 1.

(b) Where minimum IFR flight altitudes established by States are higher than those established by the Operator, the higher values shall apply.

(c) The Operator shall take at least into account the following factors when establishing minimum flight altitudes:

- (1) The accuracy with which the position of the aircraft can be determined;
- (2) The probable inaccuracies in the indications of the altimeters used;
- (3) The characteristics of the terrain along the routes or in the areas where operations are to be conducted;
- (4) The probability of encountering unfavourable meteorological conditions; and
- (5) Possible chart inaccuracies.

(d) In fulfilling the requirements prescribed in sub-paragraph (c) above due consideration shall be given to:

- (1) Corrections for temperature and pressure variations from standard values;
- (2) The ATC requirements; and
- (3) Any foreseeable contingencies along the planned route.

MAR-OPS 1.255 Fuel policy

(a) The Operator shall establish a fuel policy in the Operations Manual for the purpose of flight planning and in-flight replanning to ensure that every flight carries sufficient fuel for the planned operation and reserves to cover deviations from the planned operation, including final reserve fuel.

(b) The Operator shall ensure that the fuel planning of flights is at least based upon:

- (1) Procedures contained in the Operations Manual and data provided by the aircraft manufacturer; and

(2) The operating conditions under which the flight is to be conducted including:

- (i) Realistic aircraft fuel consumption data, taking into account planned on-load of fuel during air to air or ground refuelling operations;
- (ii) Anticipated masses;
- (iii) Expected meteorological conditions; and
- (iv) Air Traffic Services procedures and restrictions.

(c) The Operator shall ensure that the pre-flight calculation of usable fuel required for a flight includes:

- (1) Taxi fuel;
- (2) Trip fuel;
- (3) Reserve fuel consisting of:
 - (i) Contingency fuel;
 - (ii) Alternate fuel, if a destination alternate is required. (This does not preclude selection of the departure aerodrome as the destination alternate);
 - (iii) Final reserve fuel; and
 - (iv) Additional fuel, if required by the type of operation; and
- (4) Extra fuel if required by the Pilot in Command.

(d) The Operator shall ensure that in-flight replanning procedures for calculating usable fuel required when a flight has to proceed along a route, flight altitude, or to a destination other than originally planned includes:

- (1) Trip fuel for the remainder of the flight;
- (2) Reserve fuel consisting of:
 - (i) Contingency fuel;
 - (ii) Alternate fuel, if a destination alternate is required. (This does not preclude selection of the departure aerodrome as the destination alternate);
 - (iii) Final reserve fuel; and
 - (iv) Additional fuel, if required by the type of operation; and
- (3) Extra fuel if required by the Pilot in Command.

MAR-OPS 1.260 Carriage of persons with reduced mobility

(a) The Operator shall establish procedures in the Operations Manual for the carriage of persons with reduced mobility (PRMs).

(b) The Operator shall ensure that PRMs are not allocated, nor occupy, seats where their presence could:

- (1) Impede the crew in their duties;
- (2) Obstruct access to emergency equipment; or
- (3) Impede the emergency evacuation of the aircraft.

(c) The Pilot in Command must be notified when PRMs are to be carried on board.

MAR-OPS 1.265 Carriage of inadmissible passengers, deportees or persons in custody

The Operator shall establish procedures in the Operations Manual for the transportation of inadmissible passengers, deportees or persons in custody to ensure the safety of the aircraft and its occupants. The Pilot in Command must be notified when the above mentioned persons are to be carried on board.

MAR-OPS 1.270 Stowage of baggage and equipment

(a) The Operator shall establish procedures in the Operations Manual to ensure that only such hand baggage is taken into the passenger cabin as can be adequately and securely stowed.

(b) The Operator shall establish procedures in the Operations Manual to ensure that all baggage and cargo on board, which might cause injury or damage, or obstruct aisles and exits if displaced, is adequately stowed to prevent movement during the flight.

MAR-OPS 1.280 Passenger seating

The Operator shall establish procedures in the Operations Manual to ensure that passengers are seated where, in the event that an emergency evacuation is required, they may best assist and not hinder evacuation from the aircraft.

MAR-OPS 1.285 Passenger briefing

(a) The Operator shall ensure that passengers are adequately briefed about safety matters before commencement of the flight.

(b) In case the Operator assesses that due to the nature of the operation, passenger briefing as meant by sub-paragraph (a) above is impracticable, he shall establish a procedure for ensuring that unbrieffed passenger(s) can be supported in safety matters by crewmembers if needed.

(c) In case of transport of passengers which have received adequate briefing and training on safety and emergency aspects in advance of embarking the aircraft, the requirement in sub-paragraph (a) may be considered fulfilled provided this is stated in the mission assignment to the Pilot in Command.

MAR-OPS 1.290 Flight preparation

(a) The Operator shall ensure that an operational flight plan relevant to the type of operation (reference MAR-OPS 1.1060) is completed for each intended flight and the content is briefed to all crew members before the commencement of flight, if applicable, even if MAR-OPS 1.135(a) and (c) does not require an operational flight plan to be on board the aircraft during flight.

(b) For local operations, as meant in MAR-OPS 1.135(c), the Military Aviation Authority may exempt the Operator from complying with requirement (a) above, in case an alternate procedure is laid down in the Operations Manual.

(c) The Pilot in Command shall not commence a flight unless he is satisfied that:

- (1) The aircraft is airworthy;
- (2) The aircraft is not operated contrary to the provisions of the Operator's Configuration Deviation List, if available;
- (3) The instruments and equipment required for the flight to be conducted, in accordance with MAR-OPS 1 subparts K and L, are in operable condition except as provided in the Operator's Minimum Equipment List, if available;
- (4) The documents, checklists, additional information and documentation required to be available by MAR-OPS 1.125 and MAR-OPS 1.135 are on board;
- (5) Current maps, charts and associated documentation or equivalent data are available to cover the intended operation of the aircraft including any diversion which may reasonably be expected. This shall include any conversion tables necessary to support operations where metric heights, altitudes and flight levels must be used;
- (6) Air navigation facilities and and Air Traffic and Tactical Control services required for the planned flight are available and adequate (reference MAR-OPS 1.215);
- (7) An ATS flightplan has been submitted in accordance with the Operations Manual (reference MAR-OPS 1.300);
- (8) Flight planning shows that the operation can be conducted in accordance with the Operations Manual;
- (9) The aircraft configuration is certified;
- (10) The mass of the aircraft, at the commencement of take-off roll, will be such that the flight can be conducted in compliance with MAR-OPS 1, subparts G;
- (11) Any operational limitation in addition to those covered by sub-paragraphs (8) and (10) above can be complied with; and
- (12) The operations can be conducted in compliance with relevant national and international rules and regulations.

MAR-OPS 1.292 Formation flying

(a) The Operator shall appoint a qualified formation lead who is responsible for the coordination and safe execution of a flight with more than one aircraft in the formation.

(b) To conduct flights with more than one aircraft in the formation, the Operator shall establish procedures in the Operations Manual to minimize mid-air collision potential, covering at least:

- (1) Day, night and IMC procedures;
- (2) Different formation types; and
- (3) Duties and responsibilities of flight members.

MAR-OPS 1.295 Selection of destination and alternate aerodromes and landing sites

(a) The Operator shall establish procedures in the Operations Manual for the selection of destination and/or alternate aerodromes or landing sites in accordance with MAR-OPS 1.220 when planning a flight.

(b) The Operator must select a take-off alternate if it would not be possible to return to the location of departure for meteorological reasons. The take-off alternate shall be located within:

- (1) For two-engined aircraft, either:
 - (i) One hour flight time at a one-engine-inoperative cruising speed according to the Aircraft Flight Manual in still air standard conditions based on the actual take-off mass; or
 - (ii) The Operator's approved ETOPS diversion time, subject to any MEL restriction, up to a maximum of two hours, at the one-engine-inoperative cruising speed according to the Aircraft Flight Manual in still air standard conditions based on the actual take-off mass for aircraft and crews authorised for ETOPS; or
- (2) For three and four-engined aircraft, two hours flight time at a one-engine-inoperative cruising speed according to the Aircraft Flight Manual in still air standard conditions based on the actual take-off mass.

If the AFM does not contain an one-engine-inoperative cruising speed, the speed to be used for calculation must be that which is achieved with the remaining engine(s) set at maximum continuous power.

(c) The Operator must select at least one destination alternate for each IFR flight unless:

- (1) Both:
 - (i) The duration of the planned flight from take-off to landing does not exceed 6 hours; and
 - (ii) Two separate runways are available and useable at the destination and the appropriate weather reports or forecasts for the destination aerodrome, or any combination thereof, indicate 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 2000 ft or circling height + 500 ft, whichever is greater, and the visibility will be at least 5 km; or
- (2) The destination is isolated and no adequate destination alternate exists.

- (d) The Operator must select two destination alternates for each IFR flight when:
- (1) 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
 - (2) No meteorological information is available.
- (e) The Operator shall specify any required alternate(s) in the operational flight plan (reference MAR-OPS 1.1060).

MAR-OPS 1.296 Planning minima - VFR flights

The Operator shall ensure that VFR flights are planned in accordance with the applicable (inter)national regulations, taking into account the most restrictive rules.

MAR-OPS 1.297 Planning minima - IFR flights

(a) The Operator shall establish a method in the Operations Manual to select the required destination and alternate aerodromes with respect to the required weather conditions in accordance with sub-paragraph (b) and (c) below.

(b) *Planning minima for take-off alternate.* The Operator shall not select an aerodrome or landing site as a take-off alternate unless the appropriate weather reports or forecasts or any combination thereof indicate that, during a period commencing 1 hour before and ending 1 hour after the estimated time of arrival at the take-off alternate, the weather conditions will be at or above the applicable IFR operating minima determined in accordance with MAR-OPS 1.225.

(c) *Planning minima for destination and alternate.* The Operator shall only select the destination and/or alternate when the appropriate weather reports or forecasts, or any combination thereof, indicate that, during a period commencing 1 hour before and ending 1 hour after the estimated time of arrival at the destination or destination alternate, the weather conditions will be at or above the applicable IFR planning minima as follows:

- (1) Planning minima for a destination shall be at or above the IFR operating minima determined in accordance with MAR-OPS 1.225; and
- (2) Planning minima for destination alternate aerodrome(s) and isolated destination aerodromes shall not be below the operating minima for the approach as stated in table 1 below.

Table 1 Planning minima – destination alternates and isolated destinations

type of approach	operating minima
Precision Cat II	Cat I
Precision other than Cat II	Non-precision
Non-precision	Non-precision plus 200 ft/1 000 m
Circling	Circling

(d) *Planning minima for an ETOPS en-route alternate.* The Operator shall not select an alternate as an ETOPS en-route alternate unless the appropriate weather reports or forecasts, or any combination thereof, indicate that, during a period commencing 1 hour before and ending 1 hour after the expected time of arrival at the aerodrome, the weather conditions will be at or above the planning minima prescribed in Table 2 below, and in accordance with the Operator's ETOPS approval.

Table 2 Planning minima – ETOPS

Type of Approach	Planning Minima	
	(RVR/visibility required & ceiling if applicable)	
	Aerodrome with	
	at least 2 separate approach procedures based on 2 separate aids serving 2 separate runways	at least 2 separate approach procedures based on 2 separate aids serving 1 runway or, at least 1 approach procedure based on 1 aid serving 1 runway
Precision Approach Cat II	Precision Approach Cat I minima	Non-Precision Approach Minima
Precision Approach Cat I	Non-Precision Approach minima	Circling or, if not available, non-precision approach minima plus 200 ft / 1000m
Non-Precision Approach	The lower of non-precision approach minima plus 200 ft / 1000 m or circling minima	The higher of circling minima or non-precision approach minima plus 200 ft / 1000 m
Circling Approach	Circling minima	

MAR-OPS 1.300 Submission of ATS Flight Plan

The Operator shall ensure that:

(a) A flight is not commenced unless an ATS flight plan has been submitted, or adequate information has been deposited, or transmitted as soon as possible after take-off, in order to permit alerting services to be activated if required; and

(b) Instructions are included in the Operations Manual for completing and submitting an ATS flight plan, at least addressing a method for determination and filing of the required and/or applicable 'type of flight' and 'flight rules' flight plan items.

MAR-OPS 1.303 Ground procedures – Pre,- thru- and post-flight inspections

(a) Pre-, thru and post-flight inspections shall be conducted by suitable qualified personnel.

(b) The Operator shall establish procedures in the Operations Manual for the conduct of pre-, thru- or post-flight inspections including the duties and responsibilities of the required personnel.

MAR-OPS 1.304 Ground procedures – Loading/reloading/unloading

(a) The Operator shall establish procedures in the Operations Manual for the loading, reloading and unloading of weapons, munitions, expendables and external stores with and without engine(s) running. These procedures shall at least specify:

- (1) Type and number of equipment required;
- (2) Type and number of personnel required;
- (3) Duties and responsibilities of the required personnel;
- (4) Communication procedures between Crew Members and involved ground staff, if applicable;
- (5) Safe areas and safe distances;
- (6) Limiting conditions and/or restrictions;
- (7) Contingency procedures; and
- (8) Emergency procedures.

(b) The loading, reloading and unloading of weapons, munitions, expendables and external stores shall be conducted by suitable qualified personnel.

MAR-OPS 1.305 Ground procedures - refuelling/defuelling

(a) The Operator shall establish procedures in the Operations Manual for refuelling and defuelling aircraft on the ground with and without engine(s) running. These procedures shall at least specify:

- (1) Type and number of equipment required;
- (2) Type and number of personnel required;
- (3) Duties and responsibilities of the required personnel;
- (4) Coordinations between crewmembers and ground staff, if applicable;
- (5) Safe areas and safe distances;
- (6) Actions related to passenger safety;
- (7) Limiting conditions and or restrictions, to include the use of wide-cut fuel if applicable and weather limitations;
- (8) Contingency procedures; and
- (9) Emergency procedures.

(b) Refuelling and defuelling shall be conducted by suitable qualified personnel.

(c) The Operator shall ensure that before refuelling/defuelling an aircraft on the ground when passengers are embarking, on board or disembarking, all necessary safety precautions are taken and the aircraft is properly manned by qualified personnel ready to initiate and direct an evacuation of the aircraft by the most practical and expeditious means available.

(d) The Operator shall ensure that no aircraft is refuelled/defuelled on the ground with Avgas or wide-cut type fuel (e.g. Jet-B / JP-4 / AVTAG or equivalent) or when a mixture of these types of fuel might occur, when passengers are embarking, on board or disembarking.

(e) The Operator shall ensure that no aircraft is refuelled/defuelled on the ground with engines running with passengers on board, unless debarkation of passengers imposes a greater risk to the passengers than staying on board the aircraft. The Operator shall establish a procedure in the Operations Manual for engine running refuelling/defuelling in the Operations Manual, focussed on passenger safety and including at least:

- (1) Fire-fighting safety precaution to be taken;
- (2) Emergency disembarkation of passengers on board;
- (3) Training for crewmembers and ground staff involved; and
- (4) Any special or restricting circumstances (daytime, nighttime, weather (thunderstorms), etc).

MAR-OPS 1.307 Ground procedures – Arming/dearming

(a) The Operator shall establish procedures in the Operations Manual for arming and dearming aircraft armament. These procedures shall at least specify:

- (1) Duties and responsibilities of the required personnel;
- (2) Communication procedures between Crew Members and ground crew, if applicable;
- (3) Safe directions;
- (4) Limiting conditions and/or restrictions;
- (5) Contingency procedures; and
- (6) Emergency procedures.

(b) The arming and dearming of aircraft armament shall be conducted by suitable qualified personnel.

MAR-OPS 1.308 Ground procedures - Other

The Operator shall establish ground procedures in the Operations Manual for:

- (a) Towing and push-back of aircraft;
- (b) The handling of emergency aircraft (e.g. hot brakes); and

(c) The emergency evacuation of the occupants.

MAR-OPS 1.310 Air to air refuelling

(a) The Operator shall establish a procedure in the Operations Manual for air to air refuelling. The procedure shall at least specify:

- (1) Communication procedures between supplying and receiving aircraft;
- (2) Limiting conditions and/or restrictions, to include weather limitations;
- (3) Contingency procedures; and
- (4) Emergency procedures.

(b) The Operator shall ensure that equipment used for air to air refuelling is certified (for both supplier and receiver).

MAR-OPS 1.315 Assisting means for emergency evacuation

An Operator shall establish procedures to ensure that before taxiing, take-off and landing, and when safe and practicable to do so and if applicable to the type of aircraft, an assisting means for emergency evacuation that deploys automatically, is armed.

MAR-OPS 1.320 Seats, safety belts and harness

(a) Flight crew members

- (1) During taxi, take-off and landing each flight crew member required to be on duty in the cockpit shall be at his station and keep his safety belt fastened.
- (2) During all other phases of flight, each flight crew member required to be on duty shall remain at his station with his safety belt fastened unless his absence is necessary for the performance of his duties in connection with the operation, or for physiological needs, provided at least one suitably qualified pilot remains at the controls of the aircraft at all times.

(b) Other crew members.

- (1) During taxi, take-off and landing crew members other than flight crew members shall be seated at their assigned stations and properly secured by safety belts and / or harnesses, unless this is impracticable due to the nature of the operation, subject to the Pilot in Command's discretion during the flight and in accordance with the Operations Manual.
- (2) In all other phases of flight, they shall be seated at their assigned stations with safety belts and harnesses fastened whenever deemed necessary by the Pilot in Command in the interest of personal safety.

(c) *Passengers*

Before take-off and landing, and during taxiing, and whenever deemed necessary in the interest of safety, the Pilot in Command shall ensure that each passenger on board occupies a seat or berth with his safety belt, or harness where provided, properly secured, unless this is impracticable due to the nature of the operation, subject to the Pilot in Command's discretion during the flight and in accordance with the Operations Manual.

MAR-OPS 1.321 Carriage of weapons, munitions, expendables and external stores

- (a) The Operator shall not carry any weapons, munitions, expendables and external stores as an integral part of the aircraft, unless these weapons, munitions, expendables and external stores are certified as an authorised configuration by the Military Aviation Authority.
- (b) Unless the Operator deems it unpracticable due to the nature of the operation, the Operator shall ensure that firearms carried in the aircraft are unloaded, unarmed, or set to safe.
- (c) For the purpose of employment of any weapons and expendables during flight, the Operator shall ensure that these weapons and expendables are:
 - (1) Loaded or attached to the aircraft in accordance with the Operator's procedures, preventing inadvertent release or firing of weapons or release of (weapon) stores (reference MAR-OPS 1.304);
 - (2) Armed and de-armed in accordance with the Operator's procedure (reference MAR-OPS 1.307); and
 - (3) Operated in accordance with the Operator's procedures, preventing unintentional release or firing and unintended risk to third parties.
- (d) The Operator shall establish a procedure for simulating weapon and/or munition employment, while carrying live and/or training weapons or munition.

MAR-OPS 1.322 In-flight dispensing

The Operator shall:

- (a) Establish procedures to ensure that during in-flight dispensing of articles, expendables and external stores and employment of weapons and munitions:
 - (1) There is no unintentional hazard to third parties; and
 - (2) The risk to the airframe and the occupants of the aircraft is minimised;
- (b) Ensure that no articles, external stores or expendables will be dispensed, or weapons and munitions employed from the aircraft without the permission of the Pilot in Command.
- (c) Establish contingency procedures, covering at least the handling of:
 - (1) Unsafe weapons and/or munitions;
 - (2) Aircraft armament or dispensing system malfunction;
 - (3) Battle damage;
- (d) Ensure that in-flight dispensing of articles, expendables or external stores and the employment of weapons or munitions is in compliance with relevant national regulations; and

(e) Ensure that equipment is certified for in-flight dispensing of expendables or external stores and the employment of weapons or munitions.

MAR-OPS 1.323 Use of electro-magnetic systems

The Operator shall:

(a) Establish procedures in the Operations Manual to ensure that during the activation of electro-magnetic systems:

(1) There is no unintentional hazard to third parties; and

(2) The risk to any aircraft in the formation and its occupants is minimised;

(b) Ensure that no electro-magnetic system is activated without the permission of the Pilot in Command;

(c) Specify with respect to the activation of electro-magnetic systems, safe areas and safe distances, where applicable;

(d) Establish contingency procedures covering at least the handling of electro-magnetic system malfunctions; and

(e) Ensure that the usage of electro-magnetic systems is in compliance with relevant national regulations.

MAR-OPS 1.325 Securing of exit(s) and escape path(s)

The Operator shall ensure that before taxiing, take-off and landing and whenever deemed necessary in the interest of safety all exits and escape paths are unobstructed and all equipment and baggage is properly secured.

MAR-OPS 1.327 Safety rules

(a) With respect to a safe mission execution, the Operator shall establish in the Operations Manual a coherent set of safety rules and procedures for all phases of flight, minimizing the risk of or hazard to:

(1) Third parties, both on the ground and in the air;

(2) Own aircraft or any occupant therein;

(3) Mid-air or ground collision; and

(4) Departing controlled flight.

(b) The Operator shall ensure that mission execution is in compliance with safety rules as meant by sub-paragraph (a) above, the relevant national safety rules and procedures or relevant safety rules and procedures established by a third party, whichever is higher.

MAR-OPS 1.330 Accessibility of emergency equipment

The Pilot in Command shall ensure that relevant emergency equipment is and remains easily accessible for immediate use while operating the aircraft.

MAR-OPS 1.340 Meteorological conditions

(a) On an IFR flight a Pilot in Command shall not:

(1) Commence take-off; nor

(2) Continue beyond the point from which a revised flight plan applies in the event of in-flight replanning,

unless information is available indicating that the expected weather conditions at the destination and required alternate(s), prescribed in MAR-OPS 1.295, are at or above the planning minima, prescribed in MAR-OPS 1.297.

(b) On an IFR flight, a Pilot in Command shall not continue towards the planned destination unless the latest information available indicates that, at the expected time of arrival, the weather conditions at the destination, or at least one destination alternate, are at or above the applicable IFR operating minima.

(c) On a VFR flight a Pilot in Command shall not commence take-off nor continue towards the planned destination unless the latest meteorological reports or a combination of current reports and forecasts indicate that the meteorological conditions along the route or that part of the route to be flown under VFR will, at the appropriate time, be such as to render compliance with these rules possible.

MAR-OPS 1.345 Ice and other contaminants –Ground procedures

(a) The Operator shall establish procedures in the Operations Manual for ground de-icing and anti-icing and related inspections of the aircraft.

(b) The Pilot in Command shall not commence take-off unless the external surfaces are clear of any deposit which might adversely affect the performance and/or controllability of the aircraft except as permitted in the Aircraft Flight Manual.

MAR-OPS 1.346 Icing conditions– Flight procedures

(a) The Operator shall establish procedures in the Operations Manual for flights in expected or actual icing conditions.

(b) The Pilot in Command shall not commence a flight nor intentionally fly into expected or actual icing conditions unless the aircraft is certificated and equipped to cope with such conditions.

MAR-OPS 1.348 Adverse operating conditions – Ground and flight procedures

The Operator shall establish procedures and operating limits in the Operations Manual for operating in or in the vicinity of adverse weather and/or environmental conditions, minimizing any hazard and/or risk to its personnel and equipment, covering at least:

- (a) Hot and cold weather conditions;
- (b) Dust or sand in atmosphere;
- (c) Volcanic ash in atmosphere;
- (d) Rough sea conditions;
- (e) Strong wind and windshear conditions;
- (f) Severe turbulence; and
- (g) Thunderstorms or lightning.

MAR-OPS 1.350 Mission and aircraft acceptance

Before flight, the Pilot in Command shall accept:

- (a) The mission assignment by signing the Flight registration book; and
- (b) The aircraft by signing the Aircraft Technical Log after having verified that the status of the aircraft is in compliance with flight planning as stated in MAR-OPS 1.290 and the pre-, thru- or postflight inspection is completed in accordance with Operator's procedures (reference MAR-OPS 1.303).

MAR-OPS 1.355 Take-off and departure conditions

(a) The Operator shall establish procedures in the Operations Manual to ensure a safe (if applicable formation), take-off and departure. These procedures shall as a minimum take full account of:

- (1) Aircraft configuration(s);
- (2) Take-off performance (reference MAR-OPS 1 subpart G);
- (3) Airfield status;
- (4) Weather and runway / landing site conditions; and
- (5) Wake turbulence separation criteria.

(b) Before commencing take-off, the Pilot in Command must satisfy himself that, according to the information available to him:

- (1) The weather and (if applicable) the condition of the runway or landing site intended to be used do not prevent a safe take-off and departure; and
- (2) The reported weather at the aerodrome or landing site is equal to or better than the applicable operating minima.

MAR-OPS 1.365 Minimum flight altitudes

The Pilot in Command or the pilot to whom conduct of the flight has been delegated shall not fly below specified minimum flight altitudes except when necessary for take-off or landing or if required due to the nature of the operation.

MAR-OPS 1.370 Simulated abnormal situations in flight

The Operator shall ensure that abnormal or emergency situations requiring the application of part or all of abnormal or emergency procedures and simulation of IMC by artificial means, are not simulated during flights with MLE-300 category C and D passengers.

MAR-OPS 1.375 In-flight fuel management

- (a) The Operator shall establish a procedure in the Operations Manual to ensure that in-flight fuel checks and fuel management are carried out.
- (b) The Pilot in Command shall ensure that the amount of usable fuel on board is not less than the fuel required to proceed to an aerodrome or landing site where a safe landing can be made with final reserve fuel remaining.

MAR-OPS 1.385 Use of supplemental oxygen

The Operator shall establish a procedure in the Operations Manual to ensure the use of supplemental oxygen whenever cabin altitude exceeds 10000 ft for a period in excess of 30 minutes and whenever the cabin altitude exceeds 13000 ft.

MAR-OPS 1.395 Ground proximity detection

When undue proximity to the ground is detected by any crew member or by a ground proximity warning system, the Pilot in Command or the pilot to whom conduct of the flight has been delegated shall ensure that corrective action is initiated immediately to establish safe flight conditions.

MAR-OPS 1.396 Use of aircraft lighting

The Operator shall establish a procedure in the Operations Manual for the use of aircraft lighting taking into account:

- (a) National regulations;
- (b) The nature of the operation;
- (c) The risk of in-flight collision; and
- (d) The provisions and requirements stated in the 'Regeling doven luchtvaartuiglichten militaire luchtvaartuigen'.

MAR-OPS 1.398 Use of Airborne Collision Avoidance System (ACAS)

The Operator shall establish procedures to ensure that:

- (a) When ACAS is installed and serviceable, it shall be used in flight in a mode that enables Resolution Advisories (RA) to be produced unless to do so would not be appropriate for conditions existing at the time; and
- (b) When undue proximity to another aircraft (RA) is detected by ACAS, the Pilot in Command or the pilot to whom conduct of the flight has been delegated, shall ensure that corrective action is initiated immediately to establish safe separation unless the intruder has been visually identified and has been determined not to be a threat.

MAR-OPS 1.400 Approach and landing conditions

(a) The Operator shall establish procedures in the Operations manual to ensure a safe approach and landing. These procedures shall as a minimum take full account of:

- (1) Aircraft configuration(s);
- (2) Landing performance (reference MAR-OPS 1 subpart G);
- (3) Airfield status;
- (4) Weather and runway / landing surface conditions; and
- (5) Wake turbulence separation criteria.

(b) Before commencing an approach to land, a Pilot in Command must satisfy himself that, according to the information available to him, the weather and the condition of the landing surface intended to be used do not prevent a safe approach, missed approach or landing, having regard to the performance information contained in the Operations Manual.

MAR-OPS 1.415 Flight registration book and aircraft technical log

The Pilot in Command shall after each flight complete and sign the flight registration book and the relevant parts of the Aircraft Technical Log.

MAR-OPS 1.420 Occurrence reporting

The Operator shall comply with SMAR-1 (Special Military Aviation Requirements dealing with Occurrence Reporting).

MAR-OPS 1.425 Parachute dropping

The Operator shall establish a procedure in the Operations Manual for dropping manned and unmanned parachutes, covering at least:

- (a) Standard and contingency procedures;
- (b) Environmental and other restrictions;

- (c) Flightplanning, including contingency planning;
- (d) Coordination of operational procedures with parachute unit;
- (e) Preflight- and inflight briefing;
- (f) CRM aspects for all personnel involved;
- (g) Safety procedures for opening aircraft doors or ramp in flight; and
- (h) Airspace and dropzone restrictions.

MAR-OPS 1.433 Internal carriage of cargo

The Operator shall establish a procedure in the Operations Manual for carrying internal cargo, covering at least:

- (a) Normal and contingency procedures;
- (b) Securing of cargo;
- (c) The in-flight supervision of the transported cargo;
- (d) The carriage of dangerous goods (reference SUBPART R);
- (e) The non-compartmentalized combined carriage of passengers and cargo (combi-transport)(reference SMAR-3); and
- (f) Engine running onload and offload of cargo.

MAR-OPS 1.437 Alternative disembarkation of passengers

The Operator shall establish a procedure in the Operations Manual for alternative disembarkation on the ground of passengers (e.g. engine running offload), covering at least:

- (a) Normal and contingency procedures;
- (b) Crew responsibilities;
- (c) Environmental and other restrictions;
- (d) Flightplanning, including contingency planning;
- (e) Preflight- and inflight briefing; and
- (f) CRM aspects for all personnel involved.

MAR-OPS 1.439 Aerial photography and filming

(a) The Operator shall ensure that aerial photography and filming, other than with tactical reconnaissance and/or surveillance equipment is:

- (1) In compliance with relevant national regulations of the state(s) overflown; and

- (2) Performed by personnel that have been authorised by the Operator to do so.
- (b) The Operator shall specify in the Operations Manual the conditions for the safe conduct of aerial photography or filming, to include:
 - (1) Conditions under which aerial photography and filming may be performed by the pilot flying;
 - (2) Mandatory procedures with respect to:
 - (i) Flightplanning, to include contingency planning;
 - (ii) Required preflight- and/or inflight briefing; and
 - (iii) Mission execution; and
 - (3) Crew resource management aspects for all personnel involved; and
 - (4) Limitations and/or restrictions.

MAR-OPS 1.441 Use of night vision systems

- (a) The Operator shall establish a procedure in the Operations Manual for the use of NVIS-systems, covering at least:
 - (1) Specific flightplanning requirements;
 - (2) The transition to and from an NVIS flight;
 - (3) Aircraft light settings;
 - (4) Formation contracts, if applicable; and
 - (5) Contingency procedures, to include the handling of system malfunctions and adverse environmental conditions.
- (b) These procedures shall at least take full account of:
 - (1) Pilot experience;
 - (2) Type, performance and handling characteristics;
 - (3) Human factor limitations;
 - (4) Environmental conditions; and
 - (5) The use of different variants of NVIS systems within the crew or formation of aircraft.
- (c) The Operator shall ensure that equipment used for NVIS operations comply with MAR-OPS 1.844(a).

MAR-OPS 1.447 Demonstration flying

(a) The Operator shall ensure that demonstration flights are:

- (1) In compliance with relevant national regulations;
- (2) In compliance with STANAG 3533 or an equivalent standard acceptable to the Military Aviation Authority; and
- (3) Performed by personnel that are suitably qualified and authorised by the Operator to do so.

(b) The Operator shall develop and approve special flight profiles, if applicable, which are in accordance with standard acceptable to the Military Aviation Authority.

(c) The Operator shall specify in the Operations Manual the conditions for the safe conduct of demonstration flights, to include:

- (1) Minimum safety margins and distances to minimize any hazards to:
 - (i) The flightcrew itself;
 - (ii) Other aircraft in the formation; and
 - (iii) Third parties on the ground;
- (2) Mandatory procedures with respect to:
 - (i) Flightplanning, to include contingency planning;
 - (ii) Required pre-flight- and/or in-flight briefing; and
 - (iii) Mission execution; and
- (3) Minimum equipment and/or aircraft system requirements;
- (4) Crew resource management aspects for all personnel involved; and
- (5) Limitations and/or restrictions.

MAR-OPS 1.449 Low level flying

(a) The Operator shall ensure that flight operations in a low level environment are conducted:

- (1) In compliance with relevant national regulations of the state(s) overflown; and
- (2) By flight crew suitably qualified, trained and authorised to do so by the Operator.

(b) The Operator shall establish a policy regarding and specify the conditions and procedures for the safe conduct of flight operations in a low level environment in the Operations Manual, covering at least:

- (1) Mandatory procedures with respect to:
 - (i) Flightplanning, to include contingency planning;
 - (ii) Required preflight- and/or in-flight briefing; and
 - (iii) Mission execution; and
- (2) Minimum equipment and/or aircraft system requirements;
- (3) Crew resource management aspects for all personnel involved; and
- (4) Limitations and/or restrictions.

(c) The Operator shall ensure that operations in a low level environment shall not be executed with MAR-300 category C and D passengers on board.

MAR-OPS 1.455 Operational Testing

(a) Before conducting operations beyond the scope of his MAOC or introducing new or modified aircraft hardware and or software, (role) equipment, or weapons, the Operator shall conduct operational testing and evaluation, to determine:

- (1) Required changes to flight crew training, maintenance management procedures and operational concepts and procedures as described in the Operations Manual; and
- (2) Required differences training for flight crew (reference MAR-OPS 1.950) and or other relevant operations personnel.

(b) For the conduct of operational testing and evaluation, the Operator shall:

- (1) Comply with this MAR-OPS 1 and the procedures as laid down in the Operations Manual, unless described otherwise in the operational test plan; and
- (2) Comply with the operational test plan as required by sub-paragraph (c) below.

(c) The Operator shall specify in an operational test plan, acceptable to the Military Aviation Authority, the conditions for the safe conduct of operational testing and evaluation.

SUBPART G – PERFORMANCE

MAR-OPS 1.470 Applicability

MAR-OPS 1.475 General

Appendix 1 to MAR-OPS 1.470(a) Performance requirements

MAR-OPS 1.470 Applicability

(See appendix 1 to MAR-OPS 1.470(a) Performance requirements)

(a) The Operator shall establish a procedure in the Operations Manual to ensure that all aircraft are operated in accordance with appendix 1 to this subpart.

(b) In case compliance with subparagraph (a) above is not practicable due to the nature of the operation, the Operator shall establish a procedure in the Operations Manual to ensure that all aircraft engaged in such operations, are operated in a way that they are capable of:

- (1) Performing a safe take-off abort and safe continued take-off;
- (2) Reaching and maintaining a safe altitude; and
- (3) Performing a safe landing at the intended destination or alternate,

taking into account:

- (4) Any obstacles at the places of departure, along the intended route, and at the intended destination and alternate; and
- (5) Engine failure in all flight phases mentioned in (b)(1), (2) and (3) above.

MAR-OPS 1.475 General

(a) The Operator shall ensure that the mass of the aircraft:

- (1) At the start of the take-off;

or, in the event of in-flight re-planning,

- (2) At the point from which the revised operational flight plan applies,

is not greater than the mass at which the requirements of this subpart can be complied with for the flight to be undertaken, allowing for expected reductions in mass as the flight proceeds, and for such fuel jettisoning as is provided for in the particular requirement.

(b) The Operator shall ensure that the approved performance data contained in the Aircraft Flight Manual (AFM) is used to determine compliance with the requirements of this subpart, supplemented as necessary with other data acceptable to the Military Aviation Authority. Account may be taken of any operational factors already incorporated in the Aircraft Flight Manual performance data to avoid double application of factors.

(c) When showing compliance with the requirements of this subpart, due account shall be taken of aircraft configuration, environmental conditions, operating techniques, and the operation of systems which have an adverse effect on performance.

(d) For performance purposes, a damp runway may be considered to be dry.

(e) The Operator shall take account of charting accuracy when assessing compliance with the take-off requirements of this subpart.

Appendix 1 to MAR-OPS 1.470(a) Performance requirements.

General

(a) The Operator shall ensure that, for determining compliance, the approved performance data in the Aircraft Flight Manual is supplemented as necessary with other data acceptable to the Military Aviation Authority if the approved performance data in the Aircraft Flight Manual is insufficient in respect of items such as:

- (1) Accounting for reasonably expected adverse operating conditions such as take-off and landing on contaminated runways; and
- (2) Consideration of engine failure in all flight phases.

(b) The Operator shall ensure that, for the wet and contaminated runway case, performance data determined in accordance with EASA CS 25.1591 or equivalent acceptable to the Military Aviation Authority is used.

Take-off

(a) The Operator shall ensure that the take-off mass does not exceed the maximum take-off mass specified in the Aircraft Flight Manual for the pressure altitude and the ambient temperature at the aerodrome at which the take-off is to be made.

(b) The Operator shall meet the following requirements when determining the maximum permitted take-off mass:

- (1) The accelerate-stop distance must not exceed the accelerate-stop distance available;
- (2) 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;
- (3) The take-off run must not exceed the take-off run available;
- (4) Compliance with this paragraph must be shown using a single value of V1 for the rejected and continued take-off; and
- (5) On a wet or contaminated runway, the take-off mass must not exceed that permitted for a take-off on a dry runway under the same conditions.

(c) When showing compliance with sub-paragraph (b) above, the Operator shall take account of the following:

- (1) The pressure altitude at the aerodrome;
- (2) The ambient temperature at the aerodrome; and
- (3) The runway surface condition and the type of runway surface;
- (4) The runway slope in the direction of take-off;
- (5) Not more than 50% of the reported head-wind component or not less than 150% of the reported tailwind component; and
- (6) The loss, if any, of runway length due to alignment of the aircraft prior to take-off.

Take-off obstacle clearance

(a) The Operator shall ensure that the net take-off flight path clears all obstacles by a vertical distance of at least 35 ft or by a horizontal distance of at least 90 m plus $0.125 \times D$, where D is the horizontal distance the aircraft 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. For aircraft with a wingspan of less than 60 m a horizontal obstacle clearance of half the aircraft wingspan plus 60 m, plus $0.125 \times D$ may be used.

(b) When showing compliance with sub-paragraph (a) above, the Operator must take account of the following:

- (1) The mass of the aircraft at the commencement of the take-off run;
- (2) The pressure altitude at the aerodrome;
- (3) The ambient temperature at the aerodrome; and
- (4) Not more than 50% of the reported head-wind component or not less than 150% of the reported tailwind component.

(c) When showing compliance with sub-paragraph (a) above:

- (1) Track changes shall not be 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 aircraft is banked by no more than 15° . Above 400 ft height bank angles greater than 15° , but not more than 25° may be scheduled;
- (2) Any part of the net take-off flight path in which the aircraft is banked by more than 15° must clear all obstacles within the horizontal distances specified in sub-paragraphs (a), (d) and (e) of this paragraph by a vertical distance of at least 50 ft;
- (3) The Operator shall use special procedures, acceptable to the Military Aviation Authority, to apply increased bank angles of not more than 20° between 200 ft and 400 ft, or not more than 30° above 400 ft; and
- (4) Adequate allowance must be made for the effect of bank angle on operating speeds and flight path including the distance increments resulting from increased operating speeds.

(d) When showing compliance with sub-paragraph (a) above for those cases where the intended flight path does not require track changes of more than 15° , the Operator need not consider those obstacles which have a lateral distance greater than:

- (1) 300 m, if the pilot is able to maintain the required navigational accuracy through the obstacle accountability area; or
- (2) 600 m, for flights under all other conditions.

(e) When showing compliance with sub-paragraph (a) above for those cases where the intended flight path does require track changes of more than 15° , the Operator need not consider those obstacles which have a lateral distance greater than:

- (1) 600 m, if the pilot is able to maintain the required navigational accuracy through the obstacle accountability area; or

(2) 900 m for flights under all other conditions.

(f) The Operator shall establish contingency procedures to satisfy these requirements and to provide a safe route, avoiding obstacles, to enable the aircraft to either comply with the en-route requirements stated below (Enroute – one engine inoperative), or land at either the aerodrome of departure or at a take-off alternate aerodrome .

Enroute – one engine inoperative

(a) The Operator shall ensure that the one engine inoperative en-route net flight path data shown in the Aircraft Flight Manual, appropriate to the meteorological conditions expected for the flight, complies with either sub-paragraph (b) or (c) at all points along the route. The net flight path must have a positive gradient at 1500 ft above the aerodrome where the landing is assumed to be made after engine failure. In meteorological conditions requiring the operation of ice protection systems, the effect of their use on the net flight path must be taken into account.

(b) The gradient of the net flight path must be positive at at least 1000 ft above all terrain and obstructions along the route within 9,3 km (5 nm) on either side of the intended track.

(c) The net flight path must permit the aircraft to continue flight from the cruising altitude to an aerodrome where a landing can be made in accordance with the landing requirements stated below (Landing – Dry runways/ Landing – Dry runways), the net flight path clearing vertically, by at least 2000 ft, all terrain and obstructions along the route within 9,3 km (5 nm) on either side of the intended track in accordance with sub-paragraphs (1) to (4) below:

(1) The engine is assumed to fail at the most critical point along the route;

(2) Account is taken of the effects of winds on the flight path;

(3) Fuel jettisoning is permitted to an extent consistent with reaching the aerodrome with the required fuel reserves, if a safe procedure is used; and

(4) The aerodrome where the aircraft is assumed to land after engine failure must meet the following criteria:

(i) The performance requirements at the expected landing mass are met; and

(ii) Weather reports or forecasts, or any combination thereof, and field condition reports indicate that a safe landing can be accomplished at the estimated time of landing.

(d) When showing compliance with the one engine inoperative en-route requirements stated above (Enroute – one engine inoperative), the Operator must increase the width margins of sub-paragraphs (b) and (c) above to 18,5 km (10 nm) if the navigational accuracy does not meet the 95% containment level.

Enroute – Aircraft with three or more engines, two engines inoperative

(a) The Operator shall ensure that at no point along the intended track will an aircraft having three or more engines be more than 90 minutes, at the all-engines long range cruising speed at standard temperature in still air, away from an aerodrome at which the performance requirements applicable at the expected landing mass are met unless it complies with sub-paragraphs (b) to (f) below.

(b) The two engines inoperative en-route net flight path data must permit the aircraft to continue the flight, in the expected meteorological conditions, from the point where two engines are assumed to fail simultaneously, to an aerodrome at which it is possible to land and come to a complete stop when using the prescribed procedure for a landing with two engines inoperative. The net flight path must clear vertically, by at least 2000 ft all terrain and obstructions along the route within 9,3 km (5 nm) on either side of the intended track. At altitudes and in meteorological conditions requiring ice protection systems to be operable, the effect of their use on the net flight path data must be taken into account. If the navigational accuracy does not meet the 95% containment level, the Operator must increase the width margin given above to 18,5 km (10 nm).

(c) The two engines are assumed to fail at the most critical point of that portion of the route where the aircraft is more than 90 minutes, at the all engines long range cruising speed at standard temperature in still air, away from an aerodrome at which the performance requirements applicable at the expected landing mass are met.

(d) The net flight path must have a positive gradient at 1500 ft above the aerodrome where the landing is assumed to be made after the failure of two engines.

(e) Fuel jettisoning is permitted to an extent consistent with reaching the aerodrome with the required fuel reserves, if a safe procedure is used.

(f) The expected mass of the aircraft at the point where the two engines are assumed to fail must not be less than that which would include sufficient fuel to proceed to an aerodrome where the landing is assumed to be made, and to arrive there at least 1500 ft directly over the landing area and thereafter to fly level for 15 minutes.

Landing – Destination and alternate aerodromes

(a) The Operator shall ensure that the landing mass of the aircraft determined in accordance with MAR-OPS 1.475(a) does not exceed the maximum landing mass specified for the altitude and the ambient temperature expected for the estimated time of landing at the destination and alternate aerodrome.

(b) For instrument approaches with a missed approach gradient greater than 2,5% the Operator shall verify that the expected landing mass of the aircraft allows a missed approach with a climb gradient equal to or greater than the applicable missed approach gradient in the one-engine inoperative missed approach configuration and speed (see EASA CS 25.121(d)). The use of an alternative method must be acceptable to the Military Aviation Authority .

(c) For instrument approaches with decision heights below 200 ft, the Operator must verify that the expected landing mass of the aircraft allows a missed approach gradient of climb, with the critical engine failed and with the speed and configuration used for go-around of at least 2,5%, or the published gradient, whichever is the greater. The use of an alternative method must be acceptable to the Military Aviation Authority.

Landing – Dry runways

(a) The Operator shall ensure that the landing mass of the aircraft determined in accordance with MAR-OPS 1.475(a) for the estimated time of landing at the destination aerodrome and at any alternate aerodrome allows a full stop landing:

- (1) For turbo-jet powered aeroplanes, within 60% of the landing distance available;
or

- (2) For turbo-propeller powered aeroplanes, within 70% of the landing distance available;
- (b) When showing compliance with sub-paragraph (a) above, the Operator must take account of the following:
- (1) The altitude at the aerodrome;
 - (2) Not more than 50% of the head-wind component or not less than 150% of the tailwind component; and
 - (3) The runway slope in the direction of landing if greater than +/-2%.
- (c) When showing compliance with sub-paragraph (a) above, it must be assumed that:
- (1) The aircraft will land on the most favourable runway, in still air; and
 - (2) The aircraft will land on the runway most likely to be assigned considering the probable wind speed and direction and the ground handling characteristics of the aircraft, and considering other conditions such as landing aids and terrain.
- (d) If the Operator is unable to comply with sub-paragraph (c)(1) above for a destination aerodrome having a single runway where a landing depends upon a specified wind component, an aircraft may be despatched if 2 alternate aerodromes are designated which permit full compliance with sub-paragraphs (a), (b) and (c). Before commencing an approach to land at the destination aerodrome the Pilot in Command must satisfy himself that a landing can be made in full compliance with the requirements for landing at destination and alternate aerodromes (Landing - Destination and alternate aerodromes), and sub-paragraphs (a) and (b) above.
- (e) If the Operator is unable to comply with sub-paragraph (c)(2) above for the destination aerodrome, the aircraft may be despatched if an alternate aerodrome is designated which permits full compliance with sub-paragraphs (a), (b) and (c).

Landing – Wet and contaminated runways

- (a) The Operator shall ensure that when the appropriate weather reports or forecasts, or a combination thereof, indicate that the runway at the estimated time of arrival may be wet, the landing distance available is at least 115% of the required landing distance, determined in accordance with the requirements for landing on dry runways as stated above.
- (b) The Operator shall ensure that when the appropriate weather reports or forecasts, or a combination thereof, indicate that the runway at the estimated time of arrival may be contaminated, the landing distance available must be at least the landing distance determined in accordance with sub-paragraph (a) above, or at least 115% of the landing distance determined in accordance with approved contaminated landing distance data or equivalent, acceptable to the Military Aviation Authority, whichever is greater.
- (c) A landing distance on a wet runway shorter than that required by sub-paragraph (a) above, but not less than that required by sub-paragraph (a) of 'Landing – Dry runways' above, may be used if the Aircraft Flight Manual includes specific additional information about landing distances on wet runways.
- (d) A landing distance on a specially prepared contaminated runway shorter than that required by sub-paragraph (b) above, but not less than that required by sub-paragraph (a) of 'Landing – Dry runways', may be used if the Aeroplane Flight Manual

includes specific additional information about landing distances on contaminated runways.

(e) When showing compliance with sub-paragraphs (b), (c) and (d) above, the criteria of 'Landing – Dry runways' shall be applied accordingly except that sub-paragraph (a)(1) and (2) of 'Landing – Dry runways' shall not be applied to sub-paragraph (b) above.

SUBPART J – MASS AND BALANCE

MAR-OPS	1.605 General
MAR-OPS	1.610 Loading, mass and balance
MAR-OPS	1.615 Mass values for crew
MAR-OPS	1.620 Mass values for passengers and baggage
MAR-OPS	1.625 Mass and balance documentation

MAR-OPS 1.605 General

(a) The Operator shall ensure that during any phase of operation, the loading, mass and centre of gravity of the aircraft complies with the limitations specified in the approved Aircraft Flight Manual.

(b) The Operator shall establish the mass and the centre of gravity of any aircraft by actual weighing prior to initial entry into service and thereafter at intervals of 4 years or at intervals in accordance with the maintenance program, whichever is more restrictive.. The accumulated effects of modifications and repairs on the mass and balance must be accounted for and properly documented. Furthermore, aircraft must be reweighed if the effect of modifications on the mass and balance is not accurately known.

(c) The Operator shall determine the mass of all operating items and crew members included in the aircraft dry operating mass by weighing or by using standard masses. The influence of their position on the aircraft centre of gravity must be determined.

(d) The Operator shall establish a method in the Operations Manual for determining the mass of any cargo;

(e) The Operator shall or determine the mass of passengers and baggage in accordance with MAR-OPS 1.620.

(f) The Operator shall determine the mass of the fuel load by using the actual density or, if not known, the density calculated in accordance with a method specified in the Operations Manual.

MAR-OPS 1.610 Loading, mass and balance

The Operator shall specify, in the Operations Manual, the principles and methods involved in the loading and in the mass and balance system that meet the requirements of MAR-OPS 1.605. This system shall cover all types of intended operations.

MAR-OPS 1.615 Mass values for crew

(a) The Operator shall use the following mass values to determine the dry operating mass:

- (1) Actual masses including any crew baggage;
- (2) Standard masses, including hand baggage, of 95 kg for crew members; or
- (3) Other standard masses acceptable to the Military Aviation Authority.

(b) The Operator shall correct the dry operating mass to account for any additional baggage. The position of this additional baggage must be accounted for when establishing the centre of gravity of the aircraft.

MAR-OPS 1.620 Mass values for passengers and baggage

(a) The Operator shall compute the mass of passengers and checked baggage using either the actual weighed mass of each person and the actual weighed mass of baggage or the standard mass values specified in Tables 1 and 2 below. Passenger mass may also be established by use of a verbal statement by or on behalf of each passenger and adding to it a pre-determined constant to account for hand baggage and clothing. The procedure specifying when to select actual or standard masses and the procedure to be followed when using verbal statements must be included in the Operations Manual.

(b) If determining the actual mass by weighing, the Operator shall ensure that passengers' personal belongings and hand baggage are included. Such weighing must be conducted immediately prior to boarding and at an adjacent location.

(c) If determining the mass of passengers using standard mass values, the standard mass values in Table 1 below must be used. The standard masses include hand baggage and the mass of any infant below 2 years of age carried by an adult on one passenger seat. Infants occupying separate passenger seats must be considered as children for the purpose of this sub-paragraph.

(d) Mass values for passengers

The standard masses of male, female, children and troops in Table 1 are applicable.

Table 1

Male	95 kg
Female	75 kg
Children	35 kg
Troops	120 kg

(e) Mass values for baggage

The standard mass values given in Table 2 are applicable for each piece of checked baggage.

Table 2

Small suitcase / bag	20 kg
Large suitcase / bag	32 kg
Military gear bag / backpack	50 kg

(f) If the Operator wishes to use standard mass values other than those contained in Tables 1 and 2 above, he shall advise the Military Aviation Authority of his reasons and gain its approval in advance. He shall also submit for approval a detailed weighing survey plan. After verification and approval by the Military Aviation Authority of the results of the weighing survey, the revised standard mass values are only applicable to that Operator. The revised standard mass values can only be used in circumstances consistent with those under which the survey was conducted. Where revised standard masses exceed those in Tables 1 and 2, then such higher values must be used.

(g) On any flight identified as carrying a significant number of passengers whose masses, including hand baggage, are expected to exceed the standard passenger mass, the Operator shall determine the actual mass of such passengers by weighing or by adding an adequate mass increment.

(h) If standard mass values for baggage are used and a significant amount of baggage is expected to exceed the standard baggage mass, the Operator shall determine the actual mass of such baggage by weighing or by adding an adequate mass increment.

(i) The Operator shall ensure that a Pilot in Command is advised when a non-standard method has been used for determining the mass of the load and that this method is stated in the mass and balance documentation.

MAR-OPS 1.625 Mass and balance documentation

(a) The Operator shall establish mass and balance documentation prior to each flight specifying the load and its distribution. The mass and balance documentation must enable the Pilot in Command to determine that the load and its distribution is such that the mass and balance limits of the aircraft are not exceeded. The person preparing the mass and balance documentation must be named on the document. The person supervising the loading of the aircraft must confirm by signature that the load and its distribution are in accordance with the mass and balance documentation. This document must be acceptable to the Pilot in Command, his acceptance being indicated by signing for the mass and balance documentation.

(b) The Operator shall specify procedures for last minute changes to the load.

SUBPART K – INSTRUMENTS AND EQUIPMENT

MAR-OPS 1.630	General introduction
MAR-OPS 1.635	Circuit protection devices
MAR-OPS 1.640	Aircraft operating lights
MAR-OPS 1.645	Windshield wipers
MAR-OPS 1.647	Equipment for radio communication
MAR-OPS 1.650	Day VFR operations - flight instruments and associated equipment
MAR-OPS 1.652	IFR or night operations - flight instruments and associated equipment
MAR-OPS 1.655	IMC or night operations - autopilot for single pilot operation
MAR-OPS 1.660	Altitude alerting system
MAR-OPS 1.665	Ground proximity warning system and terrain awareness warning system
MAR-OPS 1.670	Airborne weather radar equipment
MAR-OPS 1.675	Equipment for operations in icing conditions
MAR-OPS 1.685	Flight crew intercom system
MAR-OPS 1.690	Crew member intercom system
MAR-OPS 1.695	Public address system
MAR-OPS 1.700	Cockpit voice recorder
MAR-OPS 1.715	Flight data recorder 1
MAR-OPS 1.720	Flight data recorder 2
MAR-OPS 1.725	Flight data recorder 3
MAR-OPS 1.727	Combination recorder
MAR-OPS 1.730	Seats, seat safety belts, harnesses and child restraint devices
MAR-OPS 1.731	Fasten seat belt and no-smoking signs
MAR-OPS 1.735	Internal doors and curtains
MAR-OPS 1.745	First-aid kits
MAR-OPS 1.760	First-aid oxygen
MAR-OPS 1.770	Supplemental oxygen – pressurised aircraft
MAR-OPS 1.775	Supplemental oxygen – non-pressurised aircraft
MAR-OPS 1.780	Crew protective breathing equipment
MAR-OPS 1.790	Hand fire extinguishers
MAR-OPS 1.795	Crash axes and crowbars
MAR-OPS 1.800	Marking of break-in points
MAR-OPS 1.805	Means for emergency evacuation
MAR-OPS 1.810	Megaphones
MAR-OPS 1.815	Emergency lighting
MAR-OPS 1.820	Automatic Emergency Locator Transmitter
MAR-OPS 1.828	Occupant flight equipment
MAR-OPS 1.835	Survival equipment
MAR-OPS 1.843	All aircraft on flights over water – ditching provisions
MAR-OPS 1.844	Role equipment - NVIS equipment

Appendix 1 to MAR-OPS 1.700	Cockpit voice recorder - specifications
Appendix 1 to MAR-OPS 1.715	Flight data recorder 1 - specifications
Appendix 1 to MAR-OPS 1.720	Flight data recorder 2 - specifications
Appendix 1 to MAR-OPS 1.725	Flight data recorder 3 - specifications
Appendix 1 to MAR-OPS 1.770	Supplemental oxygen - pressurised aircraft
Appendix 1 to MAR-OPS 1.775	Supplemental Oxygen - non-pressurised aircraft

MAR-OPS 1.630 General introduction

(a) The Operator shall ensure that a flight does not commence unless the aircraft's instruments and equipment are in accordance with the applicable national requirements for military aircraft of the airspace concerned.

(b) The Operator shall ensure that a flight does not commence unless the instruments and equipment required under this subpart are:

(1) Approved, except as specified in sub-paragraph (d), and installed in accordance with the requirements applicable to them, including the minimum performance standard and the military operational and airworthiness requirements;

(2) In operable condition except as provided in the Minimum Equipment List;

(c) Instruments and equipment minimum performance standards are those prescribed in the applicable EASA Technical Standard Orders (ETSO) as listed in CS-TSO or equivalent requirements acceptable to the Military Aviation Authority, unless different performance standards are prescribed in the military operational or airworthiness codes. Instruments and equipment complying with design and performance specifications other than ETSO on the date that MAR-OPS 1 enters into force may remain in service, or be installed, unless additional requirements are prescribed in this subpart. Instruments and equipment that have already been approved do not need to comply with a revised ETSO or a revised specification, other than ETSO, unless a retroactive requirement is prescribed.

(d) The following items shall not be required to have an equipment approval:

(1) Fuses referred to in MAR-OPS 1.635;

(2) Electric torches referred to in MAR-OPS 1.640(b)(5);

(3) An accurate time piece referred to in MAR-OPS 1.650(a)(2) & 1.652(a)(2);

(4) Small items being part of survival equipment referred in MAR-OPS 1.835(a);

(e) If equipment is to be used by one flight crew member at his station during flight, it must be readily operable from his station. When a single item of equipment is required to be operated by more than one flight crew member it must be installed so that the equipment is readily operable from any station at which the equipment is required to be operated.

(f) Those instruments that are used by any one flight crew member shall be so arranged as to permit the flight crew member to see the indications readily from his station, with the minimum practicable deviation from the position and line of vision which he normally assumes when looking forward along the flight path. Whenever a single instrument is required in an aircraft operated by more than one flight crew member it must be installed so that the instrument is visible from each applicable flight crew station.

(g) The term 'equipped with' used in this subpart may either mean installed in the aircraft or taken onboard the aircraft. In case the equipment is not part of the standard aircraft equipment, the Operator shall establish procedures to ensure that the required equipment is installed, attached or onboard during flight, as appropriate.

MAR-OPS 1.635 Circuit protection devices

The Operator shall not operate an aircraft in which fuses are used unless there are spare fuses available for use in flight equal to at least 10% of the number of fuses of each rating or three of each rating whichever is the greater.

MAR-OPS 1.640 Aircraft operating lights

The Operator shall not operate an aircraft unless it is equipped with:

(a) For flights by day:

(1) An anti-collision light system; or

(b) For flights under IMC or by night, in addition to equipment specified in paragraph (a) above:

(1) Navigation/position lights;

(2) Lighting supplied from the aircraft's electrical system to provide adequate illumination for all instruments and equipment essential to the safe operation of the aircraft;

(3) Lighting supplied from the aircraft's electrical system to provide illumination in all passenger compartments;

(4) A landing and taxi light; and

(5) An electric torch for each required crew member readily accessible to crew members when seated at their designated station.

MAR-OPS 1.645 Windshield wipers

The Operator shall not operate an aircraft unless it is equipped with a windshield wiper system or equivalent means to maintain a clear portion of the windshield during precipitation.

MAR-OPS 1.647 Equipment for radio communication

Whenever a radio communication and/or radio navigation system is required, the Operator shall not operate an aircraft unless it is equipped with a transmit button on the flight controls and a headset with boom microphone or equivalent for each required crew member at his working station.

MAR-OPS 1.650 Day VFR operations – flight instruments and associated equipment

(a) The Operator shall not operate an aircraft by day in accordance with Visual Flight Rules (VFR) unless it is equipped with the flight and navigational instruments, associated equipment and, where applicable, under the conditions stated in the following sub-paragraphs:

(1) The means of measuring and displaying magnetic heading should be a magnetic compass or equivalent;

(2) An accurate timepiece showing the time in hours, minutes, and seconds;

(3) A sensitive pressure altimeter calibrated in feet with a sub-scale setting, calibrated in hectopascals/millibars, adjustable for any barometric pressure likely to be set during flight; and

(4) An airspeed indicator calibrated in knots.

(b) Whenever two pilots are required the second pilot's station shall have separate instruments for the instruments stated in (a)(3), and (4) above and –in addition to these– a direction indicator. The duplicate instrument requirement embraces separate displays for each pilot and separate selectors or other associated equipment where appropriate.

(c) In addition to the flight instruments required by sub-paragraphs (a) and (b) above, aircraft must be equipped with the following flight instruments when operating over water out of sight of land or when the visibility is less than 1500 m:

(1) An attitude indicator;

(2) A stabilised direction indicator; and

(3) A radio altimeter when operating over water below 500ft AMSL, equipped with an audio voice warning, or other means acceptable to the Military Aviation Authority, operating below a preset height and a visual warning capable of operating at a height selectable by the pilot.

(d) All aircraft must be equipped with means for indicating when power is not adequately supplied to the required flight instruments.

(e) Each airspeed indicating system must be equipped with a heated pitot tube system or equivalent means for preventing malfunctioning due to either condensation or icing.

MAR-OPS 1.652 IFR or night operations – flight instruments and associated equipment

(a) The Operator shall not operate an aircraft under IFR or by night unless it is equipped with the flight and navigational instruments, associated equipment and, where applicable, under the conditions stated in the following sub-paragraphs:

(1) The means of measuring and displaying magnetic heading should be a magnetic compass or equivalent;

(2) An accurate time-piece showing the time in hours, minutes and seconds;

(3) A sensitive pressure altimeter calibrated in feet with sub-scale settings, calibrated in hectopascals/millibars, adjustable for any barometric pressure likely to be set during flight. The altimeter must have counter drum-pointer or equivalent presentation;

(4) An airspeed indicating system with heated pitot tube or equivalent means for preventing malfunctioning due to either condensation or icing including a warning indication of pitot heater failure;

- (5) A vertical speed indicator;
- (6) A slip indicator;
- (7) An attitude indicator;
- (8) An additional, standby, attitude indicator (artificial horizon);
- (9) A stabilised direction indicator;
- (10) A means of indicating in the cockpit the aircraft outside air temperature calibrated in degrees Celsius; and
- (11) Two independent static pressure systems.

(b) Whenever two pilots are required the second pilot's station shall have separate instruments for the instruments stated in (a)(3), (4), (5), (6), (7), (9) above. The duplicate instrument requirement embraces separate displays for each pilot and separate selectors or other associated equipment where appropriate.

(c) In addition to the flight instruments required by sub-paragraphs (a) and (b) above, aircraft must be equipped with the a radio altimeter when operating below 500ft AMSL or GND as applicable. This radio altimeter must be equipped with an audio voice warning, or other means acceptable to the Military Aviation Authority, operating below a preset height and a visual warning capable of operating at a height selectable by the pilot.

(d) The additional, standby, attitude indicator as mentioned in sub-paragraph (a)(8) above shall:

- (1) Be powered continuously during normal operation and, after a total failure of the normal electrical generating system, powered from a source independent of the normal electrical generating system;
- (2) Provide reliable operation for a minimum of 30 minutes after total failure of the normal electrical generating system, taking into account other loads on the emergency power supply and operational procedures;
- (3) Operate independently of any other attitude indicating system;
- (4) Operate automatically after total failure of the normal electrical generating system;
- (5) Be appropriately illuminated when required; and
- (6) Indicate evidently to the flight crew when it is being operated by emergency power.

(e) A chart holder in an easily readable position which can be illuminated for night operations.

(f) All aircraft must be equipped with means for indicating when power is not adequately supplied to the required flight instruments.

(g) All aircraft with compressibility limitations not otherwise indicated by the required airspeed indicators shall be equipped with a Mach number indicator at each pilot's station.

MAR-OPS 1.655 IMC or night operations - autopilot for single pilot operation

The Operator shall not conduct single pilot IMC or night operations unless the aircraft is equipped with an autopilot with at least altitude hold and heading mode.

MAR-OPS 1.660 Altitude alerting system

The Operator shall not operate:

(a) A turbine propeller powered aircraft with a maximum certificated take-off mass in excess of 5700 kg or with a maximum approved passenger seating configuration of more than 9; or

(b) A turbojet powered aircraft,

unless it is equipped with an altitude alerting system capable of:

- (1) Alerting the flight crew upon approaching a pre-selected altitude; and
- (2) Alerting the flight crew by at least an aural signal, when deviating from a pre-selected altitude.

MAR-OPS 1.665 Ground proximity warning system and terrain awareness warning system

(a) The Operator shall not operate a turbine powered aircraft having a maximum certificated take-off mass in excess of 5700 kg or a maximum approved passenger seating configuration of more than 9 unless it is equipped with a ground proximity warning system.

(b) The ground proximity warning system must automatically provide, by means of aural signals, which may be supplemented by visual signals, timely and distinctive warning to the flight crew of sink rate, ground proximity, altitude loss after take-off or go-around, incorrect landing configuration and downward glide-slope deviation.

(c) The Operator shall not operate a turbine powered aircraft having a maximum certificated take-off mass in excess of 5700 kg or having a maximum approved passenger seating configuration of more than 30 unless it is equipped with a ground proximity warning system that includes a predictive terrain hazard warning function (Terrain Awareness and Warning System – TAWS).

(d) The terrain awareness and warning system must automatically provide the flight crew, by means of visual and aural signals and a Terrain Awareness Display, with sufficient alerting time to prevent controlled flight into terrain events, and provide a forward looking capability and terrain clearance floor.

MAR-OPS 1.668 Airborne Collision Avoidance System

The Operator shall not operate a turbine powered aircraft having a maximum certificated take-off mass in excess of 5700 kg, or a maximum approved passenger seating configuration of more than 19, unless it is equipped with an airborne collision avoidance system with a minimum performance level of at least ACAS II.

MAR-OPS 1.670 Airborne weather radar equipment

The Operator shall not operate an aircraft unless it is equipped with airborne weather radar equipment whenever such aircraft is being operated unaided at night or in instrument meteorological conditions when current weather reports indicate that thunderstorms or other potentially hazardous weather conditions, regarded as detectable with airborne weather radar, may be expected to exist along the route. The airborne weather radar equipment may be replaced by other equipment capable of detecting thunderstorms and other potentially hazardous weather conditions, regarded as detectable with airborne weather radar equipment, subject to approval by the Military Aviation Authority.

MAR-OPS 1.675 Equipment for operations in icing conditions

- (a) The Operator shall not operate an aircraft in expected or actual icing conditions unless it is certificated and equipped to operate in icing conditions.
- (b) The Operator shall not operate an aircraft in expected or actual icing conditions at night unless it is equipped with a means to illuminate or detect the formation of ice. Any illumination that is used must be of a type that will not cause glare or reflection that would handicap crew members in the performance of their duties.

MAR-OPS 1.685 Flight crew intercom system

The Operator shall not operate an aircraft unless it is equipped with a flight crew intercom system, including headsets and microphones, not of a handheld type, for use by all members of the flight crew.

MAR-OPS 1.690 Crew member intercom system

- (a) The Operator shall not operate an aircraft carrying a crew member other than a flight crew member unless it is equipped with a crew member intercom system.
- (b) The crew member intercom system required by this paragraph must:
 - (1) Operate independently of the public address system except for handsets, headsets, microphones, selector switches and signalling devices; and
 - (2) Provide a means of two-way communication between the cockpit and:
 - (i) Each passenger compartment;
 - (ii) Each galley located other than on a passenger deck level;
 - (iii) Each remote crew compartment that is not on the passenger deck and is not easily accessible from a passenger compartment;
 - (3) Be readily accessible for use from each of the required flight crew stations in the cockpit;
 - (4) Be readily accessible for use at required Crew Member member stations close to each separate or pair of emergency exits;

- (5) Have an alerting system incorporating aural or visual signals for use by flight crew members to alert the Crew Members and for use by Crew Members to alert the flight crew;
- (6) Have a means for the recipient of a call to determine whether it is a normal call or an emergency call; and
- (7) Provide on the ground a means of two-way communication between ground crew and at least two flight crew members.

MAR-OPS 1.695 Public address system

- (a) The Operator shall not operate an aircraft with a maximum approved passenger seating configuration of more than 19 when carrying one or more passengers, unless a public address system is installed.
- (b) The public address system required by this paragraph must:
 - (1) Operate independently of the intercom systems except for handsets, headsets, microphones, selector switches and signalling devices;
 - (2) Be readily accessible for immediate use from each required flight crew member station;
 - (3) For each required floor level passenger emergency exit which has an adjacent Crew Member seat, have a microphone which is readily accessible to the seated Crew Member, except that one microphone may serve more than one exit, provided the proximity of the exits allows unassisted verbal communication between seated Crew Members;
 - (4) Be capable of operation within 10 seconds by a Crew Member member at each of those stations in the compartment from which its use is accessible; and
 - (5) Be audible and intelligible at all passenger seats, toilets and Crew Member seats and work stations.

MAR-OPS 1.700 Cockpit voice recorder

(See appendix 1 to MAR-OPS 1.700 Cockpit voice recorder – specifications)

The Operator shall, in support of accident and incident data requirements (reference MAR-OPS 1.260) and the Operator's accident prevention and flight safety program (reference MAR-OPS 1.037), not operate an aircraft, which:

- (a) Has a maximum approved passenger seating configuration of more than 9; or
- (b) Has a maximum certificated take-off mass over 5700 kg,

unless it is equipped with a cockpit voice recorder as specified in Appendix 1 to MAR-OPS 1.700.

MAR-OPS 1.715 Flight data recorder 1

(See appendix 1 to MAR-OPS 1.715 Flight data recorder 1 – specifications)

The Operator shall, in support of accident and incident data requirements (reference MAR-OPS 1.160) and the Operator's accident prevention and flight safety program (reference MAR-OPS 1.037), not operate an aircraft first issued with an individual Certificate of Airworthiness on or after 1 April 1998, which:

(1) Is multi-engine turbine powered and has a maximum approved passenger seating configuration of more than 9; or

(2) Has a maximum certificated take-off mass over 5700 kg,

unless it is equipped with a flight data recorder as specified in Appendix 1 to MAR-OPS 1.715.

MAR-OPS 1.720 Flight data recorder 2

(See appendix 1 to MAR-OPS 1.720 Flight data recorder 2 – specifications)

The Operator shall, in support of accident and incident data requirements (reference MAR-OPS 1.160) and the Operator's accident prevention and flight safety program (reference MAR-OPS 1.037), not operate an aircraft first issued with an individual Certificate of Airworthiness on or after 1 June 1990 up to and including 31 March 1998, which has a maximum certificated take-off mass over 5700 kg, unless it is equipped with a flight data recorder as specified in:

(1) Appendix 1 to MAR-OPS 1.720; or

(2) Appendix 1 to MAR-OPS 1.715.

MAR-OPS 1.725 Flight data recorder 3

(See appendix 1 to MAR-OPS 1.725 Flight data recorder 3 – specifications)

The Operator shall, in support of accident and incident data requirements (reference MAR-OPS 1.160) and the Operator's accident prevention and flight safety program (reference MAR-OPS 1.037), not operate an turbine-engined aircraft first issued with an individual Certificate of Airworthiness, before 1 June 1990, which has a maximum certificated take-off mass over 5700 kg unless it is equipped with a flight data recorder as specified in:

(1) Appendix 1 to MAR-OPS 1.725; or

(2) Appendix 1 to MAR-OPS 1.720; or

(2) Appendix 1 to MAR-OPS 1.715.

MAR-OPS 1.727 Combination recorder

(a) Compliance with the applicable cockpit voice recorder and flight data recorder requirements may be achieved by:

(1) One combination recorder if the aircraft has to be equipped with a cockpit voice recorder or with a flight data recorder only; or

(2) Two combination recorders if the aircraft with a maximum take-off mass over 5700 kg has to be equipped with a cockpit voice recorder and a flight data recorder.

(b) A combination recorder shall record:

(1) all voice communications and aural environment required by the applicable cockpit voice recorder requirement; and

(2) all parameters required by the applicable flight data recorder requirement.

MAR-OPS 1.730 Seats, seat safety belts, harnesses and child restraint devices

(a) The Operator shall not operate an aircraft unless it is equipped with:

(1) A seat or berth for each person who is aged two years or more;

(2) A safety belt, with or without a diagonal shoulder strap, or a safety harness for use in each passenger seat for each passenger aged 2 years or more;

(3) A supplementary loop belt or other restraint device for each infant;

(4) A safety belt with shoulder harness for each flight crew seat and for any seat alongside a pilot's seat incorporating a device which will automatically restrain the occupant's torso in the event of rapid deceleration;

(5) A safety belt with shoulder harness for each Crew Member seat; and

(6) Seats for Crew Members located near required floor level emergency exits except that, if the emergency evacuation of passengers would be enhanced by seating Crew Members elsewhere, other locations are acceptable.

(b) All safety belts with shoulder harness must have a single point release.

MAR-OPS 1.731 Fasten seat belt signs

The Operator shall not operate an aircraft in which all passenger seats are not visible from the cockpit, unless it is equipped with a means of indicating to all passengers and Crew Members when seat belts shall be fastened.

MAR-OPS 1.735 Internal doors and curtains

The Operator shall not operate an aircraft unless the following equipment is installed:

(a) In an aircraft configured for carrying passengers, a door or curtain between the passenger compartment and the cockpit;

(b) A means for opening each door that separates a passenger compartment from another compartment that has emergency exit provisions. The means for opening must be readily accessible;

(c) If it is necessary to pass through a doorway or curtain separating the passenger cabin from other areas to reach any required emergency exit from any passenger seat, the door or curtain must have a means to secure it in the open position;

(d) A placard on each internal door or adjacent to a curtain that is the means of access to a passenger emergency exit, to indicate that it must be secured open during take off and landing; and

(e) A means for any member of the crew to unlock any door that is normally accessible to passengers and that can be locked by passengers.

MAR-OPS 1.745 First-aid kits

(a) The Operator shall not operate an aircraft unless it is equipped with first-aid kits, readily accessible for use, to the following scale:

Number of passengers carried	Number of First-Aid Kits required
0 to 99	1
100 to 199	2
200 to 299	3
300 and more	4

(b) The Operator shall ensure that first-aid kits are:

(1) Inspected periodically to confirm, to the extent possible, that contents are maintained in the condition necessary for their intended use; and

(2) Replenished at regular intervals, in accordance with instructions contained on their labels, or as circumstances warrant.

MAR-OPS 1.760 First-aid oxygen

(a) The Operator shall not operate a pressurised aircraft above 25000 ft when carrying passengers, unless it is equipped with a supply of undiluted oxygen for passengers who, for physiological reasons, might require oxygen following a cabin depressurisation. The amount of oxygen shall be calculated using an average flow rate of at least 3 litres Standard Temperature Pressure Dry (STPD)/minute/person and shall be sufficient for the remainder of the flight after cabin depressurisation when the cabin altitude exceeds 8000 ft but does not exceed 15000 ft, for at least 2% of the passengers carried, but in no case for less than one person. There shall be a sufficient number of dispensing units, but in no case less than two, with a means for Crew Members to use the supply. The dispensing units may be of a portable type.

(b) The amount of first-aid oxygen required for a particular operation shall be determined on the basis of cabin pressure altitudes and flight duration, consistent with the operating procedures established for each operation and route.

(c) The oxygen equipment provided shall be capable of generating a mass flow to each user of at least four litres per minute, STPD. Means may be provided to decrease the flow to not less than two litres per minute, STPD, at any altitude.

MAR-OPS 1.770 Supplemental oxygen - pressurised aircraft

(See appendix 1 to MAR-OPS 1.770 Supplemental oxygen - pressurised aircraft)

(a) General

(1) The Operator shall not operate a pressurised aircraft at pressure altitudes exceeding 10000 ft unless supplemental oxygen equipment, capable of storing and dispensing the oxygen supplies required by this paragraph, is provided.

(2) The amount of supplemental oxygen required shall be determined on the basis of cabin pressure altitude, flight duration and the assumption that a cabin pressurisation failure will occur at the pressure altitude or point of flight that is most critical from the standpoint of oxygen need, and that, after the failure, the aircraft will descend in accordance with emergency procedures specified in the Aircraft Flight Manual to a safe altitude for the route to be flown that will allow continued safe flight and landing.

(3) Following a cabin pressurisation failure, the cabin pressure altitude shall be considered the same as the aircraft pressure altitude, unless it is demonstrated to the Military Aviation Authority that no probable failure of the cabin or pressurisation system will result in a cabin pressure altitude equal to the aircraft pressure altitude. Under these circumstances, the demonstrated maximum cabin pressure altitude may be used as a basis for determination of oxygen supply.

(b) Oxygen equipment and supply requirements

(1) Flight crew members

(i) Each member of the flight crew on cockpit duty shall be supplied with supplemental oxygen in accordance with Appendix 1 to MAR-OPS 1.770. If all occupants of cockpit seats are supplied from the flight crew source of oxygen supply then they shall be considered as flight crew members on cockpit duty for the purpose of oxygen supply. Cockpit seat occupants, not supplied by the flight crew source, are to be considered as passengers for the purpose of oxygen supply.

(ii) Flight crew members, not covered by sub-paragraph (b)(1)(i) above, are to be considered as passengers for the purpose of oxygen supply.

(iii) Oxygen masks shall be located so as to be within the immediate reach of flight crew members whilst at their assigned duty station.

(iv) Oxygen masks for use by flight crew members in pressurised aircraft operating at pressure altitudes above 25000 ft, shall be a quick donning type of mask.

(2) Crew Members and passengers

(i) Crew Members and passengers shall be supplied with supplemental oxygen in accordance with Appendix 1, except when sub-paragraph (v) below applies. Crew Members carried in addition to the minimum number of Crew Members required shall be considered as passengers for the purpose of oxygen supply.

(ii) Aircraft intended to be operated at pressure altitudes above 25000 ft shall be provided sufficient spare outlets and masks and/or sufficient portable oxygen units with masks for use by all required Crew Members. The spare outlets and/or portable oxygen units are to be distributed evenly throughout the cabin to ensure immediate availability of oxygen to each required Crew Members regardless of his location at the time of cabin pressurisation failure.

(iii) Aircraft intended to be operated at pressure altitudes above 25000 ft shall be provided an oxygen dispensing unit connected to oxygen supply terminals immediately available to each occupant, wherever seated. The total number of dispensing units and outlets shall exceed the number of seats by at least 10%. The extra units are to be evenly distributed throughout the cabin.

(iv) Aircraft intended to be operated at pressure altitudes above 25000 ft or which, if operated at or below 25000 ft, cannot descend safely within 4 minutes to 13000 ft, shall be provided with automatically deployable oxygen equipment immediately available to each occupant, wherever seated. The total number of dispensing units and outlets shall exceed the number of seats by at least 10%. The extra units are to be evenly distributed throughout the cabin.

(v) The oxygen supply requirements, as specified in Appendix 1 to MAR-OPS 1.770, for aircraft not certificated to fly above 25000 ft, may be reduced to the entire flight time between 10000 ft and 13000 ft cabin pressure altitudes for all required Crew Members and for at least 10% of the passengers if, at all points along the route to be flown, the aircraft is able to descend safely within 4 minutes to a cabin pressure altitude of 13000 ft.

MAR-OPS 1.775 Supplemental oxygen - non-pressurised aircraft

(See appendix 1 to MAR-OPS 1.775 Supplemental oxygen - non-pressurised aircraft)

(a) General

(1) The Operator shall not operate a non-pressurised aircraft at pressure altitudes above 10000 ft unless supplemental oxygen equipment, capable of storing and dispensing the oxygen supplies required, is provided.

(2) The amount of supplemental oxygen for sustenance required for a particular operation shall be determined on the basis of flight altitudes and flight duration, consistent with the operating procedures established for each operation in the Operations Manual and with the routes to be flown, and with the emergency procedures specified in the Operations Manual.

(3) An aircraft intended to be operated at pressure altitudes above 10000 ft shall be provided with equipment capable of storing and dispensing the oxygen supplies required.

(b) Oxygen supply requirements

(1) *Flight crew members.* Each member of the flight crew on cockpit duty shall be supplied with supplemental oxygen in accordance with Appendix 1 to MAR-OPS 1.775. If all occupants of cockpit seats are supplied from the flight crew source of oxygen supply then they shall be considered as flight crew members on cockpit duty for the purpose of oxygen supply.

(2) *Crew Members and passengers.* Crew Members and passengers shall be supplied with oxygen in accordance with Appendix 1 to MAR-OPS 1.775. Crew Members carried in addition to the minimum number of Crew Members required shall be considered as passengers for the purpose of oxygen supply.

MAR-OPS 1.780 Crew protective breathing equipment

(a) The Operator shall not operate an aircraft with a maximum certificated take-off mass exceeding 5700 kg or having a maximum approved seating configuration of more than 19 seats when carrying one or more passengers, unless:

(1) It has equipment to protect the eyes, nose and mouth of each flight crew member while on cockpit duty and to provide oxygen for a period of not less than 15 minutes. The supply for Protective Breathing Equipment (PBE) may be provided by the supplemental oxygen required by MAR-OPS 1.770(b)(1) or MAR-OPS 1.775(b)(1). In addition, when the flight crew is more than one and a Crew Member is not carried, portable PBE must be carried to protect the eyes, nose and mouth of one member of the flight crew and to provide breathing gas for a period of not less than 15 minutes; and

(2) It has sufficient portable PBE to protect the eyes, nose and mouth of all required Crew Members and to provide breathing gas for a period of not less than 15 minutes.

(b) PBE intended for flight crew use must be conveniently located in the cockpit and be easily accessible for immediate use by each required flight crew member at their assigned duty station.

(c) PBE intended for Crew Member's use must be installed adjacent to each required Crew Member's duty station.

(d) An additional, easily accessible portable PBE must be provided and located at or adjacent to the hand fire extinguishers required by MAR-OPS 1.790(c) and (d) except that, where the fire extinguisher is located inside a cargo compartment, the PBE must be stowed outside but adjacent to the entrance to that compartment.

(e) PBE while in use must not prevent communication where required by MAR-OPS 1.685, MAR-OPS 1.690, MAR-OPS 1.810 and MAR-OPS 1.850.

MAR-OPS 1.790 Hand fire extinguishers

The Operator shall not operate an aircraft unless hand fire extinguishers are provided for use in crew, passenger and, as applicable, cargo compartments and galleys in accordance with the following:

(a) The type and quantity of extinguishing agent must be suitable for the kinds of fires likely to occur in the compartment where the extinguisher is intended to be used and, for personnel compartments, must minimise the hazard of toxic gas concentration;

(b) At least one hand fire extinguisher, containing Halon 1211 (bromochlorodifluoromethane, CBrClF₂), or equivalent as the extinguishing agent, must be conveniently located in the cockpit for use by the flight crew;

(c) At least one hand fire extinguisher must be located in, or readily accessible for use in, each galley not located on the main passenger deck;

(d) At least one readily accessible hand fire extinguisher must be available for use in each Class A or Class B cargo or baggage compartment and in each Class E cargo compartment that is accessible to crew members in flight;

(e) At least the following number of hand fire extinguishers must be conveniently located in the passenger compartment(s):

Number of passengers carried	Number of extinguishers
7 to 30	1
31 to 60	2
61 to 200	3
201 to 300	4
301 to 400	5

When two or more extinguishers are required, they must be evenly distributed in the passenger compartment.

(f) When carrying 31 to 60 passengers, at least one of the required fire extinguishers located in the passenger compartment must contain Halon 1211 (bromochlorodifluoromethane, CBrClF₂), or equivalent as the extinguishing agent; and

(g) When carrying 61 or more passengers, at least two of the fire extinguishers located in the passenger compartment must contain Halon 1211 (bromochlorodifluoromethane, CBrClF₂), or equivalent as the extinguishing agent.

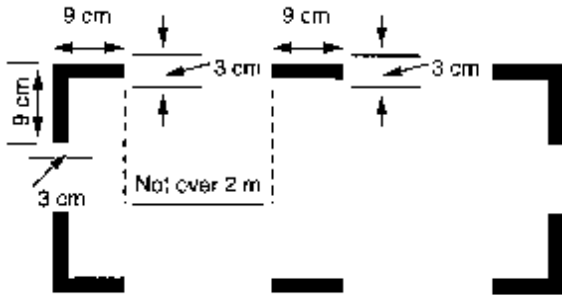
MAR-OPS 1.795 Crash axes and crowbars

(a) The Operator shall not operate an aircraft with a maximum certificated take-off mass exceeding 5700 kg or having a maximum approved passenger seating configuration of more than 9 seats when carrying one or more passengers, unless it is equipped with at least one crash axe or crowbar in the front section of the cabin. If the maximum approved passenger seating configuration is more than 200 an additional crash axe or crowbar must be carried when carrying one or more passengers. If equipped with more than one crash axe or more than one crow bar, these axes and/or crow bars shall be evenly distributed along the front, mid and aft section of the cabin.

(b) Crash axes and crowbars located in the passenger compartment must not be visible to passengers.

MAR-OPS 1.800 Marking of break-in points

The Operator shall ensure that, if areas of the fuselage suitable for break-in by rescue crews in emergency are marked on an aircraft, such areas are marked as shown below. The markings shall be in contrast with the background. If the corner markings are more than 2 metres apart, intermediate lines 9 cm x 3 cm shall be inserted so that there is no more than 2 metres between adjacent marks.



MAR-OPS 1.805 Means for emergency evacuation

(a) The Operator shall not operate an aircraft with passenger emergency exit sill heights:

- (1) Which are more than 1,83 metres (6 feet) above the ground with the aircraft on the ground and the landing gear extended; or
- (2) Which would be more than 1,83 metres (6 feet) above the ground after the collapse of, or failure to extend of, one or more legs of the landing gear,

unless it has equipment or devices available at each exit, where sub-paragraphs (1) or (2) apply, to enable passengers and crew to reach the ground safely in an emergency.

(b) Such equipment or devices need not be provided at overwing exits if the designated place on the aircraft structure at which the escape route terminates is less than 1,83 metres (6 feet) from the ground with the aircraft on the ground, the landing gear extended, and the flaps in the take off or landing position, whichever flap position is higher from the ground.

(c) In aircraft required to have a separate emergency exit for the flight crew and:

- (1) For which the lowest point of the emergency exit is more than 1,83 metres (6 feet) above the ground with the landing gear extended; or
- (2) For which the lowest point of the emergency exit would be more than 1,83 metres (6 ft) above the ground after the collapse of, or failure to extend of, one or more legs of the landing gear,

there must be a device to assist all members of the flight crew in descending to reach the ground safely in an emergency.

MAR-OPS 1.810 Megaphones

The Operator shall not operate an aircraft with a maximum approved passenger seating configuration of more than 60 when carrying one or more passengers unless it is equipped with portable battery-powered megaphones readily accessible for use by crew members during an emergency evacuation, to the following scales:

(1) For each passenger deck:

Passenger seating configuration	Number of megaphones required
61 to 99	1
100 or more	2

(2) For aircraft with more than one passenger deck, in all cases when the total passenger seating configuration is more than 60, at least 1 megaphone is required.

MAR-OPS 1.815 Emergency lighting

(a) The Operator shall not operate a passenger carrying aircraft which has a maximum approved passenger seating configuration of more than 9 unless it is provided with an emergency lighting system having an independent power supply to facilitate the evacuation of the aircraft. The emergency lighting system must include:

(1) For aircraft which have a maximum approved passenger seating configuration of more than 19:

- (i) Sources of general cabin illumination;
- (ii) Internal lighting in floor level emergency exit areas;
- (iii) Illuminated emergency exit marking and locating signs;
- (iv) When flying by night, exterior emergency lighting at all passenger emergency exits; and
- (v) Floor proximity emergency escape path marking system in the passenger compartment(s); or

(2) For aircraft which have a maximum approved passenger seating configuration of 19 or less and are certificated to CS-23 or CS-25 or equivalent, acceptable by the Military Aviation Authority:

- (i) Sources of general cabin illumination;
- (ii) Internal lighting in emergency exit areas; and
- (iii) Illuminated emergency exit marking and locating signs; or

(3) For aircraft which have a maximum approved passenger seating configuration of 19 or less and are not certificated to CS-23 or CS-25 or equivalent, acceptable to the Military Aviation Authority:

- (i) Sources of general cabin illumination.

(b) The Operator shall not, by night, operate a passenger carrying aircraft which has a maximum approved passenger seating configuration of 9 or less unless it is provided with a source of general cabin illumination to facilitate the evacuation of the aircraft. The system may use dome lights or other sources of illumination already fitted on the aircraft and which are capable of remaining operative after the aircraft's battery has been switched off.

MAR-OPS 1.820 Automatic Emergency Locator Transmitter

(a) The Operator shall not operate an aircraft unless it is equipped with an automatic Emergency Locator Transmitter (ELT) capable of transmitting on 406 MHz.

(b) The Operator shall not operate an aircraft mainly used for operating in a maritime environment, unless for over water flights it is equipped with an Automatically Deployable Emergency Locator Transmitter (ELT(AD)).

(c) The Operator shall ensure that all ELTs that are capable of transmitting on 406 MHz shall be coded in accordance with ICAO Annex 10 and registered with the national agency responsible for initiating Search and Rescue or another nominated agency.

(d) Whenever it is possible to disable the automatic activation functionality of an automatic ELT as mentioned in sub-paragraph (a) above, the Operator shall establish an operational procedure for enabling and disabling the automatic activation function.

MAR-OPS 1.828 Occupant flight equipment

The Operator shall not operate an aircraft for maritime surveillance operations unless all occupants of that aircraft are equipped with or have easy access to protective clothing and equipment, taking into account:

(a) The actual and expected operational and environmental circumstances; and

(b) The skill of the occupants to properly use the equipment when necessary.

MAR-OPS 1.835 Survival equipment

(a) The Operator shall not operate an aircraft unless the aircraft is equipped with sufficient survival equipment for all occupants appropriate and suitable for the intended operating area and route.

(b) The Operator shall not operate an aircraft on extended overwater flights unless it carries sufficient life-raft capacity for all occupants. Each passenger life raft must carry at least one survival Emergency Locator Transmitter (ELT(S)), capable of transmitting on the distress frequencies prescribed in ICAO Annex 10.

MAR-OPS 1.843 All aircraft on flights over water – ditching provisions

The Operator shall not operate an aircraft on overwater flights at a distance from land suitable for making an emergency landing, greater than 120 minutes at cruising speed, or 400 nautical miles, whichever is less, unless the aircraft complies with the ditching requirements prescribed in the applicable airworthiness code.

MAR-OPS 1.844 Role equipment – NVIS equipment

NVIS equipment. The Operator shall not operate an aircraft to conduct NVIS operations unless equipped with:

- (a) Helmet mounted NVIS-equipment, not being an integral part of the aircraft configuration; and
- (b) NVIS compatible lighting, flight instruments and equipment, comprising of at least:
 - (1) NVIS compatible instrument panel flood lighting to illuminate all essential flight instruments;
 - (2) NVIS compatible utility lights;
 - (3) A means for removing or extinguishing internal NVIS non-compatible lights; and
 - (4) A back-up power supply to prevent inadvertent loss of NVIS capability in case of an electrical power failure of the main electrical power source.

Appendix 1 to MAR-OPS 1.700 Cockpit voice recorder - specifications

The cockpit voice recorder required by MAR-OPS 1.700 shall meet at least the following specifications:

(a) The cockpit voice recorder shall, with reference to a time scale, record at least:

- (1) Voice communications transmitted from or received in the cockpit by radio;
- (2) The aural environment of the cockpit, including without interruption, the audio signals received from each boom and mask microphone in use;
- (3) Voice communications of flight crew members in the cockpit using the aircraft's intercom system;
- (4) Voice or audio signals identifying navigation or approach aids introduced into a headset or speaker; and
- (5) Voice communications of flight crew members in the cockpit using the public address system, if installed;

(b) The cockpit voice recorder shall be capable of retaining information recorded during at least the last 2 hours of its operation;

(c) The cockpit voice recorder must start automatically to record prior to the aircraft moving under its own power and continue to record until the termination of the flight when the aircraft is no longer capable of moving under its own power. In addition, depending on the availability of electrical power, the cockpit voice recorder must start to record as early as possible during the cockpit checks prior to engine start at the beginning of the flight until the cockpit checks immediately following engine shutdown at the end of the flight; and

(d) The cockpit voice recorder must have a device to assist in locating that recorder in water.

Appendix 1 to MAR-OPS 1.715 Flight data recorder 1 - specifications

The flight data recorder required by MAR-OPS 1.715 shall meet at least the following specifications:

- (a) The flight data recorder shall use a digital method of recording and storing data and have a method of readily retrieving that data from the storage medium available;
- (b) The flight data recorder shall be capable of retaining the data recorded during at least the last 25 hours of its operation;
- (c) The flight data recorder must, with reference to a timescale, record:
 - (1) The parameters listed in tables A1 or A2 below as applicable;
 - (2) For those aircraft with a maximum certificated take-off mass over 27000 kg, the additional parameters listed in table B below;
 - (3) The flight data recorder must record any dedicated parameters relating to novel or unique design or operational characteristics of the aircraft as determined by the Military Aviation Authority during type or supplemental type certification; and
 - (4) For aircraft equipped with electronic display system the parameters listed in Table C below, except that, for aircraft first issued with an individual Certificate of Airworthiness before 20 August 2002 those parameters for which:
 - (i) The sensor is not available; or
 - (ii) The aircraft system or equipment generating the data needs to be modified; or
 - (iii) The signals are incompatible with the recording system,do not need to be recorded if acceptable to the Military Aviation Authority;
- (d) Data must be obtained from aircraft sources which enable accurate correlation with information displayed to the flight crew;
- (e) The flight data recorder must start automatically to record the data prior to the aircraft being capable of moving under its own power and must stop automatically after the aircraft is incapable of moving under its own power;
- (f) The flight data recorder must have a device to assist in locating that recorder in water; and
- (g) Aircraft first issued with an individual Certificate of Airworthiness on or after 1 April 1998, but not later than 1 April 2001 may not be required to comply with sub-paragraph (c) above if approved by the Military Aviation Authority, provided that:
 - (1) Compliance with sub-paragraph (c) above cannot be achieved without extensive modification to the aircraft systems and equipment other than the flight data recorder system; and
 - (2) The aircraft complies with Appendix 1 to MAR-OPS 1.720 sub-paragraph (c) except that parameter 15b in Table A of Appendix 1 to MAR-OPS 1.720 need not to be recorded.

Table A1 - Aircraft with a maximum certificated take-off mass of over 5700 kg

Note: The number in the left hand column reflects the Serial Numbers depicted in EUROCAE document ED55

No	Parameter
1	Time or relative time count
2	Pressure altitude
3	Indicated airspeed
4	Heading
5	Normal acceleration
6	Pitch attitude
7	Roll attitude
8	Manual radio transmission keying
9	Propulsive thrust/ power on each engine and cockpit thrust/power lever position if applicable
10	Trailing edge flap or cockpit control selection
11	Leading edge flap or cockpit control selection
12	Thrust reverse status
13	Ground spoiler position and/or speed brake selection
14	Total or outside air temperature
15	Autopilot, autothrottle and AFCS mode and engagement status
16	Longitudinal acceleration (Body axis)
17	Lateral acceleration

Table A2 - Aircraft with a maximum certificated take-off mass of 5700 kg or below

Note: The number in the left hand column reflects the Serial Numbers depicted in EUROCAE document ED55

No	Parameter
1	Time or relative time count
2	Pressure altitude
3	Indicated airspeed
4	Heading
5	Normal acceleration
6	Pitch attitude
7	Roll attitude
8	Manual radio transmission keying
9	Propulsive thrust/ power on each engine and cockpit thrust/power lever position if applicable
10	Trailing edge flap or cockpit control selection
11	Leading edge flap or cockpit control selection
12	Thrust reverse status
13	Ground spoiler position and/or speed brake selection
14	Total or outside air temperature.
15	Autopilot/autothrottle engagement status
16	Angle of attack (if a suitable sensor is available)
17	Longitudinal acceleration (Body axis)

Table B - Additional parameters for aircraft with a maximum certificated take-off mass of over 27000 kg

Note: The number in the left hand column reflects the Serial Numbers depicted in EUROCAE document ED55

No	Parameter
18	Primary flight controls - Control surface position and/or pilot input (pitch, roll, yaw)
19	Pitch trim position
20	Radio altitude
21	Vertical beam deviation (ILS Glide path or MLS Elevation)
22	Horizontal beam deviation (ILS Localiser or MLS Azimuth)
23	Marker Beacon Passage

24	Warnings
25	Reserved (Navigation receiver frequency selection is recommended)
26	Reserved (DME distance is recommended)
27	Landing gear squat switch status or air/ground status
28	Ground Proximity Warning System
29	Angle of attack
30	Low pressure warning (hydraulic and pneumatic power)
31	Groundspeed
32	Landing gear or gear selector position

Table C - Aircraft equipped with electronic display systems

Note: The number in the centre column reflects the Serial Numbers depicted in EUROCAE document ED55 table A1.5

No	No	Parameter
33	6	Selected barometric setting (Each pilot station)
34	7	Selected altitude
35	8	Selected speed
16	9	Selected mach
37	10	Selected vertical speed
38	11	Selected heading
39	12	Selected flight path
40	13	Selected decision height
41	14	EFIS display format
42	15	Multi function /Engine / Alerts display format

Appendix 1 to MAR-OPS 1.720 Flight data recorder 2 - specifications

- (a) The flight data recorder shall use a digital method of recording and storing data and have a method of readily retrieving that data from the storage medium available.
- (b) The flight data recorder shall be capable of retaining the data recorded during at least the last 25 hours of its operation.
- (c) The flight data recorder must, with reference to a timescale, record:
 - (1) The parameters listed in table A below; and
 - (2) For those aircraft with a maximum certificated take-off mass over 27000 kg the additional parameters listed in table B below.
- (d) For those aircraft having a maximum certificated take-off mass of 27000 kg or below, if acceptable to the Military Aviation Authority, parameters 14 and 15b of table A below need not be recorded, when any of the following conditions are met:
 - (1) The sensor is not readily available;
 - (2) Sufficient capacity is not available in the flight recorder system; and/or
 - (3) A change is required in the equipment that generates the data.
- (e) For those aircraft having a maximum certificated take-off mass over 27000 kg, if acceptable to the Military Aviation Authority, the following parameters need not be recorded: 15b of Table A, and 23, 24, 25, 26, 27, 28, 29, 30 and 31 of Table B, if any of the following conditions are met:
 - (1) The sensor is not readily available;
 - (2) Sufficient capacity is not available in the flight data recorder system;
 - (3) A change is required in the equipment that generates the data; and/or
 - (4) For navigational data (NAV frequency selection, DME distance, latitude, longitude, ground speed and drift) the signals are not available in digital form.
- (f) Individual parameters that can be derived by calculation from the other recorded parameters, need not to be recorded if acceptable to the Military Aviation Authority.
- (g) Data must be obtained from aircraft sources which enable accurate correlation with information displayed to the flight crew.
- (h) The flight data recorder must start to record the data prior to the aircraft being capable of moving under its own power and must stop after the aeroplane is incapable of moving under its own power.
- (i) The flight data recorder must have a device to assist in locating that recorder in water.

Table A - Aircraft with a maximum certificated take-off mass of over 5700 kg

No	Parameter
1	Time or relative time count
2	Pressure altitude
3	Indicated Airspeed
4	Heading
5	Normal Acceleration
6	Pitch attitude
7	Roll attitude
8	Manual radio transmission keying unless an alternate means to synchronise FDR and CVR recordings is provided
9	Power on each engine
10	Trailing edge flap or cockpit control selection
11	Leading edge flap or cockpit control selection
12	Thrust reverse position (for turbojet aircraft only)
13	Ground spoiler position and/or speed brake selection
14	Outside air temperature (OAT) or total air temperature (TAT)
15a	Autopilot engagement status
15b	Autopilot operating modes, autothrottle and AFCS systems engagement status and operating modes.

Table B - Additional parameters for aircraft with a maximum certificated take-off mass over 27000 kg

No	Parameter
16	Longitudinal acceleration
17	Lateral acceleration
18	Primary flight controls - Control surface position and/or pilot input (pitch, roll and yaw)
19	Pitch trim position
20	Radio altitude
21	Glide path deviation
22	Localiser deviation
23	Marker beacon passage
24	Master warning
25	NAV 1 and NAV 2 frequency selection
26	DME 1 and DME 2 distance
27	Landing gear squat switch status
28	Ground proximity warning system
29	Angle of attack
30	Hydraulics, each system (low pressure)
31	Navigation data
32	Landing gear or gear selector position

Appendix 1 to MAR-OPS 1.725 Flight data recorder 3 - specifications

- (a) The flight data recorder shall use a digital method of recording and storing data and have a method of readily retrieving that data from the storage medium available.
- (b) The flight data recorder shall be capable of retaining the data recorded during at least the last 25 hours of its operation.
- (c) The flight data recorder must, with reference to a timescale, record:
 - (1) The parameters listed in table below;
 - (2) For those aircraft with a maximum certificated take-off mass over 27000 kg that are of a type first type certificated after 30 September 1969, the additional parameters from 6 to 15b of table B below. The following parameters need not be recorded, if acceptable to the Military Aviation Authority: 13, 14 and 15b in table B below when any of the following conditions are met:
 - (i) The sensor is not readily available;
 - (ii) Sufficient capacity is not available in the flight recorder system; and/or
 - (iii) A change is required in the equipment that generates the data; and
 - (3) When sufficient capacity is available on a flight recorder system, the sensor is readily available and a change is not required in the equipment that generates the data:
 - (i) For aircraft first issued with an individual Certificate of Airworthiness on or after 1 January 1989, with a maximum certificated take-off mass of over 5700 kg but not more than 27000 kg, parameters 6 to 15b of table B below; and
 - (ii) For aircraft first issued with an individual Certificate of Airworthiness on or after 1 January 1987, with a maximum certificated take-off mass of over 27000 kg the remaining parameters of table B below.
- (d) Individual parameters that can be derived by calculation from the other recorded parameters, need not to be recorded if acceptable to the Military Aviation Authority.
- (e) Data must be obtained from aircraft sources which enable accurate correlation with information displayed to the flight crew.
- (f) The flight data recorder must start to record the data prior to the aircraft being capable of moving under its own power and must stop after the aircraft is incapable of moving under its own power.
- (g) The flight data recorder must have a device to assist in locating that recorder in water.

Table A - Aircraft with a maximum certificated take-off mass of over 5700 kg

No	Parameter
1	Time or relative time count
2	Pressure altitude
3	Indicated Airspeed
4	Heading
5	Normal Acceleration

Table B – Additional parameters for aircraft with a maximum certificated take-off mass of over 27000 kg

No	Parameter
6	Pitch attitude
7	Roll attitude
8	Manual radio transmission keying unless an alternate means to synchronise the FDR and CVR recordings is provided
9	Power on each engine
10	Trailing edge flap or cockpit control selection
11	Leading edge flap or cockpit control selection
12	Thrust reverse position (for turbojet aircraft only)
13	Ground spoiler position and/or speed brake selection
14	Outside air temperature (OAT) or total air temperature (TAT)
15a	Autopilot engagement status
15b	Autopilot operating modes, autothrottle and AFCS, systems engagement status and operating modes.
16	Longitudinal acceleration
17	Lateral acceleration
18	Primary flight controls – Control surface position and/or pilot input (pitch, roll and yaw)
19	Pitch trim position
20	Radio altitude
21	Glide path deviation
22	Localiser deviation
23	Marker beacon passage
24	Master warning
25	NAV 1 and NAV 2 frequency selection
26	DME 1 and DME 2 distance
27	Landing gear squat switch status
28	Ground proximity warning system
29	Angle of attack
30	Hydraulics, each system (low pressure)
31	Navigation data (latitude, longitude, ground speed and drift angle)
32	Landing gear or gear selector position

Appendix 1 to MAR-OPS 1.770 Supplemental oxygen - pressurised aircraft

Supply for:	Flight duration and pressure altitude:
1. All occupants of cockpit seats on flight deck duty	Entire flight time when the cabin pressure altitude exceeds 13000 ft and entire flight time when the cabin pressure altitude exceeds 10000 ft but does not exceed 13000 ft after the first 30 minutes at those altitudes, but in no case less than: (i) 30 minutes for aircraft certificated to fly at altitudes not exceeding 25000 ft (Note 2) (ii) 2 hours for aircraft certificated to fly at altitudes more than 25000 ft (Note 3).
2. All required Crew Members	Entire flight time when cabin pressure altitude exceeds 13000 ft but not less than 30 minutes (Note 2), and entire flight time when cabin pressure altitude is greater than 10000 ft but does not exceed 13000 ft after the first 30 minutes at these altitudes.
3. 100% of passengers (Note 5)	Entire flight time when the cabin pressure altitude exceeds 15000 ft but in no case less than 10 minutes. (Note 4)
4. 30% of passengers (Note 5)	Entire flight time when the cabin pressure altitude exceeds 14000 ft but does not exceed 15000 ft.
5. 10% of passengers (Note 5)	Entire flight time when the cabin pressure altitude exceeds 10000 ft but does not exceed 14000 ft after the first 30 minutes at these altitudes.

Note 1: The supply provided must take account of the cabin pressure altitude and descent profile for the routes concerned.

Note 2: The required minimum supply is that quantity of oxygen necessary for a constant rate of descent from the aircraft's maximum certificated operating altitude to 10000 ft in 10 minutes and followed by 20 minutes at 10000 ft.

Note 3: The required minimum supply is that quantity of oxygen necessary for a constant rate of descent from the aircraft's maximum certificated operating altitude to 10000 ft in 10 minutes and followed by 110 minutes at 10000 ft. The oxygen required in MAR-OPS 1.780(a)(1) may be included in determining the supply required.

Note 4: The required minimum supply is that quantity of oxygen necessary for a constant rate of descent from the aircraft's maximum certificated operating altitude to 15000 ft in 10 minutes.

Note 5: For the purpose of this table 'passengers' means passengers actually carried and includes infants.

Appendix 1 to MAR-OPS 1.775 Supplemental oxygen - non-pressurised aircraft

Supply for:	Flight duration and pressure altitude:
1. All occupants of cockpit seats on flight deck duty	Entire flight time at pressure altitudes above 10000 ft
2. All required Crew Members	Entire flight time at pressure altitudes above 13000 ft and for any period exceeding 30 minutes at pressure altitudes above 10000 ft but not exceeding 13000 ft
3. 100% of passengers (See Note)	Entire flight time at pressure altitudes above 13000 ft.
4. 10% of passengers (See Note)	Entire flight time after 30 minutes at pressure altitudes greater than 10000 ft but not exceeding 13000 ft.

Note: For the purpose of this table 'passengers' means passengers actually carried and includes infants under the age of 2.

SUBPART L – COMMUNICATION AND NAVIGATION EQUIPMENT

- MAR-OPS 1.845 General introduction
- MAR-OPS 1.850 Radio equipment
- MAR-OPS 1.860 Radio equipment for operations under VFR over routes navigated by reference to visual landmarks
- MAR-OPS 1.865 Communication and navigation equipment for operations under IFR, or under VFR over routes not navigated by reference to visual landmarks
- MAR-OPS 1.866 Transponder equipment

MAR-OPS 1.845 General introduction

(a) The Operator shall ensure that a flight does not commence unless the aircraft's communication and navigation equipment are in accordance with the applicable national requirements for military aircraft of the airspace concerned.

(b) The Operator shall ensure that a flight does not commence unless the communication and navigation equipment required under this subpart is:

(1) Approved and installed in accordance with the requirements applicable to them, including the minimum performance standard and the operational and military airworthiness requirements;

(2) Installed such that the failure of any single unit required for either communication or navigation purposes, or both, will not result in the failure of another unit required for communications or navigation purposes; and

(3) In operable condition except as provided in the MEL (reference MAR-OPS 1.030);

(c) Communication and navigation equipment minimum performance standards are those prescribed in the applicable EASA Technical Standard Orders (ETSO) as listed in CS-TSO, or equivalent requirements acceptable to the Military Aviation Authority, unless different performance standards are prescribed in the military operational or airworthiness codes. Communication and navigation equipment complying with design and performance specifications other than ETSO on the date that MAR-OPS 1 enters into force may remain in service, or be installed, unless additional requirements are prescribed in this subpart. Communication and navigation equipment which has already been approved does not need to comply with a revised ETSO or a revised specification, other than ETSO, unless a retroactive requirement is prescribed.

MAR-OPS 1.850 Radio equipment

(a) Where two independent (separate and complete) radio systems are required under this subpart, each system must have an independent antenna installation except that, where rigidly supported non-wire antennae or other antenna installations of equivalent reliability are used, only one antenna is required.

(b) The radio communication equipment required to comply with paragraph MAR-OPS 1.845 (a) above must also provide for communications on the aeronautical emergency frequency.

MAR-OPS 1.860 Radio equipment for operations under VFR over routes navigated by reference to visual landmarks

The Operator shall not operate an aircraft under VFR over routes that can be navigated by reference to visual landmarks, unless it is equipped with the radio equipment necessary to fulfill the following:

(a) Communicate with appropriate ground stations;

(b) Communicate with appropriate air traffic control facilities from any point in controlled airspace within which flights are intended; and

(c) Receive meteorological information.

MAR-OPS 1.865 Communication and navigation equipment for operations under IFR, or under VFR over routes not navigated by reference to visual landmarks

(a) The Operator shall not operate an aircraft under IFR, or under VFR over routes that cannot be navigated by reference to visual landmarks, unless the aircraft is equipped with radio and navigation equipment in accordance with the requirements in the area(s) of operation (see also MAR-OPS 1.845(a)).

(b) *Radio equipment.* The Operator shall ensure that radio equipment comprises not less than two independent radio communication systems necessary under normal operating conditions to communicate with an appropriate ground station from any point on the route including diversions.

(c) *Navigation equipment.* The Operator shall ensure that the aircraft is:

(1) Equipped with navigation equipment appropriate for the route to be flown, including departure and arrival and approach; and

(2) Sufficiently equipped to ensure that – in the event of the failure of one item of equipment – in any stage of the flight, the remaining equipment will enable the aircraft to navigate safely.

(d) The Operator shall ensure that VHF communication equipment, ILS Localiser and VOR receivers installed on aircraft to be operated under IFR are of a type that has been approved as complying with the FM immunity performance standards.

MAR-OPS 1.866 Transponder equipment

The Operator shall not operate an aircraft unless it is equipped with a SSR Mode S:

(a) Elementary Surveillance (ELS) transponder which operates in accordance with ICAO Annex 10, Volume IV; and

(b) Enhanced Surveillance (EHS) transponder which operates in accordance with ICAO Annex 10, Volume IV when flights are performed as GAT at FL245 or above.

SUBPART M – MAINTENANCE MANAGEMENT

MAR-OPS 1.875	General
MAR-OPS 1.887	Continuing airworthiness responsibility
MAR-OPS 1.892	Contracting maintenance
MAR-OPS 1.905	Operator's Aircraft Maintenance Program
MAR-OPS 1.910	Aircraft Maintenance data
MAR-OPS 1.915	Aircraft continuing airworthiness record system
MAR-OPS 1.920	Operator's Aircraft Technical Log system
MAR-OPS 1.925	Transfer of aircraft continuing airworthiness records

MAR-OPS 1.875 General

The Operator shall ensure that all aircraft operated under his MAOC hold an applicable and valid Certificate of Airworthiness issued by the Military Aviation Authority or a recognised authority and are maintained and released to service by an organisation appropriately approved in accordance with MAR-145 or equivalent acceptable to the Military Aviation Authority.

MAR-OPS 1.887 Continuing airworthiness responsibility

(a) The Operator shall ensure the continuing airworthiness of aircraft and the serviceability of operational and emergency equipment, as prescribed by MAR-OPS 1 subpart K and L, by:

- (1) The accomplishment of pre-, thru- and post-flight inspections;
- (2) The rectification to an approved standard of any defect or damage affecting safe operation, taking into account the approved Operator's Minimum Equipment List (permissible unserviceabilities) and the approved Operator's Configuration Deviation List, if available for the applicable aircraft type;
- (3) The accomplishment of all aircraft maintenance in accordance with the approved Operator's Aircraft Maintenance Program(s) (reference MAR-OPS 1.905);
- (4) The analysis of the effectiveness of the approved Operator's Aircraft Maintenance Program(s);
- (5) The accomplishment of any applicable:
 - (i) Airworthiness Directive;
 - (ii) Operational Directive with a continuing airworthiness impact;
 - (iii) Any other continuing airworthiness requirement established by the Military Aviation Authority; or
 - (iv) Measures mandated by the Military Aviation Authority in immediate reaction to a safety problem; and
- (6) The usage of data approved by the Military Aviation Authority or by an appropriately approved MAR-21 Military Type Certificate holder or equivalent, as appropriate, for assessing damage and carrying out modifications and repairs;
- (7) The accomplishment of non-mandatory modifications and inspections;
- (8) The establishment of an embodiment policy for non-mandatory modifications and inspections; and
- (9) The accomplishment of maintenance to operational and emergency equipment, as far as not being subject to an approved Operator's Aircraft Maintenance program, in accordance with applicable manufacturers maintenance manual and/or instructions or equivalent, acceptable to the Military Aviation Authority.

(b) The Operator shall ensure that the Certificate of Airworthiness for each aircraft operated, remains valid in respect of:

(1) The requirements in sub-paragraph (a) above; and

(2) Any condition specified in the Certificate of Airworthiness.

(c) The tasks as mentioned in sub-paragraph (a) (2), (3), (5), (6), and (7) above, shall be conducted by an appropriately approved MAR-145 maintenance organisation or equivalent.

(d) The Operator shall specify procedures in the Operations Manual (Part E - Maintenance Management) acceptable to the Military Aviation Authority satisfying the Operator's continuing airworthiness responsibility as specified in sub-paragraph (a) above.

MAR-OPS 1.892 Contracting maintenance

(a) The Operator shall make arrangements with an appropriately approved MAR-145 maintenance organisation, or equivalent acceptable to the Military Aviation Authority, to carry out the continuing airworthiness tasks as mentioned in MAR-OPS 1.887 (a)(2), (3), (5), (6), and (7).

(b) Arrangements between the Operator and a maintenance organisation as mentioned in sub-paragraph (a) above to include all amendments, shall be in the form of a verifiable agreement acceptable to the Military Aviation Authority, at least:

(1) Detailing the contracted functions specified in MAR-OPS 1.887 (a)(2), (3), (5), (6) and (7);

(2) Defining the required support of the quality monitoring of contracted maintenance in accordance with MAR-OPS 1.035 appendix 1 subparagraph (a)(3); and

(3) Defining the responsibilities of both parties concerning aircraft maintenance data requirements as specified in MAR-OPS 1.910.

MAR-OPS 1.905 Operator's Aircraft Maintenance Program

(a) Every aircraft shall be maintained in accordance with the applicable Operator's Aircraft Maintenance Program approved by the Military Aviation Authority.

(b) The Operator shall ensure that its Aircraft Maintenance Program(s) is (are) reviewed at least every year and if necessary is amended accordingly.

(c) The Operator shall specify procedures in the Operations Manual (Part E – Maintenance management) describing how Military Aviation Authority approval is obtained regarding the development and changing of an Aircraft Maintenance Program(s).

(d) The Operator's Aircraft Maintenance Program(s) shall establish compliance with:

(1) Instructions for continuing airworthiness issued by the applicable (supplementary) type certificate holder; and

(2) Instructions issued by the Military Aviation Authority, if they differ from or in the absence of the instructions mentioned in sub-paragraph (d)(1) above.

(e) The Operator's Aircraft Maintenance Program(s) shall contain details, including frequency, of all maintenance to be carried out and any specific tasks linked to specific operations.

(f) The Operator's Aircraft Maintenance Program(s) shall include a reliability program when:

(1) The maintenance program is based on maintenance steering group or reliability-centered maintenance methodology;

(2) The maintenance program contains components maintained conform a condition monitoring concept; or

(3) Not all revision time intervals of any major system components are incorporated.

(g) In case the Operator has less than 6 aircraft of one type or the MTOW of the aircraft type is less than 5700kg, a reliability program as mentioned in sub-paragraph (f) above is not mandatory.

MAR-OPS 1.910 Aircraft Maintenance data

The Operator shall ensure that:

(a) The contracted maintenance organisation(s) (reference MAR-OPS 1.892) shall have access to and use only applicable current maintenance data in the performance of aircraft maintenance, including modifications and repairs, being:

(1) Any applicable requirement, procedure, standard or information issued by the Military Aviation Authority;

(2) Any applicable Airworthiness Directive;

(3) Applicable instructions for continuing airworthiness, issued by the applicable (supplementary) type certificate holder; and

(4) Any applicable data issued in accordance with MAR-145.A.45(d); and

(b) All applicable maintenance data is current and readily available for use when required by the contracted maintenance organisation(s) (reference MAR-OPS 1.892); and

(c) The contracted maintenance organisation(s) (reference MAR-OPS 1.892) establishes a work card or worksheet system to be used and shall either transcribe accurately the maintenance data onto such work cards or worksheets or make precise reference to the particular maintenance task or tasks contained in such maintenance data.

MAR-OPS 1.915 Aircraft continuing airworthiness record system

The Operator shall keep for each aircraft type a continuing airworthiness record system and shall ensure that:

(a) At the completion of any maintenance, the associated Certificate(s) of Release to Service are entered in the aircraft continuing airworthiness records. Each entry shall be made as soon as practicable, but in no event more than 30 days after the day of the maintenance action;

(b) The aircraft continuing airworthiness records consists of, as appropriate, an aircraft logbook, engine logbook(s) or engine module log cards, propeller logbook(s) and log cards for any service life limited component and the Operator's Aircraft Technical Log;

(c) The aircraft continuing airworthiness records contain for each aircraft registration:

- (1) The aircraft type and registration mark, the date, together with total flight time, flight cycles and or landings, as appropriate;
- (2) The status of continuing airworthiness related directives, requirements and/or measures as mentioned by MAR-OPS 3.887 (a) (5);
- (3) The status of modifications, repairs and inspections;
- (4) The status of compliance with the applicable Operator's Aircraft Maintenance Program;
- (5) The status of service life limited components;
- (6) The mass and balance report; and
- (7) The list of deferred maintenance; and.

(d) In addition to the Certificate of Release to Service, Defence Form 1 or equivalent, the following information relevant to any component installed is entered in the appropriate engine logbook, engine module or service life limited component log card:

- (1) Identification of the component;
- (2) The type, serial number and registration of the aircraft to which the particular component has been fitted, along with the reference to the installation and removal of the component;
- (3) The particular component accumulated total flight time, flight cycles, landings and or calendar time, as appropriate; and
- (4) The current information as mentioned in sub-paragraph (c) above, applicable to the component; and

(e) All entries in the aircraft continuing airworthiness records are accurate, made concurrently and permanent in nature. When it is necessary to correct an entry, the correction shall be made in a manner that clearly shows the original entry.

MAR-OPS 1.920 Operator's Aircraft Technical Log system

(a) The Operator shall keep for each aircraft type an Aircraft Technical Log system containing for each aircraft registration the following information:

- (1) The aircraft type and registration mark, for each flight the date, name and signature of the Pilot in Command, together with total flight time, flight cycles and or landings, as appropriate;
- (2) Information about each flight necessary to ensure continuing flight safety;
- (3) The current aircraft Certificate of Release to Service;

- (4) The current maintenance statement giving the aircraft maintenance status of what scheduled and out of phase maintenance is next due except that the Military Aviation Authority may agree to the maintenance statement being kept elsewhere;
 - (5) A list of all deferred maintenance that affect the operation of the aircraft; and
 - (6) Any necessary guidance instructions on maintenance support arrangements.
- (b) The Aircraft Technical Log system and subsequent amendments shall be approved by the Military Aviation Authority.

MAR-OPS 1.925 Transfer of aircraft continuing airworthiness records

The Operator shall ensure that when an aircraft is permanently transferred from one Operator to another Operator the records specified in MAR-OPS 1.915 are also transferred.

SUBPART N – FLIGHT CREW

MAR-OPS 1.935	General
MAR-OPS 1.940	Composition of flight crew
MAR-OPS 1.943	Initial Operator's crew resource management (CRM) training
MAR-OPS 1.945	Conversion training and checking
MAR-OPS 1.946	Mission qualification training
MAR-OPS 1.950	Differences training
MAR-OPS 1.955	Nomination as Pilot in Command
MAR-OPS 1.960	Tactical instructor qualification training
MAR-OPS 1.965	Continuation training and checking.
MAR-OPS 1.968	Pilot qualification to operate in either pilot's seat
MAR-OPS 1.970	Recent experience
MAR-OPS 1.980	Operation on more than one type or variant
MAR-OPS 1.985	Training records

MAR-OPS 1.935 General

The Operator shall ensure that all flight crewmembers hold an applicable and valid licence and military medical certificate issued by the Military Aviation Authority or a recognised Authority and are suitably qualified and competent to conduct the duties and kind of operations, assigned to them.

MAR-OPS 1.940 Composition of flight crew

The Operator shall ensure that:

- (a) The composition and number of the flight crew are both in compliance with, and no less than the minimum specified in, the Aircraft Flight Manual (AFM);
- (b) The flight crew includes additional flight crew members when required by the type of operation, and is not reduced below the number specified in the Operations Manual;
- (c) Procedures are established, acceptable to the Military Aviation Authority, to prevent the crewing together of inexperienced flight crew members; and
- (d) For all turbo-propeller aircraft with a maximum approved passenger seating configuration of more than 9 and for all turbojet aircraft, the minimum flight crew is 2 pilots.

MAR-OPS 1.943 Initial Operator's crew resource management (CRM) training

- (a) When a flight crew member has not previously completed an initial Operator's crew resource management (CRM) training, then the Operator shall ensure that the flight crew member completes an initial CRM training program. New employed flight crew members shall complete initial Operator's CRM training within their first year of joining the Operator.
- (b) If the flight crew member has not previously completed a human factors training course, then a theoretical course, based on the human performance and limitations program for the Military Pilot License (reference MAR-FCL 1/2) shall be completed before the initial Operator's CRM training or combined with the initial Operator's CRM training.
- (c) Initial CRM training shall be conducted by suitably qualified personnel.
- (d) Initial CRM training is conducted in accordance with a detailed course syllabus included in the Operations Manual, and shall contain at least the following items:
 - (1) Human factor in system safety;
 - (2) Company safety culture, Standard Operating Procedures (SOPs), organisational factors;
 - (3) Stress, stress management, fatigue and vigilance;
 - (4) Information acquisition and processing, situational awareness, workload management;
 - (5) Decision making;
 - (6) Communication and co-ordination inside and outside the cockpit;

- (7) Leadership and team behaviour, synergy;
- (8) Automation and philosophy of the use of automation;
- (9) Case based studies; and
- (10) Additional areas which warrant extra attention, as identified by the accident prevention and flight safety program (see MAR-OPS 1.037).

MAR-OPS 1.945 Conversion training and checking.

The Operator shall ensure that:

- (a) A flight crew member completes the Operator's conversion course before commencing unsupervised flying when:
 - (1) Changing to another aircraft type after obtaining the appropriate Type Rating; or
 - (2) Changing to another Operator with different operating procedures; or
 - (3) Changing type of operation;
- (b) Conversion training with integrated elements of CRM is conducted by suitably qualified personnel in accordance with a detailed course syllabus included in the Operations Manual;
- (c) The amount of training required by the Operator's conversion course is determined after due note has been taken of the flight crew member's previous training as recorded in his training records prescribed in MAR-OPS 1.985;
- (d) The minimum standards of qualification and experience required of flight crew members before undertaking conversion training are specified in the Operations Manual;
- (e) Each flight crew member at least completes the training required by MAR-OPS 1.965(b) before commencing flying under supervision; and
- (f) Upon completion of flying under supervision, the check required by MAR-OPS 1.965(c) is undertaken.

MAR-OPS 1.946 Mission qualification training

The Operator shall ensure that:

- (a) A flight crew member completes an Operator's mission qualification training as detailed in the Operations Manual to:
 - (1) Obtain an initial mission qualification; or
 - (2) Regain a mission qualification; and
- (b) Mission qualification training with integrated elements of CRM is conducted by suitably qualified personnel in accordance with a detailed course syllabus included in the Operations Manual. This syllabus shall cover training for all operational duties and taskings applicable to the flight crew member undergoing mission qualification training;

(c) The amount of training required by the Operator's mission qualification training course is determined after due note has been taken of the flight crew member's previous training as recorded in his training records prescribed in MAR-OPS 1.985; and

(d) The minimum prerequisites required for flight crew members undertaking mission qualification training are specified in the Operations Manual.

MAR-OPS 1.950 Differences training

(a) The Operator shall ensure that a flight crew member completes differences training which requires additional knowledge and training on an appropriate training device or the aircraft, before commencing unsupervised flying an aircraft:

(1) Which is registered as a variant of an aircraft type for which a Type Rating is held;

(2) Which is modified with new hardware and/or software; or

(3) Which has new equipment installed.

(b) The Operator shall specify in the Operations Manual when such differences training is required.

MAR-OPS 1.955 Nomination as Pilot in Command

The Operator shall ensure that for upgrade to Pilot in Command from co-pilot and for those joining as Pilot in Command a minimum level of experience is specified in the Operations Manual.

MAR-OPS 1.960 Tactical instructor qualification training.

The Operator shall ensure that:

(a) A flight crew member, appointed to carry out tactical instruction, completes the Operator's tactical instructor qualification training course to:

(1) Obtain a tactical instruction qualification; or

(2) Regain a tactical instruction qualification as referred to in the Operator Manual;

(b) Tactical instruction qualification training is conducted by suitably qualified personnel in accordance with a detailed course syllabus referred to in the Operations Manual. This syllabus shall cover training for all instructional duties and taskings applicable to the flight crew member undergoing tactical instructor qualification training;

(c) The amount of training required by the Operator's tactical instructor qualification training course is determined after due note has been taken of the flight crew member's previous training as recorded in his training records prescribed in MAR-OPS 1.985;

(d) The minimum prerequisites required of flight crew members undertaking tactical instructor qualification training are specified in the Operations Manual; and

(e) All categories of tactical instructors and their specific duties and responsibilities are specified in the Operations Manual.

MAR-OPS 1.965 Continuation training and checking.

The Operator shall ensure that:

- (a) Each flight crew member undergoes a yearly training program as specified in the Operations Manual, to maintain his qualifications and competence to conduct the duties and kind of operations, assigned to him;
- (b) Each flight crew member undergoes recurrent training relevant to the applicable type of aircraft and type of operations in accordance with a detailed recurrent training program specified in the Operations Manual, including at least:
 - (1) Ground training;
 - (2) Emergency procedure training;
 - (3) Survival training;
 - (4) Emergency and safety equipment training;
 - (5) CRM training; and
 - (6) Flight and/or simulator training of the safe conduct of:
 - (i) Normal, abnormal and emergency procedures (proficiency training); and
 - (ii) Operations described in the Operations Manual (operational training);
- (c) A checking program including contents en periodicity, is established in the Operations Manual consisting of at least one proficiency check (reference MAR-FCL 1/2) and one Operator's check; and
- (d) Recurrent training and checking is conducted by suitably qualified personnel, nominated in the Operations Manual.

MAR-OPS 1.968 Pilot qualification to operate in either pilot's seat

The Operator shall ensure that:

- (a) A pilot who is assigned to operate in either pilot's seat completes appropriate training and checking; and
- (b) The training and checking program referred to in sub-paragraph (a) above is specified in the Operations Manual.

MAR-OPS 1.970 Recent experience

The Operator shall establish minimum requirements for recent experience of flight crew members relevant to the applicable type of aircraft. These minimum requirements shall be included in the Operations Manual.

MAR-OPS 1.980 Operation on more than one type or variant

- (a) The Operator shall ensure that a flight crew member does not operate on more than one type or variant, unless the flight crew member is competent to do so.

(b) The Operator shall ensure that a flight crew member operating more than one type or variant complies with all of the requirements prescribed in this subpart for each type or variant unless the Military Aviation Authority has approved the use of credit(s) related to the qualification, the continuation training and checking, and recent experience requirements.

(c) The Operator shall specify appropriate procedures and/or operational restrictions in the Operations Manual for any operation on more than one type or variant covering:

- (1) The flight crew member's minimum experience level;
- (2) The minimum experience level on one type or variant before beginning training for and operation of another type or variant; and
- (3) The process whereby flight crew qualified on one type or variant will be trained and qualified on another type or variant.

MAR-OPS 1.985 Training records

The Operator shall maintain for each individual flight crew member:

(a) Records of all training, checking and qualification prescribed in MAR-OPS 1.943, 1.945, 1.946, 1.950, 1.955, 1.961, 1.965, 1.968 undertaken by a flight crew member; and

(b) Records of recent experience as meant by MAR-OPS 1.970.

SUBPART O – CREW MEMBERS

MAR-OPS 1.988	Applicability
MAR-OPS 1.989	General
MAR-OPS 1.990	Composition of Crew Members
MAR-OPS 1.1000	Initial Operator's crew resource management (CRM) training
MAR-OPS 1.1005	Conversion training and checking
MAR-OPS 1.1007	Mission qualification training
MAR-OPS 1.1010	Differences training
MAR-OPS 1.1012	Mission instructor qualification training.
MAR-OPS 1.1015	Continuation training and checking
MAR-OPS 1.1020	Recent experience
MAR-OPS 1.1030	Operation on more than one type or variant
MAR-OPS 1.1035	Training records

MAR-OPS 1.988 Applicability

(a) This subpart is applicable to Crew Members other than flight crew, assigned to undertake tasks on board of the aircraft which are essential to the safe execution of the flight. This includes, but is not limited to:

- (1) Crewmembers with passenger safety duties; and
- (2) Crewmembers involved in tactical control of the flight.

(b) The Operator shall specify in the Operations Manual the different qualifications of Crew Members mentioned in sub-paragraph (a) above and their corresponding duties and responsibilities.

MAR-OPS 1.989 General

The Operator shall ensure that all Crew members hold an applicable and valid military medical certificate, issued by the Military Aviation Authority or a recognised Authority, and are suitably qualified and competent to conduct the duties and kind of operations, assigned to them.

MAR-OPS 1.990 Composition of Crew Members

The Operator shall ensure that:

(a) The composition and number of Crew Members are both in compliance with, and no less than the minimum specified in, the Aircraft Flight Manual (AFM);

(b) The composition of the Crew Members includes at least one Crew Member with passenger safety duties for every 50 passengers, or fraction thereof, when operating an aircraft with a maximum approved passenger seating configuration of more than 19 and carrying one or more passengers, for the purpose of performing duties in the interests of the safety of passengers;

(c) A senior Crew Member with passenger safety duties is nominated whenever more than one Crew Member with passenger safety duties are assigned;

(d) The composition and number of Crew Members depends on the type of operation, and is not reduced below the number specified in the Operations Manual for that operation; and

(e) Procedures are established, acceptable to the Military Aviation Authority, to prevent the crewing together of inexperienced Crew Members.

MAR-OPS 1.1000 Initial Operator's crew resource management (CRM) training

(a) When an Crew Member has not previously completed an initial Operator's crew resource management (CRM) training, then the Operator shall ensure that the Crew Member completes an initial CRM training program. New employed Crew Members shall complete initial Operator's CRM training within their first year of joining the Operator.

(b) If the Crew Member has not previously completed a human factors training course, then a theoretical course, based on the human performance and limitations program for the applicable Aircrew License (see the requirements applicable to the issue of Aircrew Licences) shall be completed before the initial Operator's CRM training or combined with the initial Operator's CRM training.

(c) Initial CRM training shall be conducted by suitably qualified personnel.

(d) Initial CRM training is conducted in accordance with a detailed course syllabus included in the Operations Manual, and shall contain at least the following items:

- (1) Human factor in system safety;
- (2) Company safety culture, Standard Operating Procedures (SOPs), organisational factors;
- (3) Stress, stress management, fatigue and vigilance;
- (4) Information acquisition and processing, situation awareness, workload management;
- (5) Decision making;
- (6) Communication and co-ordination inside and outside the cockpit;
- (7) Leadership and team behaviour, synergy;
- (8) Automation and philosophy of the use of automation;
- (9) Case based studies; and
- (10) Additional areas which warrant extra attention, as identified by the accident prevention and flight safety program (reference MAR-OPS 1.037).

MAR-OPS 1.1005 Conversion training and checking

The Operator shall ensure that:

(a) A Crew Member completes the Operator's conversion course before commencing unsupervised flying:

- (1) When changing to another aircraft type after obtaining the appropriate Type Rating;
- (2) When changing to another Operator with different operating procedures; or
- (3) When changing type of operation.

(b) Conversion training with integrated elements of CRM is conducted by suitably qualified personnel in accordance with a detailed course syllabus included in the Operations Manual;

(c) The amount of training required by the Operator's conversion course is determined after due note has been taken of the Crew Member's previous training as recorded in his training records prescribed in MAR-OPS 1.1035;

- (d) The minimum prerequisites required for Crew Members undertaking conversion training are specified in the Operations Manual;
- (e) Each Crew Member at least completes the training required by MAR-OPS 1.1015 before commencing flying under supervision; and
- (f) Upon completion of flying under supervision, the check required by MAR-OPS 1.1015 is undertaken.

MAR-OPS 1.1007 Mission qualification training

The Operator shall ensure that:

(a) A Crew Member completes the Operator's mission qualification training as detailed in the Operations Manual and including contents and periodicity to:

- (1) Obtain an initial mission qualification; or
- (2) Regain a mission qualification.

(b) Mission qualification training is conducted by suitably qualified personnel in accordance with a detailed course syllabus referred to in the Operations Manual. This syllabus shall cover training for all operational duties and taskings applicable to the Crew Member undergoing mission qualification training;

(c) The amount of training required by the Operator's mission qualification training course is determined after due note has been taken of the Crew Member's previous training as recorded in his training records prescribed in MAR-OPS 1.1035;

(d) The minimum prerequisites required of Crew Members before undertaking mission qualification training are specified in the Operations Manual;

MAR-OPS 1.1010 Differences training

(a) The Operator shall ensure that a flight crew member completes differences training, consisting of additional knowledge and training on an appropriate training device or the aircraft, before performing duties without supervision as Crew Member on board an aircraft which:

- (1) Is modified with new hardware and/or software; or
- (2) Has new equipment or weaponry installed.

(b) The Operator shall specify in the Operations Manual when such differences training is required.

MAR-OPS 1.1012 Mission instructor qualification training.

The Operator shall ensure that:

(a) A Crew Member, appointed to carry out mission instruction, completes the Operator's mission instructor qualification training course to:

- (1) Obtain an initial mission instruction qualification; or

- (2) Regain a mission instruction qualification as referred to in the Operator Manual;
- (b) Mission instruction qualification training is conducted by suitably qualified personnel in accordance with a detailed course syllabus included in the Operations Manual. This syllabus shall cover training for all instructional duties and taskings applicable to the Crew Member undergoing mission instructor qualification training;
- (c) The amount of training required by the Operator's mission instructor qualification training course is determined after due note has been taken of the Crew Member's previous training as recorded in his training records prescribed in MAR-OPS 1.1035;
- (d) The minimum prerequisites required of Crew Members before undertaking mission instructor qualification training are specified in the Operations Manual; and
- (e) All categories of mission instructors and their specific duties and responsibilities are specified in the Operations Manual.

MAR-OPS 1.1015 Continuation training and checking

The Operator shall ensure that:

- (a) Each Crew Member undergoes a yearly training program as specified in the Operations Manual, to maintain his qualifications and competence to conduct the duties and kind of operations, assigned to him;
- (b) Each Crew Member undergoes recurrent training relevant for the applicable type of aircraft and type of operations in accordance with a detailed recurrent training program specified in the Operations Manual, including at least:
 - (1) Ground training;
 - (2) Emergency and safety procedure and equipment training (including aircraft evacuation training);
 - (3) Survival training;
 - (4) CRM training; and
 - (5) Flight and/or simulator training of the safe conduct of:
 - (i) Normal, abnormal and emergency procedures (proficiency training); and
 - (ii) Tactical and normal operations described in the Operations Manual (operational training);
- (c) A recurrent checking program, including contents and periodicity, is specified in the Operations Manual; and
- (d) Recurrent training and checking is conducted by suitably qualified personnel, nominated in the Operations Manual.

MAR-OPS 1.1020 Recent experience

The Operator shall establish minimum requirements for recent experience of Crew members. These minimum requirements shall be included in the Operations Manual.

MAR-OPS 1.1030 Operation on more than one type or variant

The Operator shall ensure that Crew Members who perform duties on different aircraft types, shall comply with the continuation training and checking, and recent experience requirements as specified in MAR-OPS 1.1005, 1.1010 and 1.1015 for each type.

MAR-OPS 1.1035 Training records

The Operator shall maintain for each individual Crew Member:

- (a) Records of all training, checking and qualification prescribed in MAR-OPS 1.1000, 1.1005, 1.1007, 1.1010, 1.1015 undertaken by a Crew Member; and
- (b) Records of recent experience as meant by MAR-OPS 1.1020.

SUBPART P – MANUALS, LOGS AND RECORDS

MAR-OPS 1.1040 General Rules for Operations Manuals
MAR-OPS 1.1045 Operations Manual – structure and contents
MAR-OPS 1.1050 Aircraft Flight Manual (AFM)
MAR-OPS 1.1055 Flight registration book
MAR-OPS 1.1060 Operational flight plan
MAR-OPS 1.1065 Document storage periods

Appendix 1 to MAR-OPS 1.1045 Operations Manual – contents
Appendix 2 to MAR-OPS 1.1065 Document storage – periods

MAR-OPS 1.1040 General Rules for Operations Manuals

(a) An Operator shall ensure that the Operations Manual contains:

- (1) All instructions and information necessary for operations personnel to perform their duties; and
- (2) A compliance statement signed by the accountable manager.

(b) The Operator shall ensure that the contents of the Operations Manual, including all amendments or revisions, do not contravene the terms and conditions contained in his MAOC or any applicable regulations and are acceptable to or approved by the Military Aviation Authority.

(c) Unless otherwise approved by the Military Aviation Authority, the Operator must prepare the Operations Manual in the English language. In addition, an Operator may translate and use that manual, or parts thereof, into another language.

(d) The Operator may issue an Operations Manual in separate volumes.

(e) The Operator shall ensure that all operations personnel have easy access to a copy of each part of the Operations Manual which is relevant to their duties. In addition, the Operator shall supply all crewmembers with a personal copy of, or sections from, Parts A and B (reference MAR-OPS 1.1045) of the Operations Manual as are relevant for personal use.

(f) An Operator shall ensure that:

- (1) The Operations Manual is amended or revised so that the instructions and information contained therein are kept up to date;
- (2) All operations personnel are made aware of such changes that are relevant to their duties;
- (3) When the Operations Manual is amended, the changes in the text relative to the previous issue are clearly marked; and
- (4) Each holder of an Operations Manual or appropriate parts of it, keeps it up to date with the amendments or revisions supplied by the Operator.

(g) An Operator shall supply the Military Aviation Authority with intended amendments and revisions in advance of the effective date. When the amendment concerns any part of the Operations Manual which must be approved in accordance with MAR-OPS 1, this approval shall be obtained before the amendment becomes effective. When immediate amendments or revisions are required in the interest of safety, they may be published and applied immediately, provided that any approval required has been applied for.

(h) In addition to sub-paragraph (g) above the Operator may use an internal procedure for the implementation of amendments to the Operations Manual, provided:

- (1) These amendments have no impact on the scope of operation conducted under the terms and conditions of its MAOC and the approved means of compliance of any MAR-OPS 1 requirement;
- (2) A description of specific duties and responsibilities for controlling amendments is established by the Operator and accepted by the Military Aviation Authority; and

(3) The Military Aviation Authority receives a copy of each amendment issued.

(i) The Operator shall incorporate all amendments and revisions required by the Military Aviation Authority.

(j) The Operator must ensure that information taken from approved documents, and any amendment of such approved documentation, is correctly reflected in the Operations Manual and that the Operations Manual contains no information contrary to any approved documentation. However, this requirement does not prevent an Operator from using more conservative data and procedures.

(k) The Operator must ensure that the contents of the Operations Manual are presented in a form in which they can be used without difficulty. The design of the Operations Manual shall observe human factors principles.

(l) The Operator may be permitted by the Military Aviation Authority to present the Operations Manual or parts thereof in a form other than on printed paper. In such cases, an acceptable level of accessibility, usability and reliability must be assured.

MAR-OPS 1.1045 Operations Manual – structure and contents

(See appendix 1 to MAR-OPS 1.1045 Operations Manual - contents)

(a) The Operator shall ensure that the main structure of the Operations Manual is as follows:

Part A. General/Basic

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

Part B. Aircraft operating matters - type related

This part shall comprise all type-related instructions and procedures needed for a safe operation. It shall take account of any differences between types, variants or individual aircraft used by the Operator.

Part C. Detailed instruction and information for standard route, area and aerodromes.

This part may comprise detailed instructions and information needed for frequently used routes, areas of operation, and aerodromes.

Part D. Training

This part shall comprise all training programs, courses and instructions for personnel required for a safe operation.

Part E. Maintenance Management

This part shall comprise all instructions and procedures related to the Operator's continuing airworthiness responsibility.

Part F. Ground operations.

This part shall comprise all instructions for ground personnel direct related to the Operators ground operations responsibility.

(b) The Operator shall ensure that the contents of the Operations Manual are in accordance with appendix 1 to this MAR-OPS 1 requirement and relevant to the area and type of operation.

(c) The Operator shall ensure that the detailed structure of the Operations Manual is acceptable to the Military Aviation Authority.

MAR-OPS 1.1050 Aircraft Flight Manual

The Operator shall keep a current approved Aircraft Flight Manual or equivalent document for each aircraft type operated.

MAR-OPS 1.1055 Flight registration book

(a) The Operator shall retain the following information for each flight in the form of a flight registration book:

- (1) Aircraft registration;
- (2) Date;
- (3) Name(s) of crew member(s);
- (4) Duty assignment of crew member(s);
- (5) Place of departure;
- (6) Place of arrival;
- (7) Time of departure (off-block time);
- (8) Time of arrival (on-block time);
- (9) Hours of flight;
- (10) Type of operation and/or authorised mission;
- (11) Incidents, deviations from authorised mission, observations (if any);
- (12) The signature of the authorizing authority (or equivalent); and
- (13) The Pilot in Command's signature (or equivalent).

(b) The flight registration book may be used and retained in a digitized form.

(c) An Operator shall ensure that all entries are made concurrently and that they are permanent in nature.

MAR-OPS 1.1060 Operational flight plan

(a) The Operator must ensure that the operational flight plan used and the entries made during flight contain the following items:

- (1) Aircraft registration;
- (2) Date of flight;
- (3) Flight identification;
- (4) Flight crew members;
- (5) Duty assignment of flight crew members;

- (6) Place of departure;
 - (7) Time of departure (actual off-block time, take-off time);
 - (8) Destination;
 - (9) Time of arrival (actual landing and on-block time);
 - (10) Type of operation / authorised mission;
 - (11) Coordinated data with other participating units, if applicable;
 - (12) Other safety related operational information, if applicable;
 - (13) Route and route segments with checkpoints/waypoints, distances, time and tracks;
 - (14) Planned cruising speed and flying times between checkpoints/waypoints. Estimated times overhead;
 - (15) Safe altitudes and/or minimum flight altitudes/levels;
 - (16) Planned altitudes and/or flight levels;
 - (17) Fuel on board when starting engines;
 - (18) Fuel calculations;
 - (19) Planned destination alternate - and, where applicable, take-off and en-route alternate(s);
 - (20) Details of the filed ATS flight plan;
 - (21) Appropriate NOTAM/AIS briefing documentation;
 - (22) Appropriate meteorological information; and
 - (23) Mass and balance documentation as specified in subpart J;
- (b) Items which are readily available from a separate retrievable source or are irrelevant to the type of operation, need not to be recorded as part of the operational flight plan as meant in sub-paragraph (a) above.
- (c) The Operator must ensure that the operational flight plan and its use are described in the Operations Manual.
- (d) The Operator shall ensure that all entries on the operational flight plan are concurrent and permanent in nature.

MAR-OPS 1.1065 Document storage periods

(See appendix 1 to MAR-OPS 1.1065 Document storage – periods)

The Operator shall ensure that:

(a) All documents, records and all relevant operational and technical information for each individual flight, are stored:

(1) For the periods prescribed in appendix 1 to this MAR-OPS 1 requirement, even if he ceases to be the Operator of the aircraft during that period;

(2) In a manner acceptable and accessible to the Military Aviation Authority; and

(3) In a manner that ensures protection from damage, alteration, theft and loss.

(b) All computer hardware used as backup is stored in a different location from the hardware containing the original data; and

(c) When aircraft continuing airworthiness records are transferred from one Operator to another Operator (reference MAR-OPS 1.925), the document storage periods as prescribed in appendix 1 to this MAR-OPS 1 requirement, will continue to apply to the new Operator.

Appendix 1 to MAR-OPS 1.1045 Operations Manual - contents

Part A. General/basic

0. Administration and control of operations manual

0.1 Introduction

- Compliance statement signed by the accountable manager;
- Description of the various parts of the Operations Manual; and
- Explanations and definitions of terms and words.

0.2 System of amendment and revision

- Person(s) responsible for the issuance and insertion of amendments and revisions;
- Record of amendments and revisions;
- Amendment and (temporary) revision policy and procedures;
- Annotation policy;
- List of effective pages;
- Distribution system for the manuals, amendments and revisions; and
- Notification procedure to the Military Aviation Authority.

1. Organisation and responsibilities

1.1 Scope of operation and operational environments

1.2 Organisational facilities and locations

1.3 Organisational and managerial structure

1.4 Relationship concern directory

- Chains of responsibility between the accountable manager and concern director; and
- Chains of responsibility between quality manager and the applicable quality department at the concern directory level.
- Chains of responsibility between safety manager and the applicable safety department at the concern directory level.

1.5 Accountable manager

1.6 Quality manager

1.7 Safety Manager

1.8 Nominated post holders

1.9 Supervisors

1.10 Ground staff - pertaining to flight safety and the compliance with the applicable regulations

1.11 Pilot in Command

1.12 Crew members other than the Pilot in Command

2. Operational control and supervision

2.1 Supervisory system, structure and processes

2.2 System of promulgation of additional Operational Directives, instructions and information

2.3 Method for exercising the Operator's responsibility with respect to the safe conduct of operations

2.4 Passenger policy

2.5 Alternative implementation decision-making process

2.6 Procedure for assessment of prevailing security situations

2.7 Exemptions

- Procedures for submitting a petition for an exemption from any Military Aviation Requirement;
- Procedures for submitting a report regarding MAR-OPS 1 deviations; and
- Policy, procedures and the Operator decision-making process with respect to MAR-OPS 1 deviations without prior approval of the Military Aviation Authority.

2.8 Sub-contracting

- Policies and procedures concerning sub-contracting; and
- Sub-contractor selection procedure.

3. Quality system

A description of the quality system adopted including at least:

3.1 Quality policy statement signed by the accountable manager;

3.2 Quality plan and objectives;

3.3 Basic structure of the quality system;

3.4 Quality monitoring program;

3.5 Audit process, procedures and schedules;

3.6 A description of the quality department; and

3.7 Quality auditors' duties and responsibilities.

4 Safety management system

4.1 Safety policy and objectives

- Description of the management commitment and responsibilities
- Description of safety accountabilities
- Overview of designated key safety personnel

- Overview of established safety objectives
- Description of third party/contractor safety interfaces/activities
- Description and coordination of the emergency response plan
- Description of available SMS documentation

4.2 Safety risk management

- Hazard identification processes and procedures
- Risk assessment and mitigation processes and procedures.
- Description of the FDM program implemented

4.3 Safety assurance

- Safety performance monitoring and measurement procedures
- Internal safety investigation procedures
- Management of change procedures
- Continuous improvement of the safety system.

4.4 Safety training and promotion

- Description of safety training and education
- Description of safety communication and promotion procedures and tools.

5. Qualification requirements

5.1 Required license, rating(s), qualification and competency, experience, training, checking and recency of operations personnel to conduct their duties

5.2 Flight crew, to include operation on more than one type or variant

5.3 Crew Members, to include operation on more than one type or variant

5.4 Mission Essential crew members

5.5 Groundstaff involved in flight operations

5.6 Groundstaff involved in crew training and checking

5.7 Groundstaff involved in ground operations

5.8 Groundstaff involved in maintenance management

6. Crew health precautions instructions

6.1 Alcohol

6.2 Drugs and other substances

6.3 Decompression, to include the effects of scuba diving and rapid decompressions

6.4 Blood donation

6.5 Sleep and rest

7. Flight time restrictions

7.1 Flight and duty time limitations and rest scheme

7.2 Exceedances of flight and duty time limitations and/or reductions of rest periods

8. Operating procedures

8.1 Flight Preparation Instructions

- Method of determination and application of minimum flight altitudes;
- Aerodrome authorization: criteria and responsibilities;
- Method of determination of aerodrome operating minima;
- Procedure for the selection of destination and/or alternate aerodromes;
- Planning minima or a method of determination of those minima with respect to the required weather conditions for VFR portions of a flight;
- Method to select the required destination or alternate aerodromes with respect to the required weather conditions;
- Interpretation of meteorological information;
- Fuel policy;
- Procedure to calculate take off and landing performance data;
- Principles and methods involved in the loading and in the mass and balance system;
- Procedures with respect to the use air traffic services and tactical control services;
- Procedures and responsibilities for flight planning and briefing;
- Instructions for preparation and submission of the ATS flight plan; and
- Documents, checklists and additional information/documentation to be carried on board.

8.2 Ground Handling instructions

Instructions, to include appropriate checklists and the use thereof, regarding:

- Fuelling and defuelling;
- Arming and de-arming;
- Passengers handling related to safety;
- De-icing and anti-icing;
- Loading, reloading and unloading;
- Aircraft movements on the ground;
- Aircraft handling related to security; and
- Ground operations under adverse operating conditions.

8.3 Flight Procedures

- VFR and IFR Policy;
- Navigation Procedures, to include;
 - Standard navigation;
 - In-flight replanning;
 - System degradation;
 - Navigation in area's with specified navigation performance (if applicable); and
 - Navigation in RVSM airspace (if applicable);
- Altimeter setting procedures;
- Altitude alerting system procedures;
- Ground proximity/terrain avoidance procedures and instructions;
- Inadvertent IMC procedures;

- Policy and procedures for in-flight fuel management;
- Procedure regarding adverse operating conditions;
- Take off and departures procedures;
- Approach and landing procedures;
- Wake turbulence separation criteria;
- Procedures for the usage of seats, safety belts and personnel connections;
- Procedures for the usage of aircraft lighting;
- Procedures for stowage of baggage and equipment;
- Instructions regarding smoking on board;
- Occupant briefing procedures;
- Policy on the use of the autopilot system;
- Procedures for arming assisting means for emergency evacuation;
- Procedures for the usage of Electro-magnetic systems;
- Procedures for the usage of NVIS-systems;
- Formation flying procedures;
- Low level flying policy and procedures;
- Air to air refuelling procedures;
- Procedures for carrying weapons, munitions, expandables and external stores;
- Procedures for simulating weapon and/or ammunition employment, while carrying live and/or training weapons or ammunition;
- Procedures in case of unsafe weapons, munitions, and or armament system malfunctions; and
- Procedures for in-flight dispensing of expendables and external stores and, the employment of weapons and munitions.

8.4 Conditions and procedures regarding (if applicable):

- Aerial photography and filming;
- Demonstration flights;
- Parachute dropping;
- Air to air refuelling;
- Internal carriage of cargo; and
- Alternative disembarkation of passengers.

8.5 Conditions and procedures regarding Operational Testing

8.6 Safety rules policy and instructions, to include the usages of the:

- Autopilot system; and
- Ground Proximity Warning system;
- ACAS system;
- Weather radar.

8.7 Procedures and instructions for the usage of Crew Member's flight equipment

8.8 Procedures for the usage of supplemental oxygen

8.9 Procedures and instructions for the usage of the Operator's Aircraft Technical Log system

8.10 Procedures and instructions for the usage of the flight registration book.

8.11 Procedure and instructions for the usage of the Operator's Minimum Equipment List with respect to the conduct of flight operations

8.12 Procedure and instructions for the usage of the Operator's Configuration Deviation List with respect to the conduct of flight operations

9. N/A

10. Aircraft protection.

10.1 Protective measures and security procedures against unlawful interference

11. Handling, notifying and reporting occurrences

11.1 Procedures for the handling, notifying and reporting occurrences

12. Rules of the air

12.1 Visual and instrument flight rules

12.2 Territorial application of the Rules of the Air

12.3 Communication procedures including communication failure procedures

12.4 Information and instructions relating to the interception of civil and military aircraft

12.5 The circumstances in which a radio listening watch is to be maintained

12.6 Signals

12.7 Time system used in operation

12.8 ATC clearances, adherence to flight plan and position reports

12.9 Visual signals used to warn an unauthorised aircraft flying in or about to enter a restricted, prohibited or danger area

12.10 Procedures for pilots observing an accident or receiving a distress transmission

12.11 The ground/air visual codes for use by survivors, description and use of signal aids

12.12 Distress and urgency signals

13. Leasing

13.1 Required operational arrangements for leasing

13.2 Procedures regarding leasing

13.3 Management responsibilities

13.4 Transfer of aircraft maintenance records

14. Documentation

14.1 Document control process and procedures

14.2 Procedures and instructions for documentation storage

15. Appendices

15.1 Sample documents

15.2 List of sub-contracted organisations, if applicable

15.3 List of quality auditors

Part B. Aircraft operating matters – type related

Taking account of the differences between types, and variants of types, under the following headings:

0. General information

0.1 Aircraft dimensions

0.1 Units of measurement

0.2 Conversion tables

1. Limitations

Certified limitations and applicable operational limitations, including:

- Certification status;
- Aircraft related approved types of operation;
- Mass and centre of gravity;
- Speed limitations;
- Flight envelope(s);
- Wind limits;
- Performance limitations for applicable configurations;
- Runway slope;
- Limitations on wet or contaminated runways;
- Airframe contamination;
- System limitations; and
- Environmental limitations.

2. Normal crew procedures

The normal procedures, the appropriate checklists and use thereof, including at least:

- Pre-flight;
- Walkaround;
- (Pre-) Start up;
- Pre-departure;
- Altimeter setting and checking;
- Taxi, take-off and climb;
- Noise abatement;
- Cruise and descent;
- Approach and landing preparation;
- Visual Approach and circling;
- Instrument approach;
- Missed approach;
- Normal landing;
- After landing;
- (Pre-) Shut down; and
- Operation on wet and contaminated runways.

3. Abnormal and emergency crew procedures

The abnormal and emergency procedures, the appropriate checklists and use thereof, including at least:

- Fire and smoke in the cockpit;
- Rapid decompression;
- Exceeding structural limits such as over G's;
- Lightning strikes;
- Distress communications and alerting ATC to emergencies;
- Engine failure;
- System failures;
- Guidance for diversion;
- Windshear;
- Emergency landing;
- Flame-out patterns and landing;
- Aircraft emergency egress;
- Departing hardened surface;
- Bird strikes;
- Physiological incident;
- Uncommanded flight manoeuvres;
- Emergency fuel; and
- Icing procedures, to include emergency icing penetrations.

4. Performance

4.1 performance data

- Aircraft Flight Manual approved performance data; and
- Supplementary performance data.

5. Flight planning

5.1 Data and instructions necessary for pre-flight and in-flight planning

5.2 Method for fuel calculation

6. Mass and balance

6.1. Instructions and data for the calculation of the mass and balance

6.2 Authorised standard configurations

7. Loading, reloading, unloading

Procedures and provisions for loading, reloading and unloading weapons, munitions, expendables and external stores

8. Configuration Deviation List

The Operator's Configuration Deviation List(s), if provided by the manufacturer

9. Minimum Equipment List

The Operators Minimum Equipment List(s).

10. Emergency and Safety and survival equipment

10.1 Safety and survival equipment for the routes to be flown

10.2 Procedures for checking the serviceability of this equipment

10.3 Instructions regarding the location, accessibility and use of survival equipment and its associated checklist(s)

10.4 The procedure for determining the amount of oxygen required and the quantity that is available.

11. Emergency evacuation procedures.

Procedures and instructions for ground evacuation of aircraft occupants

12. Aircraft systems

Description of aircraft systems, related controls and indications and operating instructions

Part C Detailed instructions and information for standard route, area and aerodrome

As required by the operator, this Part C can be used for detailed instructions and information relating to frequently used routes, areas and aerodromes. The following aspects are to be considered:

- Minimum flight level/altitude;
- Altitude and airspeed restrictions;
- Geographical restrictions;
- Coordination with third parties;
- EMCON;
- Controlling agency requirements;
- Operating minima for departure, destination and alternate aerodromes;
- Communication facilities and navigation aids;
- Runway data and aerodrome facilities;
- Approach, missed approach and departure procedures including noise abatement procedures;
- COM-failure procedures;
- Search and rescue facilities and procedures for the area over which the aircraft is to be flown;
- A description of the aeronautical charts that must be carried on board in relation to the type of flight and the route to be flown, including the method to check their validity;
- Availability of aeronautical information and MET-services;
- En-route COM/NAV-procedures;
- Aerodrome categorization for flight crew competence qualification; and
- Special aerodrome limitations (performance limitations and operating procedures etc.).

Part D Training

1. Training syllabi and checking programs

- 1.1 Flight crew
- 1.2 Crew Members
- 1.3 Mission Essential crew members
- 1.4 Ground staff involved in flight operations other than crewmembers
- 1.5 Ground staff involved in crew training and checking
- 1.6 Ground staff involved in ground operations
- 1.7 Ground staff involved in maintenance management

2. Procedures

- 2.1 Procedures for training and checking
- 2.2 Procedures to be applied in the event that personnel do not achieve or maintain the required standards
- 2.3 Procedures for training and checking of abnormal or emergency situations

3. Appendices

- 3.1 Sample documents and forms
- 3.2 List of training staff
- 3.3 List of checking staff
- 3.4 List of contracted simulator organisations (if applicable)

Part E Maintenance management

1. Continuing airworthiness management procedures

- 1.1 Aircraft Technical Log utilisation, and MEL and CDL application
- 1.2 Aircraft Maintenance Program(s) - development, amendment and approval
- 1.3 Time and continuing airworthiness records, responsibilities, retention, access
- 1.4 Accomplishment and control of directives
- 1.5 Analysis of the effectiveness of the maintenance program(s)
- 1.6 Non mandatory modification embodiment policy
- 1.7 Major modification standards
- 1.8 Defect reports
- 1.9 Engineering activities
- 1.10 Reliability programs
- 1.11 Aircraft weighing
- 1.12 Maintenance manual(s) for operational and emergency equipment as far as not being part of the Aircraft Maintenance Program(s) – development, amendment and approval

2. N/A

3. Contracted maintenance

- 3.1 Policies and procedures concerning contracting aircraft maintenance
- 3.2 Maintenance contractor selection procedure
- 3.3 Quality audit of performed aircraft maintenance

4. Appendices

- 4.1 Sample documents, forms and labels
- 4.2 List of contracted maintenance organisations

Part F Ground operations

1. Ground operations procedures

- 1.1 Pre-, thru- and post-flight inspections
- 1.2 Loading, reloading and unloading
- 1.3 Refuelling and defuelling
- 1.4 Arming and dearming
- 1.5 De-icing and anti-icing, to include an Operator policy
- 1.6 Aided and unaided aircraft movements on the ground
- 1.7 Handling of emergency aircraft.
- 1.8 Emergency evacuation of occupants
- 1.9 Adverse operating conditions, to include an Operator policy
- 1.10 Aircraft search procedure
- 1.11 Dangerous goods handling
- 1.12 Sub-contracted ground handling functions

2. Appendices

- 2.1 Sample documents, forms and labels

Appendix 1 to MAR-OPS 1.1065 Document storage - periods

Table 1 – Information used for the preparation and execution of a flight

Operational flight plan	3 months
Route specific NOTAM/AIS briefing documentation if edited by the Operator	3 months
Mass and balance documentation	3 months
Documentation required by States concerning a specific flight	3 months
Notification of special loads including written information to the Pilot in Command about dangerous goods	3 months

Table 2 – Reports

Flight Registration Book	3 months
Flight report(s) for recording details of any occurrence or any event which the Pilot in Command deems necessary to report/record	3 months
Reports on deviations from MAR-OPS 1 requirements	3 months
RIE request forms and monthly reports of Operator approved RIE's, if applicable	3 months
Reports on exceedances of duty and/or reducing rest periods	3 months

Table 3 – Flight and Crew Member's records

Licence	As long as the flight crew member is exercising the privileges of the licence for the Operator
Initial Operator's crew resource management training	3 years
Conversion training: mission qualification training	3 years
Differences training	3 years
Tactical/Mission instructor qualification training	3 years
Continuation training and checking	3 years
Recent experience	15 months

Table 4 – Records for Mission Essential crew members

Training/qualification records of mission essential crew members for whom a (qualification) training program is required by MAR-OPS 1	3 years
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Table 5 – Aircraft continuing airworthiness records

All detailed maintenance records in respect of the aircraft, engine (modules) and any life-limited component fitted thereto	36 months after the aircraft or component was permanently withdrawn from service
The total time and flight cycles as appropriate, of the aircraft and all life-limited components	36 months after the aircraft or component has been permanently withdrawn from service
The time and flight cycles as appropriate, since last scheduled maintenance of the component subjected to a service life limit	at least until the component scheduled maintenance has been superseded by another

	scheduled maintenance of equivalent work scope and detail
The current status of compliance with the maintenance program such that compliance with the approved Operator's Aircraft Maintenance Program(s) can be established	at least until the aircraft or component scheduled maintenance has been superseded by other scheduled maintenance of equivalent work scope and detail
The current status of continuing airworthiness related directives, requirements and or measures applicable to the aircraft and components	36 months after the aircraft or component has been permanently withdrawn from service
Details of current modifications, repairs and inspections to, as appropriate, the aircraft, engine(s), propellers, and any other component vital to flight safety	36 months after they have been permanently withdrawn from service
Aircraft Technical Log	36 months after the date of the last entry

Table 6 – Aircraft and Organisational documents and manuals

Military Air Operator Certificate	As long as the Operator is exercising the privileges of the MAOC
The Certificate(s) of Registration	As long as the aircraft is operated by the Operator
The Certificate(s) of Airworthiness	As long as the Operator is exercising the privileges of the certificate
The Noise Certificate(s), if applicable	As long as the Operator is exercising the privileges of the certificate
Radio station license(s), if applicable	As long as the Operator is exercising the privileges of the certificate
Current version of the approved parts of the Operations Manual (including all amendments to it)	at least until the current version of the OM has been superseded by a new version
The approved Operator's Aircraft Maintenance Program(s) (including all amendments to it)	at least until the current version of the maintenance program has been superseded by an new version
Applicable agreements with contracted maintenance and or simulator organisations	36 months after expiration of the applicable agreement.
Applicable agreements with sub-contracted organisations	36 months after expiration of the applicable agreement.
Quality monitoring program records	36 months
Knowledge, experience and competence summary of AM, PH and QM	36 months after the AM, PH or QM is replaced

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SUBPART R - TRANSPORT OF DANGEROUS GOODS BY AIR

Introduction

MAR-OPS 1.1145 General

MAR-OPS 1.1147 Applicability

MAR-OPS 1.1149 Responsibilities

MAR-OPS 1.1150 Exemption

MAR-OPS 1.1152 General exception

MAR-OPS 1.1155 Approval to transport dangerous goods

MAR-OPS 1.1157 Transport of non ICAO TI compliant dangerous goods with passengers

MAR-OPS 1.1160 Limitations on the transport of dangerous goods

MAR-OPS 1.1195 Acceptance of dangerous goods

MAR-OPS 1.1200 Inspection for damage, leakage or contamination

MAR-OPS 1.1205 Removal of contamination

MAR-OPS 1.1210 Loading restrictions

MAR-OPS 1.1211 Handling of dangerous goods

MAR-OPS 1.1215 Provision of information

MAR-OPS 1.1220 Training programs

MAR-OPS 1.1223 Documents

MAR-OPS 1.1225 Reporting of anomalies

Appendix 1 to MAR-OPS 1.1145 General – Military special provisions – List of dangerous goods, Special Provisions and Special packages instructions

Appendix 1 to MAR-OPS 1.1160 Limitations on the transport of dangerous goods – Accident Information Sheets (AIS)

Appendix 2 to MAR-OPS 1.1160 Limitations on the transport of dangerous goods – Supplementary Hazard Warning Sheet (SHWS)

Appendix 1 to MAR-OPS 1.1211 Handling of dangerous cargo – Segregation table class 1 explosive substances and/or articles

Introduction

This Subpart R depicts the requirements for transport of dangerous goods by air. In general these requirements serve a special purpose, in this case supplementary requirements for the air transport of non ICAO TI / IATA DGR compliant dangerous goods with Dutch registered aircraft under the responsibility of a Dutch military Operator. The requirements in this Subpart R secure an acceptable level of safety for military Operators and they are developed as a result of the Dutch Aviation Act (Wet luchtvaart) and underlying Ministerial Orders. Substantively the requirements in this Subpart R are a broadening of the civil requirements. Guidance Material (GM) and Acceptable Means of Compliance (AMC) to this MAR-OPS Subpart R is published for applicable articles. The purpose of GM and AMC is to further clarify the requirement and to specify the context or intention of the applicable article.

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 ICAO Technical Instructions or IATA Dangerous Goods Regulations or which are classified according to those instructions.

Some articles in this Subpart R are for helicopters only (Underslung Loads) despite of the fact that this MAR-OPS 1 addresses Air Mobility. This is intentionally to safeguard the integral perspective of the Subpart R.

MAR-OPS 1.1145 General

(See also Appendix 1 to MAR-OPS 1.1145 General - Military special provisions)

(a) An Operator must comply with the applicable provisions contained in the ICAO Technical Instructions (ICAO TI) or IATA Dangerous Goods Regulations (IATA DGR). In case of non-compliant articles or substances the Operator may transport dangerous goods in accordance with appendix 1 to this MAR-OPS 1.1145.

(b) Air transport of dangerous goods is merely carried out when transportation by any other modality is not (practically) possible or very undesirable. At any time a consideration is to be made, by means of an acceptable procedure to the MAA, which depicts the necessity for air transport.

MAR-OPS 1.1147 Applicability

Aviation legislation is inherently transnational in scope. This subpart therefore applies to all Netherlands registered aircraft under responsibility of a Netherlands military Operator regardless of where they operate in the world. When a conflict with local national regulations arises, the most restrictive regulations apply.

MAR-OPS 1.1149 Responsibilities

(a) The Operator shall ensure that the transport of dangerous goods is executed in accordance to the ICAO TI's, the IATA DGR and the MAR-OPS Subpart R.

(b) The Operator shall ensure that he is informed about any dangerous goods transported by aircraft under his responsibility.

(c) The Operator shall ensure that the Pilot in Command is informed about the dangerous goods to be transported.

MAR-OPS 1.1150 Exemption

(a) The Operator shall submit any petition for exemption to the MAA in accordance with MAR-11. Part of this petition shall be a verifiable risk analysis and the Operator shall take in consideration in his risk acceptance that the requirements stated in this Subpart R are in fact already broadening the regulations mentioned in the ICAO TI's (see also Introduction).

(b) If, due to the nature of the operation in the specific military context, the Operator has to deviate from the requirements in this subpart without having obtained a prior exemption from the MAA, the Operator shall ensure that a report is filed to the MAA as soon as possible after the event.

(1) The Operator shall specify applicable procedures in the Operation Manual.

(2) The report shall address at least the requirements that were deviated from and a thorough risk assessment.

MAR-OPS 1.1152 General exception

(a) Dangerous goods that are an integral part of the operational equipment of the military aircraft are exempted from these requirements.

(b) Articles and substances which would otherwise be classified as dangerous goods but which are not subject to the ICAO Technical Instructions in accordance with Part 1 Chapter 2 paragraph 2.2 and Part 8 Chapter 1 paragraph 1.1 (i.e. laptop, telephone, lighter, consumer commodities, etcetera) are excluded from the provisions of this Subpart providing that it is approved by the Operator and secured in procedures in the Operating Manual, acceptable to the MAA.

MAR-OPS 1.1155 Approval to transport dangerous goods

An Operator shall only transport dangerous goods under a valid Military Aircraft Operator Certificate (MAOC) issued by the MAA.

MAR-OPS 1.1157 Transport of non ICAO TI compliant dangerous goods with passengers

Air transport of non ICAO TI / IATA DGR compliant dangerous goods in combination with passengers is forbidden, unless:

(a) Appendix 1 to MAR-OPS 1.1145 General – Military Special Provisions state otherwise and conditions herein are complied with; or

(b) Transport is according MAR-OPS 1.1160(g), 1.1160(h) and 1.1210(b)(2); or

(c) The transported dangerous goods are part of the individual and/or group equipment of the military passengers (cat. A) to be transported, as meant in MAR-OPS 1.1160 (b); or

(d) Operational necessity dictates that dangerous goods are carried as external load (under Slung Load (USL)) under a helicopter with passengers on board and carriage is approved by local authorities.

MAR-OPS 1.1160 Limitations on the transport of dangerous goods

(a) Escort:

- (1) When transportation of non ICAO TI / IATA DGR compliant dangerous goods and articles can only be carried out safely under supervision of an escort, this escort shall be on board the aircraft during the flight.
- (2) The necessity of supervision by an escort is stated in column M of Appendix 1-B List of dangerous goods to Appendix 1 to MAR-OPS 1.1145 General – Military special provisions, NLD17.
- (3) No additional approval from the MAA is required for this escort to be on-board a Cargo Aircraft Only (CAO) flight.
- (4) With respect to compliance with on-board flight safety, the escort reports to the pilot-in-command.
- (5) The escort:
 - (i) Is in the vicinity of the escorted cargo from the moment that loading commences until the moment that unloading has been completed, unless this is not possible due to mandatory disembarking of the aircraft (for example during atmospheric disturbance).
 - (ii) Is in possession of hard copies of all documentation regarding the dangerous goods to be escorted, the Accident Information Sheets (AIS, see Appendix 1 to MAR-OPS 1.1160) and the Supplementary Hazard Warning Sheets (SHWS, see Appendix 2 to MAR-OPS 1.1160) and he ensures that all transport and safety regulations are complied with such as the presence of personal protection equipment.
 - (iii) Is obliged to inform the Pilot in Command before departure about:
 - a. Relevant data mentioned on the Notification to Commander (NOTOC), Accident Information Sheets (AIS) and the Supplementary Hazard Warning Sheets (SHWS); and
 - b. The Pilot in Command's requirement to provide air traffic control of the airfield of arrival with data concerning hazard class 1 explosive substances and/or articles with regard to specific parking requirements for loading/unloading; and
 - c. Possible behaviour of the dangerous cargo that could arise during flight.
 - (iv) Advises the Pilot in Command on any dangerous cargo related measures that should be taken in view of safety.

(b) Unpacked dangerous goods as part of individual and/or group equipment:

- (1) It is not allowed to transport unpacked dangerous goods, unless these dangerous goods belong to the individual and group equipment of the military units (Troops in fighting trim (TIFT)) to be transported and the specific equipment table for that unit has been approved by the MAA and published as Acceptable Means of Compliance (AMC) to this subpart. Although normally AMC have a voluntary character, the AMC

for the specific equipment tables is mandatory for Dutch Operators due to the fact that it contains a standing exemption beforehand when adhered to. Examples of such specific equipment tables can be found in this AMC.

(2) Transport of dangerous goods that belong to the **group** equipment tables published as Acceptable Means of Compliance (AMC) but need to be carried without the presence of the individual TIFT of the specific unit mentioned on the group equipment table is permitted when operational necessity dictates. In addition to the mentioned Generic Conditions in the AMC, the Specific Conditions added to the group equipment table (controlling measures) also apply.

(3) The Pilot in Command shall be informed about the nature and composition of the dangerous goods meant in subparagraph (b)(1) above.

(c) Dangerous goods forbidden for transport by air under any circumstances:

Any Article or substance which, as presented for transport, is liable to explode, dangerously react, produce a flame or dangerous evolution of heat or dangerous emission of toxic, corrosive or flammable gases or vapours under normal conditions encountered in transport must not be carried on aircraft under any circumstance. This includes class 1 explosive substances or articles of compatibility Groups A, K and UN 0331 and UN0332.

(d) Dangerous goods forbidden for transport by air as external load:

(1) Unless necessary due to the nature of the operation in the specific military context it is forbidden to transport the following dangerous goods as external load under a helicopter (USL):

- (i) Hazard classes; 2.1, 2.3, 4.2, 4.3 (with exception of UN2813, Meals ready to eat (MRE's), 5.1, 5.2, 6.1, 6.2 and 7 (with exception of UN2911);
- (ii) Class 1: compatibility groups A, J, K and L;
- (iii) Class 3: packing group I;
- (iv) Class 8: packing group I;
- (v) Class 9: UN3077 and UN3082; and
- (vi) Dangerous goods liquids in limited quantities (LQ as meant by ICAO TI's) defined in the ICAO Technical Instructions or IATA Dangerous Goods Regulations.

(2) All other dangerous goods not mentioned in (d)(1) are permitted to transport as USL within the Operational area after prior approval of the local authorities (see GM MAR-OPS X.1147).

(3) Outside the Operational area only class 9 military vehicles and non-dangerous goods are permitted to transport as USL after prior approval of local authorities (see GM MAR-OPS X.1147).

(e) For transportation by air as external load under a helicopter (USL):

(1) Box pallets shall be used, unless this is not practicable due to the nature of the operations in the specific military context; and

(2) Vibration tests shall be performed for the purpose of classifying the type of external load of hazard class 1 explosive substances and/or articles in accordance with "Qualification Guidelines for air transport of ammunition and explosives" (AC 326 G4/NLD WPO1-2011 Edition 1).

(f) Dangerous goods to be carried as external load under a helicopter (USL) of which the hazard labels are not visible due to the way of loading, need to be marked unless this is not practicable due to the nature of the operation in the specific military context. The Operator shall establish a procedure to safeguard this in the Operations Manual, approved by the MAA.

(g) Dangerous goods such as Smoke Grenades, Markers or Sonar buoys used as landing aid or demarcation points for helicopters and dangerous goods that are used as (re)load for weapon systems (aircraft and personnel) and Chaff/Flare Dispensers are exempted from these requirements, provided procedures are secured in the Operations Manual and these dangerous goods are transported in certified packages acceptable to the MAA (e.g. see *Appendix 1-D Code table of Special Provisions, NLD16*).

(h) Dangerous Goods carried in a Crew Chief Box or Fly Away Kit (dangerous goods in Operator's property) are exempted from these requirements, provided:

- (1) Dangerous goods are in compliance with IATA DGR article 2.5.1.1 and 2.5.2.1, Aircraft Equipment; and
- (2) Dangerous goods are in compliance with the Aircraft Maintenance Program and carried in minimal quantities for specific operation (see also MAR-OPS 1.1210 Loading restrictions (b)(2)).
- (3) Aircraft tire assemblies, serviceable, are inflated to a pressure not greater than their rated inflation pressure and carried in containers specially designed for their transport. For unserviceable or damaged tire assemblies, Special Provision A59 of the IATA DGR is applicable.
- (4) It is allowed to carry dangerous goods as meant by subparagraphs (1), (2) and (3) above when they are part of Downed Aircraft Recovery Team (DART) equipment and operational necessity exists (see also MAR-OPS 1.1210 Loading restrictions (b)(2)).
- (5) Dangerous goods shall be transported in packages capable of meeting at least the requirements for the packaging specified in the ICAO TI / IATA DGR.

MAR-OPS 1.1195 Acceptance of dangerous goods

(a) An Operator shall not accept dangerous goods unless:

- (1) All packages, either single or in overpack(s), have been inspected in accordance with the acceptance procedures in the ICAO Technical Instructions or IATA Dangerous Goods Regulations;
- (2) The English language is used for:
 - (i) Package marking and labelling; and
 - (ii) The dangerous goods transport document, in addition to any other language requirements.
- (3) Except when otherwise specified in the ICAO Technical Instructions or IATA Dangerous Goods Regulations, they are accompanied by two copies of a dangerous goods transport document.

- (b) The Operator shall use an acceptance checklist for dangerous goods to be transported, provided by the handling agent complied with all relevant details to be checked. The acceptance checklist shall be in such form that it will allow for the recording of the results of the acceptance check by manual, mechanical or computerized means.
- (c) The Operator shall ensure that when dangerous goods are accepted for air transport meant for aerial delivery, for example (controlled precision) drops of cargo, these dangerous goods are accepted as far as practicable in accordance with (a) and (b) above. Dangerous goods to be carried of which the hazard labels are not visible due to the way of loading, need to be marked unless this is not practicable due to the nature of the operation in the specific military context. The Operator shall establish a procedure to safeguard this in the Operations Manual, approved by the MAA (see also article 1.1211 (e)(7) and (f)(1)(i)).

MAR-OPS 1.1200 Inspection for damage, leakage or contamination

An Operator shall ensure that leaking and/or damaged packages or overpacks are not loaded on an aircraft. The dangerous cargo acceptance procedure shall be used according to the ICAO Technical Instructions or the IATA Dangerous Goods Regulations.

MAR-OPS 1.1205 Removal of contamination

(a) An Operator shall ensure that:

(1) Any contamination resulting from the leakage from or damage to articles or packages containing dangerous goods is as soon as possible removed with adequate means and steps are taken to nullify any hazard as specified in the ICAO Technical Instructions or the IATA Dangerous Goods Regulations and the Operator shall report any dangerous goods incidents and accidents according MAR-OPS 1.1225 Reporting of anomalies; and

(2) An aircraft which has been contaminated by radioactive materials is immediately taken out of service and not returned until the radiation level at any accessible surface and the non-fixed contamination are not more than the values specified in the ICAO Technical Instructions or IATA Dangerous Goods Regulations.

(b) In the event of non compliance with any limit in the ICAO Technical Instructions or IATA Dangerous Goods Regulations applicable to radiation level or contamination:

(1) The Operator must:

- i) Take immediate steps to mitigate the consequences of the non-compliance;
- ii) Communicate the non-compliance to the shipper and relevant competent authority(ies), respectively, as soon as practicable and immediately whenever an emergency situation has developed or is developing.

(2) The Operator must also, within the scope of his responsibilities:

- i) Investigate the non-compliance and its causes, circumstances and consequences;
- ii) Take appropriate action, to remedy the causes and circumstances that led to the non-compliance and to prevent a recurrence of similar

circumstances that led to the non-compliance;

- iii) Communicate to the relevant competent authority(ies) on the causes of the non-compliance and on corrective or preventative actions taken or to be taken.

MAR-OPS 1.1210 Loading restrictions

The Operator shall ensure that:

(a) Dangerous cargo is not stowed on the flight deck, except as specified in the ICAO Technical Instructions or IATA Dangerous Goods Regulations (see also MAR-OPS 1.1152 (b)).

(b) Dangerous cargo is not carried on the same deck as that occupied by passengers, except;

(1) Dangerous goods as specified in the ICAO Technical Instructions or IATA Dangerous Goods Regulations (see also MAR-OPS 1.1152 (b)).

(2) Dangerous Goods carried in a Crew Chief Box, Fly Away Kit or as DART equipment (dangerous goods in Operator's property) may be carried on the same deck as that occupied by passengers provided procedures are secured in the Operations Manual acceptable to the MAA (see also MAR-OPS 1.1160 (h)).

(3) Dangerous goods, with the exception of CAO freight, packed in accordance with the ICAO TI's, IATA DGR or Appendix 1 to MAR-OPS 1.1145 on C-130 aircraft and helicopters, may be carried on the same deck with mission essential passengers due to the fact that these aircraft have only one deck, permanently overseen by (a) Loadmaster(s), provided the transport is necessary due to the nature of the operation in the specific military context.

(4) Dangerous goods when transported as part of the individual and/or group equipment of the military passengers to be transported, as meant in 1.1160 (b).

(c) Dangerous goods are loaded, segregated, stowed and secured on an aircraft as specified in the ICAO Technical Instructions, the IATA Dangerous Goods Regulations and the additional requirements as prescribed in appendix 1 to MAR-OPS 1.1145 and MAR-OPS 1.1211 Handling of dangerous cargo;

(d) Packages of dangerous goods bearing the "Cargo Aircraft Only" label are only carried on a cargo aircraft and loaded as specified in the ICAO Technical Instructions, the IATA Dangerous Goods Regulations or the additional requirements as prescribed in appendix 1 to MAR-OPS 1.1145, whichever is applicable.

(e) When dangerous goods (including CAO freight) are carried as external load under a helicopter (USL), it is allowed to transport this USL in combination with passengers on-board of the helicopter when operational necessity so dictates and a verifiable risk analysis has been made at least taking into consideration the operational necessity, the context of the flight, the possible effect on/for third parties and MAR-OPS 3.1160 *Limitations on the transport of dangerous goods* subparagraph (d). This risk analyses management procedure shall be laid down in the Operator's Operation Manual and is acceptable to the MAA.

(f) The net explosive mass/quantity of ammunition and explosives in any one aircraft may not exceed the net explosive mass/quantity that may be accepted at the airfield where the cargo is to be delivered or where the aircraft is scheduled to stop en route.

MAR-OPS 1.1211 Handling of dangerous goods

(a) General:

- (1) After unloading of dangerous goods is completed the Crew Member shall ensure that no dangerous goods have been unintentionally left behind in the aircraft.
- (2) For loading and unloading of dangerous goods suitable support equipment shall be used which does not impose unnecessary risk of causing damage to the dangerous goods itself or its packaging.

(b) Class 1 explosive substances and/or articles:

- (1) During loading and unloading of class 1 explosive substances and/or articles the distance between aircraft shall be at least 50 meters unless this is not practicably possible due to local circumstances.
- (2) For loading and unloading of class 1 explosive substances and/or articles the following condition applies:
 - i) Only those persons necessary for the loading/unloading of the aircraft may be on-board the aircraft or in the direct vicinity of the aircraft;
 - ii) Activities on-board the aircraft or in the direct vicinity of the aircraft that involve or could produce fire, sparks or heat are prohibited. Smoking is prohibited and no refuelling of the aircraft shall take place during loading or unloading;
 - iii) The aircraft's engines propulsion system shall not be running.
- (3) The cargo compartment shall be closed if loading/unloading is interrupted and after the loading is completed.
- (4) When loading/unloading explosive substances or objects, two way radio contact is maintained with the airport's traffic control.
- (5) When loading/unloading explosive substances or objects there shall be present at the aircraft's position, ready for immediate use:
 - i) One fire fighting vehicle with foam, manned by at least two fire-fighters;
or
 - ii) Fire extinguishers or extinguishing installation as mentioned in STANAG 3863 and STANAG 4441 (including the replacing document for the AASTP-2, the Allied Movement Publication-6 (AMovP-6).
- (6) During loading and unloading adequate fire extinguishing equipment shall be available. The personnel involved in loading and unloading shall be trained in the use of this fire extinguishing equipment.
- (7) If during loading/unloading the explosive substance or object falls or lands in a way that the package is damaged to a degree where it is plausible that the integrity of the packaging is not secured or it is plausible that the explosive substance or object itself is damaged, it may not be touched or handled in any way until a munitions expert clears it for further handling.

(8) Subparagraph (7) above does not apply if the explosive substance and/or article falls in the vicinity of a source of heat or flame. If the ammunition package falls close to heat or flame, it should be moved to a safe place, if possible, exercising utmost caution.

(9) During loading and unloading on exercise locations and/or airports outside the Netherlands the local procedures/regulations shall be adhered to when more strict.

(10) The statements under subparagraph (2) (with exception of (2)ii)), (3), (4) and (5) above are not applicable in case of:

- (i) The fact that this is not practicable due to the nature of the operation in the specific military context; or
- (ii) Loading and unloading of an external load (USL) during helicopter transport; or
- (iii) Transport of TIFT according to the AMC to MAR-OPS Subpart R 1.1160 (b).

(c) Stowing:

(1) A designated member of the flight crew shall be responsible for stowing the cargo.

(2) If the dangerous goods belong to more than one hazard class, the dangerous goods with hazard classes qualified to be ejected first (if feasible) in case of emergency shall be stowed in the vicinity of the cargo door. The article shall be at all times easy accessible.

(3) Mixed transportation of explosive substances and/or articles in accordance with the ICAO Technical Instructions, IATA DGR and Appendix 1 to MAR-OPS 1.1145 with substances or objects from other hazard classes is only permitted as prescribed in (d) below.

(4) All non ICAO TI/IATA DGR compliant hazard class 1 explosive substances and/or articles shall be stowed in such a manner that:

- (i) It will be easily accessible during flight without moving other cargo.
- (ii) Segregated from general cargo and other hazard class 1 explosive substances and/or articles according the segregation table stated in Appendix 1 to MAR-OPS 1.1211 Handling of dangerous cargo – Segregation table class 1 explosive substances and/or articles and as prescribed in (d) below.

(d) Stowing compatibility:

Stowing of non IATA DGR compliant dangerous goods together with any other dangerous goods:

It is forbidden to stow non ICAO TI / IATA DGR compliant ("forbidden, forbidden") hazard class 1 explosive substances and/or articles together in one aircraft with other classes/subclasses except for dangerous substances or objects of hazard class 2.2, matches packed in (a) military emergency ration(s) of hazard class 4.1 (see NLD20), excepted packages UN2910 and UN2911 of hazard class 7 and UN3166

Engine internal combustion flammable liquid powered (diesel and kerosene), UN3166 Vehicle flammable liquid powered (diesel and kerosene), UN3528 Engine, internal combustion, flammable liquid powered (diesel and kerosene), UN3082 as part of UN3363 Dangerous goods in machinery and apparatus (see NLD12 of Appendix 1 to MAR-OPS 1.1145 General - Military Special Provisions) and UN3363 Dangerous goods in machinery and apparatus of hazard class 9.

(e) Segregation:

(1) Hazard class 1 explosive substances and/or articles need not be segregated on sub-risk, just on compatibility.

(2) Acids and bases are both categorised as hazard class 8. Because of the fact that these substances will react very aggressive when in contact with each other, and in addition to table 9.3.A of the IATA DGR, all possible effort should be made to segregate these substances from each other during air transport.

(3) As a consequence of article (d) above packages and units with hazard class / subclass 2.2, matches packed in (a) military emergency ration(s) of hazard class 4.1 (see NLD20), excepted packages UN2910 and UN2911 of hazard class 7 and UN3166 Engine internal combustion flammable liquid powered (diesel and kerosene), UN3528 Engine, internal combustion, flammable liquid powered (diesel and kerosene), UN3166 Vehicle flammable liquid powered (diesel and kerosene), UN3082 as part of UN3363 Dangerous goods in machinery and apparatus of hazard class 9 (see NLD12 of Appendix 1 to MAR-OPS 1.1145 General - Military Special Provisions) and UN3363 Dangerous goods in machinery and apparatus of hazard class 9 are stowed and separated with a segregation distance of 1 pallet position with a minimum distance of two metres from class 1 explosive substances and/or articles.

(4) Subparagraph (3) does not apply when loaded in different closed unit load devices (ULD's).

(5) Compatibility Groups;

The segregation table for segregation of compatibility groups of hazard class 1 explosive substances and/or articles shall be used. The segregation table is stated in Appendix 1 to MAR-OPS 1.1211 Handling of dangerous cargo – Segregation table class 1 explosive substances and/or articles.

(6) CAO dangerous goods other than hazard class 1 explosive substances and/or articles that are listed in Appendix 1 to MAR-OPS 1.1145 must be loaded and segregated according the additional military transport instructions mentioned in Appendix 1-C to MAR-OPS 1.1145, the Special Provisions, if applicable.

(7) Aerial delivery (for example (controlled precision) drops of cargo);

Segregation of dangerous goods has to be done as far as practicable. When segregation is not possible due to the nature of the operation in the specific military context the following measures are applicable:

- i) dangerous goods droppings are commenced only when there is a verifiable operational necessity;

- ii) all hazard classes are packed in accordance with the most achievable and stringent package instructions possible considering the nature of the operation;
- iii) the dangerous goods trained loadmaster is informed about the possible lack of segregation.

(f) Dispersal/Jettison:

(1) It is not permitted to disperse/jettison dangerous goods during flight unless:

- (i) It is desirable due to the nature of the operation in the specific military context, like aerial delivery (for example (controlled precision) drops of cargo); or,
- (ii) The pilot-in-command considers it's necessary for the safety of the aircraft and its occupants.

(2) The Operator shall have a procedure in the Operations Manual to secure a load after dispersal or jettison as meant in subparagraph (f)(1)(ii) above.

(g) Handling of passengers in relation to dangerous goods:

If passengers and dangerous goods are being carried on the same flight, the passengers shall embark the aircraft after loading has been completed and disembark before unloading commences, unless this is not practicable due to the nature of the operation in the specific military context.

(h) Ventilation:

When dangerous goods are being transported, the aircraft shall be ventilated optimally.

MAR-OPS 1.1215 Provision of information

(a) Information to personnel:

An Operator must provide such information in the Operations Manual and/or other appropriate manuals as will enable personnel to carry out their responsibilities with regard to the transport of dangerous goods including the actions to be taken in the event of emergencies involving dangerous goods. Where applicable, such information must also be provided to his handling agent.

(b) Information to passengers and other persons:

(1) An Operator shall ensure that information is promulgated as required by the ICAO Technical Instructions or IATA Dangerous Goods Regulations so that passengers are warned about the types of goods that are forbidden for them to take on-board an aircraft; and

(2) An Operator shall ensure that notices are provided at acceptance points for cargo by giving information about the specific hazard of the dangerous goods.

(c) Information to the Pilot in Command:

- (1) An Operator shall ensure that written information (NOTOC) is provided to the Pilot in Command about the dangerous goods to be carried on an aircraft, as specified in the ICAO Technical Instructions or IATA Dangerous Goods Regulations.
- (2) An Operator shall ensure that information for use in responding to in-flight emergencies is provided to the Pilot in Command (see also MAR-OPS 1.1215 (e)).
- (3) An Operator shall ensure that a legible copy of the written information to the Pilot in Command is retained on the ground at a readily accessible location until after the flight to which the written information refers. This copy, or the information contained in it, must be readily accessible at the aerodrome (or aerodrome officials) of last departure until after the flight to which the information refers.
- (4) An Operator shall ensure that when dangerous goods are carried on a flight which takes place wholly or partially outside the territory of the Netherlands, the English language is used for the written information to the Pilot in Command in addition to any other language requirements.

(d) Information in the event of an aircraft incident or accident:

- (1) In the event of an aircraft incident while carrying dangerous goods as cargo the Operator must, if requested to do so, provide any information without delay to emergency services responding to the incident and to the appropriate authority of the State in which the incident occurred as required by the ICAO Technical Instructions or IATA Dangerous Goods Regulations.
- (2) In the event of an aircraft accident or serious incident while carrying dangerous goods as cargo the Operator shall, without delay, provide any information to emergency services responding to the serious incident or accident and to the appropriate authority of the State in which the serious incident or accident occurred as required by the ICAO Technical Instructions or IATA Dangerous Goods Regulations.
- (3) The Operator of an aircraft shall include procedures in appropriate manuals and accident contingency plans to enable this information to be provided.

(e) Information in the event of an in-flight emergency:

If an in-flight emergency occurs the Pilot in Command shall, as soon as the situation permits, inform the appropriate air traffic services of any dangerous goods carried as cargo on board the aircraft as specified in the ICAO Technical Instructions Part 7 Chapter 4 paragraph 3 or IATA Dangerous Goods Regulations Chapter 9.5.1.2 and 9.5.1.3 by means of the Emergency Response Guidance for Aircraft Incidents Involving Dangerous goods (ERG, ICAO doc.9481-AN/928).

MAR-OPS 1.1220 Training programs

(a) An Operator shall establish and maintain training programs, as required by the ICAO Technical Instructions or IATA Dangerous Goods Regulations (respectively Table 1.4 and Table 1.5A) including elements of dangerous goods security. The training program shall be acceptable to the MAA.

(b) In addition to the training requirements stated in the ICAO Technical Instructions or IATA Dangerous Goods Regulations, personnel in the service of the Armed Forces of the

Netherlands in the position of originator, ground handler and crew involved in transportation of dangerous goods by air (as a minimum the Pilot in Command and (a) the loadmaster(s) if involved in the carriage of dangerous goods) must have received appropriate training acceptable to the MAA.

(c) An Operator shall ensure that all staff who receive training undertake a written test to verify understanding of their responsibilities. The 70% norm shall be achieved in order to pass the test.

(d) An Operator shall ensure that all staff who require dangerous goods training receive recurrent training at intervals of not longer than two years.

(e) An Operator shall ensure that records of dangerous goods training are maintained for all staff as required by the ICAO Technical Instructions or IATA Dangerous Goods Regulations.

(f) An Operator shall ensure that his handling agents staff are trained as required by the ICAO Technical Instructions or IATA Dangerous Goods Regulations (respectively Table 1.4 and Table 1.5.A).

(g) An Operator shall ensure that all persons involved in tactical TIFT operations, known as the frequent users, have received appropriate training acceptable to the MAA as meant in the AMC to MAR-OPS 1.1160 (b) (1).

MAR-OPS 1.1223 Documents

(a) During air transport of dangerous goods the following documents shall be carried on board the aircraft:

(1) The Shipper's Declaration:

- (i) The shipper is responsible for drafting the Shippers Declaration. When an Air Loading Table (ALT) is used the shipper is responsible for the timely supply of the ALT (see also MAR-OPS 1.1223 (b) and AMC to MAR-OPS 1.1160 (b)(1)).
- (ii) In the Operational area it is permitted to make use of a Multi Modal Dangerous Goods Form (MMDGF) instead of the Shippers Declaration, provided compliancy to the requirements in ICAO TI Part 5 Chapter 4 paragraph 4.1.6.1.
- (iii) If due to the fact that non ICAO TI / IATA DGR compliant dangerous goods are transported according the MAR-OPS Subpart R, "**NLD MAR-OPS**" and the applicable Special Provision number(s) **NLD..** shall be indicated on the document under the column "authorisation" (see Chapter 8.1.6.9.4 IATA DGR).
- (iv) The Shipper's Declaration or MMDGF shall be completed in the English language.
- (v) For transport of hazard class 1 explosive substances and/or articles the Shipper's Declaration shall contain the following additional information: Net explosive mass (NEM/NEQ/NEW), followed by the unit of measurement.

(2) Freight manifest or Cargo manifest.

(3) Notification to Captain (NOTOC);

(i) In case air transport of dangerous goods is based on NLD MAR-OPS, this shall be stated on the Notification to Captain (NOTOC);

(ii) The NOTOC shall be completed i.a.w. the Emergency Response Guidance for Aircraft Incidents Involving Dangerous goods (ERG, ICAO doc.9481-AN/928) or IATA DGR 9.5.1.1.

(5) The IATA DGR (the latest effective edition).

(6) The MAR-OPS Subpart R (the latest effective edition).

(7) The Emergency Response Guidance for Aircraft Incidents Involving Dangerous goods (ERG, ICAO doc.9481-AN/928, the latest effective edition).

(b) For air transport of dangerous goods as part of the individual- and/or group equipment, as meant in MAR-OPS 1.1160 (b), it is allowed to replace the documents mentioned in sub paragraph (a) (1) up to and including (5) above by an Air Loading Table (ALT) in which at least the following information is recorded:

(1) Name/identification of the unit;

(2) UN numbers;

(3) Hazard classes/subclasses;

(4) Quantities (mass and NEM/NEQ/NEW);

or,

(5) codes of the approved equipment table (see appendices to the AMC to MAR-OPS 1.1160 (b)).

(c) For air transport of dangerous goods during helicopter operations there may be circumstances when the full provisions of the regulations are not appropriate or necessary, therefore the Operator;

(1) Is allowed to replace the documents mentioned in subparagraph (a)(1) up to and including (5) by at least a verbal transfer of information to the Pilot in Command on the nature and quantity of the dangerous cargo when for air transport of dangerous goods as external load (USL) physical handover of documents is not possible.

(2) Has the possibility to obtain a MAA approval to permit the carriage of dangerous goods without all of the normal requirements of the regulations being fulfilled due to the fact that operations take place from remote (dis)locations and/or unmanned sites (see also ICAO TI Part 7 Chapter 1 paragraph 1 and IATA DGR Chapter 9.9).

MAR-OPS 1.1225 Reporting of anomalies

(a) An Operator shall report any dangerous goods incidents and accidents with reference to the SMAR-1 (contrary to the SMAR-1 this includes serious injury to a person as a result of dangerous goods handling) to the MAA and the appropriate authority in the State where the accident or incident occurred, as provided for in sub-paragraph (c), (d) and (e) below, irrespective of whether the dangerous goods are contained in cargo, mail, passengers baggage or crew baggage.

(b) An Operator shall also report to the MAA and the appropriate authority in the State where the event occurred, the finding of undeclared or misdeclared dangerous goods discovered in cargo, mail, passengers baggage or crew baggage, as provided for in sub-paragraph (c), (d) and (e) below (reference SMAR-1).

(c) The first report shall be despatched within 72 hours of the event unless exceptional circumstances prevent this. It may be sent by any means, including e-mail, telephone or fax. This report shall include the details that are known at that time, under the headings identified in sub-paragraph (d) below. If necessary, a subsequent report shall be made as soon as possible giving all the details that were not known at the time the first report was sent. If a report has been made verbally, written confirmation shall be sent as soon as possible.

(d) The first report and any subsequent report shall be as precise as possible and contain such of the following data that are relevant:

- (1) date of the incident or accident or the finding of undeclared or misdeclared dangerous goods;
- (2) location, the flight number and flight date;
- (3) description of the goods and the reference number of the freight manifest, pouch, baggage tag, ticket, etc;
- (4) proper shipping name (including the technical name, if appropriate) and UN/ID number, when known;
- (5) hazard class or division and any subsidiary risk;
- (6) type of packaging, and the packaging specification marking on it;
- (7) quantity of the dangerous goods;
- (8) name and address of the shipper, passenger, etc.;
- (9) any other relevant details;
- (10) suspected cause of the incident or accident;
- (11) action taken;
- (12) any other reporting action taken; and
- (13) name, title, address and telephone number of the person making the report.

(e) Copies of relevant documents and any photographs taken should be attached to a report.

Appendix 1 to MAR-OPS 1.1145 General - Military special provisions

Appendix 1-A Bookmark

(a) The Netherlands Ministry of Defence (NLMoD) List of Dangerous Goods contains all substances and items that, in deviation from the ICAO TI's (Technical Instructions) / IATA DGR (Dangerous Goods Regulations) can be transported by aircraft under the responsibility of a Dutch military Operator. The structure of the list is identical to the data from the list of dangerous goods contained in the IATA DGR. For ease of use and contrary to the IATA DGR, an ascending UN-numbering system has been used.

(b) When in column J and L of the List of Dangerous Goods in addition to an entry for hazard class 2 up to and including class 9 is mentioned, it shows the maximum net quantity per package of the substance or object allowed in each package on a passenger or cargo aircraft.

(c) For class 1 explosive substances and/or articles, contrary to the ICAO TI's and IATA DGR, column L (and column J in case of class/subclass 1.4S permitted on passenger aircraft) states the maximum Net Explosive Mass (NEM, NEQ or NEW) per package or (robust) article if stated in the NC9-65. When in column L the maximum NEM is not mentioned or exceeded and column K does **not** show "FORBIDDEN", the following actions need to be taken before air transport is commenced in accordance with these provisions:

(1) A Competent Authority Approval (CAA) must be added to the shipment, the CAA gives clarity about the used classification code and it states on the CAA that the safe (inter)national transport is in conformity with the United Nations Recommendations on the transport of dangerous goods. It establishes that the materials described are classified as such and may be packaged and transported with the approval of a competent authority for the classification of military ammunition regardless if it concerns a foreign CAA. If Special Provision A62 is added in column M of the Appendix 1 to MAR-OPS 1.1145 a CAA needs to be added to the shipment every time air transport is commenced in accordance with the ICAO TI's and IATA DGR;

(2) The hazard class 1 explosive substances and/or articles (ammunition) are packed in the organic, classified and certified UN package according the packaging instruction mentioned in column K of this Appendix 1 to MAR-OPS 1.1145;

(3) The data mentioned in the NC9-65 is followed, the Safety advisor of the Air Force Command must be contacted to mediate between knowledge centers and/or authorities in order to obtain a written conformity on the safe transportation by air in case of a non-compliance situation;

Only when all of the above conditions are complied with, air transport is permitted without exemption given by the MAA (with the exception of those articles and/or substances where Special Provision NLD01 in column M is added).

(d) When in column I and/or K of the List of Dangerous Goods the Packing Instruction number is placed between parentheses the accompanying instructions can be found, as opposed to the IATA DGR, in the ICAO TI or the ICAO TI Supplement (Doc 9284, AN/905 Supplement).

(e) When in column L an additional term IATA is added, the specific article or substance can be transported according the IATA DGR, refer to these regulations for air transport prior to use this MAR-OPS subpart R. A Special Provision can be given as addition in column M.

(f) When Column M states a Special Provision (SP) it refers to *Appendix 1-C Special Provisions* and *Appendix 1-D Code table of Special Provisions* (e.g. NLD01). These Special Provisions are supplementary to the information provided in the List of Dangerous Goods for the relevant position and must be complied with. When in column M an "A" number is mentioned as Special Provision, this Special Provision can be found in the applicable ICAO TI/IATA DGR document.

(g) When Column M states the Emergency Response Guidance (ERG) code. It refers to the drill code which can be used to find the appropriate drill in the ERG in case of an in-flight emergency. Drill codes are shown in table 4-1 of the Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods (Doc 9481, AN/928) and are a combination of a number followed by one or more characters (e.g. 1L, 1CP etc.).

(h) When Column M states a Supplementary Hazard Warning Sheet (SHWS) code. It refers to the composition of the relevant hazard class 1 explosive substances and/or articles (ammunition) with regard to the nature of danger, personal protection measures and additional considerations for Crew Members during emergencies. SHWS codes are a compilation of characters (e.g. IRFNA, PT, HC etc.). In case column M doesn't state a SHWS code, it is also shown on the ammunition packages as a part of the marking scheme.

Appendix 1-B List of dangerous goods

UN/ ID no.	Proper Shipping Name Description	Class or Div.	Sub risk	Hazard Label(s)	PG	Passenger and Cargo aircraft		Cargo aircraft only		SP/ ERG/ SHWS
						PI	Max Net Qty/ Pkg ¹	PI	Max. Net Qty/ Pkg or NEQ ¹	
A	B	C	D	E	F	I	J	K	L	M
0004	Ammonium picrate dry or wetted with less than 10% water, by mass	1.1D		Explosive		FORBIDDEN		(112)		NLD01 1L
0005	Cartridges for weapons with bursting charge †	1.1F		Explosive		FORBIDDEN		130	2,5 kg	1L
0006	Cartridges for weapons with bursting charge †	1.1E		Explosive		FORBIDDEN		130	12 kg	1L
0007	Cartridges for weapons with bursting charge †	1.2F		Explosive		FORBIDDEN		130	3 kg	1L
0009	Ammunition, incendiary , with or without burster, expelling charge or propelling charge †	1.2G		Explosive		FORBIDDEN		130	9,4 kg	1L

¹ For hazard class 1 column J and L are the maximum quantities NEM (or NEQ) per package.

UN/ ID no.	Proper Shipping Name Description	Class or Div.	Sub risk	Hazard Label(s)	PG	Passenger and Cargo aircraft		Cargo aircraft only		SP/ ERG/ SHWS
						PI	Max Net Qty/ Pkg ¹	PI	Max. Net Qty/ Pkg or NEQ ¹	
A	B	C	D	E	F	I	J	K	L	M
0010	Ammunition, incendiary , with or without burster, expelling charge or propelling charge †	1.3G		Explosive		FORBIDDEN		130	13 kg	1L
0012	Cartridges for weapons, inert projectile †	1.4S		Explosive 1.4		130	1,8 kg IATA	130	5 kg IATA	A802 3L
0012	Cartridges small arms	1.4S		Explosive 1.4		130	1,7 kg IATA	130	5 kg IATA	A802 3L
0014	Cartridges for weapons, blank †	1.4S		Explosive 1.4		130	2 kg IATA	130	5 kg IATA	A802 3L
0014	Cartridges, small arms, blank †	1.4S		Explosive 1.4		130	2 kg IATA	130	5 kg IATA	A802 3L
0015	Ammunition, smoke with or without burster, expelling charge or propelling charge †	1.2G		Explosive		FORBIDDEN		130	70 kg	A132 1L
0016	Ammunition, smoke with or without burster, expelling charge or propelling charge †	1.3G		Explosive		FORBIDDEN		130	95 kg	A132 1L
0018	Ammunition, tear-producing with burster, expelling charge or propelling charge †	1.2G	6.1 8	Explosive, Toxic, Corrosives		FORBIDDEN		130		NLD05 NLD06 1CP CS
0019	Ammunition, tear-producing with burster, expelling charge or propelling charge †	1.3G	6.1 8	Explosive, Toxic, Corrosives		FORBIDDEN		130	0,5 kg	NLD05 NLD06 1CP CS
0020	Ammunition, toxic * with burster, expelling charge or propelling charge †	1.2K	6.1	Explosive, Toxic		FORBIDDEN		FORBIDDEN		
0021	Ammunition, toxic * with burster, expelling charge or propelling charge †	1.3K	6.1	Explosive, Toxic		FORBIDDEN		FORBIDDEN		
0027	Black powder , granular or as a meal †	1.1D		Explosive		FORBIDDEN		(113)	5 kg	NLD01 1L
0027	Gunpowder , granular or as a meal †	1.1D		Explosive		FORBIDDEN		(113)		NLD01 1L

UN/ ID no.	Proper Shipping Name Description	Class or Div.	Sub risk	Hazard Label(s)	PG	Passenger and Cargo aircraft		Cargo aircraft only		SP/ ERG/ SHWS
						PI	Max Net Qty/ Pkg ¹	PI	Max. Net Qty/ Pkg or NEQ ¹	
A	B	C	D	E	F	I	J	K	L	M
0028	Black powder, compressed †	1.1D		Explosive		FORBIDDEN		(113)		NLD01 1L
0028	Black powder in pellets †	1.1D		Explosive		FORBIDDEN		(113)		NLD01 1L
0028	Gunpowder, compressed †	1.1D		Explosive		FORBIDDEN		(113)		NLD01 1L
0028	Gunpowder in pellets †	1.1D		Explosive		FORBIDDEN		(113)		NLD01 1L
0029	Detonators, non-electric for blasting †	1.1B		Explosive		FORBIDDEN		131	3 kg	1L
0030	Detonators, electric for blasting †	1.1B		Explosive		FORBIDDEN		131	1 kg	1L
0033	Bombs with bursting charge †	1.1F		Explosive		FORBIDDEN		130		1L
0034	Bombs with bursting charge †	1.1D		Explosive		FORBIDDEN		130	430 kg	1L
0035	Bombs with bursting charge †	1.2D		Explosive		FORBIDDEN		130	35 kg	1L
0037	Bombs, photo-flash †	1.1F		Explosive		FORBIDDEN		130		1L
0038	Bombs, photo-flash †	1.1D		Explosive		FORBIDDEN		130		1L
0039	Bombs, photo-flash †	1.2G		Explosive		FORBIDDEN		130		1L
0042	Boosters without detonator †	1.1D		Explosive		FORBIDDEN		(132)	8,9 kg	1L
0043	Bursters , explosive †	1.1D		Explosive		FORBIDDEN		133		1L
0044	Primers, cap type †	1.4S		Explosive 1.4		133	0,5 kg IATA	133	0,5 kg IATA	A802 3L
0048	Charges, demolition †	1.1D		Explosive		FORBIDDEN		130	105 kg	1L
0049	Cartridges, flash †	1.1G		Explosive		FORBIDDEN		135		1L
0050	Cartridges, flash †	1.3G		Explosive		FORBIDDEN		135	2,5 kg IATA	A802 1L
0054	Cartridges, signal †	1.3G		Explosive		FORBIDDEN		135	15 kg IATA	1L
0055	Cases, cartridge, empty, with primer †	1.4S		Explosive 1.4		136	0,5 kg	136	0,5 kg IATA	A802 3L
0056	Charges, dept †	1.1D		Explosive		FORBIDDEN		130	1 kg	1L
0059	Charges, shaped without detonator †	1.1D		Explosive		FORBIDDEN		137	2 kg	1L
0060	Charges, supplementary, explosive †	1.1D		Explosive		FORBIDDEN		(132)	10 kg	1L

UN/ ID no.	Proper Shipping Name Description	Class or Div.	Sub risk	Hazard Label(s)	PG	Passenger and Cargo aircraft		Cargo aircraft only		SP/ ERG/ SHWS
						PI	Max Net Qty/ Pkg ¹	PI	Max. Net Qty/ Pkg or NEQ ¹	
A	B	C	D	E	F	I	J	K	L	M
0065	Cord, detonating, flexible †	1.1D		Explosive		FORBIDDEN		139	10 kg	1L
0066	Cord, igniter †	1.4G		Explosive 1.4		FORBIDDEN		140	0,5 kg IATA	A1 1L
0070	Cutters, cable, explosive †	1.4S		Explosive 1.4		134	1 kg IATA	134	3 kg IATA	A802 3L
0072	Cyclonite, wetted with not less than 15% water, by mass	1.1D		Explosive		FORBIDDEN		(112a)		NLD01 1L
0072	Cyclotrimethylenetrini tramine, wetted with not less than 15% water, by mass	1.1D		Explosive		FORBIDDEN		(112a)	0,5 kg	1L
0072	Hexogen, wetted with not less than 15% water, by mass	1.1D		Explosive		FORBIDDEN		(112a)		NLD01 1L
0072	RDX, wetted with not less than 15% water, by mass	1.1D		Explosive		FORBIDDEN		(112a)		NLD01 1L
0073	Detonators for ammunition †	1.1B		Explosive		FORBIDDEN		133		1L
0074	Diazodinitrophenol, wetted with not less than 40% water, or mixture of alcohol and water, by mass	1.1A		Explosive		FORBIDDEN		FORBIDDEN		
0075	Diethyleneglycol dinitrate, desensitized with not less than 25% non- volatile, water-insoluble phlegmatizer, by mass	1.1D		Explosive		FORBIDDEN		(115)		NLD01 1L
0076	Dinitrophenol dry or wetted with less than 15% water, by mass	1.1D	6.1	Explosive, Toxic		FORBIDDEN		(112)		NLD01 1P
0077	Dinitrophenolates, alkali metals, dry or wetted with less than 15% water, by mass	1.3C	6.1	Explosive, Toxic		FORBIDDEN		(134)		NLD01 1P
0078	Dinitroresorcinol, dry or wetted with less than 15% water, by mass	1.1D		Explosive		FORBIDDEN		(112)		NLD01 1L

UN/ ID no.	Proper Shipping Name Description	Class or Div.	Sub risk	Hazard Label(s)	PG	Passenger and Cargo aircraft		Cargo aircraft only		SP/ ERG/ SHWS
						PI	Max Net Qty/ Pkg ¹	PI	Max. Net Qty/ Pkg or NEQ ¹	
A	B	C	D	E	F	I	J	K	L	M
0079	Dipicrylamine	1.1D		Explosive		FORBIDDEN		(112b or 112c)		NLD01 1L
0079	Hexanitrodiphenylamine	1.1D		Explosive		FORBIDDEN		(112b or 112c)		NLD01 1L
0079	Hexyl	1.1D		Explosive		FORBIDDEN		(112b or 112c)		NLD01 1L
0081	Explosive, blasting, type A †	1.1D		Explosive		FORBIDDEN		(116)	0,05 kg	1L
0082	Explosive, blasting, type B †	1.1D		Explosive		FORBIDDEN		(116)	0,05 kg	1L
0083	Explosive, blasting, type C †	1.1D		Explosive		FORBIDDEN		(116)		1L
0084	Explosive, blasting, type D †	1.1D		Explosive		FORBIDDEN		(116)	0,05 kg	1L
0092	Flares, surface †	1.3G		Explosive		FORBIDDEN		135	3 kg IATA	A802 1L
0093	Flares, aerial †	1.3G		Explosive		FORBIDDEN		135	13,2 kg IATA	A802 NLD16 1L
0094	Flash powder †	1.1G		Explosive		FORBIDDEN		(113)		NLD01 1L
0099	Fracturing devices, explosive , without detonator for oil wells †	1.1D		Explosive		FORBIDDEN		(114)		1L
0101	Fuse, non-detonating †	1.3G		Explosive		FORBIDDEN		(140)		1L
0102	Cord, detonating, metal clad †	1.2D		Explosive		FORBIDDEN		139		1L
0102	Fuse, detonating metal clad	1.2D		Explosive		FORBIDDEN		139		1L
0103	Fuse, igniter , tubular, metal clad †	1.4G		Explosive 1.4		FORBIDDEN		140	IATA	A802 1L
0104	Cord, detonating, mild effect , metal clad	1.4D		Explosive 1.4		FORBIDDEN		139	IATA	A802 1L
0104	Fuse, detonating, mild effect , metal clad	1.4D		Explosive 1.4		FORBIDDEN		139	IATA	A802 1L

UN/ ID no.	Proper Shipping Name Description	Class or Div.	Sub risk	Hazard Label(s)	PG	Passenger and Cargo aircraft		Cargo aircraft only		SP/ ERG/ SHWS
						PI	Max Net Qty/ Pkg ¹	PI	Max. Net Qty/ Pkg or NEQ ¹	
A	B	C	D	E	F	I	J	K	L	M
0105	Fuse, safety †	1.4S		Explosive 1.4		140	0,5 kg	140	1,5 kg IATA	A802 3L
0106	Fuses, detonating †	1.1B		Explosive		FORBIDDEN		141	0,5 kg	1L
0107	Fuses, detonating †	1.2B		Explosive		FORBIDDEN		141	0,5 kg	1L
0110	Grenades, practice, hand or rifle †	1.4S		Explosive 1.4		141	0,5 kg IATA	141	0,5 kg IATA	A802 3L
0113	Guanyl nitrosaminoguanilyd ene hydrazine, wetted with not less than 30% water, by mass	1.1A		Explosive		FORBIDDEN		FORBIDDEN		
0114	Guanyl nitrosaminoguanilytet razene, wetted with not less than 30% water, or mixture of alcohol and water by mass	1.1A		Explosive		FORBIDDEN		FORBIDDEN		
0114	Tetrazene, wetted with not less than 30% water, or mixture of alcohol and water by mass	1.1A		Explosive		FORBIDDEN		FORBIDDEN		
0118	Hexolite dry or wetted with less than 15% water, by mass	1.1D		Explosive		FORBIDDEN		(112)		NLD01 1L
0118	Hexotol dry or wetted with less than 15% water, by mass	1.1D		Explosive		FORBIDDEN		(112)		NLD01 1L
0121	Igniters †	1.1G		Explosive		FORBIDDEN		142		1L
0124	Jet perforating guns, charged, oil well, without detonator †	1.1D		Explosive		FORBIDDEN		101		1L
0129	Lead azide, wetted with 20% or more water or mixture of alcohol and water, by mass	1.1A		Explosive		FORBIDDEN		FORBIDDEN		
0130	Lead styphnate, wetted with not less than 20% water or mixture of alcohol and water, by mass	1.1A		Explosive		FORBIDDEN		FORBIDDEN		

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						PI	Max Net Qty/ Pkg ¹	PI	Max. Net Qty/ Pkg or NEQ ¹	
A	B	C	D	E	F	I	J	K	L	M
0130	Lead trinitroresorcinate, wetted with not less than 20% water, or mixture of alcohol and water, by mass	1.1A		Explosive		FORBIDDEN		FORBIDDEN		
0131	Lighters, fuse †	1.4S		Explosive 1.4		142	0,5 kg IATA	142	0,5 kg IATA	A802 3L
0132	Deflagrating metal salts of aromatic nitro-derivatives, n.o.s.	1.3C		Explosive		FORBIDDEN		(114b)		NLD01 1L
0133	Mannitol hexanitrate, wetted with not less than 40% water or mixture of alcohol and water, by mass	1.1D		Explosive		FORBIDDEN		(112a)		NLD01 1L
0133	Nitromannite, wetted with not less than 40% water, or mixture of alcohol and water, by mass	1.1D		Explosive		FORBIDDEN		(112a)		NLD01 1L
0135	Mercury fulminate, wetted with not less than 20% water or mixture of alcohol and water, by mass	1.1A		Explosive		FORBIDDEN		FORBIDDEN		
0136	Mines with bursting charge †	1.1F		Explosive		FORBIDDEN		130	2 kg	1L
0137	Mines with bursting charge †	1.1D		Explosive		FORBIDDEN		130	36 kg	1L
0138	Mines with bursting charge †	1.2D		Explosive		FORBIDDEN		130	1 kg	1L
0143	Nitroglycerin, desensitized with not less than 40% non-volatile water-insoluble phlegmatizer, by mass	1.1D	6.1	Explosive		FORBIDDEN		(115)		NLD01 1P
0144	Nitroglycerin solution in alcohol with more than 1% but not more than 10% nitroglycerin	1.1D		Explosive		FORBIDDEN		(115)		NLD01 1L
0146	Nitrostarch dry or wetted with less than 20% water, by mass	1.1D		Explosive		FORBIDDEN		(112)		NLD01 1L

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						PI	Max Net Qty/ Pkg ¹	PI	Max. Net Qty/ Pkg or NEQ ¹	
A	B	C	D	E	F	I	J	K	L	M
0147	Nitro urea	1.1D		Explosive		FORBIDDEN		(112b)		NLD01 1L
0150	Pentaerythrite tetranitrate, desensitized with not less than 15% phlegmatizer, by mass	1.1D		Explosive		FORBIDDEN		(112b)		NLD01 1L
0150	Pentaerythrite tetranitrate, wetted with not less than 25% water, by mass	1.1D		Explosive		FORBIDDEN		(112b)		NLD01 1L
0150	Pentaerythritol tetranitrate, desensitized with not less than 15% phlegmatizer, by mass	1.1D		Explosive		FORBIDDEN		(112b)	0,1 kg	NLD01 1L
0150	Pentaerythritol tetranitrate, wetted with not less than 25% water, by mass	1.1D		Explosive		FORBIDDEN		(112b)		NLD01 1L
0150	PETN, desensitized with not less than 15% phlegmatizer, by mass	1.1D		Explosive		FORBIDDEN		(112b)		NLD01 1L
0150	PETN, wetted with not less than 25% water, by mass	1.1D		Explosive		FORBIDDEN		(112b)		NLD01 1L
0151	Pentolite , dry or wetted with less than 15% water, by mass	1.1D		Explosive		FORBIDDEN		(112)		NLD01 1L
0153	Picramide	1.1D		Explosive		FORBIDDEN		(112b or 112c)		NLD01 1L
0153	Trinitroaniline	1.1D		Explosive		FORBIDDEN		(112b or 112c)		NLD01 1L
0154	Picric acid , dry or wetted with less than 30% water, by mass	1.1D		Explosive		FORBIDDEN		(112)		NLD01 1L
0154	Trinitrophenol , dry or wetted with less than 30% water, by mass	1.1D		Explosive		FORBIDDEN		(112)		NLD01 1L

UN/ ID no.	Proper Shipping Name Description	Class or Div.	Sub risk	Hazard Label(s)	PG	Passenger and Cargo aircraft		Cargo aircraft only		SP/ ERG/ SHWS
						PI	Max Net Qty/ Pkg ¹	PI	Max. Net Qty/ Pkg or NEQ ¹	
A	B	C	D	E	F	I	J	K	L	M
0155	Picryl chloride	1.1D		Explosive		FORBIDDEN		(112b or 112c)		NLD01 1L
0155	Trinitrochloro benzene	1.1D		Explosive		FORBIDDEN		(112b or 112c)		NLD01
0159	Powder cake, wetted with not less than 25% water, by mass †	1.3C		Explosive		FORBIDDEN		(111)		NLD01 1L
0159	Powder paste, wetted with not less than 25% water, by mass †	1.3C		Explosive		FORBIDDEN		(111)		NLD01 1L
0160	Powder, smokeless †	1.1C		Explosive		FORBIDDEN		(114b)	0,5 kg	NLD01 1L
0161	Powder, smokeless †	1.3C		Explosive		FORBIDDEN		(114b)	12 kg	NLD01 1L
0167	Projectiles with bursting charge †	1.1F		Explosive		FORBIDDEN		130		1L
0168	Projectiles with bursting charge †	1.1D		Explosive		FORBIDDEN		130	90 kg	1L
0169	Projectiles with bursting charge †	1.2D		Explosive		FORBIDDEN		130	5 kg	1L
0171	Ammunition, illuminating with or without burster, expelling charge or propelling charge †	1.2G		Explosive		FORBIDDEN		130	30 kg	1L
0173	Release devices, explosive †	1.4S		Explosive 1.4		134	0,5 kg IATA	134	0,5 kg IATA	A802 3L
0174	Rivets, explosive	1.4S		Explosive 1.4		134	IATA	134	IATA	A802 3L
0180	Rockets with bursting charge †	1.1F		Explosive		FORBIDDEN		130	20 kg	1L
0181	Rockets with bursting charge †	1.1E		Explosive		FORBIDDEN		130	530 kg	1L
0182	Rockets with bursting charge †	1.2E		Explosive		FORBIDDEN		130	530 kg	1L
0183	Rockets with inert head †	1.3C		Explosive		FORBIDDEN		130	70 kg	1L
0186	Rocket motors †	1.3C		Explosive		FORBIDDEN		130	360 kg IATA	A802 1L

UN/ ID no.	Proper Shipping Name Description	Class or Div.	Sub risk	Hazard Label(s)	PG	Passenger and Cargo aircraft		Cargo aircraft only		SP/ ERG/ SHWS
						PI	Max Net Qty/ Pkg ¹	PI	Max. Net Qty/ Pkg or NEQ ¹	
A	B	C	D	E	F	I	J	K	L	M
0190	Samples, explosive, * other than initiating explosives	1.1		Explosive		FORBIDDEN		101	5 kg	NLD01 1L
0191	Signal devices, hand †	1.4G		Explosive		FORBIDDEN		135	2 kg IATA	A802 1L
0192	Signals, railway track, explosive †	1.1G		Explosive		FORBIDDEN		135		1L
0193	Signals, railway track, explosive †	1.4S		Explosive 1.4		135	IATA	135	IATA	A802 3L
0194	Signals, distress, ship †	1.1G		Explosive		FORBIDDEN		135		1L
0195	Signals, distress † ship	1.3G		Explosive		FORBIDDEN		135	IATA	A802 1L
0196	Signals, smoke †	1.1G		Explosive		FORBIDDEN		135	0,5 kg	1L
0197	Signals, smoke †	1.4G		Explosive 1.4		FORBIDDEN		135	2,5 kg IATA	A802 1L
0204	Sounding devices, explosive †	1.2F		Explosive		FORBIDDEN		101		1L
0207	Tetranitroaniline	1.1D		Explosive		FORBIDDEN		(112b or 112c)		NLD01 1L
0208	Tetryl	1.1D		Explosive		FORBIDDEN		(112b or 112c)	0,5 kg	NLD01 1L
0208	Trinitrophenylmethyln itramine	1.1D		Explosive		FORBIDDEN		(112b or 112c)	0,5 kg	NLD01 1L
0209	TNT, dry or wetted with less than 30% water, by mass	1.1D		Explosive		FORBIDDEN		(112)	25 kg	1L
0209	Trinitrotoluene, dry or wetted with less than 30% water, by mass	1.1D		Explosive		FORBIDDEN		(112)		1L
0212	Tracers for ammunition †	1.3G		Explosive		FORBIDDEN		133		1L
0213	Trinitroanisole	1.1D		Explosive		FORBIDDEN		(112b or 112c)		NLD01 1L

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						PI	Max Net Qty/ Pkg ¹	PI	Max. Net Qty/ Pkg or NEQ ¹	
A	B	C	D	E	F	I	J	K	L	M
0214	Trinitrobenzene , dry or wetted with less than 30% water, by mass	1.1D		Explosive		FORBIDDEN		(112)		NLD01 1L
0215	Trinitrobenzoic acid , dry or wetted with less than 30% water, by mass	1.1D		Explosive		FORBIDDEN		(112)		NLD01 1L
0216	Trinitro-m-cresol	1.1D		Explosive		FORBIDDEN		(112b or 112c)		NLD01 1L
0217	Trinitronaphthalene	1.1D		Explosive		FORBIDDEN		(112b or 112c)		NLD01 1L
0218	Trinitrophenetole	1.1D		Explosive		FORBIDDEN		(112b or 112c)		NLD01 1L
0219	Styphnic acid , dry or wetted with less than 20% water, or mixture of alcohol and water, by mass	1.1D		Explosive		FORBIDDEN		(112)		NLD01 1L
0219	Trinitroresorcinol dry or wetted with less than 20% water, or mixture of alcohol and water, by mass	1.1D		Explosive		FORBIDDEN		(112)		NLD01 1L
0220	Urea nitrate dry or wetted with less than 20% water, by mass	1.1D		Explosive		FORBIDDEN		(112)		NLD01 1L
0221	Warheads, torpedo with bursting charge †	1.1D		Explosive		FORBIDDEN		130	310 kg	1L
0222	Ammonium nitrate with more than 0.2% combustible substances, including any organic substance calculated as carbon, to the exclusion of any other added substance	1.1D		Explosive		FORBIDDEN		(112b or 112c)	0,5 kg	NLD01 1L
0224	Barium azide , dry or wetted with less than 50% water, by mass	1.1A	6.1	Explosive, Toxic		FORBIDDEN		FORBIDDEN		1P
0225	Boosters with detonator †	1.1B		Explosive		FORBIDDEN		133		1L

UN/ ID no.	Proper Shipping Name Description	Class or Div.	Sub risk	Hazard Label(s)	PG	Passenger and Cargo aircraft		Cargo aircraft only		SP/ ERG/ SHWS
						PI	Max Net Qty/ Pkg ¹	PI	Max. Net Qty/ Pkg or NEQ ¹	
A	B	C	D	E	F	I	J	K	L	M
0226	Cyclotetramethylenetetra-nitramine, wetted with not less than 15% water, by mass	1.1D		Explosive		FORBIDDEN		(112a)	0,5 kg	NLD01 1L
0226	HMX, wetted with not less than 15% water, by mass	1.1D		Explosive		FORBIDDEN		(112a)		NLD01 1L
0226	Octogen, wetted with not less than 15% water, by mass	1.1D		Explosive		FORBIDDEN		(112a)		NLD01 1L
0234	Sodium dinitro-ortho-cresolate dry or wetted with less than 15% water, by mass	1.3C		Explosive		FORBIDDEN		114		NLD01 1L
0235	Sodium picramate dry or wetted with less than 20% water, by mass	1.3C		Explosive		FORBIDDEN		114		NLD01 1L
0236	Zirconium picramate dry or wetted with less than 20% water, by mass	1.3C		Explosive		FORBIDDEN		114		NLD01 1L
0237	Charges, shaped, flexible, linear †	1.4D		Explosive 1.4		FORBIDDEN		138	0,5 kg IATA	A802 1L
0238	Rockets, line-throwing †	1.2G		Explosive		FORBIDDEN		130		1L
0240	Rockets, line-throwing †	1.3G		Explosive		FORBIDDEN		130	0,5 kg IATA	A802 1L
0241	Explosive, blasting, type E †	1.1D		Explosive		FORBIDDEN		(116)	0,5 kg	1L
0242	Charges, propelling, for cannon †	1.3C		Explosive		FORBIDDEN		130	30 kg	1L
0243	Ammunition, incendiary, white phosphorus with burster, expelling charge or propelling charge †	1.2H		Explosive		FORBIDDEN		130		1L WP
0244	Ammunition, incendiary, white phosphorus with burster, expelling charge or propelling charge †	1.3H		Explosive		FORBIDDEN		130		1L WP

UN/ ID no.	Proper Shipping Name Description	Class or Div.	Sub risk	Hazard Label(s)	PG	Passenger and Cargo aircraft		Cargo aircraft only		SP/ ERG/ SHWS
						PI	Max Net Qty/ Pkg ¹	PI	Max. Net Qty/ Pkg or NEQ ¹	
A	B	C	D	E	F	I	J	K	L	M
0245	Ammunition, smoke, white phosphorus with burster, expelling charge or propelling charge †	1.2H		Explosive		FORBIDDEN		130	5 kg	1L WP
0246	Ammunition, smoke, white phosphorus with burster, expelling charge or propelling charge †	1.3H		Explosive		FORBIDDEN		130	1 kg	1L WP
0247	Ammunition, incendiary liquid or gel, with burster, expelling charge or propelling charge †	1.3J		Explosive		FORBIDDEN		101		1L
0248	Contrivances, water-activated * with burster, expelling charge or propelling charge †	1.2L		Explosive		FORBIDDEN		(144)		1L
0249	Contrivances, water-activated * with burster, expelling charge or propelling charge †	1.3L		Explosive		FORBIDDEN		(144)	1 kg	1L
0250	Rocket motors with hypergolic liquids with or without expelling charge †	1.3L		Explosive		FORBIDDEN		101		1L
0254	Ammunition, illuminating with or without burster, expelling charge or propelling charge †	1.3G		Explosive		FORBIDDEN		130	150 kg	1L
0255	Detonators, electric for blasting †	1.4B		Explosive 1.4		FORBIDDEN		131	0,5 kg IATA	A802 1L
0257	Fuses, detonating †	1.4B		Explosive 1.4		FORBIDDEN		141	0,5 kg IATA	A802 1L
0266	Octol , dry or wetted with less than 15% water, by mass	1.1D		Explosive		FORBIDDEN		(112)	30 kg	NLD01 1L
0266	Octolite dry or wetted with less than 15% water, by mass	1.1D		Explosive		FORBIDDEN		(112)	2 kg	NLD01 1L
0267	Detonators, non-electric for blasting †	1.4B		Explosive 1.4		FORBIDDEN		131	0,5 kg IATA	A802 1L
0268	Boosters with detonator †	1.2B		Explosive		FORBIDDEN		133		1L

UN/ ID no.	Proper Shipping Name Description	Class or Div.	Sub risk	Hazard Label(s)	PG	Passenger and Cargo aircraft		Cargo aircraft only		SP/ ERG/ SHWS
						PI	Max Net Qty/ Pkg ¹	PI	Max. Net Qty/ Pkg or NEQ ¹	
A	B	C	D	E	F	I	J	K	L	M
0271	Charges, propelling †	1.1C		Explosive		FORBIDDEN		143	0,5 kg	1L
0272	Charges, propelling †	1.3C		Explosive		FORBIDDEN		143	6 kg	1L
0275	Cartridges, power device †	1.3C		Explosive		FORBIDDEN		134	0,5 kg IATA	A802 1L
0276	Cartridges, power device †	1.4C		Explosive		FORBIDDEN		134	2 kg IATA	A802 1L
0277	Cartridges, oil well †	1.3C		Explosive		FORBIDDEN		134		NLD01 1L
0278	Cartridges, oil well †	1.4C		Explosive 1.4		FORBIDDEN		134	IATA	NLD01 A802 1L
0279	Charges, propelling, for cannon †	1.1C		Explosive		FORBIDDEN		130		1L
0280	Rocket motors †	1.1C		Explosive		FORBIDDEN		130	3,5 kg	1L
0281	Rocket motors †	1.2C		Explosive		FORBIDDEN		130	0,5 kg	1L
0282	Nitroguanidine dry or wetted with less than 20% water, by mass	1.1D		Explosive		FORBIDDEN		(112)	0,5 kg	NLD01 1L
0282	Picrite dry or wetted with less than 20% water, by mass	1.1D		Explosive		FORBIDDEN		(112)		NLD01 1L
0283	Boosters without detonator †	1.2D		Explosive		FORBIDDEN		(132)		1L
0284	Grenades , hand or rifle, with bursting charge †	1.1D		Explosive		FORBIDDEN		141	0,5 kg	1L
0285	Grenades , hand or rifle, with bursting charge †	1.2D		Explosive		FORBIDDEN		141	1,5 kg	1L
0286	Warheads, rocket with bursting charge †	1.1D		Explosive		FORBIDDEN		130	100 kg	1L
0287	Warheads, rocket with bursting charge †	1.2D		Explosive		FORBIDDEN		130		1L
0288	Charges, shaped, flexible, linear †	1.1D		Explosive		FORBIDDEN		138	12 kg	1L
0289	Cord, detonating, flexible †	1.4D		Explosive 1.4		FORBIDDEN		139	IATA	A802 1L
0290	Cord, detonating, metal clad †	1.1D		Explosive		FORBIDDEN		139		1L
0290	Fuse, detonating metal clad †	1.1D		Explosive		FORBIDDEN		139		1L
0291	Bombs with bursting charge †	1.2F		Explosive		FORBIDDEN		130		1L

UN/ ID no.	Proper Shipping Name Description	Class or Div.	Sub risk	Hazard Label(s)	PG	Passenger and Cargo aircraft		Cargo aircraft only		SP/ ERG/ SHWS
						PI	Max Net Qty/ Pkg ¹	PI	Max. Net Qty/ Pkg or NEQ ¹	
A	B	C	D	E	F	I	J	K	L	M
0292	Grenades , hand or rifle, with bursting charge †	1.1F		Explosive		FORBIDDEN		141	4 kg	1L
0293	Grenades , hand or rifle, with bursting charge †	1.2F		Explosive		FORBIDDEN		141	2,5 kg	1L
0294	Mines with bursting charge †	1.2F		Explosive		FORBIDDEN		130		1L
0295	Rockets with bursting charge †	1.2F		Explosive		FORBIDDEN		130		1L
0296	Sounding devices, explosive †	1.1F		Explosive		FORBIDDEN		134		1L
0297	Ammunition, illuminating with or without burster, expelling charge or propelling charge †	1.4G		Explosive 1.4		FORBIDDEN		130	3,5 kg IATA	1L
0299	Bombs, photo-flash †	1.3G		Explosive		FORBIDDEN		130		1L
0300	Ammunition, incendiary with or without burster, expelling charge or propelling charge †	1.4G		Explosive 1.4		FORBIDDEN		130	3,5 kg IATA	A802 1L
0301	Ammunition, tear-producing with burster, expelling charge or propelling charge †	1.4G	6.1 8	Explosive 1.4 Toxic Corrosive		FORBIDDEN		130	13 kg IATA	NLD05 NLD06 A802 1CP CS
0303	Ammunition, smoke with or without burster, expelling charge or propelling charge †	1.4G		Explosive 1.4		FORBIDDEN		130	6,5 kg IATA	A132 A802 1L
0305	Flash powder †	1.3G		Explosive		FORBIDDEN		(113)		NLD01 1L
0306	Tracers for ammunition †	1.4G		Explosive 1.4		FORBIDDEN		133	IATA	A802 1L
0312	Cartridges, signal †	1.4G		Explosive 1.4		FORBIDDEN		135	5 kg IATA	A802 1L
0313	Signals, smoke †	1.2G		Explosive		FORBIDDEN		135		1L
0314	Igniters †	1.2G		Explosive		FORBIDDEN		142	0,5 kg	1L
0315	Igniters †	1.3G		Explosive		FORBIDDEN		142	0,5 kg	1L
0316	Fuzes, igniting †	1.3G		Explosive		FORBIDDEN		141		1L
0317	Fuzes, igniting †	1.4G		Explosive 1.4		FORBIDDEN		141	IATA	A802 1L

UN/ ID no.	Proper Shipping Name Description	Class or Div.	Sub risk	Hazard Label(s)	PG	Passenger and Cargo aircraft		Cargo aircraft only		SP/ ERG/ SHWS
						PI	Max Net Qty/ Pkg ¹	PI	Max. Net Qty/ Pkg or NEQ ¹	
A	B	C	D	E	F	I	J	K	L	M
0318	Grenades, practice, hand or rifle †	1.3G		Explosive		FORBIDDEN		141		1L
0319	Primers, tubular †	1.3G		Explosive		FORBIDDEN		133	0,5 kg	1L
0320	Primers, tubular †	1.4G		Explosive 1.4		FORBIDDEN		133	1,5 kg IATA	A802 1L
0321	Cartridges for weapons with bursting charge †	1.2E		Explosive		FORBIDDEN		130	20 kg	1L
0322	Rocket motors with hypergolic liquids with or without expelling charge †	1.2L		Explosive		FORBIDDEN		101		1L
0323	Cartridges, power device †	1.4S		Explosive 1.4		134	IATA	134	6,5 kg IATA	NLD16 A165 A802 3L
0324	Projectiles with bursting charge †	1.2F		Explosive		FORBIDDEN		130		1L
0325	Igniters †	1.4G		Explosive 1.4		FORBIDDEN		142	IATA	A802 1L
0326	Cartridges for weapons, blank †	1.1C		Explosive		FORBIDDEN		130	5 kg	1L
0327	Cartridges for weapons, blank †	1.3C		Explosive		FORBIDDEN		130	30 kg	1L
0328	Cartridges for weapons, inert projectile †	1.2C		Explosive		FORBIDDEN		130	10 kg	1L
0329	Torpedoes with bursting charge †	1.1E		Explosive		FORBIDDEN		130	310 kg	1L
0330	Torpedoes with bursting charge †	1.1F		Explosive		FORBIDDEN		130		1L
0331	Agent, blasting type B †	1.5D		Explosive 1.5		FORBIDDEN		FORBIDDEN		
0331	Explosive, blasting, type B †	1.5D		Explosive 1.5		FORBIDDEN		FORBIDDEN		
0332	Agent, blasting, type E †	1.5D		Explosive 1.5		FORBIDDEN		FORBIDDEN		
0332	Explosive, blasting, type E †	1.5D		Explosive 1.5		FORBIDDEN		FORBIDDEN		
0333	Fireworks †	1.1G		Explosive		FORBIDDEN		135		1L
0334	Fireworks †	1.2G		Explosive		FORBIDDEN		135		1L
0335	Fireworks †	1.3G		Explosive		FORBIDDEN		135	1,5 kg	1L

UN/ ID no.	Proper Shipping Name Description	Class or Div.	Sub risk	Hazard Label(s)	PG	Passenger and Cargo aircraft		Cargo aircraft only		SP/ ERG/ SHWS
						PI	Max Net Qty/ Pkg ¹	PI	Max. Net Qty/ Pkg or NEQ ¹	
A	B	C	D	E	F	I	J	K	L	M
0336	Fireworks †	1.4G		Explosive 1.4		FORBIDDEN		135	0,5 kg IATA	A802 1L
0337	Fireworks †	1.4S		Explosive 1.4		135		135	IATA	A802 1L
0338	Cartridges for weapons, blank †	1.4C		Explosive 1.4		FORBIDDEN		130	IATA	A802 1L
0338	Cartridges, small arms, blank †	1.4C		Explosive 1.4		FORBIDDEN		130	IATA	A802 1L
0339	Cartridges for weapons, inert projectile †	1.4C		Explosive 1.4		FORBIDDEN		130	IATA	A802 1L
0339	Cartridges, small arms †	1.4C		Explosive 1.4		FORBIDDEN		130	IATA	A802 1L
0340	Nitrocellulose dry or wetted with less than 25% water (or alcohol), by mass	1.1D		Explosive		FORBIDDEN		(112b or 112c)		NLD01 1L
0341	Nitrocellulose unmodified or plasticized with less than 18% plasticizing substance, by mass	1.1D		Explosive		FORBIDDEN		(112b)		NLD01 1L
0342	Nitrocellulose, wetted with not less than 25% alcohol, by mass	1.3C		Explosive		FORBIDDEN		(114a)		NLD01 1L
0343	Nitrocellulose, plasticized with not less than 18% plasticizing substance, by mass	1.3C		Explosive		FORBIDDEN		134		NLD01 1L
0344	Projectiles with bursting charge †	1.4D		Explosive 1.4		FORBIDDEN		130	IATA	A802 1L
0345	Projectiles inert with tracer †	1.4S		Explosive 1.4		130		130	IATA	A802 3L
0346	Projectiles with burster or expelling charge †	1.2D		Explosive		FORBIDDEN		130		1L
0347	Projectiles with burster or expelling charge †	1.4D		Explosive 1.4		FORBIDDEN		130	IATA	A802 1L
0348	Cartridges for weapons with bursting charge †	1.4F		Explosive 1.4		FORBIDDEN		130		1L

UN/ ID no.	Proper Shipping Name Description	Class or Div.	Sub risk	Hazard Label(s)	PG	Passenger and Cargo aircraft		Cargo aircraft only		SP/ ERG/ SHWS
						PI	Max Net Qty/ Pkg ¹	PI	Max. Net Qty/ Pkg or NEQ ¹	
A	B	C	D	E	F	I	J	K	L	M
0349	Articles, explosive, n.o.s.	1.4S		Explosive 1.4		101	IATA	101	IATA	NLD16 A62 A802 3L
0350	Articles, explosive, n.o.s.	1.4B		Explosive 1.4		FORBIDDEN		101		A62 1L
0351	Articles, explosive, n.o.s.	1.4C		Explosive 1.4		FORBIDDEN		101	IATA	A62 A802 NLD01 1L
0352	Articles, explosive, n.o.s.	1.4D		Explosive 1.4		FORBIDDEN		101	IATA	A62 A802 NLD01
0353	Articles, explosive, n.o.s.	1.4G		Explosive 1.4		FORBIDDEN		101	IATA	A62 A802 1L
0354	Articles, explosive, n.o.s.	1.1L		Explosive		FORBIDDEN		101		A62 NLD01 1L
0355	Articles, explosive, n.o.s.	1.2L		Explosive		FORBIDDEN		101		A62 NLD01
0356	Articles, explosive, n.o.s.	1.3L		Explosive		FORBIDDEN		101		A62 NLD01 1L
0357	Substances, explosive, n.o.s.	1.1L		Explosive		FORBIDDEN		101		A62 NLD01 1L
0358	Substances, explosive, n.o.s.	1.2L		Explosive		FORBIDDEN		101		NLD01 1L
0359	Substances, explosive, n.o.s.	1.3L		Explosive		FORBIDDEN		101		NLD01 1L
0360	Detonator assemblies, non- electric for blasting †	1.1B		Explosive		FORBIDDEN		131	0,5 kg	1L
0361	Detonator assemblies, non- electric for blasting †	1.4B		Explosive 1.4		FORBIDDEN		131	8 kg IATA	A802 1L
0362	Ammunition, practice †	1.4G		Explosive		FORBIDDEN		130	2,5 kg IATA	A802 1L
0363	Ammunition, proof †	1.4G		Explosive 1.4		FORBIDDEN		130	1 kg IATA	A802 1L

UN/ ID no.	Proper Shipping Name Description	Class or Div.	Sub risk	Hazard Label(s)	PG	Passenger and Cargo aircraft		Cargo aircraft only		SP/ ERG/ SHWS
						PI	Max Net Qty/ Pkg ¹	PI	Max. Net Qty/ Pkg or NEQ ¹	
A	B	C	D	E	F	I	J	K	L	M
0364	Detonators for ammunition †	1.2.B		Explosive		FORBIDDEN		133		1L
0365	Detonators for ammunition †	1.4B		Explosive 1.4		FORBIDDEN		133	IATA	A802 1L
0366	Detonators for ammunition †	1.4S		Explosive 1.4		133	IATA	133	IATA	A165 A802 3L
0367	Fuzes, detonating †	1.4S		Explosive 1.4		141	IATA	141	0,5 kg IATA	A802 3L
0368	Fuzes, igniting †	1.4S		Explosive 1.4		141	IATA	141	0,5 kg IATA	A802 1L
0369	Warheads, rocket with bursting charge †	1.1F		Explosive		FORBIDDEN		130		1L
0370	Warheads, rocket with burster or expelling charge †	1.4D		Explosive 1.4		FORBIDDEN		130	IATA	A802 1L
0371	Warheads, rocket with burster or expelling charge †	1.4F		Explosive 1.4		FORBIDDEN		130		1L
0372	Grenades, practice hand or rifle †	1.2G		Explosive		FORBIDDEN		141		1L
0373	Signal devices, hand †	1.4S		Explosive 1.4		135	IATA	135	IATA	A802 3L
0374	Sounding devices, explosive †	1.1D		Explosive		FORBIDDEN		134		1L
0375	Sounding devices, explosive †	1.2D		Explosive		FORBIDDEN		134		1L
0376	Primers, tubular †	1.4S		Explosive 1.4		133	IATA	133	0,5 kg IATA	A802 3L
0377	Primers, cap type †	1.1B		Explosive		FORBIDDEN		133		1L
0378	Primers, cap type †	1.4B		Explosive 1.4		FORBIDDEN		133	IATA	A802 1L
0379	Cases, cartridge, empty, with primer †	1.4C		Explosive 1.4		FORBIDDEN		136	0,5 kg IATA	1L
0380	Articles, pyrophoric †	1.2L		Explosive		FORBIDDEN		FORBIDDEN		NLD01 1S
0381	Cartridges, power device †	1.2C		Explosive		FORBIDDEN		134		1L
0382	Components, explosive train, n.o.s. * †	1.2B		Explosive		FORBIDDEN		101		1L

UN/ ID no.	Proper Shipping Name Description	Class or Div.	Sub risk	Hazard Label(s)	PG	Passenger and Cargo aircraft		Cargo aircraft only		SP/ ERG/ SHWS
						PI	Max Net Qty/ Pkg ¹	PI	Max. Net Qty/ Pkg or NEQ ¹	
A	B	C	D	E	F	I	J	K	L	M
0383	Components, explosive train, n.o.s. * †	1.4B		Explosive 1.4		FORBIDDEN		101	IATA	A62 A802 1L
0384	Components, explosive train, n.o.s. * †	1.4S		Explosive 1.4		101	IATA	101	IATA	A62 A802 1L
0385	5-Nitrobenzotriazol	1.1D		Explosive		FORBIDDEN		(112b or 112c)		NLD01 1L
0386	Trinitrobenzenesulph onic acid	1.1D		Explosive		FORBIDDEN		(112b or 112c)		NLD01 1L
0387	Trinitrofluorenone	1.1D		Explosive		FORBIDDEN		(112b or 112c)		NLD01 1L
0388	TNT and hexanitrostilbene mixture	1.1D		Explosive		FORBIDDEN		(112b or 112c)		NLD01 1L
0388	TNT and trinitrobenzene mixture	1.1D		Explosive		FORBIDDEN		(112b or 112c)		NLD01 1L
0388	Trinitrotoluene and hexanitrostilbene mixture	1.1D		Explosive		FORBIDDEN		(112b or 112c)		NLD01 1L
0388	Trinitrotoluene and trinitrobenzene mixture	1.1D		Explosive		FORBIDDEN		(112b or 112c)		NLD01 1L
0389	TNT mixture containing trinitrobenzene and hexanitrostilbene	1.1D		Explosive		FORBIDDEN		(112b or 112c)		NLD01 1L
0389	Trinitrotoluene mixture containing Trinitrobenzene and hexanitrostilbene	1.1D		Explosive		FORBIDDEN		(112b or 112c)		NLD01 1L

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						PI	Max Net Qty/ Pkg ¹	PI	Max. Net Qty/ Pkg or NEQ ¹	
A	B	C	D	E	F	I	J	K	L	M
0390	Tritonal	1.1D		Explosive		FORBIDDEN		(112b or 112c)		NLD01 1L
0391	Cyclonite and cyclotetra- methylenetetranitra mine mixture, desensitized with not less than 10% phlegmatizer, by mass	1.1D		Explosive		FORBIDDEN		(112a)		NLD01 1L
0391	Cyclonite and cyclotetra- methylenetetranitra mine mixture, wetted with not less than 15% water, by mass	1.1D		Explosive		FORBIDDEN		(112a)		NLD01 1L
0391	Cyclotrimethylenetri nitramine and cyclotetramethylene- tetranitramine mixture, desensitized with not less than 10% phlegmatiser, by mass	1.1D		Explosive		FORBIDDEN		(112a)		NLD01 1L
0391	Cyclotrimethylenetri nitramine and Cyclotetramethylene- tetranitramine mixture, wetted with not less than 15% water, by mass	1.1D		Explosive		FORBIDDEN		(112a)		NLD01 1L
0391	Hexogen and cyclotetra- methylenetetranitra mine mixture, desensitized with not less than 10% phlegmatizer, by mass	1.1D		Explosive		FORBIDDEN		(112a)		NLD01 1L
0391	Hexogen and cyclotetra- methylenetetranitra mine mixture, wetted with not less than 15% water, by mass	1.1D		Explosive		FORBIDDEN		(112a)		NLD01 1L

UN/ ID no.	Proper Shipping Name Description	Class or Div.	Sub risk	Hazard Label(s)	PG	Passenger and Cargo aircraft		Cargo aircraft only		SP/ ERG/ SHWS
						PI	Max Net Qty/ Pkg ¹	PI	Max. Net Qty/ Pkg or NEQ ¹	
A	B	C	D	E	F	I	J	K	L	M
0391	RDX and cyclotetra methylenetetranitramine mixture, desensitized with not less than 10% phlegmatizer, by mass	1.1D		Explosive		FORBIDDEN		(112a)		NLD01 1L
0391	RDX and cyclotetra-methylenetetranitramine mixture, wetted with not less than 15% water, by mass	1.1D		Explosive		FORBIDDEN		(112a)		NLD01 1L
0392	Hexanitrostilbene	1.1D		Explosive		FORBIDDEN		(112b or 112c)		NLD01 1L
0393	Hexotonal	1.1D		Explosive		FORBIDDEN		(112b)		NLD01 1L
0394	Styphnic acid, wetted with not less than 20% water, or mixture of alcohol and water, by mass	1.1D		Explosive		FORBIDDEN		(112a)		NLD01 1L
0394	Trinitroresorcinol, wetted with not less than 20% water, or mixture of alcohol and water, by mass	1.1D		Explosive		FORBIDDEN		(112a)		NLD01 1L
0395	Rocket motors, liquid fuelled †	1.2J		Explosive		FORBIDDEN		101		NLD01 1L
0396	Rocket motors, liquid fuelled †	1.3J		Explosive		FORBIDDEN		101		NLD01 1L
0397	Rockets, liquid fuelled with bursting charge †	1.1J		Explosive		FORBIDDEN		101		NLD01 1L
0398	Rockets, liquid fuelled with bursting charge †	1.2J		Explosive		FORBIDDEN		101		NLD01 1L
0399	Bombs with flammable liquid with bursting charge †	1.1J		Explosive		FORBIDDEN		101		NLD01 1L
0400	Bombs with flammable liquid with bursting charge †(	1.2J		Explosive		FORBIDDEN		101		NLD01 1L
0401	Dipicryl sulphide dry or wetted with less than 0% water, by mass	1.1D		Explosive		FORBIDDEN		(112)		NLD01 1L

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						PI	Max Net Qty/ Pkg ¹	PI	Max. Net Qty/ Pkg or NEQ ¹	
A	B	C	D	E	F	I	J	K	L	M
0402	Ammonium perchlorate	1.1D		Explosive		FORBIDDEN		(112b or 112c)		A22 NLD01 1L
0403	Flares, aerial †	1.4G		Explosive 1.4		FORBIDDEN		135	IATA	A802 1L
0404	Flares, aerial †	1.4S		Explosive 1.4		135	IATA	135	1 kg IATA	A802 3L
0405	Cartridges, signal †	1.4S		Explosive 1.4		135	IATA	135	2,5 kg IATA	A802 3L
0406	Dinitrosobenzene	1.3C		Explosive		FORBIDDEN		(114b)		NLD01 1L
0407	Tetrazol-1-acetic acid	1.4C		Explosive 1.4		FORBIDDEN		114	IATA	A802 1L
0408	Fuzes, detonating with protective features †	1.1D		Explosive		FORBIDDEN		141	1,5 kg	1L
0409	Fuzes, detonating with protective features †	1.2D		Explosive		FORBIDDEN		141	1,5 kg	1L
0410	Fuzes, detonating with protective features †	1.4D		Explosive 1.4		FORBIDDEN		141	1 kg IATA	A802 1L
0411	Pentaerythrite tetranitrate with not less than 7% wax, by mass	1.1D		Explosive		FORBIDDEN		(112b or 112c)		NLD01 1L
0411	Pentaerythritol tetranitrate with not less than 7% wax, by mass	1.1D		Explosive		FORBIDDEN		(112b or 112c)		NLD01 1L
0411	PETN with not less than 7% wax, by mass	1.1D		Explosive		FORBIDDEN		(112b or 112c)		NLD01 1L
0412	Cartridges for weapons with bursting charge †	1.4E		Explosive 1.4		FORBIDDEN		130	IATA	A802 1L
0413	Cartridges for weapons, blank †	1.2C		Explosive		FORBIDDEN		130	6 kg	1L
0414	Charges, propelling, for cannon †	1.2C		Explosive		FORBIDDEN		130	6 kg	1L
0415	Charges, propelling †	1.2C		Explosive		FORBIDDEN		143	1 kg	1L

UN/ ID no.	Proper Shipping Name Description	Class or Div.	Sub risk	Hazard Label(s)	PG	Passenger and Cargo aircraft		Cargo aircraft only		SP/ ERG/ SHWS
						PI	Max Net Qty/ Pkg ¹	PI	Max. Net Qty/ Pkg or NEQ ¹	
A	B	C	D	E	F	I	J	K	L	M
0417	Cartridges for weapons, inert projectile †	1.3C		Explosive		FORBIDDEN		130	6 kg	1L
0417	Cartridges, small arms †	1.3C		Explosive		FORBIDDEN		130	50 kg	1L
0418	Flares, surface †	1.1G		Explosive		FORBIDDEN		135		1L
0419	Flares, surface †	1.2G		Explosive		FORBIDDEN		135		1L
0420	Flares, aerial †	1.1G		Explosive		FORBIDDEN		135		1L
0421	Flares, aerial †	1.2G		Explosive		FORBIDDEN		135		1L
0424	Projectiles , inert with tracer †	1.3G		Explosive		FORBIDDEN		130	0,5 kg	1L
0425	Projectiles , inert with tracer †	1.4G		Explosive 1.4		FORBIDDEN		130	2 kg IATA	A802 1L
0426	Projectiles with burster or expelling charge †	1.2F		Explosive		FORBIDDEN		130		1L
0427	Projectiles with burster or expelling charge †	1.4F		Explosive 1.4		FORBIDDEN		130		1L
0428	Articles, pyrotechnic for technical purposes †	1.1G		Explosive		FORBIDDEN		135	1,5 kg	1L
0429	Articles, pyrotechnic for technical purposes †	1.2G		Explosive		FORBIDDEN		135	0,5 kg	1L
0430	Articles, pyrotechnic for technical purposes †	1.3G		Explosive		FORBIDDEN		135	4 kg	1L
0431	Articles, pyrotechnic for technical purposes †	1.4G		Explosive 1.4		FORBIDDEN		135	6 kg IATA	A802 1L
0432	Articles, pyrotechnic for technical purposes †	1.4S		Explosive 1.4		135	IATA	135	1,5 kg IATA	A802 3L
0433	Powder cake, wetted with 17% or more alcohol, by weight †	1.1C		Explosive		FORBIDDEN		111		NLD01 1L
0433	Powder paste, wetted with 17% or more alcohol, by weight †	1.1C		Explosive		FORBIDDEN		111		NLD01 1L
0434	Projectiles with burster or expelling charge †	1.2G		Explosive		FORBIDDEN		130		1L
0435	Projectiles with burster or expelling charge †	1.4G		Explosive 1.4		FORBIDDEN		130	IATA	NLD16 A802 1L

UN/ ID no.	Proper Shipping Name Description	Class or Div.	Sub risk	Hazard Label(s)	PG	Passenger and Cargo aircraft		Cargo aircraft only		SP/ ERG/ SHWS
						PI	Max Net Qty/ Pkg ¹	PI	Max. Net Qty/ Pkg or NEQ ¹	
A	B	C	D	E	F	I	J	K	L	M
0436	Rockets with expelling charge †	1.2C		Explosive		FORBIDDEN		130	13 kg	1L
0437	Rockets with expelling charge †	1.3C		Explosive		FORBIDDEN		130	655 kg	1L
0438	Rockets with expelling charge †	1.4C		Explosive 1.4		FORBIDDEN		130	IATA	1L
0439	Charges, shaped without detonator †	1.2D		Explosive		FORBIDDEN		137		1L
0440	Charges, shaped without detonator †	1.4D		Explosive 1.4		FORBIDDEN		137	IATA	A1 A802 1L
0441	Charges, shaped without detonator †	1.4S		Explosive 1.4		137		137	IATA	A165 A802 3L
0442	Charges, explosive, commercial , without detonator †	1.1D		Explosive		FORBIDDEN		137		NLD01 1L
0443	Charges, explosive, commercial without detonator †	1.2D		Explosive		FORBIDDEN		137		NLD01 1L
0444	Charges, explosive, commercial without detonator †	1.4D		Explosive 1.4		FORBIDDEN		137	IATA	A802 1L
0445	Charges, explosive, commercial without detonator †	1.4S		Explosive 1.4		137	IATA	137	IATA	A165 A802 3L
0446	Cases, combustible, empty, without primer †	1.4C		Explosive		FORBIDDEN		136	IATA	A802 1L
0447	Cases, combustible, empty, without primer †	1.3C		Explosive		FORBIDDEN		136		1L
0448	5-Mercaptotetrazol-1-acetic acid	1.4C		Explosive 1.4		FORBIDDEN		114	IATA	A802 1L
0449	Torpedoes, liquid fuelled with or without bursting charge †	1.1J		Explosive		FORBIDDEN		101		1L
0450	Torpedoes, liquid fuelled with or without bursting charge †	1.3J		Explosive		FORBIDDEN		101		1L
0451	Torpedoes with bursting charge †	1.1D		Explosive		FORBIDDEN		130		1L
0452	Grenades, practice hand or rifle †	1.4G		Explosive		FORBIDDEN		141	0,5 kg IATA	A802 1L

UN/ ID no.	Proper Shipping Name Description	Class or Div.	Sub risk	Hazard Label(s)	PG	Passenger and Cargo aircraft		Cargo aircraft only		SP/ ERG/ SHWS
						PI	Max Net Qty/ Pkg ¹	PI	Max. Net Qty/ Pkg or NEQ ¹	
A	B	C	D	E	F	I	J	K	L	M
0453	Rockets, line-throwing †	1.4G		Explosive 1.4		FORBIDDEN		130	0,5 kg IATA	A802 1L
0454	Igniters †	1.4S		Explosive 1.4		142	IATA	142	IATA	NLD16 A802 3L
0455	Detonators, non-electric for blasting †	1.4S		Explosive 1.4		131	IATA	131	IATA	A165 A802 3L
0456	Detonators, electric for blasting †	1.4S		Explosive 1.4		131	IATA	131	IATA	A165 A802 3L
0457	Charges, bursting, plastics bonded †	1.1D		Explosive		FORBIDDEN		130	1 kg	1L
0458	Charges, bursting, plastics bonded †	1.2D		Explosive		FORBIDDEN		130		1L
0459	Charges, bursting, plastics bonded †	1.4D		Explosive		FORBIDDEN		130	IATA	A802 1L
0460	Charges, bursting, plastics bonded †	1.4S		Explosive 1.4		130	IATA	130	IATA	A165 A802 3L
0461	Components, explosive train, n.o.s. * †	1.1B		Explosive		FORBIDDEN		101		1L
0462	Articles, explosive, n.o.s. *	1.1C		Explosive		FORBIDDEN		101		NLD01 A62 1L
0463	Articles, explosive, n.o.s. *	1.1D		Explosive		FORBIDDEN		101		NLD01 A62 1L
0464	Articles, explosive, n.o.s. *	1.1E		Explosive		FORBIDDEN		101		NLD01 A62 1L
0465	Articles, explosive, n.o.s. *	1.1F		Explosive		FORBIDDEN		101		NLD01 A62 1L
0466	Articles, explosive, n.o.s. *	1.2C		Explosive		FORBIDDEN		101		NLD01 A62 1L
0467	Articles, explosive, n.o.s. *	1.2D		Explosive		FORBIDDEN		101		NLD01 A62 1L
0468	Articles, explosive, n.o.s. *	1.2E		Explosive		FORBIDDEN		101		NLD01 A62 1L

UN/ ID no.	Proper Shipping Name Description	Class or Div.	Sub risk	Hazard Label(s)	PG	Passenger and Cargo aircraft		Cargo aircraft only		SP/ ERG/ SHWS
						PI	Max Net Qty/ Pkg ¹	PI	Max. Net Qty/ Pkg or NEQ ¹	
A	B	C	D	E	F	I	J	K	L	M
0469	Articles, explosive, n.o.s. *	1.2F		Explosive		FORBIDDEN		101		NLD01 A62 1L
0470	Articles, explosive, n.o.s. *	1.3C		Explosive		FORBIDDEN		101		NLD01 A62 1L
0471	Articles, explosive, n.o.s. *	1.4E		Explosive 1.4		FORBIDDEN		101	IATA	A62 A802 1L
0472	Articles, explosive, n.o.s. *	1.4F		Explosive 1.4		FORBIDDEN		101		NLD01 A62 1L
0473	Substances, explosive, n.o.s.*	1.1A		Explosive		FORBIDDEN		FORBIDDEN		1L
0474	Substances, explosive, n.o.s.*	1.1C		Explosive		FORBIDDEN		101		NLD01 1L
0475	Substances, explosive, n.o.s.*	1.1D		Explosive		FORBIDDEN		101		NLD01 1L
0476	Substances, explosive, n.o.s.*	1.1G		Explosive		FORBIDDEN		101		NLD01 1L
0477	Substances, explosive, n.o.s.*	1.3C		Explosive		FORBIDDEN		101		NLD01 1L
0478	Substances, explosive, n.o.s.*	1.3G		Explosive		FORBIDDEN		101		NLD01 1L
0479	Substances, explosive, n.o.s.*	1.4C		Explosive 1.4		FORBIDDEN		101	IATA	A62 A802 1L
0480	Substances, explosive, n.o.s.*	1.4D		Explosive 1.4		FORBIDDEN		101	IATA	A62 A802 1L
0481	Substances, explosive, n.o.s.*	1.4S		Explosive 1.4		101	IATA	101	IATA	A62 A802 3L
0482	Substances, EVI, n.o.s. * †	1.5D		Explosive 1.5		FORBIDDEN		101		NLD01 1L
0482	Substances, explosive, very insensitive, n.o.s. * †	1.5D		Explosive 1.5		FORBIDDEN		101		NLD01 1L
0483	Cyclonite, desensitized	1.1D		Explosive		FORBIDDEN		(112b or 112c)		NLD01 1L

UN/ ID no.	Proper Shipping Name Description	Class or Div.	Sub risk	Hazard Label(s)	PG	Passenger and Cargo aircraft		Cargo aircraft only		SP/ ERG/ SHWS
						PI	Max Net Qty/ Pkg ¹	PI	Max. Net Qty/ Pkg or NEQ ¹	
A	B	C	D	E	F	I	J	K	L	M
0483	Cyclotrimethylenetrinitramine, desensitized	1.1D		Explosive		FORBIDDEN		(112b or 112c)		NLD01 1L
0483	RDX, desensitized	1.1D		Explosive		FORBIDDEN		(112b or 112c)		NLD01 1L
0484	Cyclotetramethylenetetranitramine, desensitized	1.1D		Explosive		FORBIDDEN		(112b or 112c)		NLD01 1L
0484	HMX, desensitized	1.1D		Explosive		FORBIDDEN		(112b or 112c)		NLD01 1L
0484	Octogen, desensitized	1.1D		Explosive		FORBIDDEN		(112b or 112c)		NLD01 1L
0485	Substances, explosive, n.o.s. *	1.4G		Explosive 1.4		FORBIDDEN		101	IATA	A62 A802 1L
0486	Articles, EEI †	1.6N		Explosive 1.6		FORBIDDEN		101		A62 1L
0486	Articles, explosive, extremely insensitive †	1.6N		Explosive 1.6		FORBIDDEN		101		A62 1L
0487	Signal, smoke †	1.3G		Explosive		FORBIDDEN		135	1 kg	1L
0488	Ammunition, practice †	1.3G		Explosive		FORBIDDEN		130		1L
0489	DINGU	1.1D		Explosive		FORBIDDEN		(112b or 112c)		NLD01 1L
0489	Dinitroglycoluril	1.1D		Explosive		FORBIDDEN		(112b or 112c)		NLD01 1L
0490	Nitrotriazolone	1.1D		Explosive		FORBIDDEN		(112b or 112c)		NLD01 1L

UN/ ID no.	Proper Shipping Name Description	Class or Div.	Sub risk	Hazard Label(s)	PG	Passenger and Cargo aircraft		Cargo aircraft only		SP/ ERG/ SHWS
						PI	Max Net Qty/ Pkg ¹	PI	Max. Net Qty/ Pkg or NEQ ¹	
A	B	C	D	E	F	I	J	K	L	M
0490	NTO	1.1D		Explosive		FORBIDDEN		(112b or 112c)		NLD01 1L
0491	Charges, propelling †	1.4C		Explosive 1.4		FORBIDDEN		143	IATA	A802 1L
0492	Signals, railway track, explosive †	1.3G		Explosive		FORBIDDEN		135		NLD01 1L
0493	Signals, railway track, explosive †	1.4G		Explosive 1.4		FORBIDDEN		135	IATA	A802 1L
0494	Jet perforating guns, charged, oil well, without detonator †	1.4D		Explosive 1.4		FORBIDDEN		101	10 kg IATA	A24 A802 1L
0495	Propellant, liquid †	1.3C		Explosive		FORBIDDEN		(115)		NLD01 1L
0496	Octonal	1.1D		Explosive		FORBIDDEN		(112b or 112c)		NLD01 1L
0497	Propellant, liquid †	1.1C		Explosive		FORBIDDEN		(115)		NLD01 1L
0498	Propellant, solid †	1.1C		Explosive		FORBIDDEN		(114b)		NLD01 1L
0499	Propellant, solid †	1.3C		Explosive		FORBIDDEN		(114b)		NLD01 1L
0500	Detonator assemblies, non- electric for blasting †	1.4S		Explosive 1.4		131	IATA	131	IATA	A165 A802 3L
0501	Propellant, solid †	1.4C		Explosive 1.4		FORBIDDEN		(114b)		NLD01 1L
0502	Rockets with inert head †	1.2C		Explosive		FORBIDDEN		130		NLD01 1L
0503	Air bag inflators †	1.4G		Explosive 1.4		FORBIDDEN		135	IATA	A32 A56 A802 1L
0503	Air bag modules †	1.4G		Explosive 1.4		FORBIDDEN		135	IATA	A32 A56 A802 1L

UN/ ID no.	Proper Shipping Name Description	Class or Div.	Sub risk	Hazard Label(s)	PG	Passenger and Cargo aircraft		Cargo aircraft only		SP/ ERG/ SHWS
						PI	Max Net Qty/ Pkg ¹	PI	Max. Net Qty/ Pkg or NEQ ¹	
A	B	C	D	E	F	I	J	K	L	M
0503	Seat-belt pretensioners †	1.4G		Explosive 1.4		FORBIDDEN		135	IATA	A32 A56 A802 1L
0504	1H-Tetrazole	1.1D		Explosive		FORBIDDEN		(112c)		NLD01 1L
0505	Signals, distress, ship †	1.4G		Explosive 1.4		FORBIDDEN		135	IATA	A802 1L
0506	Signals, distress, ship †	1.4S		Explosive 1.4		135	IATA	135	IATA	A802 3L
0507	Signals, smoke †	1.4S		Explosive 1.4		135	IATA	135	IATA	A802 3L
0508	1-Hydroxy benzotriazole, anhydrous dry or wetted with less than 20% water, by weight	1.3C		Explosive		FORBIDDEN		FORBIDDEN		NLD01 1L
1001	Acetylene, dissolved	2.1		Flammable Gas		FORBIDDEN		200	16 kg 40 L IATA	NLD07 10L
1002	Air, compressed , _i) _i) in coolant bottle	2.2		Non- flammable gas		FORBIDDEN		200		NLD15 2L
1006	Argon, compressed , _i) _i) in coolant bottle	2.2		Non- flammable gas		FORBIDDEN		200		NLD15 A59 2L
1066	Nitrogen, compressed , _i) _i) in coolant bottle	2.2		Non- flammable gas		FORBIDDEN		200		NLD15 A69 2L
1072	Oxygen, compressed,	2.2	5.1	Non- flammable gas &Oxidizer				200		NLD08 2X
1073	Oxygen, refrigerated liquid	2.2	5.1	Non-flamm. Gas & Oxidizer		FORBIDDEN		202	1949L UN approved transporttank	NLD14 NLD17 A2 2X

UN/ ID no.	Proper Shipping Name Description	Class or Div.	Sub risk	Hazard Label(s)	PG	Passenger and Cargo aircraft		Cargo aircraft only		SP/ ERG/ SHWS
						PI	Max Net Qty/ Pkg ¹	PI	Max. Net Qty/ Pkg or NEQ ¹	
A	B	C	D	E	F	I	J	K	L	M
1202	Gas, oil	3		Flammable liquid	III	355	60 L	366	220 L	NLD04 NLD09 NLD10 A3 3L
1203	Gasoline	3		Flammable liquid	II	353	5 L	364	60 L	NLD04 NLD09 NLD11 A100 3L
1863	Fuel, aviation, turbine engine	3		Flammable liquid	I II III	351 353 355	1 L 5 L 60 L	361 364 366	30 L 60 L 220 L	NLD10 A3 3L
1944	Matches, safety	4.1		Flammable solid	III	455 IATA		455 IATA		NLD20
2030	Hydrazine, aqueous solution with more than 37% by weight	8	6.1	Corrosive, Toxic	I	FORBIDDEN			30 L IATA	A1 A36 NLD02 NLD03 8P
2813	Water-reactive solid n.o.s.*	4.3		Dangerous when wet	I	FORBIDDEN		488	15 kg IATA	A3 A803 4W
3090	Lithium metal batteries	9		Miscellaneous		FORBIDDEN		968	IATA	NLD19
3480	Lithium ion batteries	9		Miscellaneous		FORBIDDEN		965	IATA	NLD19
3166	Engine, internal combustion, flammable liquid powered	9		Miscellaneous		950	IATA	950	IATA	NLD13 A67 A70 A87 A134 9L

UN/ ID no.	Proper Shipping Name Description	Class or Div.	Sub risk	Hazard Label(s)	PG	Passenger and Cargo aircraft		Cargo aircraft only		SP/ ERG/ SHWS
						PI	Max Net Qty/ Pkg ¹	PI	Max. Net Qty/ Pkg or NEQ ¹	
A	B	C	D	E	F	I	J	K	L	M
3166	Vehicle, flammable liquid powered	9		Miscellaneous		950	IATA	950	IATA	NLD13 NLD18 A67 A70 A87 A118 A134 9L
3363	Dangerous goods in apparatus	9		Miscellaneous		See 962 IATA		See 962 IATA		NLD12 A48 A107 9L
3363	Dangerous goods in machinery	9		Miscellaneous		See 962 IATA		See 962 IATA		NLD12 A48 A107 9L
3528	Engine, internal combustion, flammable liquid powered	9		Miscellaneous		See 378 IATA		See 378 IATA		NLD12 NLD13 A67 A70 A87
3528	Machinery, internal combustion, flammable liquid powered	9		Miscellaneous		See 378 IATA		See 378 IATA		NLD12 NLD13 A67 A70 A87

Appendix 1-C Special Provisions

The Special Provisions referred to in column M of the List of Dangerous Goods are defined below. The Special Provisions are supplementary to the instructions provided in the List of Dangerous Goods. The information contained herein is additional to that shown for the relevant entry and must be complied with.

Appendix 1-D Code table of Special Provisions

NLD01: Regardless of the Special Provisions A1 and A2 in the ICAO TI's and IATA DGR, air transport is only permitted with the approval of the MAA.

NLD02: Per air transport, no more than 5 (five) H-70 packages (5 (five) filled Hydrazine fuel tanks) may be carried.

NLD03: Transportation of Hydrazine, aqueous solution, is permitted when complied with

the packing instructions mentioned in Appendix 1-E Special Packages (d). Due to the fact that Hydrazine, aqueous solution has a considerable health risk to occupants when exposed to leaking packages, serious attention must be given to a leakage control by a Hydrazine expert within 72 hours after packing for air transport conform Appendix 1-E Special Packages (d) (1) and (2), 72 hours hereafter and, if necessary, during a period of 45 days, the lifetime of the Hydrazine Leak Detector Pellet.

If leakage is detected, corrective action must be taken according the latest version of the Material Safety Data Sheet (MSDS) that must be carried with the consignment. When transporting UN2030 Hydrazine, aqueous solution in tanks and containers that belong to a foreign NATO partner, the Operator is obliged to put all conditions in place for safe air transport. These conditions must be equivalent to the specifications mentioned in NLD03 or Appendix 1-E Special Packages paragraph (d) pts. 2, 4, 5 and 6. Packages must be tested and approved according the conditions in pts. 1 and 3. When the controlling measures and packages of the UN2030 Hydrazine, aqueous solution owned by foreign NATO units deviate from these conditions stated by the Director of the Military Aviation Authority (D-MAA), air transport of UN2030 Hydrazine, aqueous solution is not permitted. The foreign unit is obliged to (verifiable) declare to the Operator that it will comply with these measurements.

NLD04: Transport is permitted in UN approved packaging with UN-packing code; 31A/Y/XX/XX/NL/TOLSMA436/1734/963 suitable for UN package group II with a maximum volume of 450 litres. The Operator shall ensure that air transport only takes place on cargo aircraft and a consideration is made, by means of an acceptable procedure to the MAA, which depicts the necessity for air transport. Packages shall always be in airworthy condition which means that no structural damage, leaks, spillages or any other form of discharging dangerous goods is evident. See also *Appendix 1-E Special Packages paragraph (a)*.

NLD05: The item is stowed in the vicinity of a suitable (cargo) door to facilitate jettisoning in case of emergency. The item is at all times easy accessible (see also MAR-OPS 1.1211 Handling of dangerous cargo, paragraph (c) (2) Stowing).

NLD06: All members of the Crew and (when authorised) every passenger on board is equipped with personal protection equipment as prescribed in accordance with the information in the SHWS and AIS (see *Appendix 1 to MAR-OPS 1.1160*) when transporting tear-producing ammunition, unless the transport is being carried as an external load. Crew Members must, as a consequence of the hazard of teargas, develop procedures with regard to the actions to be taken in case of a possible teargas incident. Carrying sufficient water on board (minimum of 20 liters) for eye rinsing is a recommendation when tear-producing ammunition is transported.

NLD07: Transport is permitted as CAO freight in packaging with maximum volume of 16 kg/40 liters. The dangerous good is transported in ADR or UN-approved packaging (pressurised container) that complies with the other conditions of Packing Instruction 200. The pressurised container has a package orientation label and is transported upright. Transportation in combination with passengers is authorised within the operational area after prior approval of the MAA or as part of the AMC to MAR-OPS 1.1160 (b). Consideration is given to MAR-OPS 1.1211 Handling of dangerous cargo, paragraph (c)(2).

NLD08: Transport of Cosmodynes is permitted with exception of pressurised containers marked in accordance with DOT-4B-500. These pressurised containers are **not** permitted for air transport.

NLD09: Transport is permitted in UN-approved packaging with UN packing code; 31A/Y/XX/XX/NL/TOLSMA436/1734/963 suitable for UN package group II with a maximum volume of 750 litres and filled to no more than 95% of capacity. The Operator

shall ensure that air transport only takes place on cargo aircraft and a consideration is made, by means of an acceptable procedure to the MAA, which depicts the necessity for air transport. Packages shall always be in airworthy condition which means that no structural damage, leaks, spillages or any other form of discharging dangerous goods is evident. See also *Appendix 1-E Special Packages paragraph (a)*.

NLD10: Transport in certified fuel bags ("fuel blivets" or "bravin bags") is permitted (see also *Appendix 1E Special packages (b)*).

NLD11: Transport is permitted in non UN authorised packaging if the packaging is used as fuel tank or reserve tank under the following conditions:

(1) A fully closed system with a maximum volume of 25 litres.

(2) An open system, possibly equipped with closed aerating- and/or venting valves with a maximum volume of 20 litres.

(3) Filled to no more than 75% of capacity.

Transporting with Category A and B passengers is also permitted in an operational area.

NLD12: When environmental hazardous substances are classified as UN3082 and contained in machinery or apparatus there is no maximum limit to the amount of liquids if the substance is hydraulic oil. Robust apparatus can be transported unpacked. It shall be assessed that damage cannot result in leaks, spillages or any other form of discharging environmental hazardous substances during transport. They shall be transported upright and unpressurised. Smaller articles are packed in strong outer packages according Packing Instruction 962. The carriage of passengers is permitted.

NLD13: Damaged vehicles and equipment must be transported in accordance with conditions in *Appendix 1E Special Packages (e)*.

NLD14: Transportation of Oxygen, refrigerated liquid is permitted when transported according to the LOX regulations 2nd revised edition, latest change (change 1 is dated 20-JAN-2011).

NLD15: The transportation of UN1002 Air compressed (in coolant bottles), UN1006 Argon compressed (in coolant bottles) and UN1066 Nitrogen compressed (in coolant bottles) is permitted based on test results given by the Knowledge Centre Weapon-systems and Munition (KC W&M) in project report "*Veiligheidstesten Coolant Bottles*" with project number 6144.07.4055 and when complied with the packaging requirements stated in *Appendix 1-E Special Packages (c)*. Furthermore the Operator shall ensure that the shortest possible safe route is flown during air transport.

NLD16: The transport of flares and chaff and their igniters is permitted in a certified reload box with part number: W1645LDW marked with UN specification marking: UN 4B/Y20.8/S/./NL/TCPI-MINDEF-150543. The Competent Authority Approvals (CAA) for UN0323 (1.4S) and UN0349 (1.4S) are applicable. Because of the classification of UN0093 and UN0454 when packed in certified reload box as mentioned above (1.4S), transport in combination with passengers is allowed when complied with the packaging requirements stated in *Appendix 1-E Special Packages (f)*.

NLD17: Escort required according MAR-OPS 1.1160 (a)

NLD18: Armoured vehicles equipped with explosives for security reasons are permitted for air transport on a cargo aircraft under the following conditions:

(1) Items classified as hazard class 1 explosive substances and/or articles that can be removed from the vehicle, must be removed and transported in accordance with the provisions of these requirements.

(2) For all items classified as hazard class 1 explosive substances and/or articles that are an integral part of the vehicle and its intended use which cannot be removed, all effort shall be made to prevent unintentional activation of explosives.

(3) The Operator shall ensure that air transport only takes place after a risk analysis is made, by means of an acceptable procedure to the MAA, which depicts the necessity for air transport.

NLD19: Although in general the transport of lithium batteries is restricted by the ICAO TI/IATA DGR, the air transport of UN3090 and UN3480 is allowed in combination with military (category A) passengers when operational necessity dictates and the batteries are part of the military equipment or spares therefore. Also a State of Charge (SoC) higher than 30% is allowed on passenger and cargo (CAO) flights. The Operator shall ensure that air transport with a SoC higher than 30% only takes place after a consideration for operational reasons is made, by means of an acceptable procedure to the MAA and separate cargo flights are undesirable. In addition to that, the Operator also ensures that verifiable risk analyses are made before accepting the air task(s) with regard to the residual risk during air transport of UN3090 and UN3480. The Accountable Manager (see definition of Operator in GM X.1145 (a)) verifiably declares the acceptance of this residual risk or refers to a verifiable decision of a higher directorate when UN3090 and UN3480 are transported in combination with (category A) passengers. Air transport is only allowed when the following conditions apply:

(1) prior approval is gained by means of diplomatic clearance of the country of origin, destination and overflight because this exemption can be overruled by more restrictive local (international) regulations.

(2) during air tasks, only category A passengers are allowed on board of the aircraft.

(3) the air transport of UN3090 Lithium metal batteries is executed conform the general and Section IA requirements (including the additional requirements) of Packing Instruction 968.

(4) the air transport of UN3480 Lithium ion batteries is executed conform the general and Section IA requirements (including the additional requirements) of Packing Instruction 965.

(5) effort will be made, when possible due to the operational necessity in the military context to reduce the SoC of UN3480 Lithium ion batteries to 30% or lower conform a regulated manner as a result of the section 38.3 of the ICAO "UN Manual of tests and criteria".

(6) a document for the type of battery that proves that the requirement(s) of testing are met conform Section 38.3.2.3 of the ICAO "UN Manual of tests and Criteria" is added to the shipment when UN3090 and/or UN3480 are transported; in combination with passengers or; when UN3480 is transported with a SoC > 30% or; a combination hereof;

(7) when possible, as a consequence of the impossibility to extinguish a lithium fire, UN3090 and UN3480 shall be stowed in the vicinity of the cargo door where it can be ejected first under the responsibility of the Pilot in Command, in case of emergency (see also 1.1211 (c) (2) and (f)).

(8) on C-130 and helicopters the dangerous goods trained Loadmaster oversees the load and the passengers and can therefore react timely to occurrences.

(9) the packages with batteries shall be at all times easily accessible and made visible from other freight due to a minimal possible reaction time during an emergency situation.

(10) In case of strategic air transport carriage of UN3090 and UN3480 is only allowed as CAO-freight. For a KDC-10 aircraft this means that the air transport is only allowed without passengers (batteries as CAO-freight on the main deck, see (7)). During strategic air transport item (5) also remains unabated in force.

(11) Special Provisions A154, A164, A183, A206, A331 and article 3.9.2.6 of the IATA DGR's are imperative.

NLD20: The transport of UN 1944 (Matches) packed in (a) military emergency ration(s) is allowed in combination with non ICAO TI / IATA DGR compliant ("forbidden, forbidden") hazard class 1 explosive substances and/or articles (see 1.1211 d)) when at least one (per same consignment) of the rations is opened and confirmed in written on the freight manifest that:

(1) per personal emergency ration only one small strike on box, -card or -book of matches is incorporated.

(2) these matches are not "strike anywhere matches".

(3) the small box, card or book is packed in a, sealed air and water tight, strong inner package as excepted quantity.

Appendix 1-E Special Packages

(a) *Intermediate Bulk Container (IBC)*: An IBC must be provided with a valid verification mark.

(b) *Fuel bag*: Air transport of dangerous goods in a fuel bag ("fuel blivets" or "bravin bags") is only permitted if the fuel bag is certified for air transport in accordance with an (inter)national acknowledged standard, acceptable to the MAA. Packages shall always be in airworthy condition and carried as external load under a helicopter (USL).

(c) *Coolant bottles*: Air transport of coolant bottles is only permitted when the coolant bottle is marked: TMU-72B and has NATO Stock Number (NSN): 1420-01-039-9905. The packaging must be in compliance with Special Packaging Instructions ID 98752 (SPI 01-039-9905) and EUR AIM9L, chapter 006.08.11.2 and the cushioning material must be used in a way that the coolant bottles are not placed directly above one another. The coolant bottles must be verifiable inspected and tested conform F-16 TO xx21M AIM9M-2 before air transport is commenced (see also NLD15).

(d) *Hydrazine containers / fuel tanks*:

Air transport of hydrazine fuel tanks is not permitted, unless:

(1) They are carried in hydrazine containers intended for that purpose (reusable shipping container) with NSN 8145-01-188-3644 according TNO test report number: VERP 05.09025/CB; and

(2) The Hydrazine Fuel Tank is packed in a protective plastic bag (PA/PE bag with

grip seal closing) specifically intended for this purpose, along with a hydrazine indicator; and

- (3) The UN designation UN/4H2/X92/S/69/NL/DEF2164 (or equivalent for foreign containers, see NLD03) is written in clearly visible script, in a contrasting color and indelible ink, on the outside of the hydrazine container; and
- (4) The hydrazine container for H70 is also on the outside, in indelible ink in a contrasting color, provided with the UN number UN2030 and the text 'HYDRAZINE, AQUEOUS SOLUTION'. If applicable, the text, '(HYDRAZINE 70% - F-16 H-70 FUEL TANK CONTENTS 26 L)' will be added; and
- (5) The container is, in addition to the required hazard labels 6.1 and 8, provided with orientation markings (arrows) besides the Cargo Aircraft Only (CAO) label. See IATA DGR Chapter 7.4.4 figure 7.4.D or Chapter 7.4.5 figure 7.4.E; and
- (6) The latest version of the applicable Technical Orders (T.O.), apply to procedures related to packing and unpacking hydrazine containers.

(e) Damaged vehicles:

- (1) Air transport of vehicles or equipment with damage is not allowed unless:
 - (i) It is assessed that damage to brake lines, fuel lines, battery, airbags, fire extinguishers or any other structural damage, cannot result in leaks, spillages, or any other form of discharging dangerous goods during transport; and
 - (ii) Fuel lines and -tanks are drained and plugged in a manner that during flight no leakage can occur; and
 - (iii) In case of damaged or unserviceable electrical systems the battery is disconnected and the battery poles are insulated to prevent electrical short circuits. If the battery box or -case is damaged, the battery shall be removed from the vehicle. It is not allowed to air transport damaged (wet) batteries, unless suitable salvage packages are used; and
 - (iv) All remaining explosive substances and/or articles and other (dangerous) goods are removed.
- (2) When removed fuels and/or other substances have to be shipped by air transport, this shall be done according ICAO TI / IATA DGR regulations.
- (3) During flights within the operational area, damaged vehicles may be transported as internal- and as external load (USL) to the recovery position, after appropriate measures have been taken to absorb and/or collect leakages.

(f) Reload boxes:

- (1) the reload boxes are provided with part number: W1645LDW.
- (2) the reload boxes are provided with UN specification marking:
UN 4B/Y20.8/S/./NL/TCPI-MINDEF-150543.
- (3) the reload boxes are painted green and are equipped with the hazard class 1.4S label and all required information conform the MP40-40 Chapter 2200.

- (4) the reload boxes are undamaged.
- (5) the reload boxes will not be opened during flight.
- (6) the reload boxes can be used as transport boxes, however when the use is intended for reload, the box is grounded by means of the for this purpose specially supplied grounding cable to a certified grounding point in the aircraft.
- (7) the two latches of the reload boxes with PSN: W1645LDW are additionally secured by means of safety pins through both latches.
- (8) reload boxes are stowed in upright position conform the loading requirements on a location in the aircraft determined by the loadmaster taking in account the information as meant in MAR-OPS 1.1211(c)(2).

Appendix 1 to MAR-OPS 1.1160 Limitations on the transport of dangerous goods - Accident Information Sheets (AIS)

Accident Information Sheet, Airtransport CLASS 1, DIVISION 1.1, ICAO



Nature of danger.	Mass Explosion, Blast, High velocity fragments and debris. Potential additional environmental hazards see supplemental hazard warning sheet, if applicable.
Additional personal protection / or Special actions.	See Supplementary Hazard Warning Sheet, if applicable.
General Actions in flight.	Perform standard aircraft emergency procedures and checklists in the ERG Notify ATC with NOTOC information.
After Landing.	Disembark: ASAP Inform OCC of the fire brigade with NOTOC and AIS information.
Emergency Service fire withdrawal distance recommendations.	<u>Cargo on fire:</u> Evacuate casualties as quickly as possible from hazard area. Leave area of fire immediately. Keep all persons (except firefighting personnel) away from fire area. Low risk at least 870 meters (up to 7500 kg NEQ); 1120 meters (up to 16000 kg NEQ). Always seek significant cover (such as strongly built structure); avoid glass surfaces. Minimum distance for firefighting personnel. Medium risk to personnel – 435 meters (up to 7500 kg NEQ); 560 meters (up to 16000 kg NEQ). High risk to personnel – 188 meters (up to 7500 kg NEQ); 250 meters (up to 16000 kg NEQ). Fight ambient fires from covered position.

Accident Information Sheet, Airtransport
CLASS 1, DIVISION 1.2, ICAO



Nature of danger.	Progressive Explosions, Fragments and debris. Potential additional environmental hazards see supplemental hazard warning sheet, if applicable.
Additional personal protection / or Special actions.	See Supplementary Hazard Warning Sheet, if applicable.
General Actions in flight.	Perform standard aircraft emergency procedures and checklists in the ERG Notify ATC with NOTOC information.
After Landing.	Disembark: ASAP Inform OCC of the fire brigade with NOTOC and AIS information.
Emergency Service fire withdrawal distance recommendations.	<u>Cargo on fire:</u> Evacuate casualties as quickly as possible from hazard area. Leave area of fire immediately. Keep all persons (except firefighting personnel) away from fire area. Low risk - at least 1000 meters. Always seek significant cover (such as strongly built structure); avoid glass surfaces. Minimum distance for fire fighting personnel; Medium risk to personnel 390 meters. High risk to personnel 135 meters. Fight ambient fires from covered position.

Accident Information Sheet, Airtransport
CLASS 1, DIVISION 1.3, ICAO



Nature of danger.	Explosions, possibility of mass fire, Firebrands may be projected. Potential additional environmental hazards see supplemental hazard warning sheet, if applicable.
Additional personal protection / or Special actions.	See Supplementary Hazard Warning Sheet, if applicable.
General Actions in flight.	Perform standard aircraft emergency procedures and checklists in the ERG Notify ATC with NOTOC information.
After Landing.	Disembark: ASAP Inform OCC of the fire brigade with NOTOC and AIS information.
Emergency Service fire withdrawal distance recommendations.	<u>Cargo on fire:</u> Evacuate casualties as quickly as possible from hazard area Leave area of fire immediately. Keep all persons (except firefighting personnel) away from fire area. Low risk - at least 160 meters. Always seek significant cover (such as strongly built structure); avoid glass surfaces. Minimum distance for firefighting personnel. High risk to personnel 60 meters. Fight ambient fires from covered position.

Accident Information Sheet, Airtransport
CLASS 1, DIVISION 1.4, ICAO



Nature of danger.	Moderate fire, Effects largely confined to package. Limited flight distance of fragments. Potential additional environmental hazards see supplemental hazard warning sheet, if applicable.
Additional personal protection / or Special actions.	See Supplementary Hazard Warning Sheet, if applicable.
General Actions in flight.	Perform standard aircraft emergency procedures and checklists in the ERG Notify ATC with NOTOC information.
After Landing.	Disembark: ASAP Inform OCC of the fire brigade with NOTOC and AIS information.
Emergency Service fire withdrawal distance recommendations.	<u>Cargo on fire:</u> Evacuate casualties as quickly as possible from hazard area. Keep all persons (except firefighting personnel) well away from fire area. No minimum distance for firefighting personnel.

Accident Information Sheet, Airtransport
CLASS 1, DIVISION 1.5, ICAO



Nature of danger.	Mass Explosion, Blast, high velocity fragments and debris. Potential additional environmental hazards see supplemental hazard warning sheet, if applicable.
Additional personal protection / or Special actions.	See Supplementary Hazard Warning Sheet, if applicable.
General Actions in flight.	Perform standard aircraft emergency procedures and checklists in the ERG Notify ATC with NOTOC information.
After Landing.	Disembark: ASAP Inform OCC of the fire brigade with NOTOC and AIS information.
Emergency Service fire withdrawal distance recommendations.	<u>Cargo on fire:</u> Evacuate casualties as quickly as possible from hazard area. Leave area of fire immediately. Keep all persons (except firefighting personnel) away from fire area. Low risk – at least 1100 meters. Always seek significant cover (such as strongly built structure); avoid glass surfaces Minimum distance firefighting personnel Medium risk to personnel – 550 meters. High risk to personnel – 246 meters. Fight ambient fires from covered position.

Accident Information Sheet, Airtransport
CLASS 1, DIVISION 1.6, ICAO



Nature of danger.	Fire and heat. Potential additional environmental hazards see supplemental hazard warning sheet, if applicable.
Additional personal protection / or Special actions.	See Supplementary Hazard Warning Sheet, if applicable.
General Actions in flight.	Perform standard aircraft emergency procedures and checklists in the ERG Notify ATC with NOTOC information.
After Landing.	Disembark: ASAP Inform OCC of the fire brigade with NOTOC and AIS information.
Emergency Service fire withdrawal distance recommendations.	<u>Cargo on fire:</u> Evacuate casualties as quickly as possible from hazard area. Leave area of fire immediately. Keep all persons (except firefighting personnel) well away from fire area. Low risk – at least 174 meters. Always seek significant cover (such as strongly built structure); avoid glass surfaces. No minimum distance for firefighting personnel.

Appendix 2 to MAR-OPS 1.1160 Limitations on the transport of dangerous goods – Supplementary Hazard Warning Sheets

SUPPLEMENTARY HAZARD WARNING SHEET
Ammunition containing Thermite (TH)

TH

LOAD

Ammunition containing Thermite, which is:

- Solid substance, metal mixture.
- Insoluble in water.

NATURE OF DANGER

- Develops high temperatures in the event of fire.
- Generation of explosive gases in connection with water.

PERSONAL PROTECTION

Appropriate respiratory protection equipment.

ADDITIONAL AND/OR SPECIAL ACTIONS BY AIRCREW

In event of moderate fire or development of fumes:
DO NOT USE WATER for fire fighting.

Throughout area affected by smoke and fumes:

- Short stay: wear appropriate respiratory protection equipment

EMERGENCY SERVICES advice: In event of longer stay:

- Wear self contained breathing apparatus
- Wear protective clothing or heat protection suit affording heat protection comparable to asbestos

FIRST AID

- Move affected persons to fresh air.

For urgent information regarding assessment and treatment of noxious effects, contact poison control or medical treatment center.

Supplementary Hazard Warning Sheet

Ammunition containing Pyrotechnic Charges (PT)

PT

LOAD

Ammunition containing Pyrotechnic Charges (PT), which are:

- Solid substances.
- Fairly soluble in water.

NATURE OF DANGER

In fire:

- Ammunition may cause intense burning or explosions.
- Caustic or poisonous gases may be produced.

Hazardous to water.

PERSONAL PROTECTION

- Appropriate respiratory protection equipment.
- One 500 ml eye flushing bottle with fresh tap water for each individual.
- One container with 20 liters of fresh tap water.

ADDITIONAL AND/OR SPECIAL ACTIONS BY AIRCREW

In event of moderate fire or development of fumes:

Throughout area affected by smoke and fumes:

- Short stay: wear appropriate respiratory protection equipment.

EMERGENCY SERVICES advice:

In event of longer stay:

- Wear self-containing breathing apparatus.
- Cover all parts of body.

DO NOT USE WATER to fight fire

FIRST AID

Action to be taken:

- If eyes are affected, hold open eyelids and rinse immediately with water for 10 to 15 minutes, rolling eyeballs in all directions.

EMERGENCY SERVICES advice:

- In the event of respiratory arrest apply immediately expired-air ventilation or breathing apparatus.

For urgent information regarding assessment and treatment of noxious effects, contact poison control or medical treatment center.

SUPPLEMENTARY HAZARD WARNING SHEET

Ammunition containing Red Phosphorus (RP)

RP

LOAD

Ammunition containing Red Phosphorus, which is:

- Solid substance.
- Insoluble in water.

NATURE OF DANGER

- Combustion produces fumes which are detrimental to health. Irritation of eyes and respiratory tract, cauterization is possible.
- In the event of fire substances are produced that are hazardous to water.

PERSONAL PROTECTION

- Appropriate respiratory protection equipment.
- One 500 ml eye flushing bottle with fresh tap water for each individual.
- One container with 20 liters of fresh tap water

ADDITIONAL AND/OR SPECIAL ACTIONS BY AIRCREW

In event of moderate fire or development of fumes:
Throughout area affected by smoke and fumes:

- Short stay: wear appropriate respiratory protection equipment.

EMERGENCY SERVICES advice: In event of longer stay:

- Wear self-containing breathing apparatus.

FIRST AID

Action to be taken:

- Remove immediately contaminated clothing.
- If eyes are affected, hold open eyelids and rinse immediately with water for 10 to 15 minutes, rolling eyeballs in all directions.
- Have victim lie down even if feeling healthy.
- Transport casualties preferably in a lying position.
- Ensure medical care.

EMERGENCY SERVICES advice:

- In the event of respiratory arrest apply immediately expired-air ventilation or breathing apparatus.
- If possible, provide oxygen feed.

For urgent information regarding assessment and treatment of noxious effects, contact poison control or medical treatment center.

SUPPLEMENTARY HAZARD WARNING SHEET

Ammunition containing Chloroacetophenone (CN) or Chlorobenzylidene Malonic Acid Dinitrile (CS), also Termed Ortho-Chlorobenzal malononitrile

CS
CN

LOAD

(CN) Ammunition containing Chloroacetophenone, which is:

- Colourless to white or slightly yellowish crystals or powder.
- Nasty smell.
- Heavier than water; **or**

(CS) Ammunition containing Chlorobenzylidene Malonic Acid Dinitrile which is:

- White to slightly yellowish substance.
- Slightly pepper-like to pungent smell.

NATURE OF DANGER

- Irritation of eyes, skin and respiratory tract.
- Nausea, vomiting and cauterization. High concentrations will cause severe noxious effects. Detrimental to health when inhaled and swallowed.
- Potential hazard to waters and sewage treatment plants..
- Substances hazardous to water may be produced in the event of fire.

(CN) Slow reaction with water producing a caustic mixture.

PERSONAL PROTECTION

- Appropriate respiratory protection equipment.
- One 500 ml eye flushing bottle with fresh tap water for each individual.
- One container with 20 liters fresh tap water.

ADDITIONAL AND/OR SPECIAL ACTIONS BY CREW MEMBERS

In event of moderate fire or development of fumes:

Throughout area affected by smoke and fumes:

- Short stay: wear appropriate respiratory protection equipment.

EMERGENCY SERVICES advice: In event of longer stay:

- Wear self-containing breathing apparatus.
- Cover all parts of the body.

FIRST AID

- Remove affected clothing.
- In the event of skin irritations, thoroughly rinse and wash affected skin areas.
- In case of eye contact, hold eyelids open and rinse with tap water 10 to 15 minutes while rolling eyes in all directions.
- In event of vomiting, place head in lateral position. Call physician to accident site.

EMERGENCY SERVICES advice:

- In the event of a respiratory arrest immediately apply expired-air ventilation or breathing apparatus and provide oxygen feed, if indicated.

For urgent information regarding assessment and treatment of noxious effects contact poison control or medical treatment center.

SUPPLEMENTARY HAZARD WARNING SHEET

Ammunition containing Calcium Phosphide (CP)

CP

LOAD

Ammunition containing Calcium Phosphide (CP), which is:

- Solid substance.
- Smell of rotten fish, carbide or garlic.

NATURE OF DANGER

- Easily combustible.
- Reacts strongly with water (self-igniting) by forming highly toxic and explosive hydrogen phosphide.
- Irritation of skin, eyes and respiratory tract.
- Danger of poisoning by inhalation (notably near ground level), swallowing or skin contact.
- Substance hazardous to water.

PERSONAL PROTECTION

- Appropriate respiratory protection equipment.
- One 500 ml eye flushing bottle with fresh tap water for each individual.
- One container with 20 liters fresh tap water.

ADDITIONAL AND/OR SPECIAL ACTIONS BY AIRCREW

In event of moderate fire or development of fumes:
Throughout area affected by smoke and fumes:

- Short stay: wear appropriate respiratory protection equipment.

EMERGENCY SERVICES advice: In event of longer stay:

- Wear self contained breathing apparatus.
- Wear protective clothing impermeable against toxic agents and flame resistant.

FIRST AID

Symptoms of poisoning:

- Irritation of the eyes, nasal/pharyngeal mucosa and skin.
- Coughing, feeling of tightness, shortness of breath.
- Headache, dizziness, ringing in the ears.
- Nausea, vomiting and diarrhoea.
- Rise in pulse rate, tendency to collapse.
- Unconsciousness, spasm.

Action to be taken:

- In the event of a respiratory arrest apply immediately expired-air ventilation.
- Rush affected persons to hospital. Transport only in a lying position. Half-sitting position is permissible in case of breathing difficulties.
- In case of eye contact, hold eyelids open and rinse with tap water 10 to 15 minutes while rolling eyes in all directions.
- In the event of skin contact with calcium phosphide rinse with plenty of water and subsequently cover with sterile dressing material.

For urgent information regarding assessment and treatment of noxious effects, contact poison control or medical treatment center.

SUPPLEMENTARY HAZARD WARNING SHEET

Ammunition containing Depleted Uranium (DU)

DU

LOAD

Ammunition containing Depleted Uranium (DU), which is:

- Dull silver to blue-black metal.
- Very heavy.
- Low specific activity. No radiation hazard involved under transport conditions.

NATURE OF DANGER

- Combustible metal at approximately 300 degrees Celsius.
- Forms toxic (heavy metal) oxide dust of low specific activity when burning. Smoke and resulting dust may include Uranium Oxide.
- Impairment of health caused by inhalation, swallowing, or when oxide dust gets into wounds.
- Possible hazard to water and sewage treatment plants.

PERSONAL PROTECTION

- Appropriate respiratory protection equipment.
- Protective gloves.

ADDITIONAL AND/OR SPECIAL ACTIONS AIRCREW

In event of moderate fire or development of fumes:

- In flight, wear Smoke hood / after disembarking, keep up-wind, out of area affected by smoke.
- Warn residents of populated areas to close doors and windows in smoke movement direction for several hundred meters.

For short stay:

- Wear respiratory protective equipment.
- Wear protective gloves.

EMERGENCY SERVICES advice:

- Wear self contained breathing apparatus.
- Cover all parts of the body.
- Put down smoke with water spray, containing water runoff.
- Fight fire as if magnesium; **DO NOT** use **HALONS**.
- To prevent Uranium Oxide spread, survey equipment and personnel before departing the scene.

FIRST AID

- If a person is affected by smoke or breathes dust, remove to hospital.
- Inform medical personnel that victim may be contaminated with Uranium Oxide.

For urgent information regarding assessment and treatment of noxious effects, contact poison control or medical treatment center.

SUPPLEMENTARY HAZARD WARNING SHEET
Ammunition containing Titanium Tetrachloride (FM)

FM

LOAD

Ammunition containing Titanium Tetrachloride (FM), which is:

- Colorless or yellowish fluid.

NATURE OF DANGER

- Extremely caustic.
- Reacts strongly with moisture or water, developing heat and forming hydrochloric acid during reaction.

PERSONAL PROTECTION

- Appropriate respiratory protection equipment.
- One 500 ml eye flushing bottle with fresh tap water for each individual.
- One container with 20 liters of fresh tap water.

ADDITIONAL AND/OR SPECIAL ACTIONS BY AIRCREW

In event of moderate fire or development of fumes:
Throughout area affected by smoke and fumes:

- Short stay: wear appropriate respiratory protection equipment.

EMERGENCY SERVICES advice: In event of longer stay:

- Wear self-containing breathing apparatus.
- Wear protective clothing or a heat protection suit affording heat protection comparable to asbestos.
- Cover non-burning exposed FM with ground limestone to neutralize.

FIRST AID

Action to be taken:

- Remove immediately contaminated clothing.
- Rinse affected body parts with plenty of water and cover with sterile dressing (no treated burn dressing).
- If eyes are affected, hold open eyelids and rinse immediately with water for 10 to 15 minutes, rolling eyeballs in all directions.
- Call physician to accident site.
- Protect from body heat loss .
- Transport casualties preferably in a lying position.

EMERGENCY SERVICES advice:

- In the event of respiratory arrest apply immediately expired-air ventilation or breathing apparatus.

For urgent information regarding assessment and treatment of noxious effects, contact poison control or medical treatment center.

SUPPLEMENTARY HAZARD WARNING SHEET

Ammunition containing Hexachloroethane (HC)

HC

LOAD

Ammunition containing Hexachloroethane (HC), which is:

- Solid substance.
- Insoluble in water.

NATURE OF DANGER

- Zinc chloride fume poisoning.
- After ignition, high concentration of fumes with caustic effects is produced, particularly in cold and dry air.
- Irritation of eyes and respiratory tract.
- Substances hazardous to water may be produced in the event of fire.

PERSONAL

Appropriate respiratory.

ADDITIONAL AND/OR SPECIAL ACTIONS BY AIRCREW

In event of moderate fire or development of fumes:
Throughout area affected by smoke or fumes:

In the event of a short stay:

Wear appropriate respiratory protective equipment.

EMERGENCY SERVICES advice: In the event of a longer stay,

- Wear self-contained breathing apparatus;
- Cover all parts of the body.

FIRST AID

Symptoms of zinc chloride fume poisoning:

- Irritation of the eyes.
- Irritation of the upper respiratory tract and hoarseness.
- Pains in the chest, especially behind the sternum.
- Severe coughing, breathing difficulties and feeling of suffocation.

Action to be taken:

- Rush affected persons to nearest physician.
- Transport casualties preferable in a lying position.

EMERGENCY SERVICES advice:

- If possible, apply oxygen douche (set equipment to 8 liters Oxygen/min).

For urgent information regarding assessment and treatment of noxious effects, contact poison control or medical treatment center.

SUPPLEMENTARY HAZARD WARNING SHEET

Ammunition containing Otto Fuel 11 (OF)

OF

LOAD

Ammunition containing Otto Fuel II (OF), which is:

- Oily liquid.
- Not miscible in water.
- Heavier than water.

NATURE OF DANGER

- Heating of closed containers may cause bursting due to pressure.
- Detrimental to health when inhaled and swallowed. High concentrations will cause severe noxious effects.
- Potential Hazard to waters and sewage treatment plants.

PERSONAL PROTECTION

- Appropriate respiratory protection equipment.
- One 500 ml eye flushing bottle with fresh tap water for each individual.
- One container with 20 liters of fresh tap water.
- Protective gloves for each individual.

ADDITIONAL AND/OR SPECIAL ACTIONS BY AIRCREW

In event of moderate fire or development of fumes:

Throughout area affected by smoke and fumes:

- Short stay: wear appropriate respiratory protection equipment.
- Wear protective gloves to discover leakage.

EMERGENCY SERVICES advice: In event of longer stay:

- Wear self contained breathing apparatus
- Wear chemical protective clothing outfit

FIRST AID

Symptoms of intoxication:

- Irritation of nasal mucosa and rhinostenosis.
- Splitting headache.
- Dizziness, disorientation and disorder of balance.
- Irritation of the eyes.
- Contact with skin leads to a yellow skin hue.

Action to be taken:

- Move casualties into fresh air, put them on the ground in a comfortable position, loosen tight clothing, prevent chilling.
- In case of respiratory arrest, start artificial respiration (mouth to mouth or breathing apparatus) immediately.
- Remove affected clothing (usually identifiable by yellow colour).
- Rinse affected parts of the body with lots of water.
- If eyes are affected, hold open eyelids and rinse immediately with water for 10 to 15 minutes, rolling eyeballs in all directions.
- If Otto Fuel has been swallowed, provoke vomiting.
- Call physician to accident site. Transport casualties.

Supplementary Hazard Warning Sheet

Ammunition containing Unsymmetrical Dimethyl Hydrazine

UDMH

LOAD

Ammunition containing Unsymmetrical Dimethyl Hydrazine (UDMH), which is:

- Colorless liquid with pungent ammonia-like odor.
- Completely water miscible.

NATURE OF DANGER

- Non persistent and highly flammable, caustic and toxic.
- Spontaneous reaction upon contact with oxygen-rich substances (e.g. acid, rust).
- Vapours are heavier than air and combined with air from explosive mixtures.
- Acid burns on eyes and respiratory organs are possible (Pulmonary Edema).
- Substance hazardous to water.

PERSONAL PROTECTION

- Appropriate respiratory protection equipment.
- Protective clothing.
- One 500 ml eye flushing bottle with fresh tap water for each individual.
- One container with 20 liters of fresh tap water.

ADDITIONAL AND/OR SPECIAL ACTIONS BY AIRCREW

Evacuate immediately the hazard area.
Hazard area description on reverse

Throughout area affected by smoke and fumes:

- Short stay: wear appropriate respiratory protection equipment

INTERVENTION PERSONNEL advice:

- In event of longer stay: wear self-containing breathing apparatus and protective clothing.
- Capture runoff from leak or firefighting operation.

FIRST AID

Symptoms of intoxication/acid burn:

- Eyes, nasal and pharyngeal mucous membranes, respiratory tract smart.
- Irritation causing slight cough which subsides after approximately 20 to 30 minutes.
- Trembling, dizziness, possibly convulsion, unconsciousness.
- Skin smarts, blisters appear.

Action to be taken:

- Remove immediately contaminated clothing.
- Rinse affected body parts with plenty of water and cover with sterile dressing (no ointment, cream or oily solutions).
- If eyes are affected, hold open eyelids and rinse immediately with water for 10 to 15 minutes, rolling eyeballs in all directions.

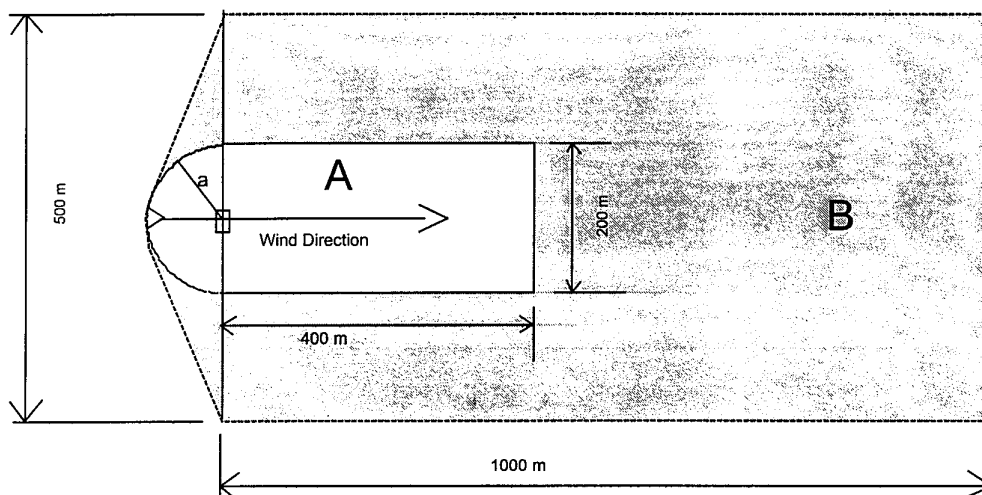
- Call physician to accident site.
 - Transport promptly casualties for medical treatment in a lying position.

INTERVENTION SERVICE advice:

- In the event of respiratory arrest apply immediately expired-air ventilation or breathing apparatus
- In case of victim dyspnea, half sitting position is permitted.

For urgent information regarding assessment and treatment of noxious effects, contact poison control or medical treatment center.

UDMH



Explanations:

a = 100 m Radius

1. **LEAK:**

Hazard Area **A** must be evacuated.

Hazard Area **B** applies if the danger to the environment cannot be cleared away

within one hour.

2. **FIRE:** Hazard Area **A and B** must be evacuated.

SUPPLEMENTARY HAZARD WARNING SHEET

Ammunition containing White Phosphorus (WP)

WP

LOAD

Ammunition containing white phosphorus, which is:

- Colorless to yellow wax-like substance.
- Pungent, garlic-like smell.

NATURE OF DANGER

- Phosphorus poisoning.
- Ignites upon contact with atmospheric oxygen, producing thick fumes which are detrimental to health.
- On contact with water, caustic phosphoric acid is produced.
- Irritation of skin, eyes and respiratory tract; cauterization is possible.
- Substance hazardous to water.

PERSONAL PROTECTION

- Appropriate respiratory protective equipment.
- One 500 ml eye flushing bottle with fresh tap water for each individual.
- One container with 20 liters fresh tap water.
- Three liters of 1 % sodium bicarbonate solution.

ADDITIONAL AND/OR SPECIAL ACTIONS BY CREW MEMBERS

In event of moderate fire or development of fumes, throughout area affected by smoke and fumes:

- short stay: wear appropriate respiratory protection equipment

EMERGENCY SERVICES advice: In event of longer stay:

- Wear self-containing breathing apparatus.
- Wear protective clothing or a heat protection suit (affording heat protection comparable to asbestos).
- Spray water continuously on extinguished phosphorus fires or cover with moist sand/soil.

FIRST AID

Remove quickly all clothing affected by phosphorus to prevent phosphorus burning through to skin. If this is impossible:

- Plunge skin or clothing affected by phosphorus in cold water or moisten strongly to extinguish or prevent fire. Then immediately remove affected clothing and rinse affected skin areas with cold sodium bicarbonate solution or with cold water.
- Moisten skin and remove visible phosphorus (preferably under water) with squared object (knife-back etc.) or tweezers. Do not touch phosphorus with fingers!
- Throw removed phosphorus or clothing affected by phosphorus into water or allow to burn in suitable location
- Cover phosphorus burns with moist dressing and keep moist to prevent renewed inflammation.
- In case of eye contact, prop eyelids open and rinse eyes with water for 10 to 15 minutes.

For urgent information regarding assessment and treatment of noxious effects, contact poison control or medical center.

SUPPLEMENTARY HAZARD WARNING SHEET

Ammunition containing Inhibited Red Fuming Nitric Acid (IRFNA)

IRFNA

LOAD

Ammunition containing Inhibited Red Fuming Nitric Acid (IRFNA), which is: Brown liquid

- Red-brown to yellow vapors with pungent, acrid odor when exposed to air,
- Completely water miscible.

NATURE OF DANGER

- Fire-conductive, caustic, and toxic.
- Ignites flammable solids (e.g. wood, cotton) upon contact.
- Violent reactions upon contact with flammable liquid (explosion hazard).
- Vapours cause acid burns on skin, eyes, and respiratory organs (pulmonary edema).
- Substance hazardous to water.

PERSONAL PROTECTION

- Appropriate respiratory protection equipment.
- Protective clothing.
- One 500 ml eye flushing bottle with fresh tap water for each individual.
- One container with 20 liters of fresh tap water.

ADDITIONAL AND/OR SPECIAL ACTIONS BY AIRCREW

Evacuation immediately of the hazard area.
Hazard area description on reverse

Throughout area affected by smoke and fumes:

- Short stay: wear appropriate respiratory protection equipment.

INTERVENTION PERSONNEL advice:

- In event of longer stay: wear self contained breathing apparatus and protective clothing.
- Capture runoff from leak or firefighting operation.

FIRST AID

Symptoms of intoxication/acid burn:

- Skin, eyes, nasal and pharyngeal mucous membranes, respiratory tract smart.
- Slight tussive irritation causing slight cough which subsides after approximately 20 to 30 minutes.
- Dyspnea, vomiting, shock.

Action to be taken:

- Remove immediately contaminated clothing.
- Rinse affected body parts with plenty of water and cover with sterile dressing (no ointment, cream or oily solutions).

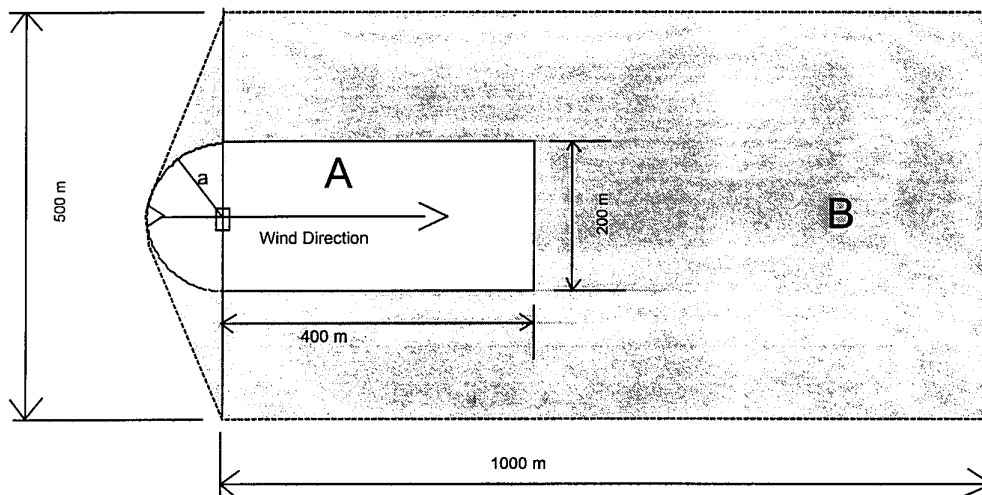
- If eyes are affected, hold open eyelids and rinse immediately with water for 10 to 15 minutes, rolling eyeballs in all directions.
- Transport promptly casualties for medical treatment in a lying position.

INTERVENTION SERVICE advice:

- In the event of respiratory arrest apply immediately expired-air ventilation or breathing apparatus.
- If swallowed, and if conscious, make victim sip large quantity of water, possibly with milk added. DO NOT make victim vomit.
- In case of victim dyspnea, half sitting position is permitted.

For urgent information regarding assessment and treatment of noxious effects, contact poison control or medical treatment center.

IRFNA



Explanations:

a = 100 m Radius

3. **LEAK:**
Hazard Area **A** must be evacuated.
Hazard Area **B** applies if the danger to the environment cannot be cleared away within one hour.
4. **FIRE:** Hazard Area **A and B** must be evacuated.

Appendix 1 to MAR-OPS 1.1211 Handling of dangerous cargo – Segregation table hazard class 1 explosive substances and/or articles

SEGREGATION CHART CLASS 1														
<i>applicable for separation of non ICAO TI compliant items of hazard Class 1.</i>														
Comptability Group (CG)	Class 1 / Explosives	A	B	C	D	E	F	G	H	J	K	L	N	S
A		✓	S	S	S	S	S	S	S	S	S	⊗	S	S
B		S	✓	S	S	S	S	S	S	S	S	⊗	S	✓
C		S	S	✓	✓	✓	S	S	S	S	S	⊗	S	✓
D		S	S	✓	✓	✓	S	S	S	S	S	⊗	S	✓
E		S	S	✓	✓	✓	S	S	S	S	S	⊗	S	✓
F		S	S	S	S	S	✓	S	S	S	S	⊗	S	✓
G		S	S	S	S	S	S	✓	S	S	S	⊗	S	✓
H		S	S	S	S	S	S	S	✓	S	S	⊗	S	✓
J		S	S	S	S	S	S	S	S	✓	S	⊗	S	✓
K		S	S	S	S	S	S	S	S	S	✓	⊗	S	✓
L		⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
N		S	S	S	S	S	S	S	S	S	S	⊗	✓	✓
S		S	✓	✓	✓	✓	✓	✓	✓	✓	✓	⊗	✓	✓



Allowed; This symbol at the intersection between row and column indicate that packages containing these compatibility groups (CG) do not require separation.



Allowed; packages containing these compatibility groups (CG) require separation.

The distance between Class 1 commodities that must be applied when they require separation is a minimum distance of 2 meters (not packed on one pallet).



Allowed with restriction; Explosives in CG L may only be transported with the same type of explosives in CG L and must not be transported with explosives of any other CG.



Forbidden; a combination of ammunition and/or explosives of these CG's (together with CG L) are forbidden for air transport

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SUBPART T – OPERATIONS REQUIRING SPECIAL APPROVAL

MAR-OPS 1.1300	Scope
MAR-OPS 1.1315	Privileges of the Operator holding a specific approval
MAR-OPS 1.1330	Operations in areas with specified navigation performance
MAR-OPS 1.1335	Operations in airspace with reduced vertical separation minima
MAR-OPS 1.1340	Extended range operations with two-engined aircraft

MAR-OPS 1.1300 Scope

- (a) The operations described in this subpart go beyond the scope of a basic MAOC approval and are therefore subject to Special Approval from the Military Aviation Authority.
- (b) The Operator shall not conduct operations described in this subpart unless a Special Approval has been granted by the Military Aviation Authority (reference MAR-OPS 1 subpart C).

MAR-OPS 1.1315 Privileges of the Operator holding a special approval

An Operator holding a Special Approval shall ensure that the privileges of the Special Approval as specified on the MAOC are included in the Operations Manual.

MAR-OPS 1.1330 Operations in areas with specified navigation performance

- (a) Operations in areas with specified navigation performance (SPN).

(1) The Operator shall not operate an aircraft in designated airspace under the terms and conditions applicable to that airspace:

- (i) On routes or in accordance with procedures where navigation specifications are established; or
- (ii) Based on ICAO Regional Air Navigation Agreement, where minimum navigation performance specifications are established,

unless holding a Special Approval issued by the Military Aviation Authority for this type of operation.

- (2) To obtain such Special Approval, an Operator shall:

(i) Demonstrate that the navigation equipment of the aircraft type for which the approval is being applied, meets the required performance in terms of navigation functionality, accuracy, integrity, availability and continuity;

(ii) Establish in the Operations Manual and maintain a training program for the flight crew involved in these operations; and

(iii) Establish in the Operations Manual operating procedures specifying:

(A) The equipment to be carried, including its operating limitations and appropriate entries in the Minimum Equipment List;

(B) Flight crew experience requirements;

(C) Normal procedures;

(D) Contingency procedures;

(E) Incident reporting;

(F) Specific regional operating procedures, in case of MNPS;

(G) Navigation database integrity, in case of PBN; and

(H) Maintenance program.

(b) The aircraft equipment for operations in MNPS areas shall comply with the ICAO Regional Air Navigation Agreement.

(c) An Operator shall ensure that a flight does not commence unless the equipment required under this subpart is approved and installed in accordance with MAR-OPS 1.845 sub-paragraph (b) and (c).

MAR-OPS 1.1335 Operations in airspace with reduced vertical separation minima

(a) An Operator shall not operate aircraft in designated airspace where a reduced vertical separation minimum of 300 m (1000 ft) applies above flight level (FL) 290, unless holding a Special Approval issued by the Military Aviation Authority for this type of operation.

(b) To obtain such Special Approval, an Operator shall:

(1) Demonstrate that the aircraft type for which the approval is being applied, has been issued with an RVSM airworthiness approval by the Military Aviation Authority in accordance with MAR-21 or equivalent;

(2) Establish in the Operations Manual and maintain a training program for the flight crew involved in these operations; and

(3) Establish in the Operations Manual operating procedures specifying:

(i) The equipment to be carried, including its operating limitations and appropriate entries in the Minimum Equipment List;

(ii) Flight crew experience requirements;

(iii) Flight planning;

(iv) Pre-flight procedures;

(v) Procedures prior to RVSM airspace entry;

(vi) In-flight procedures;

(vii) Post-flight procedures;

(viii) Maintenance program;

(ix) Incident reporting; and

(x) Specific regional operating procedures.

(c) In addition to the equipment required by MAR-OPS1 subpart K and L, aircraft used for operations in RVSM airspace shall be equipped with:

(1) Two independent altitude measurement systems;

- (2) An altitude alerting system;
- (3) An automatic altitude control system; and
- (4) A Secondary Surveillance Radar (SSR) transponder with altitude reporting system that can be connected to the altitude measurement system in use for altitude control.

(d) An Operator shall ensure that a flight does not commence unless the equipment required under this subpart is approved and installed in accordance with MAR-OPS 1.630 (b) and (c) and MAR-OPS 1.845 sub-paragraph (b) and (c).

MAR-OPS 1.1340 Extended range operations with two-engined aircraft

(a) An Operator shall not operate a two-engined aircraft carrying passengers over a route which contains a point further from an adequate aerodrome than the distance flown in 120 minutes or up to 180 minutes for turbo-jet aircraft, at the one-engine-inoperative cruise speed determined in accordance with sub-paragraph (b) below, unless holding a Special Approval issued by the Military Aviation Authority for this type of operation.

(b) An Operator shall determine a speed for the calculation of the maximum distance to an adequate aerodrome for each two-engined aircraft type or variant operated, not exceeding VMO, based upon the true airspeed that the aircraft can maintain with one-engine-inoperative under the following conditions:

(1) International Standard Atmosphere (ISA);

(2) Level flight:

(i) For turbojet aircraft at:

(A) FL 170; or

(B) At the maximum flight level to which the aircraft, with one engine inoperative, can climb, and maintain, using the gross rate of climb specified in the AFM, whichever is less; or

(ii) For propeller driven aircraft at:

(A) FL 80; or

(B) At the maximum flight level to which the aircraft, with one engine inoperative, can climb, and maintain, using the gross rate of climb specified in the AFM, whichever is less.

(3) Maximum continuous thrust or power on the remaining operating engine; and

(4) An aircraft mass not less than that resulting from:

(i) Take-off at sea-level at maximum take-off mass;

(ii) All engines climb to the optimum long range cruise altitude; and

(iii) All engines cruise at the long range cruise speed at this altitude, until the time elapsed since take-off is equal to the applicable threshold prescribed in sub-paragraph (a) above.

(c) An Operator must ensure that the following data, specific to each type or variant, is included in the Operations Manual:

- (1) The one-engine-inoperative cruise speed determined in accordance with sub-paragraph (b) above; and
- (2) The maximum distance from an adequate aerodrome determined in accordance with sub-paragraphs (a) and (b) above.

Note: The speeds and altitudes (flight levels) specified above are only intended to be used for establishing the maximum distance from an adequate aerodrome.

Final clauses

This requirement is known as: MAR-OPS – Military Aviation Requirements Operations 1 – Fixed wing transport, tanker and maritime surveillance operations and is published on the intranet site of the Ministry of Defence.

Hoofddorp, 20 July 2017

The Director of the Military Aviation Authority - The Netherlands

A handwritten signature in blue ink, consisting of stylized, overlapping loops and strokes, positioned above the printed name and title.

J.P. Apon
Colonel