THE NETHERLANDS
MILITARY AVIATION REGULATIONS

Unmanned Aircraft Systems

NLD-MAR-UAS

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MILITARY AVIATION AUTHORITY
THE NETHERLANDS (MAA-NLD)

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Notes:

1. This NLD-MAR-UAS document is a derivative from Commission Delegated Regulation (EU) 2019/945 and Commission Implementing Regulation (EU) 2019/947 and is kept as close as possible to the original text. Additions, changes or deletions are applied by the MAA-NLD based on military operational specificities. Military operational specificities are supported by specific national legislation, NATO Standardisation Agreements (STANAGs) and/or internal documents of the Netherlands Ministry of Defence. In case there are compelling budgetary or technical constraints (including capacity) preventing (temporary) implementation, the MAA-NLD and the MIL UAS Operator will determine together whether the application of the regulation is proportionate. The aim however should always be to deliver a level of safety and interoperability.

2. The following choices where made whilst creating this NLD-MAR-UAS:

a. EASA text is used verbatim if the applicability is identical in the military context;

b. Military specific additions are added to the EASA text if and when required for military operational specificities;

c. EASA text is deleted when there is no relevance in the military (and/or civil co-use) context, as long as it has no adverse effect on the level of safety and interoperability;

3. The numbering of the paragraphs in the NLD-MAR-UAS is partly identical to the numbering of the Easy Access Rules (EAR) of Commission Delegated Regulation (EU) 2019/945 and Commission Implementing Regulation (EU) 2019/947. They are consolidated versions of those rules, combining regulations with acceptable means of compliance (AMC) and guidance material (GM) in an easy-to-read format with advanced navigation features through links and bookmarks.

4. For military specific additions numbers are chosen that do not exist in the EASA document. If EASA text is deleted the word *Reserved* is inserted to indicate that numbering should not be used for other purposes also providing the complete picture.

5. This NLD-MAR-UAS relies on definitions laid down in NLD-MAD-1. Forms, standard scenarios and pre-defined risk assessments referring to in this document are published on the MAA-NLD Intranet and Internet.

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LIST OF ABBREVATIONS

AGL	Above Ground Level
AIP	Aeronautical Information Publication
AMC	Acceptable Means of Compliance
AMSL	Above Mean Sea Level
ANSP	Air Navigation Service Provider
AO	Airspace Observer
ARC	Air Risk Class
ARS	Automatic Recovery System
ATC	Air Traffic Control
BVLOS	Beyond Visual Line Of Sight
C2	Command And Control
C3	Command, Control and Communication
COMMIT	Commando Materieel & IT
ConOps	Concept of Operations
CRM	Crew Resource Management
CSP	Comprehensive Safety Portfolio
CU	Command Unit
DAA	Detect and Avoid
DCAC	Design Confirmity Assessment Certificate
EASA	European Union Aviation Safety Agency
ERP	Emergency Response Plan
EVLOS	Extended Visual Line Of Sight
FPV	First Person View
FRMS	Fatigue Risk Management System
FTD	Flight Training Device
FTS	Flight Termination System
GM	Guidance Material
GNSS	Global Navigation Satellite System

GRC	Ground Risk Class
HMI	Human Machine Interface
ICAO	International Civil Aviation Organisation
i.a.w.	In accordance with
iGRC	Intrinsic Ground Risk Class
MAA-NLD	Military Aviation Authority Of The Netherlands
MAR	Military Aviation Regulation
MAR OPS 4	Military Aviation Regulation RPAS Operations (>150kg)
MAR OPS 5	Military Aviation Regulation RPAS Operations (<150kg)
MAR M	Military Aviation Regulation Continuing Airworthiness Regulations
MAR UAS	Military Aviation Regulation UAS
MC	Military Class
MCC	Multi-Crew Cooperation
METAR	Meteorological Aerodrome Report
MIL UAS	Military Unmanned Aircraft Systeme
MOD	Ministry of Defence
MTOM	Maximum Take-Off Mass
NOTAM	Notice to Airmen
OM	Operations Manual
OSO	Operational Safety Objective
PDRA	Predefined Risk Assessment
RCP	Required Communication Performance
RF	Radio Frequency
RLP	Required C2 Link Performance
RP	Remote Pilot
RPAS	Remotely Piloted Aircraft System
SAIL	Specific Assurance and Integrity Level
SDS	Safety Data Sheets
SMM	Safety Management Manual
SORA	Specific Operations Risk Assessment

STS	Standard Scenario
TAF	Terminal Area Forecast
TCAS	Traffic Collision Avoidance System
TMPR	Tactical Mitigation Performance Requirement
UA	Unmanned Aircraft
UAS	Unmanned Aircraft System
VLOS	Visual Line of Sight
VO	Visual Observer

COVER REGULATION

Article 1 Subject matter
+AMC/+GM

1. This Military Aviation Regulation (MAR) lays down detailed requirements for the operation of Military Unmanned Aircraft Systems (MIL-UAS) including remote pilots (RP) and organisations involved in those operations.
2. This NLD-MAR-UAS applies to:
   (a) NLD Military-Owned and/or NLD Military Registered UAS regardless if Military Operated or Civilian Operated;
   (b) NLD RP of the Ministry of Defence (MOD);
   (c) Civilian RPs operating under contract of the MOD;
   (d) Other Nation's military UAS operated by NLD MOD personnel, within NLD airspace.
3. For (operation of) MIL-UAS in de categories MIL-UAS-OPEN and MIL-UAS-SPECIFIC, this regulation supersedes the MAR-OPS 4, MAR-OPS 5 and NLD-MAR-M.
4. The Military Aviation Authority of the Netherlands (MAA-NLD) may exceptionally and temporarily grant an exemption from the requirements of NLD-MAR-UAS. The exemption is temporarily and may include alternative requirements the MAA-NLD determines necessary in order to ensure an acceptable level of safety in the particular case.

   When the MIL UAS Operator has a need to deviate from any NLD-MAR-UAS requirement, a petition for exemption from the specific requirement shall be submitted to the MAA-NLD in accordance with NLD-MAR 11. The formal MAA-NLD approval shall be obtained before deviating from the requirement.

   When time does not permit compliance with the rule above, deviation from specific NLD-MAR-UAS 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 MAA-NLD as soon as possible, describing the MAR-UAS requirements deviated from including:

   i. operational circumstances and necessity to deviate;
   ii. results from the operational risk / safety assessment; and
   iii. any supplementary conditions and/or measures applied.

Article 2 Definitions
+AMC/+GM

Definitions of terms used are specified in the Annex Terms & definitions of this regulation.

Article 3 Categories of MIL-UAS operations
+AMC/+GM

MIL-UAS operations shall be performed in one of the following categories:

1. The MIL-UAS-OPEN category of operations covers operations meeting the requirements of Article 4;
2. The MIL-UAS-SPECIFIC category of operations covers operations meeting the requirements of Article 5;
3. The MIL-UAS-CERTIFIED category of operations covers operations meeting the requirements of Article 6.

Article 4 MIL-UAS operations in the MIL-UAS-OPEN category
+AMC/+GM

MIL-UAS operations in the MIL-UAS-OPEN category shall be performed in accordance with Annex A, Subpart A.

Article 5 UAS operations in the MIL-UAS-SPECIFIC category
+AMC/+GM

1. Where one of the requirements laid down in Article 4 is not met, a MIL-UAS operator shall be required to obtain an operational authorisation pursuant to Article 12 from the MAA-NLD;
2. When applying to the MAA-NLD for an operational authorisation pursuant Article 12, the operator shall perform a risk assessment in accordance with Article 11 and submit it together with the application, including adequate mitigating measures;
3. In accordance with MAR.UAS.SPEC.040 the MAA-NLD will issue an operational authorisation, if it considers that the operational risks are adequately mitigated in accordance with Article 12;
4. The MAA-NLD will specify whether the operational authorisation concerns the approval of a single operation or a number of operations specified in time or location(s) or both. The operational authorisation shall include the associated precise list of mitigating measures;
5. Where the MIL-UAS operator submits a declaration to the MAA-NLD in accordance with MAR.UAS.SPEC.020 for an operation complying with a standard scenario (STS) set out and published by the MAA-NLD, the MIL-UAS operator shall not be required to obtain an operational authorisation in accordance with paragraphs 1 to 4 of this Article. Then the procedure laid down in paragraph 5 of Article 12 shall apply. The MIL-UAS operator shall use the declaration referred in the STS as published by the MAA-NLD.

Article 6 UAS operations in the MIL-UAS-CERTIFIED category
+GM

1. MIL-UAS operations shall be classified in the MIL-UAS-CERTIFIED category when the operation meets any of the following conditions:

   (a) involves a MIL-UAS being flown over assemblies of people; or,

   (b) involves the transport of people; or

   (c) are weaponised or involves the carriage of dangerous goods that result in high risk for third

parties in case of accident.

2. In addition, MIL-UAS operations intended to be used in the MIL-UAS-SPECIFIC category of operations defined in Article 5 shall be classified as MIL-UAS operations in the MIL-UAS-CERTIFIED category where the MAA-NLD based on the risk assessment provided for in Article 11, considers that the risk of the operation cannot be adequately mitigated without the certification of the MIL-UAS, the UAS operator and, where applicable, without the licensing of the remote pilot.
3. By derogation of 1(c), the MAA-NLD may allow operations involving weaponised UAS or the carriage of dangerous goods in the MIL-UAS-SPECIFIC category.

Article 7 Rules and procedures for the operation of MIL-UAS
+GM

1. MIL-UAS operations in the MIL-UAS-OPEN category shall comply with the operational limitations set out in Annex A, Subpart A operations MIL-UAS-OPEN of this regulation.
2. MIL-UAS operations in the MIL-UAS-SPECIFIC category shall comply with:
   (a) the operational limitations set out in the Annex A, Subpart B: operations MIL-UAS-SPECIFIC of the NLD-MAR-UAS; or,
   (b) an operational authorisation as referred to in Article 12; or,
   (c) a standard scenario (STS) as defined and as published by the MAA-NLD and as declared by the MIL-UAS operator; or,
   (d) a pre-defined risk assessment (PDRA) as defined and published by the MAA-NLD with a declaration of the UAS operator on how to comply with the prescriptive conditions in the pre-determined type of operation;
3. MIL-UAS operations in the MIL-UAS-CERTIFIED category shall be subject to the applicable operational requirements laid down in MAR-OPS 4 and MAR-OPS 5.

Article 8 Rules and procedures for the competency of remote pilots
+GM

1. Remote pilots operating MIL-UAS in the MIL-UAS-OPEN category shall comply with the competency requirements set in Annex C , Subpart A; competency requirements in category MIL-UAS-OPEN of this regulation.
2. Remote pilots operating MIL-UAS in the MIL-UAS-SPECIFIC category shall comply with the competency requirements set out in the operational authorisation by the MAA-NLD or in the standard scenario defined in Annex C, Subpart B; competency requirements in category MIL-UAS-SPECIFIC of this regulation.
3. Remote pilots operating MIL-UAS in the MIL-UAS-CERTIFIED category shall comply with the competency regulations in the NLD-MAR-MRPL or NLD-MAR-FCL.
4. Remote pilots in the category MIL-UAS-SPECIFIC shall be fit to operate as set out with the requirements set in the operational authorisation by the MAA-NLD or as set in the STS as published by the MAA-NLD.
5. Remote pilots in the category MIL-UAS-CERTIFIED shall be fit to operate according to national military medical standards.

Article 9 Minimum age for remote pilots
+AMC

The minimum age for remote pilots operating a MIL-UAS in all categories shall be 17 years.

Article 10 Rules and procedures for the airworthiness of MIL-UAS
+GM

1. MIL-UAS used in operations in the MIL-UAS-OPEN or in the MIL-UAS-SPECIFIC categories shall comply with the rules and procedures for airworthiness as defined in Annex B;
2. MIL-UAS used in operations in the MIL-UAS-CERTIFIED category shall comply with the rules and procedures for airworthiness provided in and originating from MAR-OPS 4, MAR-OPS 5 and NLD-MAR-M.

Article 11 Rules for conducting an operational risk assessment
+GM

1. An operational risk assessment is required for an operation which:
   (a) does not fall into the MIL-UAS-OPEN or MIL-UAS-CERTIFIED category, or;
   (b) is not covered by an STS or PDRA.
2. An operational risk assessment shall be conducted by the Specific Operations Risk Assessment (SORA) methodology as described in Annex D.

Article 12 Authorizing operations in the MIL-UAS-SPECIFIC category
+GM

1. The MAA-NLD will evaluate the risk assessment and the robustness of the mitigating measures that the MIL-UAS operator proposes to keep the MIL-UAS operation safe in all phases of flight.
2. The MIL-UAS operator is entitled to receive an operational authorisation when the evaluation concludes that:
   (a) the operational safety objectives take account of the risks of the operation;
   (b) the combination of mitigation measures concerning the operational conditions to perform the operations, the competence of the personnel involved and the technical features of the unmanned aircraft (UA) are adequate and sufficiently robust to keep the operation safe in view of the identified ground and air risks.
3. When the operation is not deemed sufficiently safe, the MAA-NLD shall inform the applicant accordingly, giving reasons for its refusal to issue the operational authorisation.
4. The operational authorisation granted by the MAA-NLD will detail:
   (a) the scope of the authorisation;
   (b) the 'specific' conditions that shall apply:
      i) to the MIL-UAS operation and the operational limitations;
      ii) to the required competency of the MIL-UAS operator and, where applicable, of the remote pilots;

iii) to the technical requirements of the MIL-UAS, including the qualification of the MIL-UAS, if applicable;

(c) the following information:

i) the type of MIL-UAS and the technical features of the MIL-UAS;

ii) a reference to the operational risk assessment developed by the MIL-UAS operator;

iii) the operational limitations and conditions of the operation;

iv) the mitigation measures that the UAS operator has to apply;

v) the location(s) where the operation is authorised to take place

Article 13 Cross-border operations or operations outside the state of registration
+GM

If a MIL-UAS operator intends to conduct an operation in the MIL-UAS-OPEN or in the MIL-UAS-SPECIFIC category for which an operational authorisation has already been granted in accordance with Article 12, and which is intended to take place partially or entirely in the airspace of other countries, the MIL-UAS operator shall provide the military competent authority of that state an application of the intended operation upon request of that authority with:

(a) a copy of the operational authorisation granted to the MIL-UAS;

(b) the location(s) of the intended operation including the updated mitigation measures, if needed, to address those risks identified under Article 11 specific to the local airspace, terrain and population characteristics and the climatic conditions.

Article 14 Registration of MIL-UAS and MIL-UAS remote pilots
+AMC/+GM

1. MIL-UAS shall be registered by the MAA-NLD in a digital registration system when:

   (a) operating within the MIL-UAS-OPEN category;

   (b) operating within the MIL-UAS-SPECIFIC category;

   (c) operating within the MIL-UAS-CERTIFIED category.

2. All MIL-UAS shall bear a unique registration mark and nationality mark on the unmanned aircraft;
3. Military remote pilots in the category MIL-UAS-OPEN and MIL-UAS-SPECIFIC shall be registered by the MIL UAS operator in a registration system;
4. Military remote pilots operating in the MIL-UAS-CERTIFIED category shall be registered by the MAA-NLD in a digital registration system.
5. The MAA-NLD may grant an exemption from the requirements of this article. The exemption may include any supplementary condition the MAA-NLD considers necessary.

Article 15 Operational conditions for MIL-UAS geographical zones
+GM

1. When defining MIL-UAS geographical zones for safety, security, privacy or environmental reasons,

the MAA-NLD may;

(a) prohibit certain or all MIL UAS operations, request particular conditions for certain or all MIL-UAS operations or require a prior flight authorisation for certain or all MIL-UAS operations;

(b) subject MIL-UAS operations to specified standards;

(c) allow access to certain MIL-UAS classes only;

(d) allow access only to MIL-UAS equipped with certain technical features;

2. Based on a risk assessment carried out by the MAA-NLD, the MAA-NLD may designate certain military geographical zones in which MIL-UAS operations are exempt from one or more of the MIL-UAS-OPEN category requirements.

Article 16 Safety information
+AMC

1. The MIL-UAS operator shall report on safety-related occurrences and exchange information regarding its MIL-UAS.
2. The MIL-UAS operator shall comply with all applicable directives related to operations with MIL-UAS issued by the MAA-NLD;
3. The MIL-UAS operator shall allow the MAA-NLD to perform any investigations necessary to determine compliance with the applicable requirements of this NLD-MAR-UAS. The MIL-UAS operator shall allow the MAA-NLD to review any report and perform any inspection or witness any operation.

Article 17 Final clauses

This Military Aviation Regulation is known as NLD-MAR-UAS.

This Military Aviation Regulation shall enter into force on February 1st, 2026 and will be published from the day after the date of issue on the MAA-NLD internet/intranet.

This Military Aviation Regulation will be binding in its entirety and directly applicable to all Military Aviation Organisations who are involved in any way with or are acting within the Netherlands Military Aviation System (NLD-MAS) and need to be compliant no later than 01 January 2027.

The Hague, 01 March 2026

For the Minister of Defence,
The Director of the Military Aviation Authority – The Netherlands

A.A.W.K. Appels LLM, MSc,

Air Commodore

ANNEX TERMS AND DEFINITIONS USED IN THE NLD-MAR-UAS
(+AMC/ +GM)

For the purpose of this Regulation, the generic definitions in NLD-MAD-1 are used, complemented by the following MAR-UAS-specific definitions:

(1) 'adjacent area' means the ground area adjacent to the ground risk buffer where it is reasonably expected a UA may crash after a loss of control situation resulting in a flyaway;

(2) 'airspace observer' means a person who assists the remote pilot by performing unaided visual scanning of the airspace in which the unmanned aircraft is operating for any potential hazard in the air;

(3) 'acceptable means of compliance' (AMC) are non-binding standards adopted by the MAA-NLD to illustrate means to establish compliance with the Military Aviation Regulation;

(4) 'assemblies of people' means gatherings where persons are unable to move away due to the density of the people present;

(5) 'automatic recovery system' (ARS) is a system that is implemented through a UAS crew command or by the on board systems that may include an automatic pre-programmed course of action to reach a predefined and unpopulated forced landing area;

(6) 'autonomous' means a flight without the intervention of a remote pilot;

(7) 'beyond visual line of sight' (BVLOS) means any type of UAS operation which is not conducted in (E)VLOS;

(8) 'command and control link' (C2 link) means a data transmission used for control of the unmanned aircraft that transmits unmanned aircraft crew commands from the command unit to the unmanned aircraft (uplink) and unmanned aircraft status data from the unmanned aircraft to the command unit (downlink).

(9) 'command and control link service' means a communication service supplied by a third party, providing command and control between the unmanned aircraft and the CU;

(10) 'command unit' (CU) means the equipment or system of equipment to control unmanned aircraft remotely which supports the control or the monitoring of the unmanned aircraft during any phase of flight, with the exception of any infrastructure supporting the command and control (C2) link service.

(11) 'contingency area' means the projection of the contingency volume on the ground surface;

(12) 'contingency volume' means the volume of airspace outside the flight geography where contingency procedures are applied;

(13) 'dangerous goods' means articles or substances, which are capable of posing a hazard to health, safety, property or the environment in the case of an incident or accident, that the unmanned aircraft is carrying as its payload;

(14) 'direct remote identification' means a system that ensures the local broadcast of information about an unmanned aircraft in operation, including the marking of the unmanned aircraft, so that this information can be obtained without physical access to the unmanned aircraft;

(15) 'extended visual line of sight' (EVLOS) means an UAS operation under VLOS conditions where the unmanned aircraft is beyond the visual line of sight of the remote pilot but within the visual

line of sight of one or more unmanned aircraft extended visual observer(s) assisting the remote pilot in safely conducting the flight;

(16) 'flight geography' means the volume(s) of airspace defined spatially and temporally in which the UAS operator plans to conduct the operation under normal procedures;

(17) 'flight geography area' means the projection of the flight geography on the ground surface;

(18) 'flight termination system' (FTS) is a procedure or function that aims to immediately end the flight;

(19) 'follow-me mode' means a mode of operation of a UAS where the unmanned aircraft constantly follows the remote pilot within a predetermined radius;

(20) 'geo-awareness' means a function that, based on the data provided by manufacturer, MOD or equivalent state department detects a potential breach of airspace limitations and alerts the remote pilots so that they can take immediate and effective action to prevent that breach;

(21) 'ground area' means the ground area where the UAS is operated above, a 'controlled ground area' means the ground area where the UAS is operated and which the MIL-UAS Operator can ensure that only involved persons are present;

(22) 'ground risk buffer' is an area over the ground area, which surrounds the operational volume and that is specified in order to minimise the risk to third parties on the surface in the event of the unmanned aircraft unintentionally leaving the operational volume;

(23) 'guidance material' (GM) are developed to provide additional explanation to assist the application of the requirement and/or explain the AMC;

(24) 'involved persons' means persons who do not comply with the term uninvolved (39);

(25) 'maximum take-off mass' (MTOM) means the maximum Unmanned Aircraft mass, including payload and fuel, as defined by the manufacturer or the builder, at which the UA can be operated;

(26) 'military unmanned aircraft system operator' (MIL-UAS operator) is the military organisation or entity intending or offering to engage in a UAS operation. A person making a request on behalf of the 'MIL-UAS operator' will be defined as an applicant;

(27) 'night' means the period between the end of evening civil twilight and the beginning of morning civil twilight, or such other period between sunset and sunrise as may be prescribed by the MAA-NLD;

(28) 'operational volume' is the combination of the flight geography and the contingency volume;

(29) 'operational safety objectives" are SORA's safety requirements, tailored to GRC and ARC levels, covering technical, operational, and organisational measures. They are mandatory for a MIL UAS operator to mitigate risks;

(30) 'payload' means instrument, mechanism, equipment, part, apparatus, appurtenance, or accessory, including communications equipment, that is installed in or attached to the aircraft and is not used or intended to be used in operating or controlling an aircraft in flight, and is not part of an airframe, engine, or propeller;

(31) 'predefined risk assessment' (PDRA) is an operational scenario in the 'MIL-UAS-SPECIFIC category for which MAA-NLD has already carried out the risk assessment and has been published by the MAA-NLD.

(32) 'remote pilot' (RP) means the person charged by the operator with duties essential to the operation of an unmanned aircraft and who operates the flight controls, as appropriate;

(33) 'robustness' means the property of mitigation measures resulting from combining the safety gain provided by the mitigation measures and the level of assurance and integrity that the safety gain has been achieved;

(34) 'specific operations risk assessment' (SORA) is a methodology for the classification of the risk posed by a UAS flight in the MIL-UAS-SPECIFIC category of operations and for the identification of mitigations and of the safety objectives. It is mandatory for the MIL-UAS operator to identify operational limitations, training objectives for the personnel essential for the operation, technical requirements for the UAS and to develop the appropriate operational procedures that should be part of the operator manual.

(35) 'standard scenario' (STS) means a type of UAS operation in the 'MIL-UAS-SPECIFIC category, as defined and published by the MAA-NLD for which a precise list of mitigating measures has been identified in such a way that the MAA-NLD can be satisfied with declarations in which operators declare that they will apply the mitigating measures when executing this type of operation;

(36) 'swarm UAS' is a group of multiple unmanned aircraft, flying together as a unified and coordinated entity. These UA typically communicate with each other, synchronize their movements, and may operate autonomously to achieve specific objectives, such as aerial displays, surveillance, or collaborative tasks.

(37) 'tethered UAS operation' is one where the unmanned aircraft remains securely attached (tethered) via a physical link to a person, the ground or an object at all times while it is flying. The tether normally takes the form of a flexible wire or a cable and may include the power supply to the aircraft.

(38) 'UAS geographical zone' means a portion of airspace established by the competent authority that facilitates, restricts or excludes UAS operations in order to address risks pertaining to safety, privacy, protection of personal data, security or the environment, arising from UAS operations;

(39) 'uninvolved persons' means persons who are not participating in the UAS operation or who are not aware of the instructions and safety precautions given by the UAS operator, excluding military personnel involved in a military operation and/or exercise;

(40) 'unmanned aircraft' (UA) means any aircraft operating or designed to operate autonomously or to be piloted remotely without a pilot on board and is not classified as guided missile or similar ammunition type or cargo parachute;

(41) 'unmanned aircraft observer' means a person, positioned alongside the remote pilot who, by unaided visual observation of the unmanned aircraft, assists the remote pilot in keeping the unmanned aircraft in VLOS and safely conducting the flight

(42) 'unmanned aircraft system' (UAS) is an unmanned aircraft (UA), its associated ground control station(s), the required command and control links and any other components as specified in the type design. A *military* UAS has the same definition as UAS but is especially designed for or to be operated for military use. A military UAS is registered, or intended to be registered in the military register of a military (airworthiness or aviation) authority.

(43) 'visual line of sight' (VLOS) means a type of UAS operation in which the remote pilot is able to maintain continuous unaided visual contact with the unmanned aircraft, allowing the remote pilot to control the flight path of the unmanned aircraft in relation to other aircraft, people and obstacles for the purpose of avoiding collisions.

ANNEX A: OPERATIONS IN THE MIL-UAS-OPEN AND MIL-UAS-SPECIFIC CATEGORIES

SUBPART A – Operations in the MIL-UAS-OPEN category

MAR.UAS.OPEN.010 General requirements

+AMC/+GM

1. UAS operating in the MIL-UAS-OPEN shall be operated under the responsibility of a responsible officer/manager (refer to MAR.UAS.OPEN.050);
2. The UAS operations shall be performed by a remote pilot who is certified for UAS operation in the MIL-UAS-OPEN (refer to Annex C);
3. The UAS operations shall be performed with MIL-UAS holding a Design Conformity Assessment Certificate (DCAC) for class MC-0, MC-2 or MC-3 (ref. MAR.UAS.OPEN.020/030/040);
4. During flight, the unmanned aircraft is maintained at or below 120 metres Above Grond Level (AGL), except when overflying an obstacle;
5. When flying an unmanned aircraft within a horizontal distance of 50 meters from an artificial obstacle taller than 105 meters, the maximum height of the UAS operation may be increased up to 15 meters above the height of the obstacle and whereas the safety for the UA and obstacle may not be compromised;
6. When a geographical zone has been defined with a lower maximum height, the remote pilot must ensure that the UAS always complies with the requirements of the geographical zone;
7. During flight, the unmanned aircraft does

   (a) not carry dangerous goods and/or weapons/ammunitions;

   (b) does not drop any material;
8. The remote pilot keeps the unmanned aircraft in Visual Line Off Sight (VLOS) at all times except when flying in follow-me mode or in Extended Visual Line Of Sight (E-VLOS);
9. MIL-UAS-OPEN may only be flown in Class G airspace or within segregated, military terrain or military training areas. Operations in controlled or non-segregated airspace require prior coordination and authorisation from the responsible ATS unit. Use of military training areas or overflight of specific terrain may additionally require permission from the responsible land or range authority.

MAR.UAS.OPEN.020 UAS operations with class MC-0

+GM

1. The UAS operations shall be performed with an unmanned aircraft that is of a type that has a Design Conformity Assessment Certificate (DCAC) that assigns it to class MC-0 (refer to Annex B).
2. The remote pilot ensures that the unmanned aircraft is not flown over assemblies of people.

MAR.UAS.OPEN.030 UAS operations with class MC-2

1. The UAS operations shall be performed with an unmanned aircraft that is of a type that has a

DCAC that assigns it to class MC-2 (refer to Annex B);

2. The UAS is operated with the geo-awareness function;
3. The UAS operations shall be conducted in such a way that the UA does not overfly uninvolved persons and the UAS operations take place at a safe horizontal distance of at least 30 meters from them; the remote pilot may reduce the horizontal safety distance down to a minimum of 5 meters from an uninvolved person when operating an unmanned aircraft with an active low speed mode function and after evaluation of the situation regarding:

   (a) weather conditions;

   (b) performance of the unmanned aircraft;

   (c) segregation of the overflown area.

MAR.UAS.OPEN.040 UAS operations with class MC-3
+GM

1. The UAS operations shall be performed with an unmanned aircraft that is of a type that has a DCAC that assigns it to class MC-2 or MC-3 (refer to Annex B);
2. The UAS is operated with the geo-awareness function.
3. The UAS operations shall be conducted in such a way that the UA does not overfly uninvolved persons and the UAS operations take place at a safe horizontal distance of at least 30 meters from them; the remote pilot may reduce the horizontal safety distance down to a minimum of 5 meters from an uninvolved person when operating an unmanned aircraft with an active low speed mode function and after evaluation of the situation regarding:

   (a) weather conditions;

   (b) performance of the unmanned aircraft;

   (c) segregation of the overflown area.

4. The UAS operations shall be conducted at a safe horizontal distance of at least 150 meters from residential, commercial, industrial or recreational areas;

MAR.UAS.OPEN.050 Responsibilities of the responsible officer/ manager
+GM

The responsible Officer/ manager shall:

1. ensure a safe operation with the MIL-UAS within its area of responsibility;
2. ensure that risks to remote pilots, operating personnel, and other involved persons through the operation with MIL-UAS are acceptable, and stop operations if not;
3. designate a remote pilot for each flight;
4. ensure that remote pilots have:

   (a) appropriate competency in the subcategory of the intended MIL-UAS operations in accordance with points MAR.UAS.OPEN.020, MAR.UAS.OPEN.030 or MAR.UAS.OPEN.040 to perform their tasks;

   (b) the adequate information relevant to the intended MIL-UAS operation concerning any

geographical zones;

5. ensure that personnel other than the remote pilot and involved in the MIL-UAS operation are competent and trained.
6. report any safety-related occurrence or hazards to the MAA-NLD with an MAA-NLD approved reporting system.

MAR.UAS.OPEN.060 Responsibilities of the military remote pilot
+GM

1. Before starting a MIL-UAS operation, the military remote pilot shall:
   (a) have the competency in the subcategory of the intended MIL-UAS operation in accordance with points MAR.UAS.OPEN.020, MAR.UAS.OPEN.030 or MAR.UAS.OPEN.040 to perform its task and carry a proof of competency while operating the MIL-UAS;
   (b) obtain updated information relevant to the intended MIL-UAS operation about any geographical zone in accordance with Article 15;
   (c) observe the operating environment, check the presence of obstacles referred to point MAR.UAS.OPEN.020 (1) (a) and check the presence of any uninvolved person(s);
   (d) ensure that the MIL-UAS is in a condition to safely complete the intended flight, and if applicable, check if the direct remote identification is active and up-to-date;
   (e) if the MIL-UAS can be fitted with an additional payload, ensure that all fitted payloads are mentioned on the DCAC so that its mass does not exceed the maximum take-off mass (MTOM) limit of its class;
   (f) update the information into the geo-awareness system when applicable according to the intended location of operation;
2. During the flight, the military remote pilot shall:
   (a) not perform duties under the influence of psychoactive substances or alcohol or when it is unfit to perform his/her tasks due to injury, fatigue, medication, sickness or other causes;
   (b) keep the unmanned aircraft in (E-)VLOS and maintain a thorough visual scan of the airspace surrounding the unmanned aircraft in order to avoid any risk of collision with any aircraft. The remote pilot shall discontinue the flight if the operation poses a risk to other aircraft, persons, animals, environment or property;
   (c) comply with the operational limitations in geographical zones defined in accordance with Article 15;
   (d) must maintain control of the unmanned aircraft, except in the case of a lost link as part of an emergency procedure;
   (e) operate the MIL-UAS in accordance with instructions provided by the approved assessor organisation referred to MAR.UAS.B.D.020 , including any applicable limitations;
   (f) if available, comply with the operator's procedures;
   (g) when operating at night make sure that the MIL-UAS is kept in (E)VLOS;
   (h) when using First Person View (FPV) make sure that an unmanned aircraft observer is present;
   (i) not fly close to or inside areas where an emergency response effort is ongoing unless he/she

has permission to do so from the responsible emergency response services;

3. For the purposes of point (2) (b) or (2) (h), remote pilots shall be assisted by an unmanned aircraft observer. In such case, clear and effective communication shall be established between the remote pilot and the unmanned aircraft observer.

MAR.UAS.OPEN.070 Duration and validity of the military remote pilot certificates

1. The military remote pilot's theoretical certificate shall be valid for a maximum of five years.
2. The revalidation of the remote pilot online theoretical competency and of the certificate of remote pilot competency is, within its validity period, subject to the completion of a refresher training addressing respectively the theoretical knowledge subjects as defined in Annex C SUPPART A provided by the MAA-NLD or by an entity designated by the MAA-NLD.
3. The renewal of the remote pilot online theoretical competency and of the certificate of remote pilot competency is, upon its expiration, subject to the demonstration of competencies in accordance with Annex C SUPPART A.

SUBPART B – Operations in the MIL-UAS-SPECIFIC category

MAR.UAS.SPEC.010 General requirements

1. The MIL-UAS operator shall provide the MAA-NLD with an operational risk assessment for the intended operation in accordance with Article 11, or submit a declaration when MAR.UAS.SPEC.020 is applicable;
2. The MIL-UAS operator shall regularly evaluate the adequacy of the mitigation measures taken and update them where necessary;
3. Reserved.

MAR.UAS.SPEC.020 Operational declaration

+AMC

1. In accordance with Article 5, the MIL-UAS operator may submit an operational declaration of compliance with a standard scenario as published by the MAA-NLD as an alternative to MAR.UAS.SPEC.030 and MAR.UAS.SPEC.040.
2. A declaration of the MIL-UAS operator shall contain:
   (a) administrative information about the applicant and unit;
   (b) a statement that the operation satisfies the operational requirement set out in (1) and a standard scenario as published by the MAA-NLD;
   (c) the commitment of the MIL-UAS operator to comply with the relevant mitigation measures required for the safety of the operation, including the associated instructions for the operation, for the design of the unmanned aircraft and the competency of involved personnel;
   (d) Reserved.
3. UAS operators shall notify the MAA-NLD of any change to the information contained in the operational declaration that they submitted;

4. Reserved.

MAR.UAS.SPEC.030 Application for an operational authorisation

1. Before starting a UAS operation in the MIL-UAS-SPECIFIC category the MIL-UAS operator shall obtain an operational authorisation from the MAA-NLD, except when point MAR.UAS.SPEC.020 is applicable;
2. The MIL-UAS operator shall submit an application for an updated operational authorisation if there are any significant changes to the operation or to the mitigation measures listed in the operational authorisation;
3. The application for an operational authorisation shall be based on the risk assessment referred to in Article 11 and shall include in addition the following information:

   (a) the name of the organisation;

   (b) the name of the accountable manager;

   (c) the operational risk assessment (SORA) or;

   (d) a declaration of compliance with the applicable PDRA and the mitigation measures to address the risks annexed to this application. The list of mitigation measures proposed by the MIL-UAS operator should give sufficient information for the MAA-NLD to assess the adequacy of the mitigation means to address the risks;

   (e) bases on the risk and complexity of the operation an operations manual;

   (f) Reserved.

MAR.UAS.SPEC.040 Issuance of an operational authorisation
+AMC

When receiving an application in accordance with MAR.UAS.SPEC.030, the MAA-NLD shall issue an operational authorisation in accordance with Article 12 when it concludes that the operation meets the following conditions:

   (a) all information in accordance with (3) of MAR.UAS.SPEC.030 is provided;

   (b) a procedure is in place for coordination with the relevant ATC-unit if the entire operation, or part of it, is to be conducted in controlled airspace;

   (c) the MAA-NLD specifies in the operational authorisation the exact scope of the authorisation in accordance with Article 12.

MAR.UAS.SPEC.050 Responsibilities of the MIL-UAS operator
+AMC/ +GM

The MIL-UAS operator shall:

1) establish procedures and limitations adapted to the type of the intended operation and the risk involved, including:

   (a) operational procedures to ensure the safety of the operations;

   (b) procedures to ensure that security requirements applicable to the area of operations are

complied with for the intended operation;

(c) measures to protect against unlawful interference and unauthorised access;

(d) guidelines for its military remote pilots to plan UAS operations in a manner that minimises nuisances, including noise and other emissions-related nuisances, to persons and animals.

2) designate a remote pilot for each flight or, in case of autonomous operations, ensure that during all phases of the flight, responsibilities and are properly allocated in accordance with the procedures established pursuant to MAR.UAS.SPEC.050 (1) (a);

3) ensure that all operations effectively use and support the efficient use of radio spectrum in order to avoid undesirable interference;

4) ensure that before conducting operations, remote pilots comply with all of the following conditions:

a) have the competency to perform their tasks in line with the applicable training identified by the operational authorisation or, if MAR.UAS.SPEC.020 applies, by the conditions and limitations defined in the appropriate standard scenario as published by the MAA-NLD;

b) follow military remote pilot training which shall be competency based and include the competencies set out in paragraph 2 of Article 8:

c) having followed military remote pilot training as defined in the operational authorisation for operations requiring such authorisation to be conducted in cooperation with an entity designated by the MAA-NLD;

d) having followed military remote pilot training for operations under declaration that shall be conducted in accordance with the mitigation measures defined by a STS as published by the MAA-NLD;

e) having been informed about the MIL-UAS operator's operations manual, if required by the risk assessment and procedures established in accordance with point (1);

f) obtain updated information relevant to the intended operation about any geographical zone(s) defined in accordance with Article 15;

5) ensure that personnel in charge of duties essential to the MIL-UAS operation, other than the military remote pilot him/herself, comply with all of the following conditions:

a) having completed the on-the-job-training developed by the operator;

b) having been informed about the UAS operator's operations manual;

c) having obtained updated information relevant to the intended operation about any geographical zone(s) defined in accordance with Article 15;

6) carry out each operation within the limitations, conditions, and mitigation measures defined in the declaration or specified in the operational authorisation;

7) keep and maintain an up-to-date record of:

(a) all the relevant qualifications and training courses completed by the military remote pilot and the other personnel in charge of duties essential to the UAS operation, for at least 3 years after those persons have ceased employment with the organisation or have changed their position in the organisation;

(b) the information on UAS operations, including any technical or operational occurrences and other data as required by the declaration or by the operational authorisation for a minimum of

3 years;

(c) designated military remote pilots

(d) maintenance staff employed by the operator to carry out maintenance activities.

MAR.UAS.SPEC.060 Responsibilities of the military remote pilot

1. The military remote pilot shall:

   (a) not perform duties under the influence of psychoactive substances or alcohol or when is unfit to perform tasks due to injury, fatigue, medication, sickness or other causes;

   (b) comply with competency requirements as defined in the operational authorisation in a standard scenario published by the MAA-NLD and carry a proof of competency while operating the UAS;

   (c) be familiar with the instructions for flight provided by the Design Conformity Assessment Organisation;

   (d) obtain updated information relevant to the intended operation about any geographical zone(s) defined in accordance with Article 15;

   (e) ensure that the operating environment is compatible with the authorised or declared limitations and conditions;

   (f) ensure that the UAS is in a safe condition to complete the intended flight safely

   (g) ensure that the information about the operation has been made available to the relevant air traffic service (ATS) providers, other airspace users and relevant stakeholders, as required by the operational authorisation or by the conditions for the geographical zone of operation in accordance with Article 15.

2. During the flight, the military remote pilot shall:

   (a) comply with the authorised or declared limitations and conditions;

   (b) avoid any risk of collision and discontinue a flight when it may pose a risk to other aircraft, people, animals, environment or property;

   (c) comply with the operational limitations in geographical zones defined in accordance with Article 15;

   (d) comply with the operator's procedures;

   (e) not fly close to or inside areas where an emergency response effort is ongoing unless they have permission to do so from the responsible emergency response services or ATS provider.

MAR.UAS.SPEC.070 Transferability of an operational authorisation

An operational authorisation is not transferable.

MAR.UAS.SPEC.080 Duration and validity of an operational authorisation

1. The operational authorisation remains valid as long as the MIL-UAS operator remains compliant with the relevant requirements of this Regulation and with the conditions defined in the operational authorisation.
2. Realignments of the operating authorisation must be sent by the MIL-UAS operator in digital

format to the MAA-NLD;

3. Upon revocation of the operational authorisation, the MIL-UAS operator shall provide an acknowledgment in digital format to the MAA-NLD.

MAR.UAS.SPEC.085 Duration and validity of an operational declaration

The declaration shall no longer be considered as complete within the meaning of point (4) of MAR.UAS.SPEC.020 if:

(a) during the supervision of the UAS operator, the MAA-NLD has found that the MIL-UAS operation is not conducted in accordance with the operational declaration;

(b) the MAA-NLD is not granted access in accordance with MAR.UAS.SPEC.090.

MAR.UAS.SPEC.090 Access

A MIL-UAS operator shall grant to any person that is authorised by the MAA-NLD access to any facility, MIL-UAS, document, record, data, and procedures or to any other material relevant to its activity, which is subject to operational authorisation or operational declaration.

MAR.UAS.SPEC.100 Use of certified equipment and certified UAS
+AMC

1. If the MIL-UAS operation is using a UAS for which a certificate of airworthiness or a restricted certificate of airworthiness has been issued, or using certified equipment, the MIL-UAS operator shall record the operation or service time in accordance either with the instructions and procedures applicable to the certified equipment, or with the organisational approval or authorisation;
2. The MIL-UAS operator shall follow the instructions referred to in the UAS certificate or equipment certificate, and comply with any airworthiness or operational directives issued by the MAA-NLD.

ANNEX B: RULES AND PROCEDURES FOR THE AIRWORTHINESS OF MILITARY UAS

SUBPART A – Initial and continued airworthiness

MAR.UAS.B.A.010 Design certificates

+GM

1. A Military (Restricted) Type Certificate per NLD-MAR-21 is required for all MIL-UAS types to be operated in the MIL-UAS-SPECIFIC category at SAIL V or VI.
2. A Design Conformity Assessment Certificate (DCAC) is required for:
   (a) all MIL-UAS types to be operated in the MIL-UAS-SPECIFIC category at SAIL I, II, III or IV and for;
   (b) all MIL-UAS types to be operated in the MIL-UAS-OPEN category.
3. A DCAC is not required:
   (a) for flight-testing of MIL-UAS for the purpose of design assessment by the appropriately approved Design conformity assessment organisation; or,
   (b) concept development by an organisation having an appropriate operational authorisation in according with Article 12.

MAR.UAS.B.A.020 Issue of DCAC

+GM

DCAC shall be issued by:

(a) an appropriately approved Design conformity assessment organisation (refer to MAR.UAS.B.A.050), or

(b) the MAA-NLD.

MAR.UAS.B.A.030 Minimum information on DCAC

+GM

A DCAC shall, as a minimum, provide the following information:

(a) the identification of the MIL-UAS type and, if applicable, model;

(b) the identification of the issuing organisation;

(c) the date of issue;

(d) the reference to the design verification by the MAA-NLD, if applicable.

(e) the assigned MIL-UAS type class (MIL-UAS-OPEN category) and/or SAIL (MIL-UAS-SPECFIC category);

(f) the assigned level of robustness for mitigation measures M1(A).2 and M2.1 (MIL-UAS-SPECIFIC category);

(g) the assigned level of robustness for containment (MIL-UAS-SPECIFIC category);

(h) the maximum take-off mass;

(i) the maximum characteristic dimension;

(j) a short description of the configuration, assisted by a photo or drawing;

(k) the approved (combination of) payload(s);

(l) the identification of the DCAC manuals (refer to MAR.UAS.B.A.035).

MAR.UAS.B.A.034 MIL-UAS technical requirements

DCAC may only be issued after compliance has been demonstrated with the following technical requirements:

(a) For MIL-UAS types to be operated in the MIL-UAS-SPECIFIC category at SAIL I, II, III or IV:

(i) compliance must be demonstrated with the design related Operational Safety Objectives for the SAIL provided in subpart C of this Annex; and

(ii) the level of robustness for mitigation measure M2 must be established in accordance with subpart C of this Annex; and

(iii) the level of robustness for containment must be established in accordance with subpart C of this Annex.

(b) For MIL-UAS types to be operated in the MIL-UAS-OPEN category compliance must be demonstrated with the technical requirements provided in subpart B of this Annex.

MAR.UAS.B.A.035 DCAC manuals

The following manuals shall be published by the approved Design conformity assessment organisation:

(a) a manual with instructions for flight to be used by the remote pilot (Flight Manual), including operational limitations derived from the MIL-UAS type design; and

(b) if maintenance is to be performed, a manual with instructions for maintenance.

MAR.UAS.B.A.040 Design verification by the MAA-NLD
+AMC

DCAC requires approval in a form and manner to be agreed with the MAA-NLD, based on a design verification by the MAA-NLD, when:

(a) the assigned SAIL level is SAIL IV, and/or;

(b) the assigned level of robustness for mitigation measure M2.1 is High, and/or;

(c) the assigned level of robustness for containment is High.

MAR.UAS.B.A.050 Design conformity assessment organisation

The process of design conformity assessment shall be performed by an organisation approved by the MAA-NLD per subpart D of this Annex.

MAR.UAS.B.A.060 Changes to the DCAC

1. Changes to the DCAC consist of changes to the MIL-UAS type design and repairs.
2. Changes to the DCAC shall comply with the technical requirements of MAR.UAS.B.A.034.
3. Changes to the DCAC shall be approved by:
   (a) an appropriately approved Design conformity assessment organisation (refer to MAR.UAS.B.A.050), or
   (b) the MAA-NLD.
4. Changes to the DCAC of MIL-UAS types to be operated in the MIL-UAS-SPECIFIC category at SAIL IV that have an appreciable effect of the mass, balance, structural strength, reliability, operational characteristic or other characteristic affecting the airworthiness, require design verification by the MAA-NLD (refer to MAR.UAS.B.A.040).
5. The DCAC shall be updated accordingly (and reissued) when the information provided on the DCAC is altered by the design change or repair.
6. The DCAC manuals shall be updated accordingly (and reissued) to reflect the changed or repaired type design.

SUBPART B – Technical requirements for MIL-UAS types operated in the MIL-UAS-OPEN category

MAR.UAS. B.B.010 MIL-UAS type classes
+AMC

Every MIL-UAS type operated in the MIL-UAS-OPEN category shall be assigned to one of the following classes:

(a) MC-0, when the MIL-UAS meets the general requirements and the specific requirements for a class MC-0 UA;

(b) MC-1, (reserved);

(c) MC-2, when the MIL-UAS meets the general requirements and the specific requirements for a class MC-2 UA;

(d) MC-3, when the MIL-UAS meets the general requirements and the specific requirements for a class MC-3 UA;

(e) MC-4 (reserved);

(f) MC-5 (reserved);

(g) MC-6 (reserved).

MAR.UAS.B.B.020 General Requirements for all classes MIL-UAS
+AMC/+GM

All classes MIL-UAS shall meet all of the following requirements:

(a) be safely controllable with regard to stability, maneuverability and the command and control link performance by a RP with adequate competency as defined in NLD-MAR-UAS Annex A and following the manufacturer's instructions, as necessary under all anticipated operating conditions including following the failure of one or, if applicable, more systems;

(b) be designed and constructed in such a way as to minimise injury to persons during operation, sharp edges shall be avoided, unless technically unavoidable under good design and manufacturing practice. If equipped with propellers, the UA shall be designed in such a way as to limit any injury that may be inflicted by the propeller blades;

(c) have a maximum attainable height above the take-off point to 120 m or be equipped with a system that limits the height to 120 m AGL. If the value is selectable, clear information about the height of the UA above the surface or take-off point during flight shall be provided to the RP;

(d) have the requisite mechanical strength for the UA, including a prescribed safety factor, and where appropriate, stability to withstand any stress to which it is subjected during use without any breakage or deformation that might interfere with its safe flight;

(e) if equipped with a follow-me mode and when this function is on, be in a range not exceeding 50 m from the RP, and make it possible for the RP to regain control of the UA;

(f) be equipped with a command and control link protected against unauthorised access to the command and control functions.

MAR.UAS.B.B.030 Requirements for a class MC-0 MIL-UAS
+GM

A class MC-0 MIL-UAS shall meet all of the following requirements:

(a) have an MTOM of less than 250 gram;

(b) have a maximum speed in level flight of 19 m/s;

(c) be exclusively powered by electricity.

MAR.UAS.B.B.040 Reserved

Reserved for class MC-1.

MAR.UAS.B.B.050 Requirements for a class MC-2 MIL-UAS
+GM

A class MC-2 MIL-UAS shall meet all of the following requirements:

(a) have an MTOM of less than 4 kg;

(b) in case of a loss of the command and control link, have a reliable and predictable method for the UA to recover the command and control link or, if it fails, terminate the flight in a way that reduces the effect on third parties in the air and on the ground;

(c) if equipped with a low-speed mode, make it possible for the RP to select this function and limit the ground speed to no more than 3 m/s.

(d) be equipped with a geo-awareness function that provides:

(i) an interface to load and update data containing information on airspace limitations related to UA position and height imposed by the UAS geographical zones, as defined by Article 15 of this regulation which ensures that the process of loading or updating of this data does not degrade its integrity and validity;

(ii) a warning alert to the RP when a potential breach of airspace limitation(s) is detected;

(iii) information to the RP on the UA's status as well as a warning alert when its positioning or navigation systems cannot ensure the proper functioning of the geo-awareness function;

(e) if the UA has a function that limits its access to certain airspace areas or volumes, this function shall operate in such a manner that it interacts with the flight control system of the UA without adversely affecting flight safety; in addition, clear information shall be provided to the RP when this function prevents the UA from entering these airspace areas or volumes;

(f) provide the RP with a clear warning when the energy level of the UA or its command unit reaches a low level such that the RP has sufficient time to safely land the UA.

MAR.UAS.B.B.060 Requirements for a class MC-3 MIL-UAS

A class MC-3 MIL-UAS shall meet all of the following requirements:

(a) have an MTOM of less than 25kg;

(b) have a maximum characteristic dimension of less than 3 meters;

(c) in case of a loss of the command and control link, have a reliable and predictable method for the UA to recover the command and control link or, if it fails, terminate the flight in a way that reduces the effect on third parties in the air or on the ground;

(d) be equipped with a geo-awareness function that provides:

(i) an interface to load and update data containing information on airspace limitations related to UA position and height imposed by the UAS geographical zones, as defined by Article 15 of this regulation which ensures that the process of loading or updating of this data does not degrade its integrity and validity;

(ii) a warning alert to the RP when a potential breach of airspace limitation(s) is detected;

(iii) information to the RP on the UA's status as well as a warning alert when its positioning or navigation systems cannot ensure the proper functioning of the geo-awareness function;

(e) if the UA has a function that limits its access to certain airspace areas or volumes, this function shall operate in such a manner that it interacts smoothly with the flight control system of the UA without adversely affecting flight safety; in addition, clear information shall be provided to the RP when this function prevents the UA from entering these airspace areas or volumes;

(f) provide the RP with a clear warning when the energy level of the UA or its command unit reaches a low level such that the RP has sufficient time to safely land the UA.

MAR.UAS.B.B.070 Reserved

Reserved for class MC-4.

MAR.UAS.B.B.080 Reserved

Reserved for class MC-5.

MAR.UAS.B.B.090 Reserved

Reserved for class MC-6.

SUBPART C – Technical requirements for MIL-UAS types operated in the MIL-UAS-SPECIFIC category

MAR.UAS.B.C.010 Minimum level of robustness
+GM

The Specific Assurance and Integrity Level (SAIL) I-IV shall be assigned to the type when for all Operational Safety Objectives (OSOs) compliance has been demonstrated at the minimum level of robustness (for that SAIL) as indicated in table B.01.

Table B.01: Minimum level of robustness

OSO number	OSO description	Minimum level of robustness required for SAIL			
		I	II	III	IV
02.1	Design by a competent and/or proven entity	Optional	Optional	Low	Medium
02.2	Production by a competent and/or proven entity	Optional	Optional	Low	Medium
04	Developed to MAA-NLD recognised design standards	Optional	Optional	Optional	Low
05	Designed considering system safety and reliability	Optional	Optional	Low	Medium
06	C3 link characteristics are appropriate for the operation	Optional	Low	Low	Medium
10	Safe recovery from a technical issue	Low	Low	Medium	Medium
12	Designed to manage the deterioration of external systems supporting UAS operations	Low	Low	Medium	Medium
18	Automatic protection of the flight envelope from human error	Optional	Optional	Low	Medium
19.3	Safe recovery from human errors (included in the design)	Optional	Optional	Low	Medium
20	A human factors evaluation has been performed and the human machine interface (HMI) found appropriate for the mission	Optional	Low	Low	Medium
23.1	Environmental conditions for safe operations are defined	Low	Low	Medium	Medium
24	Designed and qualified for adverse environmental conditions	Optional	Optional	Medium	High

MAR.UAS.B.C.020 Level of integrity and level of assurance
+GM

The level of robustness shall be demonstrated at the corresponding (or higher) level of integrity and the level of assurance provided in table B.02.

Table B.02: Level of integrity and level of assurance

OSO	Level of robustness	Level of integrity	Level of assurance
02.1	Optional	No requirements.	No requirements.
	Low	As a minimum, design documentation covers: (a) the specification of the materials and (b) the suitability and durability of the materials used.	The specifications, suitability and durability of the materials are declared against a standard recognised by the MAA-NLD and/or in accordance with means of compliance acceptable to the MAA-NLD.
	Medium	Same as low.	Same as low. In addition, evidence is available that the UAS has been designed in accordance with design procedures.
02.2	Optional	No requirements.	No requirements.
	Low	As a minimum, production procedures cover the processes necessary to allow for repeatability in manufacturing and conformity within acceptable tolerances.	The declared production procedures are developed to a standard that is considered adequate by the MAA-NLD and/or in accordance with a means of compliance acceptable to the MAA-NLD.
	Medium	Same as low. In addition, production procedures also cover: (a) the configuration control; (b) the verification of incoming products, parts, materials and equipment; (c) identification and traceability; (d) in-process and final inspections & testing; (e) the control and calibration of tools; (f) handling and storage and (g) the control of non-conforming items.	Same as low. In addition, evidence is available that the UAS has been produced in conformance with its design.
04	Optional	No requirements.	No requirements.

OSO	Level of robustness	Level of integrity	Level of assurance
	Low	The UAS is designed to standards considered adequate by the MAA-NLD and/or in accordance with a means of compliance acceptable to the MAA-NLD.	The standards and the means of compliance shall be agreed upon during the design verification process.
05	Optional	No requirements.	No requirements.
	Low	The equipment, systems, and installations are designed to minimise hazards in the event of a probable malfunction or failure of the UAS.	A functional hazard assessment and a design and installation appraisal that show that hazards are minimised are available. The severity of failure conditions (no safety effect, minor, major, hazardous and catastrophic) should be determined.
	Medium	Same as low. In addition, the strategy for detection, alerting and management of any malfunction, failure or combination thereof, which would lead to a hazard, is available.	Same as low. In addition: (a) Safety analyses are conducted in line with standards considered adequate by the MAA-NLD and/or in accordance with a means of compliance acceptable to the MAA-NLD. (b) A strategy for the detection of single failures of concern includes pre-flight checks. The standards and the means of compliance shall be agreed upon during the design verification process.
06	Optional	No requirements.	No requirements.
	Low	(a) The performance, RF spectrum usage and environmental conditions for C3 links are adequate to safely conduct the intended operation. (b) The remote pilot has the means to continuously monitor the C3 performance and ensures that the performance continues to meet the operational requirements.	That the required level of integrity has been achieved is declared.

OSO	Level of robustness	Level of integrity	Level of assurance
		For a low level of integrity, unlicensed frequency bands might be acceptable under certain conditions, e.g.: (a) compliance with other RF spectrum usage requirements is demonstrated by showing that the UAS equipment is compliant with these requirements; and (b) the use of mechanisms to protect against interference (e.g. FHSS, frequency de-confliction by procedure). The remote pilot has continuous and timely access to the relevant C3 information that could affect the safety of flight. For operations requesting only a low level of integrity for this OSO, this could be achieved by monitoring the C2 link signal strength and receiving an alert from the UAS HMI if the signal strength becomes too low.	
	Medium	Same as low. Depending on the operation, the use of licensed frequency bands might be necessary. In some cases, the use of non-aeronautical bands (e.g. licensed bands for cellular network) may be acceptable.	Demonstration of the C3 link performance is in accordance with standards considered adequate by the MAA-NLD and/or in accordance with means of compliance acceptable to the MAA-NLD. The standards and the means of compliance shall be agreed upon during the design verification process.
10 & 12	Low	When operating over populated areas or assemblies of people, it can be reasonably expected that a fatality will not occur from any probable failure of the UAS or any external system supporting the operation. For the purpose of this assessment, the term 'probable' should be interpreted in a qualitative way as anticipated to occur one or more times during the entire system/operational life of a UAS'.	A design and installation appraisal is available. In particular, this appraisal shows that: (a) the design and installation features (independence, separation and redundancy) satisfy the low integrity criterion and (b) particular risks relevant to the ConOps (e.g. hail, ice, snow, electromagnetic

OSO	Level of robustness	Level of integrity	Level of assurance
		Some structural or mechanical failures may be excluded from the criterion if it can be shown that these mechanical parts were designed according to aviation industry best practices.	interference, etc.) do not violate the independence claims, if any. To assign SAIL IV the appraisal shall be agreed upon during the design verification process.
	Medium	When operating over populated areas or assemblies of people, it can be reasonably expected that a fatality will not occur from any single failure of the UAS or any external system supporting the operation. Software and airborne electronic hardware whose development error(s) could directly lead to a failure affecting the operation in such a way that it can be reasonably expected that a fatality would occur are developed to a standard considered adequate by the MAA-NLD and/or in accordance with means of compliance acceptable to the MAA-NLD. Some structural or mechanical failures may be excluded from the no-single failure criterion if it can be shown that these mechanical parts were designed to a standard considered adequate by the MAA-NLD and/or in accordance with a means of compliance acceptable to that authority.	Same as low. In addition, the level of integrity claimed is substantiated by analysis and/or test data with supporting evidence.
18	Optional	No requirements.	No requirements.
	Low	The UAS flight control system incorporates automatic protection of the flight envelope to prevent the remote pilot from making any single input under normal operating conditions that would cause the UA to exceed its flight envelope or prevent it from recovering in a timely fashion.	The automatic protection of the flight envelope has been developed in-house or out of the box (e.g. using commercial off-the-shelf elements), without following specific standards.
	Medium	The UAS flight control system incorporates automatic protection of the flight envelope to ensure the UA remains within the flight envelope or ensures a timely recovery to the designed operational flight envelope following remote pilot error(s).	The automatic protection of the flight envelope has been developed to standards considered adequate by the MAA-NLD and/or in accordance with a means of compliance acceptable to the MAA-NLD.

OSO	Level of robustness	Level of integrity	Level of assurance
			The standards and the means of compliance shall be agreed upon during the design verification process.
19.3	Optional	No requirements.	No requirements.
	Low	Systems detecting and/or recovering from human errors are developed according to industry best practices.	That the required level of integrity has been achieved is declared. Supporting evidence may or may not be available.
	Medium	Systems detecting and/or recovering from human errors are developed to standards considered adequate by the MAA-NLD and/or in accordance with a means of compliance acceptable to the MAA-NLD.	Supporting evidence that the required level of integrity is achieved is available. That evidence is provided through testing, analysis, simulation, inspection, design review or operational experience. To assign SAIL IV the evidence shall be agreed upon during the design verification process.
20	Optional	No requirements.	No requirements.
	Low	The UAS information and control interfaces are clearly and precisely presented and do not confuse, cause unreasonable fatigue, or contribute to remote crew errors that could adversely affect the safety of the operation. If an electronic means is used to support potential VOs in their role to maintain awareness of the position of the unmanned aircraft, its Human Machine Interface (HMI): — is sufficient to allow the VOs to determine the position of the UA during operation and —does not degrade the VO's ability to: —scan the airspace visually where the unmanned aircraft is operating for any potential collision hazard; and —maintain effective communication with the remote pilot at all times.	A human factors evaluation of the UAS to determine whether the HMI is appropriate for the mission is conducted. The HMI evaluation is based on inspection or analyses.

OSO	Level of robustness	Level of integrity	Level of assurance
	Medium	Same as low.	Same as Low, but the HMI evaluation is based on demonstrations or simulations. When simulation is performed, the validity of the targeted environment that is used in the simulation needs to be justified.
23.1	Low	The environmental conditions for safe operations are defined and reflected in the flight manual or equivalent document.	That the required level of integrity has been achieved is declared.
	Medium	Same as low.	Supporting evidence that the required level of integrity is achieved is available. This is typically done by testing, analysis, simulation, inspection, design review or through operational experience.
24	Optional Low	No requirements.	No requirements.
	Medium	The UAS is designed to limit the effect of environmental conditions.	Supporting evidence that the required level of integrity is achieved is available. This is typically done by testing, analysis, simulation, inspection, design review or through operational experience. When simulation is performed, the validity of the targeted environment that is used in the simulation needs to be justified.
	High	The UAS is designed using environmental standards considered adequate by the MAA-NLD and/or in accordance with a means of compliance acceptable to the MAA-NLD.	MAA-NLD validates the claimed level of integrity.

MAR.UAS.B.C.025 Mitigation measure M1(A).2 'evaluation of the penetration hazard'

The level of robustness for mitigation measure M1 (A).2 shall be established using the level of integrity and the level of assurance provided in table B.03.

Table B.03: Level of integrity and level of assurance.

Mitigation measure	Level of robustness	Level of integrity	Level of assurance
M1(A).2	Low	The applicant uses a UA that is not expected to penetrate structures and fatally injure people under the shelter.	The UA used is under 25 kg MTOM. Alternatively, for UA with MTOM higher than 25kg, supporting evidence that the required level of integrity is achieved is available. This is typically done by means of testing, analysis, simulation, inspection, design review or through operational experience.
	Medium	Same as Low.	Same as Low.

MAR.UAS.B.C.030 Mitigation measure M2.1 'reduced effects of UA impact dynamics'
+GM

The level of robustness for mitigation measure M2.1, if part of the type configuration, shall be established using the level of integrity and the level of assurance provided in table B.04.

Table B.04: Level of integrity and level of assurance.

Mitigation measure	Level of robustness	Level of integrity	Level of assurance
M2.1	Medium	• Effects of impact dynamics and immediate post impact hazards, critical area or the combination of these results are reduced such that the risk to population is reduced by an approximate one order of magnitude (90%). • When applicable, in case of malfunctions, failures or any combinations thereof that may lead to a crash, the UAS contains all elements required for the activation of the mitigation. • When applicable, any failure or malfunction of the proposed mitigation itself (e.g. inadvertent activation) does not adversely affect the safety of the operation.	Supporting evidence to claim that the required level of integrity is achieved is available. This is typically done by means of testing, analysis, simulation, inspection, design review or through operational experience. An UAS with MTOM lower than or equal to 900 gr and a maximum groundspeed of 19 m/s fulfils this assurance criterion. When simulation is used, the validity of the targeted environment used in the simulation needs to be justified.

Mitigation measure	Level of robustness	Level of integrity	Level of assurance
		Examples of post impact hazards include fires and the release of high-energy parts.	
	High	Same as medium. In addition: (a) When applicable, the activation of the mitigation is automated. (b) The effects of impact dynamics and immediate post impact hazards, critical area or the combination of them are reduced such that the risk to the population is reduced by an approximate two orders of magnitude (99%). An additional manual activation function may be implemented. Emerging research and upcoming industry standards may be useful to substantiate compliance with this integrity criterion.	The design is verified by the MAA-NLD.

MAR.UAS.B.C.040 Level of robustness for containment
+AMC

(1) The three levels of robustness for containment are Low, Medium and High.

(2) The level of robustness shall be demonstrated at the corresponding (or higher) level of integrity and the level of assurance provided in table B.05 or, in case of containment by tether, table B.06.

Table B.05: Level of integrity and level of assurance for containment (regular, non-tether).

Criterion	Level of robustness	Level of integrity	Level of assurance
Operational Volume Containment	Low	1) (Qualitative) No probable single failure of the UAS or any external system supporting the operation shall lead to operation outside of the operation volume, or 2) (Quantitative) The probability of the failure condition "UA leaving	That the required level of integrity has been achieved is declared. The declaration should in particular rely on a design and installation appraisal including at minimum:

Criterion	Level of robustness	Level of integrity	Level of assurance
		the operational volume" shall be less than 10^{-3} / Flight Hour (FH). Probable failures: failures anticipated to occur one or more times during the entire operational life of an item.	• design and installation features (e.g., independence, separation or redundancy claims); • any relevant particular risk (e.g., hail, ice, snow, electro-magnetic interference…) associated with the operation and how they are being addressed. Appraisal: simple written justification including functional diagrams and a description of how the system works explaining why the integrity claim (i.e. no (probable/remote) single failure criterion) is met.
	Medium	Same as Low.	Supporting evidence that the required level of integrity is achieved is available. This is typically done by testing, analysis, simulation, inspection, design review or through operational experience. When simulation is used, the suitability of the targeted environment used in the simulation needs to be justified. Among the supporting evidences: same as low.
	High	1) (Qualitative) No remote single failure of the UAS or any external system supporting the operation shall lead to	Same as Medium. In addition, the claimed level of integrity is verified by the MAA-NLD.

Criterion	Level of robustness	Level of integrity	Level of assurance
		operation outside of the operational volume, or 2) (Quantitative) The probability of the failure condition "UA leaving the operational volume" shall be less than 10^{-4} / FH. Remote failure: failures unlikely to occur with each UA during its operational life but that may occur several times when considering the total operational life of a number of UA of this type.	
End of Flight upon exit of the operational volume	Low	When the UA leaves the operational volume, an immediate end of the flight must be initiated through a combination of procedures/processes and/or available technical means.	That the required level of integrity has been achieved is declared. The declaration should in particular rely on testing of the adequacy of Emergency Procedures to terminate flight.
	Medium	Same as Low.	Supporting evidence that the required level of integrity is achieved is available. This is typically done by testing, analysis, simulation, inspection, design review or through operational experience. When simulation is used, the suitability of the targeted environment used in the simulation needs to be justified. Among the supporting evidences: Adequacy of the Emergency Procedures to terminate flight is proven through: • dedicated flight tests, or • simulation provided the simulation is proven

Criterion	Level of robustness	Level of integrity	Level of assurance
			valid for the intended purpose with positive results.
	High	Same as Medium.	Same as Medium. In addition, the claimed level of integrity is verified by the MAA-NLD.
Definition of the final ground risk buffer	Low	The Ground Risk Buffer must at least adhere to the 1:1 principle (a ground risk buffer that is as wide as the maximum height of the operational volume). The 1:1 rule may not be suitable for some UA configurations (e.g., fixed-wing or parachute-equipped UA). In those cases, the MAA-NLD may require to define the ground risk buffer based on a ballistic methodology approach, a glide trajectory, representative flight tests, and/or a combination thereof. The applicant for a rotary wing UA using a ballistic methodology approach acceptable to the MAA-NLD may prove a smaller ground risk buffer value.	That the required level of integrity has been achieved is declared.
	Medium	Ground risk buffer must consider the following points below: • Probable single failures (including the projection of high energy parts such as rotors and propellers) which would lead to an operation outside of the operational volume, • Meteorological conditions (e.g., maximum sustained wind), • UAS latencies (e.g., latencies that affect the timely maneuverability of the UA), • UA behavior when activating a	Supporting evidence that the required level of integrity is achieved is available. This is typically done by testing, analysis, simulation, inspection, design review or through operational experience. When simulation is used, the suitability of the targeted environment used in the simulation needs to be justified.

Criterion	Level of robustness	Level of integrity	Level of assurance
		technical containment measure, UA performance. Probable failures: failures anticipated to occur one or more times during the entire operational life of an item.	
	High	Same as Medium.	Same as Medium. In addition, the claimed level of integrity is verified by the MAA-NLD.
Ground risk buffer containment	Low	No requirement.	That the required level of integrity has been achieved is declared.
	Medium	No single failure of the UAS or any external system supporting the operation shall lead to operation outside of the ground risk buffer. Software and Airborne Electronic Hardware whose development error(s) could directly lead to operations outside of the ground risk buffer shall be developed to an industry standard or methodology recognised as adequate by the MAA-NLD.	Supporting evidence that the required level of integrity is achieved is available. This is typically done by testing, analysis, simulation, inspection, design review or through operational experience. When simulation is used, the suitability of the targeted environment used in the simulation needs to be justified.
	High	Same as Medium.	Same as Medium. In addition, the claimed level of integrity is verified by the MAA-NLD.

Table B.06: Level of integrity and level of assurance for containment (tether).

Criterion	Level of robustness	Level of integrity	Level of assurance
Technical design	Low	1) The length of the line is adequate to contain the UA in the operational volume. 2) Strength of the line is	That the required level of integrity has been achieved is declared.

Criterion	Level of robustness	Level of integrity	Level of assurance
		compatible with the ultimate loads expected during the operation. 3) Strength of attachment points is compatible with the ultimate loads expected during the operation. 4) The tether cannot be cut by rotating propellers. Ultimate loads are identified as the maximum loads to be expected in service, including all possible nominal and failure scenarios multiplied by a 1.5 factor of safety.	
	Medium	Same as Low.	Supporting evidence (including the tether material specifications) to claim the required level of integrity is achieved is available. This is typically achieved through testing or operational experience. Tests can be based on simulations, however the validity of the target environment used in the simulation needs to be justified.
	High	Same as Medium.	The claimed level of integrity is verified by the MAA-NLD.
Procedures	Low	The applicant has procedures to install and periodically inspect the condition of the tether.	Procedures do not require validation against either a standard or a means of compliance considered adequate by the MAA-NLD. The adequacy of the procedures is declared.
	Medium	Same as Low.	Procedures are validated against standards considered adequate by the MAA-NLD and/or in accordance with a means of compliance acceptable to the MAA-NLD. The adequacy of the procedures is proved through:

Criterion	Level of robustness	Level of integrity	Level of assurance
			• Dedicated flight tests, or • Simulation provided the simulation is proven valid for the intended purpose with positive results.
	High	Same as Medium.	Same as Medium. In addition: • Flight tests performed to validate the procedures cover the complete flight envelope or are proven to be conservative. • The procedures, flight tests and simulations are verified by the MAA-NLD.

SUBPART D – Design conformity assessment organisation approval

MAR.UAS.B.D.010 General

The approved Design Conformity Assessment Organisation is the only military organisation that is permitted to issue approved type design related data to the NLD-MAS organisations.

MAR.UAS.B.D.020 Eligibility
+AMC

At the discretion of the MAA-NLD, only the Materiel & IT Command of The Netherlands Ministry of Defence shall be eligible as an applicant for an approval under this Subpart when demonstrated its capability.

MAR.UAS.B.D.030 Application

The application for a Design Conformity Assessment Organisation approval shall be made in a form and manner acceptable to the MAA-NLD and shall include an outline of the information required by MAR.UAS.B.D.060.

MAR.UAS.B.D.040 Issue of Design Conformity Assessment Organisation approval

The applicant shall be entitled to receive a Design Conformity Assessment Organisation approval issued by the MAA-NLD when it has demonstrated compliance with the applicable requirements under this Subpart.

MAR.UAS.B.D.050 Design assurance system

The Design Conformity Assessment Organisation shall demonstrate that it has established and is able to maintain a design assurance system for the control and supervision of the design and design of changes, for MIL-UAS covered by the application. This design assurance system shall be such as to enable the organisation:

(a) to ensure that the design of the MIL-UAS or the design change or repair solution thereof comply with the applicable technical requirements and,

(b) to ensure that its responsibilities are properly discharged in accordance with the appropriate requirements of this NLD-MAR;

(c) to independently monitor the compliance with and adequacy of the documented procedures of the system. This monitoring shall include a feedback system to a person or a group of persons having the responsibility to ensure corrective actions.

MAR.UAS.B.D.060 Organisation exposition

1. The Design Conformity Assessment Organisation shall furnish an exposition to the MAA-NLD describing, directly or by cross-reference, the organisation and the relevant procedures.
2. Where any Design conformity assessments are performed by partner organisations or subcontractors, the exposition shall include a statement of how the Design conformity assessment organisation is able to give the assurance of compliance required by MAR.UAS.B.D.050 (b) and shall contain directly or by cross-reference, descriptions and information on the activities and organisation of those partners or subcontractors, as necessary to establish this statement.
3. The exposition shall be amended as necessary to remain an up-to-date description of the organisation and copies of amendments shall be supplied to the MAA-NLD.
4. The Design Conformity Assessment Organisation shall furnish a statement of the qualifications and experience of the management staff and other persons responsible for making decisions affecting airworthiness in the organisation.

MAR.UAS.B.D.070 Approval requirements

The Design conformity assessment organisation shall demonstrate, based on the information submitted in accordance with MAR.UAS.B.D.060, that, in addition to complying with MAR.UAS.B.D.050:

(a) the staff in all technical departments are of sufficient numbers and experience and have been given appropriate authority to be able to discharge their allocated responsibilities and that these, together with the accommodation, facilities and equipment, are adequate to enable the staff to achieve the airworthiness objectives for the MIL-UAS;

(b) there is full and efficient coordination between departments and within departments in respect of airworthiness and safety matters.

MAR.UAS.B.D.075 Changes in design assurance system

After the issue of a Design Conformity Assessment Organisation approval, each change to the design assurance system that is significant to the showing of compliance shall be approved by the MAA-NLD. An application for approval shall be submitted in writing to the MAA-NLD and the Design Conformity

Assessment Organisation shall demonstrate to the MAA-NLD, based on submission of proposed changes to the exposition and before implementation of the change that it will continue to comply with this Subpart after implementation.

MAR.UAS.B.D.080 Terms of approval

The terms of approval shall identify the types of work and categories of products for which the organisation holds an approval and the functions and duties that the organisation is approved to perform concerning the airworthiness of products. Those terms shall be issued as part of a Design Conformity Assessment Organisation approval.

MAR.UAS.B.D.081 Changes to the terms of approval

Each change to the terms of approval shall be approved by the MAA-NLD. An application for a change to the terms of approval shall be made in a form and manner established by the MAA-NLD. The Design Conformity Assessment Organisation shall comply with the applicable requirements of this Subpart.

MAR.UAS.B.D.084 Investigations

1. The Design conformity assessment organisation shall make arrangements that allow the MAA-NLD to make any investigations, including investigations of partners and subcontractors, necessary to determine compliance with the applicable requirements of this Subpart.
2. The Design Conformity Assessment Organisation shall grant to any person that is authorised by the MAA-NLD access to any facility, MIL-UAS, document, record, data, and procedures or to any other material relevant to its activity.

MAR.UAS.B.D.090 Findings

1. When objective evidence is found showing non-compliance of the holder of a Design Conformity Assessment Organisation approval with the applicable requirements of this NLD-MAR, the finding shall be classified as follows:
    (a) a level one finding is any non-compliance with this NLD-MAR which could lead to uncontrolled non-compliances with applicable technical requirements and which could affect the safety of the UAS;
    (b) a level two finding is any non-compliance with this NLD-MAR which is not classified as level one;
2. After receipt of notification of findings under the applicable administrative procedures of the MAA-NLD:
    (a) in case of a level one finding, the holder of the Design conformity assessment organisation approval shall demonstrate corrective action to the satisfaction of the MAA-NLD within a period of no more than 21 working days after written confirmation of the finding;
    (b) in case of level two findings, the corrective action period granted by the MAA-NLD shall be appropriate to the nature of the finding but in any case initially shall not be more than three months. In certain circumstances and subject to the nature of the finding the MAA-NLD may extend the three months period subject to a satisfactory corrective action plan agreed by the MAA-NLD;

(c) a level three finding shall not require immediate action by the holder of the Design conformity assessment organisation approval. If appropriate, the MAA-NLD will specify a compliance time.

3. In case of level one or level two findings, the Design Conformity Assessment Organisation approval may be subject to a partial or full limitation, suspension or revocation. The holder of the assessor organisation approval shall provide confirmation of receipt of the notice of limitation, suspension or revocation approval in a timely manner.

MAR.UAS.B.D.100 Duration and continued validity

1. A Design Conformity Assessment Organisation approval can be issued for an unlimited period. It shall remain valid for that duration unless:

   (a) the Design Conformity Assessment Organisation fails to demonstrate compliance with the applicable requirements of this Subpart or,

   (b) the MAA-NLD is prevented by the holder or any of its partners or subcontractors to perform the investigations in accordance with MAR.UAS.B.D.080 or,

   (c) there is evidence that the design assurance system cannot maintain satisfactory control and supervision activities under the approval or,

   (d) the certificate has been surrendered or revoked under the applicable administrative procedures established by the MAA-NLD.

2. Upon surrender or revocation, the certificate shall be returned to the MAA-NLD.

MAR.UAS.B.D.110 Privileges

Pursuant to the terms of approval issued under MAR.UAS.B.D.080, the holder of a Design conformity assessment organisation approval, under the relevant procedures of the design assurance system, may be granted the privilege(s) to:

(a) perform Design conformity assessment activities within its scope of approval;

(b) issue a MIL-UAS Design Conformity Assessment Certificate, including assigning a military class and/or SAIL;

(c) apply for a design verification at the MAA-NLD;

(d) approve changes and repairs to MIL-UAS types having a DCAC;

(e) issue information or instructions regarding operation and maintenance of MIL-UAS to other organisations within the NLD-MAS.

MAR.UAS.B.D.120 Obligations of the holder
+AMC

The holder of a Design Conformity Assessment Organisation approval shall:

(a) maintain the exposition in conformity with the design assurance system;

(b) ensure that this exposition is used as a basic working document within the organisation;

(c) determine that the MIL-UAS comply with applicable airworthiness requirements and have no

unsafe feature;

(d) provide to the MAA-NLD information to issue Airworthiness Directives when:

(i) an unsafe condition has been determined to exist in a MIL-UAS, as a result of a deficiency in the system; and,

(ii) that condition is likely to exist or develop in other MIL-UAS that may be affected by this unsafe condition.

SUBPART E – Continuing airworthiness

MAR.UAS.B.E.010 Maintenance

1. All MIL-UAS shall be maintained in accordance with the instructions provided by the approved Design Conformity Assessment Organisation.
2. MIL-UAS operated in the MIL-UAS-OPEN category shall be maintained by the MIL-UAS operator.
3. MIL-UAS operated in the MIL-UAS-SPECIFIC category shall be maintained as established in the operational risk assessment, STS or PDRA. Records of the maintenance performed shall be kept for a minimum of 3 years.

MAR.UAS.B.E.020 Changes to the design

MIL-UAS shall not be modified unless in accordance with instructions provided by the approved Design Conformity Assessment Organisation.

MAR.UAS.B.E.030 Repairs

+AMC

Damaged MIL-UAS shall be discarded unless repair or continuation of the operation with unrepaired damage is allowed in accordance with instructions provided by the approved Design Conformity Assessment Organisation.

ANNEX C: REMOTE PILOT COMPETENCIES

SUBPART A – RP competency requirements in category MIL-UAS-OPEN

MAR.UAS.C.A.010 Theoretical competencies
+AMC/+GM

UAS operations in the MIL-UAS-OPEN shall be performed by a remote pilot who:

(a) is familiar with manufacturer's instructions of the UAS and

(b) has completed a training course followed by completing successfully an online theoretical knowledge examination. The examination shall comprise the following subjects:

i. air safety;

ii. airspace restrictions;

iii. aviation regulation;

iv. human performance limitations;

v. operational procedures;

vi. UAS general knowledge;

vii. privacy and data protection;

viii. meteorology;

ix. security.

(c) The MAA-NLD can designate nominated entities that meet the applicable criteria to provide the required training.

MAR.UAS.C.A.020 Practical competencies
+AMC/+GM

1. UAS operations in the MIL-UAS-OPEN shall be performed by a remote pilot who shall complete and declare completion of a practical self-training with a MIL-UAS with class MC-3;
2. Practical self-training may be performed by RP not yet having a certificate for the MIL-UAS-OPEN category;
3. Perform practical self-training on designated areas.

MAR.UAS.C.A.030 UAS operation

Reserved

MAR.UAS.C.A.040 Proof of completion

Referring to Article 14, point (3), upon receipt of the proof that a RP has successfully completed the online theoretical knowledge-training course and the online theoretical knowledge examination the RP should provide a copy of the proof of completion to the MIL-UAS operator for registration.

SUBPART B – Competency requirements in MIL-UAS-SPECIFIC category

MAR.UAS.C.B.010 general

+AMC /+GM

1. All MIL-UAS RPs in the MIL-UAS-SPECIFIC category shall have the competency to perform their tasks in line with the applicable training identified by the operational authorisation.
2. When the MIL-UAS operation is conducted according to one of the STS that are published by MAA-NLD, the MIL-UAS operator shall ensure that the remote pilot has the competency that is defined in that STS.
3. The MAA-NLD can designate a nominated entity or entities that meet the applicable criteria to provide the required training.

MAR.UAS.C.B.020 UAS operations in MIL-UAS-SPECIFIC category

+AMC/+GM

All MIL-UAS RPs in the category MIL-UAS-SPECIFIC shall comply with the competencies as set in MAR.UAS.C.A.020 UAS operations and,

(a) complete a training course for additional theoretical knowledge and pass an examination that reflects the intended UAS operation;

(b) complete practical-skills training and assessment in the operating conditions of the MIL-UAS-SPECIFIC category.

ANNEX D: SPECIFIC OPERATIONS RISK ASSESSMENT (SORA)

SUBPART A – General

+AMC/+GM

1. An operational risk assessment shall be conducted by the SORA methodology and shall:
   (a) describe the characteristics of the UAS and its operation;
   (b) propose adequate operational safety objectives;
   (c) identify the risks of the operation on the ground and in the air considering all of the below:
      i) the extent to which third parties or property on the ground could be endangered by the activity;
      ii) the complexity, performance and operational characteristics of the unmanned aircraft involved;
      iii) the purpose of the flight, the type of UAS, the probability of collision with other aircraft and class of airspace used;
      iv) the type, scale, and complexity of the UAS operation or activity,
      v) the extent to which the persons affected by the risks involved in the UAS operation are able to assess and exercise control over those risks.
   (d) identify a range of possible risk mitigating measures;
   (e) determine the necessary level of robustness of the selected mitigating measures in such a way that the operation can be conducted safely.
2. The description of the MIL-UAS operation shall include at least the following:
   (a) the nature of the activities and operational conditions performed;
   (b) the operational environment and geographical area for the intended operation, in particular overflown population, orography, types of airspace, airspace volume in which operation will take place and which airspace volume are kept as necessary risk buffers, including the operational requirements for geographical zones;
   (c) the complexity of the operation in particular planning and execution, personnel competencies, experience and composition, required technical means are planned to conduct the operation;
   (d) the technical features of the UAS, including its performance in view of the conditions of the planned operation and its registration number;
   (e) the competence training and recent experience of the personnel for conducting the operation.
3. The assessment shall propose a target level of safety accepted by the MAA-NLD in view of the specific characteristics of the UAS operation.
4. The identification of the risks shall include the determination of all of the below:
   (a) the unmitigated ground risk of the operation taking into account the type of operation and the conditions under which the operation takes place, including at least the following criteria:
      i) VLOS or BVLOS;

ii) population density of the overflown areas;

iii) flying over an assembly of people;

iv) the dimension characteristics of the unmanned aircraft;

(b) the unmitigated air risk of the operation taking into account all of the below:

i) the exact airspace volume where the operation will take place, extended by a volume of airspace necessary for contingency procedures;

ii) the class of the airspace;

iii) the impact on other air traffic and air traffic management (ATM) and in particular:

- the altitude of the operation;
- controlled versus uncontrolled airspace;
- aerodrome versus non-aerodrome environment;
- airspace over urban versus rural environment;
- separation from other air traffic.

5. The identification of the possible mitigation measures necessary to meet the proposed target level of safety shall consider the following possibilities:

(a) containment measures for people on the ground;

(b) strategic operational limitations to the UAS operation, in particular:

i) restricting the geographical volumes where the operation takes place;

ii) restricting the duration or schedule of the time slot in which the operation takes place;

(c) strategic mitigation by common flight rules or common airspace structure and services;

(d) capability to cope with possible adverse operating conditions;

(e) the MIL-UAS operator and maintenance procedures shall meet the requirements as set up by the MAA-NLD;

(f) the level of competency and expertise of the personnel involved in the safety of the flight;

(g) the risk of human error in the application of the operational procedures;

(h) the design features and performance of the UAS, in particular:

i) the availability of means to mitigate risks of collision;

ii) the availability of systems limiting the energy at impact or the frangibility of the unmanned aircraft;

iii) the design of the UAS to recognised standards and the fail-safe design.

The robustness of the proposed mitigating measures shall be assessed in order to determine whether they are commensurate with the safety objectives and risks of the intended operation, particularly to make sure that every stage of the operation is safe.

SUBPART B - Steps in the SORA Process

MAR.UAS.D.B.010 Step #1 - ConOps description

+GM

1. The first step of the SORA requires the applicant to collect and provide the relevant technical, operational and system information needed to assess the risk associated with the intended operation of the MIL-UAS. The ConOps description is the foundation for all other activities, and it should be as accurate and detailed as possible. The ConOps should not only describe the operation, but also provide insight into the MIL-UAS operator's operational safety culture. It should also include how and when to interact with the ANS. Therefore, when defining the ConOps, the MIL-UAS operator should give due consideration to all the steps, mitigations and OSOs.
2. Before the SORA process is applied, additional mitigations and limitations may be identified, requiring additional associated technical details, procedures, and other information to be provided/updated in the ConOps. This should culminate in a comprehensive ConOps that fully and accurately describes the proposed operation as envisioned.

MAR.UAS.D.B.020 Step #2 - Determination of the intrinsic ground risk class

+GM

1. The intrinsic ground risk (iGRC) relates to the risk of a person being struck by the UA (in the case of a loss of UA control with a reasonable assumption of safety).
2. To establish the iGRC, the applicant needs the maximum UA characteristic dimension (e.g. the wingspan for a fixed-wing UA, the blade diameter for rotorcraft, the maximum distance between blade tips for multi-copters, etc.) and the knowledge of the intended operational scenario (population density of the overflown areas).
3. The applicant needs to have defined the area at risk when conducting the operation (also called the 'area of operation') including:

   (a) the operational volume, which is composed of the flight geography and the contingency volume. To determine the operational volume, the applicant should consider the position-keeping capabilities of the UA in 4D space (latitude, longitude, height and time); and

   (b) the accuracy of the navigation solution; the error between the actual track and the desired track of the UA and the path definition error (e.g. map errors), and latencies should be considered and addressed in this determination; and

   (c) whether or not the area is a controlled ground area; and

   (d) the ground risk buffer, with at least a 1:1 rule (refer to the criterion for ground risk buffer definition in Table B.05 in MAR.UAS.B.C.040).
4. Determination of the iGRC. The iGRC is found at the intersection of the applicable maximum population density and the left most column matching both criteria (the maximum UA characteristic dimension and the maximum speed) in table D.01. If there is a mismatch between the maximum UA characteristic dimension and the maximum speed, the applicant should provide substantiation for the chosen column. Alternatively, the iGRC can be determined using a tool provided by the MAA-NLD. The use of that tool and the settings of that tool must be agreed with the MAA-NLD.

Table D.01 — Determination of the intrinsic GRC

Maximum population density		**Maximum characteristic dimension**				
		Maximum speed [1]				
Qualitative criteria	**Quantitative (People/ km²)**	< 1 m (± 3 ft.)	< 3 m (± 10 ft.)	< 8 m (± 25 ft.)	< 20 m (± 65 ft.)	< 40 m (± 130 ft.)
		≤ 25 m/s [2]	≤ 35 m/s	≤ 75 m/s	≤ 120 m/s	≤ 200 m/s
Controlled ground area / Extremely remote	-	1	1	2	3	3
Remote	< 5	2	3	4	5	6
Lightly populated	< 50	3	4	5	6	7
Sparsely populated / Residential lightly populated	< 500	4	5	6	7	8
Suburban / Low density metropolitan	< 5000	5	6	7	8	9
High density metropolitan	< 50000	6	7	8	9	10
Assemblies of people	> 50000	7	8	Not MIL-UAS-SPECIFIC category		

[1] The maximum possible commanded groundspeed of the UA. This is not the flight-specific maximum commanded groundspeed of the UA, as reducing the flight groundspeed may not necessarily reduce the impact area. Mitigations that limit groundspeed below the maximum speed value during an impact can be considered in Step #3.

[2] A UA weighing less than or equal to 250 g and having a maximum speed less than or equal to 25 m/s is considered to have an iGRC of 1 (one) regardless of population density.

5. The population densities describe an attempt to provide discrete categorisations of operations with increasing numbers of people at risk. In principle, it is possible to use either qualitative criteria or quantitative criteria, or consider both criteria, to assess if an operation takes place over sparsely populated areas, populated areas, or assemblies of people.
6. Qualitative assessment: the volume to be used by the operator to classify the operation includes the operational volume and the ground risk buffer (as defined by a semantic model), which determine the iGRC.
7. Controlled ground areas are a way to strategically mitigate the risk on ground (similar to flying in segregated airspace); the MIL-UAS operator should ensure, through appropriate procedures, that no uninvolved person is in the area of operation;
8. An operation occurring in a populated environment cannot be intrinsically classified as being in a sparsely populated environment, even in cases where the footprint of the operation is completely within special risk areas (e.g. rivers, railways, and industrial estates). The applicant can make the claim for a lower density and/or shelter with Step #3 of the SORA process.
9. Operations that do not have a corresponding iGRC (i.e. grey cells on the table) are not supported

by the SORA methodology.

10. The nominal size of the crash area for most UAS can be anticipated by considering both the size and the groundspeed used in the ground risk determination. There are certain cases or design aspects that are non-typical and will have a significant effect on the lethal area of the UAS, such as the amount of fuel, high-energy rotors/props, frangibility, material, etc. These may not have been considered in the intrinsic GRC determination table. These considerations may lead to a decrease/increase in the intrinsic GRC.

MAR.UAS.D.B.030 Step #3 - Final GRC determination
+GM

1. The intrinsic risk of a person being struck by the UAS (in case of a loss of control of the operation) can be controlled and reduced by means of mitigation.
2. The mitigations used to modify the iGRC have a direct effect on the safety objectives associated with a particular operation, and therefore it is important to ensure their robustness. This has particular relevance for technical mitigations associated with the ground risk (e.g. an emergency parachute).
3. The final GRC determination is based on the availability and correct application of these mitigations to the operation. Table D.02 provides a list of potential mitigations and the associated relative correction factor. A positive number denotes an increase in the GRC, while a negative number results in a decrease in the GRC. All the mitigations should be applied in numeric sequence to perform the assessment. Table D.03 provides additional details on how to establish the robustness of each mitigation. The MAA-NLD may define additional mitigations and the relative correction factors.

Table D.02 — Mitigations for final GRC determination

Mitigation Sequence	Mitigations for ground risk	Robustness		
		Low	Medium	High
1	M1(A) - Strategic mitigations – Sheltering • M1(A).1 – Evaluation of people at risk • M1(A).2 – Evaluation of penetration hazard	-1	-2	N/A
2	M1(B) - Strategic mitigations - Operational restrictions • M1(B).1 – Evaluation of people at risk • M1(B).2 – Impact on at risk population	N/A	-1	-2
3	M1(C) - Tactical mitigations - Ground observation • M1(C).1 – Procedures • M1(C).2 – Technical means	-1	N/A	N/A
4	M2 - Effects of UA impact dynamics are reduced • M2.1 – Technical design • M2.2 – Procedures • M2.3 - Training	N/A	-1	-2

4. When applying the M1 mitigations, the GRC cannot be reduced to a value lower than the lowest value in the applicable column in Table D.01. This is because it is not possible to reduce the

number of people at risk below that of a controlled area.

5. The final GRC is established by adding all the correction factors (i.g. -2-1-0=-3) and adapting the GRC by the resulting number (e.g. 5-3=2).
6. If the final GRC is greater than 7, the SORA process does not support the operation.
7. In general, a quantitative approach to mitigation means allows to reduce the intrinsic GRC by 1 point if the mitigation means reduce the risk of the operation by a factor of approximately 10 (90 % reduction) compared to the risk that is assessed before the mitigation means are applied.

Table D.03 — Mitigation measures robustness

Mitigation measure	Level of robustness	Level of integrity	Level of assurance
M1(A).1	Low	If the applicant claims a reduction due to a sheltered operational environment, the applicant: • flies over operational environments generally consisting of structures providing shelter, • it is reasonable to expect that on average a vast majority of the uninvolved people will be located under a structure. This mitigation cannot work when only overflying open-air assemblies of people or areas with no shelter.	The applicant declares that the operation is in an environment that has structures providing shelter where people are generally expected to be, and the applicant does not fly over large open-air assemblies of people.
	Medium	Same as low. In addition, the applicant restricts operating times and demonstrates that an even greater proportion of uninvolved people are sheltered.	Same as Low. In addition, the applicant has time-based restrictions in place and evidence to support that a higher proportion of people are sheltered. Medium robustness M1 (A) mitigation cannot be combined with M1(B) mitigations.
M1(A).2	Compliance with this mitigation is established as part of the DCAC refer to MAR.UAS.B.C.025.		
M1(B).1	Medium	The applicant provides space and time-based restrictions (e.g., flying over a market square when it is not crowded) to substantiate that the actual density of people	All mapping products, data sources and processes used to claim lowering the density of population at risk may accepted by the MAA-NLD.

Mitigation measure	Level of robustness	Level of integrity	Level of assurance
		during the operation is lower than in Step #2. This can be done by means of: • An analysis or appraisal of characteristics of the location and time of operation, and/or; • Use of temporal density data (e.g., data from a supplemental data service provider) relevant for the proposed area. This can incorporate real time or historical data.	
	High	Same as Medium.	Same as Medium.
M1(B).2	Medium	The at-risk population is lowered by at least 1 iGRC population band (~90%) using one or more methods described in the Level of Integrity for Criterion #1 above.	The applicant has supporting evidence that the required level of integrity is achieved. This is typically done by means of analysis, simulation, surveys or through operational experience.
	High	The at-risk population is lowered by at least 2 iGRC population bands (~99%) using one or more methods described in the Level of Integrity for Criterion #1 above.	The claimed level of integrity is validated by the MAA-NLD against a standard considered adequate by the MAA-NLD and/or in accordance with means of compliance acceptable to the MAA-NLD.
M1(C).1	Low	To achieve a reduction of people at risk: • The remote crew members observe the vast majority of the overflown areas during the operation, and identify area(s) of less risk on the ground; • The remote pilot will reduce the number of people at risk by adjusting the flight path while the operation is ongoing (e.g., flying away from the area with a higher risk on the ground or overflying only the	The operational procedures for the mitigation are documented. The applicant declares that the required level of integrity has been achieved.

Mitigation measure	Level of robustness	Level of integrity	Level of assurance
		identified area(s) of less risk on the ground).	
M1(C).2	Low	If the mitigation is achieved with technical means (e.g., camera(s) mounted on the UA or visual ground observers with radios/phones), these should provide data of sufficient quality allowing reliable detection of uninvolved people on the ground.	The MAA-NLD may allow the use of technical means for ground observation with assurance criteria acceptable to them.
M2.1	Compliance with this mitigation is established as part of the DCAC refer to MAR.UAS.B.C.030.		
M2.2	Medium	Any equipment used to reduce the effect of the UA impact dynamics are installed and maintained in accordance with UAS/Mitigation designer instructions.	• Procedures are validated against standards considered adequate by the MAA-NLD and/or in accordance with means of compliance acceptable to the MAA-NLD. • The adequacy of the procedures is proved through: ○ Dedicated flight tests, or ○ Simulation, provided that the representativeness of the simulation means is proven for the intended purpose with positive results.
	High	Same as Medium.	Same as Medium. In addition: • Flight tests performed to validate the procedures cover the complete flight envelope or are proven to be conservative. • The procedures, flight tests and simulations are validated by the MAA-NLD.
M2.3	Medium	When use of the mitigation requires action from the remote crew, then the operator must provide appropriate training for the remote crew. The operator must ensure that the personnel responsible (internal or external) for the installation and	• Training syllabus is available. • The operator provides theoretical and practical training for the remote crew. • Personnel responsible for installation and maintenance of the mitigation measures have completed relevant training.

Mitigation measure	Level of robustness	Level of integrity	Level of assurance
		maintenance of the mitigation measures are qualified for the task.	
	High	Same as Medium.	Same as Medium. In addition, the MAA-NLD: • Validates the training syllabus. • Verifies the remote crew competencies.

MAR.UAS.D.B.040 Step #4 - Determination of the initial air risk class (ARC)
+GM

1. The MAA-NLD or Air Navigation Service Provider (ANSP) may elect to directly map the airspace collision risks using airspace characterisation studies. These maps would directly show the initial ARC for a particular volume of airspace. If the MAA-NLD or ANSP provides an air collision risk map (static or dynamic), the applicant should use that service to determine the initial ARC, and go directly to MAR.UAS.D.B.050 Step #5 Application of strategic mitigations' to reduce the initial ARC.
2. Figure D.04 categorizes the airspace into 13 aggregated collision risk categories. These categories were characterized by the altitude, controlled versus uncontrolled airspace, airport/heliport versus non-airport/non-heliport environments, airspace over urban versus rural environments, and lastly atypical (e.g. segregated) versus typical airspace.
3. To assign the proper ARC for the type of UAS operation, the applicant should use the decision tree found in Figure D.01.

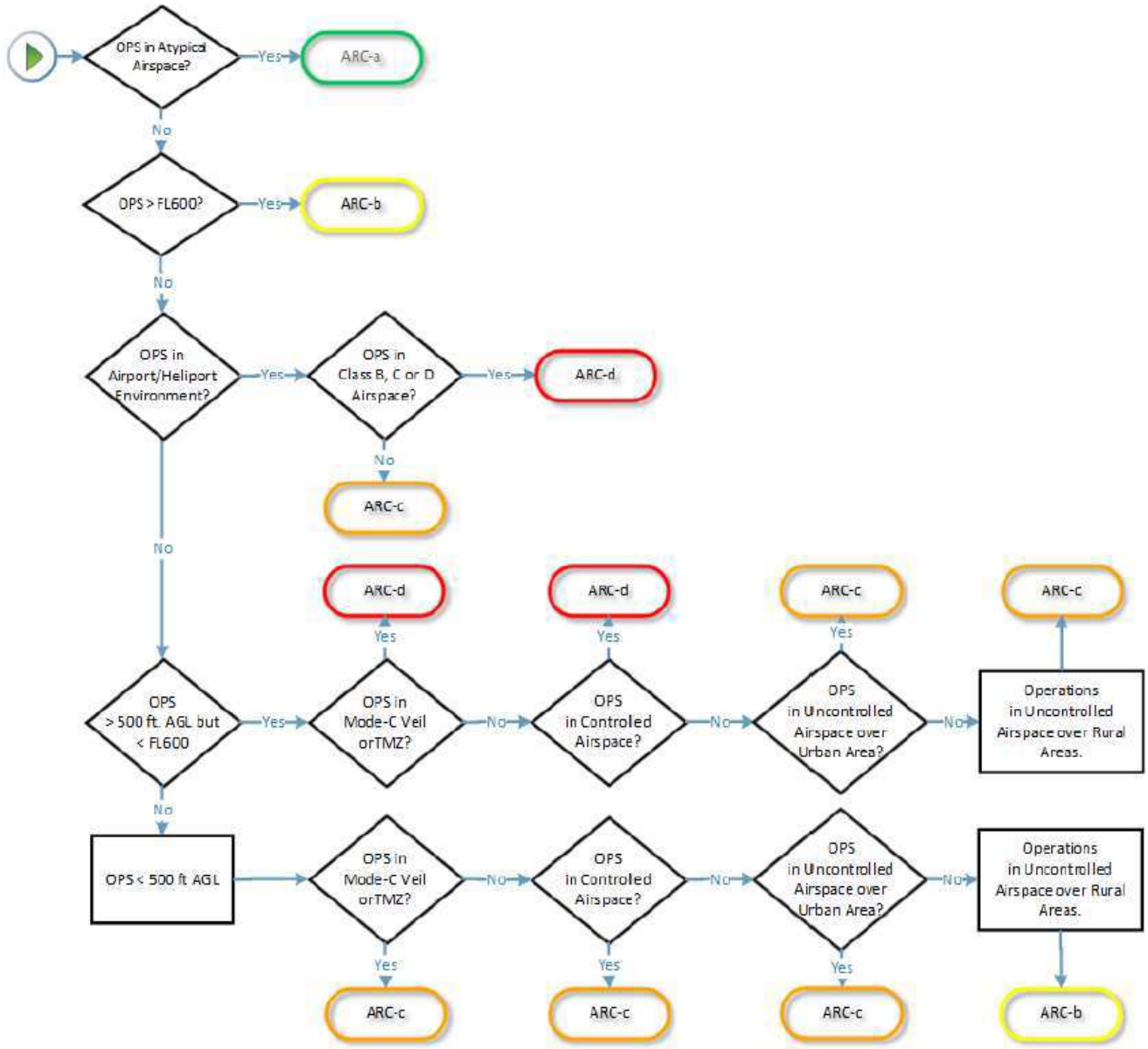

Figure D.01 — ARC assignment process

4. The ARC is a qualitative classification of the rate at which a UAS would encounter a manned aircraft in typical generalised airspace. The ARC is an initial assignment of the aggregated collision risk for the airspace, before mitigations are applied. The actual collision risk of a specific local operational volume could be much different, and can be addressed with the application of strategic mitigations to reduce the ARC.
5. Although the static generalised risk put forward by the ARC is conservative (i.e. it stays on the safe side), there may be situations where that conservative assessment may not suffice. It is

important for the MIL-UAS operator to take great care to understand the operational volume and under which circumstances the definitions in Figure D.01 could be invalidated. In some situations, the MAA-NLD may raise the operational volume ARC to a level, which is greater than that advocated by Figure D.01 The ANSP, should be consulted to ensure that the assumptions related to the operational volume are accurate.

6. ARC-a is generally defined as airspace where the risk of a collision between a UAS and any aircraft is acceptable without the addition of any tactical mitigation.
7. ARC-b, ARC-c, ARC-d generally define volumes of airspace with increasing risk of a collision between a UAS and a manned aircraft.
8. During the UAS operation, the operational volume may span many different airspace environments. The applicant needs to perform an air risk assessment for the entire range of the operational volume.

MAR.UAS.D.B.050 Step #5 - Strategic mitigations to determine the residual ARC
+AMC/+GM

1. The ARC as defined in figure D.01 is a generalised qualitative classification of the rate at which a UAS would encounter a manned aircraft in the specific airspace environment. However, it is recognised that the UAS operational volume may have a different collision risk from the one that the generalised initial ARC assigned.
2. If an applicant considers that the generalised initial ARC assigned is too high for the condition in the local operational volume, then they should demonstrate to the MAA-NLD that the risk of a mid-air collision in the operational volume is acceptably safe.
3. If the applicant considers that the generalised initial ARC assignment is correct for the condition in the local operational volume, then that ARC becomes the residual ARC.

MAR.UAS.D.B.060 Step #6 - Tactical mitigations for air risks

Tactical mitigations are applied to mitigate any residual risk of a mid-air collision that is needed to achieve the applicable airspace safety objective. Tactical mitigations will take the form of either 'see and avoid' (i.e. operations under VLOS), or they may require a system which provides an alternate means of achieving the applicable airspace safety objective operation using a Detect And Avoid (DAA), or multiple DAA systems).

1. Operations under (E)VLOS

   (a) (E)VLOS is considered an acceptable tactical mitigation for collision risk for all ARC levels. Notwithstanding the above, the UAS operator is advised to consider additional means to increase the situational awareness with regard to air traffic operating in the vicinity of the operational volume;

   (b) Operational UAS flights under (E)VLOS do not need to meet the tactical mitigation performance requirement (TMPR) nor the TMPR robustness requirements. In the case of multiple segments of the flight, those segments conducted under (E)VLOS do not have to meet the TMPR, nor the TMPR robustness requirements, whereas those conducted under BVLOS do need to meet the TMPR and the TMPR robustness requirements.

   (c) (E)VLOS verification and communication latency between the remote pilot and the observers should be less than 15 seconds.

(d) Notwithstanding the above, the applicant should have a documented (E)VLOS de-confliction scheme, in which the applicant explains which methods, will be used for detection, and defines the associated criteria applied for the decision to avoid incoming traffic. If the remote pilot relies on detection by observers, the use of phraseology will have to be described as well;

(e) For (E)VLOS operations, it is assumed that an observer is not able to detect traffic beyond two NM. (Note that the 2 NM range is not a fixed value and it may largely depend on the atmospheric conditions, aircraft size, geometry, closing rate, etc.). Therefore, the MIL-UAS operator may have to adjust the operation and/or the procedures accordingly.

2. Operations under a Detect and Avoid system — (TMPR)

(a) For operations other than (E)VLOS, the applicant will use the residual ARC and Table D.04 below to determine the TMPR.

Table D.04 — TMPRs and TMPR level of robustness assignment

Residual ARC	**TMPRs**	**TMPR level of robustness**
ARC-d	High	High
ARC-c	Medium	Medium
ARC-b	Low	Low
ARC-a	No requirement	No requirement

(b) High TMPR (ARC-d): This is airspace where either the manned aircraft encounter rate is high, and/or the available strategic mitigations are low. Therefore, the resulting residual collision risk is high, and the TMPR is high. In this airspace, the UAS may be operating in integrated airspace and will have to comply with the operating rules and procedures applicable to that airspace, without reducing the existing capacity, decreasing safety, negatively affecting current operations with manned aircraft, or increasing the risk to airspace users or persons and property on the ground. This is no different from the requirements for the integration of comparable new and novel technologies in manned aviation. The performance level(s) of those tactical mitigations and/or the required variety of tactical mitigations are generally higher than for the other ARCs. If operations in this airspace are conducted more routinely, the MAA-NLD is expected to require the MIL-UAS operator to comply with the recognised DAA system standards.

(c) Medium TMPR (ARC-c): A medium TMPR will be required for operations in airspace where the chance of encountering manned aircraft is reasonable, and/or the strategic mitigations available are medium. Operations with a medium TMPR will likely be supported by the systems currently used in aviation to aid the remote pilot in the detection of other manned aircraft, or by systems designed to support aviation that are built to a corresponding level of robustness. Traffic avoidance maneuvers could be more advanced than for a low TMPR.

(d) Low TMPR (ARC-b): A low TMPR will be required for operations in airspace where the probability of encountering another manned aircraft is low, but not negligible, and/or where strategic mitigations address most of the risk, and the resulting residual collision risk is low. Operations with a low TMPR are supported by technology that is designed to aid the remote pilot in detecting other traffic, but which may be built to lower standards. For example, for

operations below 120 m, the traffic avoidance maneuvers are expected to mostly be based on a rapid descent to an altitude where manned aircraft are not expected to ever operate.

(e) No performance requirement (ARC-a): This is airspace where the manned aircraft encounter rate is expected to be extremely low, and therefore there is no requirement for a TMPR. It is generally defined as airspace where the risk of a collision between a UAS and a manned aircraft is acceptable without the addition of any tactical mitigation.

3. Consideration of additional airspace/operational requirements

(a) Modifications to the initial and subsequent approvals may be required by the MAA-NLD or the ANSP as safety and operational issues arise.

(b) The MIL-UAS operator and the MAA-NLD need to be cognizant that the ARCs are a generalised qualitative classification of the collision risk. Local circumstances could invalidate the aircraft density assumptions of the SORA, for example, due to special events. It is important for both the MAA-NLD and the MIL-UAS operator to fully understand the airspace and air-traffic flows, and develop a system, which can alert RP to changes to the airspace on a local level. This will allow the MIL-UAS operator to safely address the increased risks associated with these events.

(c) There are many airspace, operational and equipment requirements, which have a direct impact on the collision risk of all aircraft in the airspace. Some of these requirements are general, apply to all volumes of airspace, while some are local, and are required only for a particular volume of airspace. The SORA cannot possibly cover all the possible requirements for all the conditions in which the MIL-UAS operator may wish to operate. The applicant and the MAA-NLD need to work closely together to define and address these additional requirements.

(d) The SORA process should not be used to support operations of a UAS in a given airspace without the UAS being equipped with the required equipment for operations in that airspace (e.g. the equipment required to ensure interoperability with other airspace users). In these cases, specific exemptions may be granted by the MAA-NLD. Those exemptions are outside the scope of the SORA.

(e) Operations in controlled airspace, an airport/heliport environment or a Mode-S Veil/transponder mandatory zone (TMZ) will likely require prior approval from the ANSP. The applicant should ensure that they involve the ANSP prior to commencing operations in these environments.

MAR.UAS.D.B.070 Step #7 - Final assignment of Specific Assurance and Integrity Level

1. The Specific Assurance and Integrity Level (SAIL) parameter consolidates the ground and air risk analyses, and drives the required activities. The SAIL represents the level of confidence that the UAS operation will remain under control.
2. After determining the final GRC and the residual ARC, it is then possible to derive the SAIL associated with the proposed ConOps.
3. The SAIL represents the level of confidence that the operation will remain under control. The SAIL is not quantitative, but instead corresponds to:

(a) referring to MAR.UAS.D.B.080 the operational safety objectives (OSOs) to be complied with;

(b) the description of the activities that might support compliance with those objectives; and

(c) the evidence that indicates that the objectives have been satisfied.

4. The SAIL assigned to a particular ConOps is determined using Table D.05:

Table D.05 — SAIL determination

Final GRC	Residual ARC			
	ARC-a	ARC-b	ARC-c	ARC-d
≤2	I	II	IV	VI
3	II	II	IV	VI
4	III	III	IV	VI
5	IV	IV	IV	VI
6	V	V	V	VI
7	VI	VI	VI	VI
>7	Category MIL-UAS-CERTIFIED operations			

MAR.UAS.D.B.080 Step #8 - Identification of the Operational Safety Objectives
+GM

1. Step 8 of the SORA process is to use the SAIL to evaluate the defenses within the operation in the form of operational safety objectives (OSOs), and to determine the associated level of robustness. Table D.06 provides a qualitative methodology to make this determination. In this table, O is optional, L is recommended with low robustness, M is recommended with medium robustness, and H is recommended with high robustness. The various OSOs are grouped based on the threat they help to mitigate; hence, some OSOs may be repeated in the table.
2. Table D.06 is a consolidated list of the common OSOs that historically have been used to ensure safe UAS operations. The MAA-NLD may define additional OSOs for a given SAIL and the associated level of robustness.

Table D.06 — Required OSOs for the MIL-UAS Operator

OSO number	OSO description	Minimum level of robustness required for SAIL					
		I	II	III	IV	V	VI
Technical issue with the UAS							
OSO#01	Ensure the MIL-UAS operator is competent and/or proven	L	L	M	H	H	H
OSO#02	*						
OSO#03	UAS maintained by a competent and/or proven entity	L	L	M	M	H	H
OSO#04	*						
OSO#05	*						

OSO number	OSO description	Minimum level of robustness required for SAIL					
		I	II	III	IV	V	VI
OSO#06	*						
OSO#07	Inspection of the UAS (product inspection) to ensure consistency with the ConOps	L	L	M	M	H	H
OSO#08	Operational procedures are defined, validated and adhered to	L	M	H	H	H	H
OSO#09	Remote crew trained and current and able to control the abnormal situation	L	L	M	H	H	H
OSO#10	*						
Deterioration of external systems supporting UAS operations							
OSO#11	Procedures are in-place to handle the deterioration of external systems supporting UAS operations	L	M	H	H	H	H
OSO#12	*						
OSO#13	External services supporting UAS operations are adequate for the operation	L	L	M	H	H	H
Human error							
OSO#14	Operational procedures are defined, validated and adhered to	L	M	H	H	H	H
OSO#15	Remote crew trained and current and able to control an abnormal situation	L	L	M	M	H	H
OSO#16	Multi-crew coordination	L	L	M	M	H	H
OSO#17	Remote crew is fit to operate the UAS	L	L	M	M	H	H
OSO#18	*						
OSO#19.1 **OSO#19.2**	Safe recovery from human error	O	O	L	M	M	H
OSO#19.3	*						
OSO#20	*						
Adverse operating conditions							
OSO#21	Operational procedures are defined, validated and adhered to	L	M	H	H	H	H
OSO#22	The remote crew is trained to identify critical environmental conditions and to avoid them	L	L	M	M	M	H
OSO#23.1	*						

OSO number	OSO description	Minimum level of robustness required for SAIL					
		I	II	III	IV	V	VI
OSO#23.2 OSO#23.3	Environmental conditions for safe operations are measurable and adhered to	L	L	M	M	H	H
OSO#24	*						

For the design related OSOs (description marked with * in table D.06), compliance shall be established by using a MIL-UAS that has a DCAC assigned to the SAIL or a M(R)TC (refer to Annex B).

For the other OSOs, the level of robustness shall be demonstrated at the corresponding (or higher) level of integrity and the level of assurance, provided in table D.07.

Table D.07 — OSO criteria robustness

OSO	Level of robustness	Level of integrity	Level of assurance
01	Optional	No requirements.	No requirements.
	Low	The applicant is knowledgeable of the UAS being used and as a minimum has the following relevant operational procedures: checklists, maintenance, training, responsibilities, and associated duties.	The elements delineated in the level of integrity are addressed in the ConOps.
	Medium	Same as low. In addition, the applicant has an organisation appropriate for the intended operation. In addition, the applicant has a method to identify, assess, and mitigate the risks associated with flight operations. These should be consistent with the nature and extent of the operations specified. For the purpose of this assessment, 'appropriate' should be interpreted as commensurate with/proportionate to the size of the organisation and the complexity of the operation.	Prior to the first operation, the MAA-NLD performs an audit of the organisation.
	High	Same as medium.	The applicant holds an organisational operating certificate accepted by the MAA-NLD or has a recognised flight test organisation. In addition, the

OSO	Level of robustness	Level of integrity	Level of assurance
			MAA-NLD verifies the UAS operator's competencies.
03	Low	(a) The UAS maintenance instructions are defined, and, when applicable, cover the UAS designer's instructions and requirements. (b) The maintenance staff is competent and has received an authorisation to carry out UAS maintenance. (c) The maintenance staff use the UAS maintenance instructions while performing maintenance.	For **procedure**: (a) The maintenance instructions are documented. (b) The maintenance conducted on the UAS is recorded in a maintenance log system. (c) A list of the maintenance staff authorised to carry out maintenance is established and kept up to date. The objective is to record all the maintenance performed on the aircraft, and why it is performed (rectification of defects or malfunctions, modifications, scheduled maintenance, etc.). The maintenance log may be requested for inspection/audit by the approving authority or an authorised representative. For **training**: A record of all the relevant qualifications, experience and/or training completed by the maintenance staff is established and kept up to date.
	Medium	Same as low. In addition: (a) Scheduled maintenance of each UAS is organised and in accordance with a maintenance program. (b) Upon completion, the maintenance log system is used to record all the maintenance conducted on the UAS, including releases. A staff member who has received a maintenance release authorisation for that particular UAS model/family can only accomplish a maintenance release.	For **procedure**: Same as low. In addition: (a) The maintenance program is developed in accordance with standards considered adequate by the MAA-NLD and/or in accordance with a means of compliance acceptable to that authority. In addition, if the UAS has a DVR or a (R) TC, the maintenance program includes the scheduled maintenance requirements developed as part of the design.

OSO	Level of robustness	Level of integrity	Level of assurance
			(b) A list of the maintenance staff with maintenance release authorisation is established and kept up to date. For **training**: Same as low. In addition: (a) The initial training syllabus and training standard, including theoretical/practical elements, duration, etc., is defined and is commensurate with the authorisation held by the maintenance staff. (b) For staff that hold a maintenance release authorisation, the initial training is specific to that particular UAS model/family. (c) All maintenance staff have undergone initial training.
	High	Same as medium. In addition, the maintenance staff work in accordance with a maintenance procedure manual that provides information and procedures relevant to the maintenance facility, records, maintenance instructions, release, tools, material, components, defect deferral, etc.	For **procedure**: Same as medium. In addition, the maintenance program and the maintenance procedures manual are validated by the MAA-NLD. For **training**: Same as medium. In addition: (a) A program for the recurrent training of staff holding a maintenance release authorisation is established; and (b) This program is validated by the MAA-NLD.
07	Low	The remote crew ensures that the UAS is in a condition for safe operation and conforms to the approved ConOps.	Product inspection is documented and accounts for the manufacturer's recommendations, if available. The remote crew is trained to perform the product inspection, and that training is self-declared (with evidence available).
	Medium		Same as low.

OSO	Level of robustness	Level of integrity	Level of assurance
			In addition, the product inspection is documented using checklists. For training: (a) A training syllabus including a product inspection procedure is available. (b) The UAS operator provides competency-based, theoretical and practical training.
	High		Same as medium. In addition, the product inspection procedures are validated by the MAA-NLD. The MAA-NLD: (a) validates the training syllabus; and (b) verifies the remote crew competencies.
08 **11** **14** **21**	Low	For **procedure definition**: (a) Operational procedures appropriate for the proposed operation are defined and, as a minimum, cover the following elements: (1) Flight planning; (2) Pre- and post-flight inspections; (3) Procedures to evaluate the environmental conditions before and during the mission (i.e. real-time evaluation); (4) Procedures to cope with unexpected adverse operating conditions (e.g. when ice is encountered during an operation not approved for icing conditions); (5) Normal procedures; (6) Contingency procedures (to cope with abnormal situations); (7) Emergency procedures (to cope with emergency situations); (8) Occurrence-reporting procedures; and (b) The limitations of the external systems supporting the UAS operation are defined in an OM.	The adequacy of the operational procedures and ERP is declared, except for Emergency Procedures, which are tested. Operational procedures do not require validation against either a standard or a means of compliance that is considered adequate by the MAA-NLD.

OSO	Level of robustness	Level of integrity	Level of assurance
		Operational procedures cover the deterioration of the UAS itself and any external system supporting the UAS operation. To properly address the deterioration of external systems required for the operation, it is recommended to: (a) identify these 'external systems'; (b) identify the modes of deterioration of the 'external systems' (e.g. complete loss of GNSS, GDOP/PDOP, latency issues, etc.) which would lead to a loss of control of the operation; (c) describe the means to detect these modes of deterioration of the external systems ; and (d) describe the procedure(s) used when deterioration is detected (e.g. activation of the emergency recovery capability, switch to manual control, etc.). In the scope of this assessment, external systems supporting the UAS operation are defined as systems that are not already part of the UAS but are used to: (a) launch/take off the UA; (b) make pre-flight checks; or (c) keep the UA within its operational volume (e.g. GNSS, satellite systems, air traffic management, U-space). External systems activated/used after a loss of control of the operation are excluded from this definition. For **procedure complexity**: Operational procedures may be complex and may potentially jeopardize the crew's ability to respond by increasing the remote crew's workload and/or their interaction with other entities (e.g. ATM, etc.). For **consideration of potential human error**: At a minimum, operational procedures provide:	

OSO	Level of robustness	Level of integrity	Level of assurance
		(a) a clear distribution and assignment of tasks, and (b) an internal checklist to ensure staff are adequately performing their assigned tasks. For Emergency Response Plan (ERP): The ERP: (a) is suitable for the situation; (b) effectively mitigates all anticipated hazardous secondary effects after the crash; (c) clearly delineates Remote Crew member(s) duties; (d) is practical to use and trained, so that the Remote Crew can execute the procedures effectively under stress. The ERP contains at minimum: (a) the list of anticipated emergency situations with secondary effects; (b) the procedures for each of the identified anticipated emergency situations (including criteria to identify each of these situations); (c) the list of relevant contacts to reach (e.g., Air Traffic Control, police, fire brigade, first responders).	
	Medium	For **procedure definition**: Same as low. For **procedure complexity**: Contingency/emergency procedures require manual control by the remote pilot. It should be considered that not all UAS have a mode where the pilot could directly control the surfaces; moreover, it may require significant skill not to make things worse. For **consideration of potential human error**: Operational procedures consider human error.	Normal, contingency, and emergency procedures are documented and part of the operations manual (OM). Operational procedures and ERP are developed to standards considered adequate by the MAA-NLD and/or in accordance with the means of compliance acceptable to the MAA-NLD. The adequacy of the contingency and emergency procedures is proven through: (1) dedicated flight tests; or (2) simulation, provided that the representativeness of the simulation means is proven valid for the

OSO	Level of robustness	Level of integrity	Level of assurance
		For **Emergency Response Plan (ERP):** Same as low.	intended purpose with positive results; or (3) any other means acceptable to the MAA-NLD.
	High	For **procedure definition:** Same as medium. For **procedure complexity**: Operational procedures are noncomplex and clear. For **consideration of potential human error**: Same as medium. In addition, the remote crew receives crew resource management (CRM) training. In the context of SORA, the term 'remote crew' refers to any person involved in the mission. CRM training focuses on the effective use of all the remote crew to ensure safe and efficient operation, reducing error, avoiding stress and increasing efficiency. For **Emergency Response Plan (ERP):** Same as Medium.	Same as medium. In addition: (a) Flight tests performed to validate the procedures and checklists cover the complete flight envelope or are proven conservative. (b) The procedures, checklists, flight tests and simulations are validated by the MAA-NLD. (c) The representativeness of the tabletop exercise of the ERP is validated by the MAA-NLD.
09 **15** **22**	Low	The competency-based, theoretical and practical training is adequate for the operation and ensures knowledge of: (a) applicable UAS Regulation; (b) airspace operating principles; (c) airmanship and aviation safety; (d) human performance limitations; (e) meteorology; (f) navigation/charts; (g) the UAS; and (h) operating procedures.	Training is self-declared (with evidence available).
	Medium		(a) Training syllabus is available and kept up to date. (b) The UAS operator provides competency-based, theoretical and practical training.
	High		The MAA-NLD: (a) validates the training syllabus; and (b) verifies the remote crew competencies.
13	Low	The applicant ensures that the level of performance for any externally provided service necessary for the safety of the	The applicant declares that the requested level of performance for any externally provided service

OSO	Level of robustness	Level of integrity	Level of assurance
		flight is adequate for the intended operation. If the externally provided service requires communication between the UAS operator and the service provider, the applicant ensures there is effective communication to support the service requirement. Roles and responsibilities between the applicant and the external service provider are defined.	necessary for the safety of the flight is achieved (without evidence being necessarily available).
	Medium		The applicant has supporting evidence that the required level of performance for any externally provided service required for the safety of the flight can be achieved for the full duration of the mission. This may take the form of a service-level agreement (SLA) or any official commitment that prevails between a service provider and the applicant on the relevant aspects of the service (including quality, availability, and responsibilities). The applicant has a means to monitor externally provided services, which affect flight-critical systems and take appropriate actions if real-time performance could lead to the loss of control of the operation.
	High		Same as medium. In addition: (a) the evidence of the performance of an externally provided service is achieved through demonstrations; and (b) the MAA-NLD validates the claimed level of integrity.
16	Low	For **procedures**: Procedure(s) to ensure coordination between the crewmembers and robust and effective communication channels are available and at a minimum cover: (a) assignment of tasks to the crew, and (b) establishment of systematic communications. For **training**: Remote crew training covers multi-crew coordination.	For **procedures**: (a) Procedures are validated against either a standard or a means of compliance considered adequate by the MAA-NLD. (b) The adequacy of the procedures and checklists is declared. For **training**: Training is self-declared (with evidence available).
	Medium	For **procedures**: Same as low.	For **procedures**:

OSO	Level of robustness	Level of integrity	Level of assurance
			(a) Procedures are validated against standards considered adequate by the MAA-NLD and/or in accordance with the means of compliance acceptable to the MAA-NLD. (b) The adequacy of the procedures is proven through: (1) dedicated flight tests; or (2) simulation, provided that the representativeness of the simulation means is proven valid for the intended purpose with positive results; or (3) any other means acceptable to the MAA-NLD.
		For **training**: Same as low. In addition, the remote crew receives CRM training. CRM training focuses on the effective use of all the remote crew to assure a safe and efficient operation, reducing error, avoiding stress and increasing efficiency.	For **training**: (a) Training syllabus is available. (b) The UAS operator provides competency-based, theoretical and practical training.
		For **communication devices**: Communication devices comply with standards considered adequate by the MAA-NLD and/or in accordance with a means of compliance acceptable to the MAA-NLD.	For **communication devices**: The applicant has supporting evidence that the required level of integrity is achieved. This is typically done by testing, analysis, simulation, inspection, design review or through operational experience. When simulation is performed, the validity of the targeted environment that is used in the simulation needs to be justified.
	High	For **procedures**: Same as medium.	For **procedures**: Same as medium. In addition: (a) flight tests performed to validate the procedures cover the complete flight envelope or are proven to be conservative; and (b) the procedures, flight tests and simulations are validated by the MAA-NLD.

OSO	Level of robustness	Level of integrity	Level of assurance
		For **training**: Same as medium. For **communication devices**: Communication devices are redundant and comply with standards considered adequate by the MAA-NLD and/or in accordance with a means of compliance acceptable to the MAA-NLD.	For **training**: The MAA-NLD: (a) validates the training syllabus; and (b) verifies the remote crew competencies. For **communication devices**: The MAA-NLD should request the applicant to operate a UAS designed by an approved design organisation
17	Low	The applicant has a policy defining how the remote crew can declare themselves fit to operate before conducting any operation.	The policy to define how the remote crew declares themselves fit to operate (before an operation) is documented. The remote crew fit-to-operate declaration (before an operation) is based on a policy defined by the applicant.
	Medium	Same as low. In addition: — Duty, flight duty and resting times for the remote crew are defined by the applicant and adequate for the operation. — The UAS operator defines requirements appropriate for the remote crew to operate the UAS.	Same as low. In addition: — Remote crew duty, flight duty and the resting time policy are documented. — Remote crew duty cycles are logged and cover at a minimum: • when the remote crew member's duty day commences; • when the remote crew members are free from duties; and, • resting times within the duty cycle. — There is evidence that the remote crew is fit to operate the UAS.
	High	Same as medium. In addition: — The remote crew is medically fit, — A fatigue risk management system (FRMS) is in place to manage any escalation in duty/flight duty times.	Same as medium. In addition: — Medical standards considered adequate by the MAA-NLD and/or the means of compliance acceptable to the MAA-NLD are established and the MAA-NLD verifies that the remote crew is medically fit. — The MAA-NLD validates the duty/flight duty times. — If an FRMS is used, it is validated and monitored by the MAA-NLD.

OSO	Level of robustness	Level of integrity	Level of assurance
19.1	Optional	No requirements.	No requirements.
19.2	Low	For **Procedures and checklists**: Procedures and checklists that mitigate the risk of potential human errors from any person involved with the mission are defined and used. Procedures provide at a minimum: — a clear distribution and assignment of tasks, and — an internal checklist to ensure staff are adequately performing their assigned tasks. For **training**: — The remote crew is trained to use procedures and checklists. — The remote crew receives CRM training. In the context of SORA, the term 'remote crew' refers to any person involved in the mission. CRM training focuses on the effective use of all the remote crew to ensure a safe and efficient operation, reducing error, avoiding stress and increasing efficiency. The distinction between a low, a medium and a high level of robustness for this criterion is achieved through the level of assurance (see table below).	For **Procedures and checklists**: (a) Procedures and checklists are not validated against either a standard or a means of compliance considered adequate by the MAA-NLD. (b) The adequacy of the procedures and checklists is declared. For **training**: Consider the criteria defined for the level of assurance of the generic remote crew training OSO (i.e. OSO #09, OSO #15 and OSO #22) corresponding to the SAIL of the operation.
	Medium	Same as low.	For **Procedures and checklists**: (a) Procedures and checklists are validated against standards considered adequate by the MAA-NLD and/or in accordance with the means of compliance acceptable to the MAA-NLD. (b) The adequacy of the procedures and checklists is proven through: (1) dedicated flight tests, or (2) simulation, provided that the representativeness of the simulation means is proven valid for the

OSO	Level of robustness	Level of integrity	Level of assurance
			intended purpose with positive results; or (3) any other means acceptable to the MAA-NLD. For **training**: Same as low.
	High	Same as medium.	For **Procedures and checklists**: Same as medium. In addition: (a) Flight tests performed to validate the procedures and checklists cover the complete flight envelope or are proven to be conservative. (b) The procedures, checklists, flight tests and simulations are validated by the MAA-NLD. For **training**: Same as medium.
23.2 **23.3**	Low	For **procedures**: Procedures to evaluate environmental conditions before and during the mission (i.e. real-time evaluation) are available and include assessment of meteorological conditions (METAR, TAF, etc.) with a simple recording system. For **training**: Training covers assessment of meteorological conditions.	For **procedures**: (a) Procedures do not require validation against either a standard or a means of compliance considered adequate by the MAA-NLD. (b) The adequacy of the procedures and checklists is declared. For **training**: Training is self-declared (with evidence available).
	Medium	Same as low.	For **procedures**: (a) Procedures are validated against standards considered adequate by the MAA-NLD and/or in accordance with the means of compliance acceptable to the MAA-NLD. (b) The adequacy of the procedures is proven through: (1) dedicated flight tests, or (2) simulation, provided that the representativeness of the simulation means is proven valid for the intended purpose with positive results; or

OSO	Level of robustness	Level of integrity	Level of assurance
			(3) any other means acceptable to the MAA-NLD. For **training**: — Training syllabus is available. — The UAS operator provides competency-based, theoretical and practical training.
	High	Same as medium.	For **procedures**: Same as medium. In addition: (a) Flight tests performed to validate the procedures cover the complete flight envelope or are proven to be conservative. (b) The procedures, flight tests and simulations are validated by the MAA-NLD. For **training**: The MAA-NLD: — validates the training syllabus; and — verifies the remote crew competencies.

MAR.UAS.D.B.090 Step #9 – Containment requirements
+GM

1. Containment requirements address the risk posed by a loss of control of the operation, resulting in an infringement of the adjacent areas on the ground and/or adjacent airspace. These areas may vary with different flight phases.
2. The level of robustness for containment (Low, Medium, High) of a MIL-UAS type is established by the Design conformity assessment organisation in accordance with MAR.UAS.B.C.040.
3. MIL-UAS must comply with at least the level of robustness for containment required for the operation (ConOps).
4. The required level of robustness for containment is determined as follows:

   (a) For UA with a MTOM of less than 250 gr, the required level of robustness for containment is Low without additional operational limits.

   (b) For other UA:

      i) Determine the size and population characteristics of the adjacent area;

      ii) Calculate the size of the adjacent area for the operation. The lateral outer limit of the

adjacent area is calculated from the operational volume as the distance flown in 3 minutes at maximum speed of the UA:

(1) If the distance is less than 5 km, use 5 km;

(2) If the distance is between 5 km and 35 km, use the distance calculated;

(3) If the distance is more than 35 km, use 35 km.

iii) Calculate the average population density between the outer limit of the ground risk buffer and the outer limit of the adjacent area;

iv) Assess the presence of outdoor assemblies of people within 1 km of the outer limit of the operational volume;

(c) Determine a set of operational limits appropriate for intended operation using the columns in Tables D.08.a-D.08.f:

i) Choose an operational limit for the acceptable average population density in the established adjacent area;

ii) Choose an operational limit for the acceptable size of assemblies of people within 1 km surrounding the operational volume;

iii) Use Tables D.08.a-D.08.f to identify the required containment robustness level for the chosen operational limits, the characteristic dimension of the UA and the SAIL of the operation;

iv) If the result is "out of scope", the operation cannot be conducted. In this case, adjusting the location of the operation or an increase of the SAIL of the operation could be considered.

Table D.08.a — Required containment robustness level (UA < 1 m, < 25 m/s)

UA wingspan < 1 m - groundspeed < 25 m/s Sheltering assumed applicable for the UA in the adjacent area			
Average Population density allowed	**No upper limit**		**< 50000 ppl/km²**
Outdoor Assemblies allowed within 1 km of the OPS volume	**> 400k**	**40k to 400k**	**< 40k**
SAIL I & II	High	Medium	Low
SAIL III	Medium	Low	Low
SAIL IV	Low	Low	Low
SAIL V & VI	Low	Low	Low

Table D.08.b — Required containment robustness level (UA < 3 m, < 35 m/s, shelter applicable)

wingspan< 3 m UA - groundspeed< 35 m/s Shelter applicable for the UA in the adjacent area				
Average Population density allowed	**No upper limit**		**< 50000 ppl/km²**	**< 5000 ppl/km²**
Outdoor Assemblies allowed within 1 km of the OPS volume	**> 400k**	**40k to 400k**	**< 40k**	
SAIL I & II	Out of scope	High	Medium	Low
SAIL III	Out of scope	Medium	Low	Low
SAIL IV	Medium	Low	Low	Low
SAIL V & VI	Low	Low	Low	Low

Table D.08.c — Required containment robustness level (UA < 3 m, < 35 m/s, no shelter)

wingspan< 3 m UA- groundspeed < 35 m/s Shelter not applicable for the UA in the adjacent area				
Average Population density allowed	**No upper limit**	**< 50000 ppl/km²**	**< 5000 ppl/km²**	**< 500 ppl/km²**
Outdoor Assemblies allowed within 1 km of the OPS volume	**> 400k**	**40k to 400k**	**< 40k**	
SAIL I & II	Out of scope	High	Medium	Low
SAIL III	Out of scope	Medium	Low	Low
SAIL IV	Medium	Low	Low	Low
SAIL V & VI	Low	Low	Low	Low

Table D.08.d — Required containment robustness level (UA < 8 m, < 75 m/s, no shelter)

wingspan< 8 m UA -groundspeed< 75 m/s Sheltering assumed not applicable for the UA in the adjacent area					
Average Population density allowed	**No upper limit**	**< 50000 ppl/km²**	**< 5000 ppl/km²**	**< 500 ppl/km²**	**< 50 ppl/km²**
Outdoor Assemblies allowed within 1 km of the OPS volume	**> 400k**	**40k to 400k**	**< 40k**		
SAIL I & II	Out of scope	Out of scope	High	Medium	Low
SAIL III	Out of scope	Out of scope	Medium	Low	Low
SAIL IV	Out of scope	Medium	Low	Low	Low
SAIL V	Medium	Low	Low	Low	Low
SAIL VI	Low	Low	Low	Low	Low

Table D.08.e — Required containment robustness level (UA < 20 m, < 125 m/s, no shelter)

wingspan< 20 m UA - groundspeed< 125 m/s Sheltering assumed not applicable for the UA in the adjacent area					
Average Population density allowed	**No upper limit**	**< 50000 ppl/km²**	**< 5000 ppl/km²**	**< 500 ppl/km²**	**< 50 ppl/km²**
Outdoor Assemblies allowed within 1 km of the OPS volume	**> 400k**	**40k to 400k**	**< 40k**		
SAIL I & II	Out of scope	Out of scope	Out of scope	High	Medium
SAIL III	Out of scope	Out of scope	Out of scope	Medium	Low
SAIL IV	Out of scope	Out of scope	Medium	Low	Low
SAIL V	Out of scope	Medium	Low	Low	Low
SAIL VI	Medium	Low	Low	Low	Low

Table D.08.f — Required containment robustness level (UA < 40 m, < 200 m/s, no shelter)

wingspan< 40 m UA- groundspeed < 200 m/s Sheltering assumed not applicable for the UA in the adjacent area					
Average Population density allowed	**No upper limit**	**< 50000 ppl/km²**	**< 5000 ppl/km²**	**< 500 ppl/km²**	**< 50 ppl/km²**
Outdoor Assemblies allowed within 1 km of the OPS volume	**> 400k**	**40k to 400k**	**< 40k**		
SAIL I & II	Out of scope	Out of scope	Out of scope	Out of scope	High
SAIL III	Out of scope	Out of scope	Out of scope	Out of scope	Medium
SAIL IV	Out of scope	Out of scope	Out of scope	Medium	Low
SAIL V	Out of scope	Out of scope	Medium	Low	Low
SAIL VI	Out of scope	Medium	Low	Low	Low

MAR.UAS.D.B.100 Step #10 - Comprehensive safety portfolio
+AMC

1. The Comprehensive Safety Portfolio (CSP) is a suite of documents showing compliance with the requirements resulting from the SORA steps for the proposed operation. If the Comprehensive Safety Portfolio does not provide appropriate evidence as determined by the SORA process at the given SAIL, changes to the proposed operation (e.g., reduction of the intrinsic risk of the operation), additional mitigation measures, possible UAS design changes, or further analysis/evidence may be needed.
2. Finalise and present all the documentation that needs to be included in the CSP. This should include

   (a) the finalized detailed operational description from Step #1 that details the proposed operation(s), providing the air and ground risk information necessary to validate the safety claims within the proposed operational context;

   (b) all safety claims and their robustness made through Steps #2 (iGRC), #3 (M1(A), M1(B), M1(C), M2), #4 (initial ARC), #5 (Strategic Mitigations for Air Risk), updated (if required) from Phase 1 to reflect the finalised operation;

   (c) safety claims; the final GRC, the residual ARC, TMPR, the OSOs associated with the SAIL, and the containment requirements;

   (d) compliance evidence, which is the data, facts, and information that provide the necessary justification for each of the safety claims and derived requirements made through the SORA process at the robustness level required. The CSP covers operational, technical, personnel, and organisational compliance evidence;

   (e) the necessary linkages and references between documents, that ensures the CSP makes a justified safety case that demonstrates the operation has satisfied all required SORA safety

claims and derived requirements;

(f) it is expected that a finalised compliance matrix (based on the initial compliance matrix) will be used to map the safety claims and derived requirements to the compliance evidence.

3. The MIL-UAS operator shall address any additional requirements that were not identified by the SORA process (e.g. for security, environmental protection, etc.) and identify the relevant stakeholders The activities performed within the SORA process will likely address those additional needs, but they may not be considered to be sufficient at all times.
4. The MIL-UAS operator shall ensure the consistency between the SORA safety case and the actual operational conditions (i.e. at the time of the flight).