UNITED ARAB EMIRATES
MINISTRY OF DEFENCE
SAFETY ENVIRONMENT AND WORTHINESS EXECUTIVE DIRECTORATE

الإمـــارات العـربيـــة المتحـــدة
وزارة الـــدفـــــاع
الإدارة التنفيذية للسلامة والبيئة والجدارة

MILITARY SAFETY, ENVIRONMENT AND WORTHINESS EXECUTIVE DIRECTORATE

UNITED ARAB EMIRATES MILITARY AIRWORTHINESS REGULATIONS

UAEMAR UAS

UNMANNED AIRCRAFT SYSTEMS

Edition Number	**2.0**
Edition Date	**09 January 2024**
Status	**Approved**

INTENTIONALLY LEFT BLANK

DOCUMENT CONTROL INFORMATION

DOCUMENT APPROVAL

The table below provides the document approval status:

Edition		Authorised by	Date
2.0	Prepared by	United Arab Emirates Military Airworthiness Authority	09 January 2024
	Approved by	Assistant Chief of Staff for Joint Capabilities United Arab Emirates Ministry of Defence	09 January 2024

DOCUMENT REVISION STATUS

Edition	Date	Status	Reason for change	Sections or pages affected
1.0	28 July 2022	Approved	Initial issue (Based on Australian Defence Aviation Safety Regulation, DASR UAS – Unmanned Aircraft Systems of 29 April 2021.	All
2.0	09 January 2024	Approved	Incorporate UAEMAR Form 145 requirements and for MAA to issue a Letter of Endorsed Categorisation.	GM UAS.10 (3)

STATUS

The Status of the document can take two values:

Draft: Draft version by the United Arab Emirates Military Airworthiness Authority.

Approved: Approval by the Assistant Chief of Staff for Joint Capabilities United Arab Emirates Ministry of Defence.

EDITION

Edition numbering will have the following format: **Edition X.Y**

The value of **X** will change after a **major** modification of the document

The value of **Y** will change after a **minor** modification of the document

NOTE

1. All changes are indicated by the use of a ‘sidebar’ in the margin. This can be readily cross-referenced using the table at the end of the document which details each change.

TABLE OF CONTENTS

UAEMAR UAS – UNMANNED AIRCRAFT SYSTEMS

UAS.10 – UAS APPROVAL AND AUTHORISATION

▸GM1 ▸GM2 ▸GM3

1. Defence UAS must only be operated if authorised by the relevant Command or Defence Group or MAA approved Defence Industry. ▸AMC
2. Persons authorising and operators of a UAS must: ▸GM
   a) eliminate risk to the health and safety, So Far As is Reasonably Practicable (SFARP), to other air users, and to people and critical infrastructure on the ground or water, and
   b) if it is not reasonably practicable to eliminate risk to health and safety, minimise those risks SFARP.
3. All Defence UAS must operate in accordance with the requirements and limitations of Certified, Specific or Open category. ▸GM ▸AMC1 ▸AMC2
4. Defence UAS must be either on the Defence Register when directed by the Authority, or on a local register. ▸GM ▸AMC
5. Local registers raised in accordance with UAEMAR.UAS.10 (4) must be made available to the Authority on request.

UAS.20 – CERTIFIED CATEGORY UAS

1. UAS shall only be eligible for operation under Certified category if they: ▸GM
   a) are Defence registered
   b) have a Statement of Operating Intent and Usage (SOIU)
   c) are Type Certified in accordance with UAEMAR.21 ▸AMC
   d) comply with all initial airworthiness, and continuing airworthiness UAEMAR
   e) are operated under a Military Air Operator Certificate (MAOC)
   f) comply with UAE Armed Forces Air Operations and Standard Rules of the Air Regulation. ▸AMC
   g) are controlled by a RP who is a qualified military pilot, or qualified in accordance with requirements mandated by either UAE Armed Forces Chief of Staff, Commands (Air, Land, Sea), Defence Group or MAA approved RP Training Organisation. ▸AMC

UAS.30 – SPECIFIC CATEGORY UAS

1. UAS shall only be eligible for operation under Specific category if they are operated under either: ▸GM

   a) a UASOP issued by the Authority (Specific Type A), or

   b) a Standard Scenario published by the Authority (Specific Type B).

2. Specific category UAS to be operated under a UASOP (Specific Type A) must: ▸GM1 ▸GM2 ▸AMC

   a) be registered in accordance with UAEMAR.UAS.10 (4).

   b) have its role and operating environment documented in an SOIU when directed by the Authority ▸AMC

   c) comply with UAEMAR initial and continuing airworthiness regulations as directed by the Authority ▸AMC

   d) comply with the Military Air Operator requirements of the Military Air Operator Certificate (MAOC), to the extent directed by the Authority ▸AMC

   e) comply with Air Operations and Standard Rules of the Air requirements to the extent directed by the Authority ▸AMC

   f) be controlled by a RP who is qualified as specified in the UASOP ▸AMC

   g) operate within the requirements and limitations included on the UASOP. ▸AMC

3. Specific category UAS to be operated under a Standard Scenario (Specific Type B) must: ▸GM ▸AMC

   a) be operated only under Standard Scenarios in UAEMAR.UAS.35

   b) be notified to the Authority via submission of UAEMAR Form 150 prior to commencement of UAS operations

   c) be registered in accordance with UAEMAR.UAS.10 (4).

UAS.35 – STANDARD SCENARIOS FOR UAS OPERATIONS

1. **Standard Scenario for Micro UAS.** UAS operations under the Micro UAS Standard Scenario must comply with the following requirements and limitations: ▸ GM

   a) UAS MTOW must not exceed 0.1 kg.

   b) Not operate in a Prohibited or Restricted Area unless approved by the authority controlling the area.

   c) Not operate in such a manner as to create an obstruction to another aircraft.

   d) Not operate over an aerodrome runway/movement area without approval from the relevant authority. ▸ GM

   e) Not operate in the approach or departure path of a runway, landing area or ship without approval from the relevant authority. ▸ GM

   f) Be controlled by a RP who meets training, qualification and experience requirements defined by the relevant Command/Group/Industry.

   g) Allow RP intervention during all stages of the flight. ▸ GM

   h) Employ suitable risk controls when operating: ▸ AMC

      i. beyond visual line of sight

      ii. outside of daylight hours

      iii. in cloud or reduced visibility

      iv. above 400 ft Above Ground Level (AGL)

2. **Standard Scenario for Very Small UAS.** UAS operations under the Very Small UAS Standard Scenario must comply with the following requirements and limitations: ▸ GM

   a) UAS MTOW must not exceed 2 kg.

   b) Not operate in a Prohibited or Restricted Area unless approved by the authority controlling the area.

   c) Not operate over an area where a fire, police or other public safety or emergency operation is being conducted without the approval of the person in charge of the operation.

   d) Not operate in such a manner as to create an obstruction to another aircraft.

   e) Not operate in controlled airspace higher than 400 ft AGL without approval of the relevant airspace authority. ▸ GM

   f) Not operate over an aerodrome runway/movement area without approval from the relevant authority. ▸ GM

   g) Not operate in the approach or departure path of a runway, landing area or ship without approval from the relevant authority. ▸ GM

h) Be controlled by a RP who meets training, qualification and experience requirements defined by the relevant Command/Group/Industry.

i) For each air vehicle, have a dedicated RP.

j) Allow RP intervention during all stages of the flight. ▸GM

k) Employ suitable risk controls when operating: ▸AMC

i. beyond visual line of sight
ii. outside of daylight hours
iii. in cloud or reduced visibility
iv. above 400 ft AGL
v. within 30 m horizontally of GP
vi. over populous areas
vii. over or in proximity of critical infrastructure
viii. within 3 nm (5.5 km) of the movement area of a controlled aerodrome.

3. **Standard Scenario for Defence Ranges and Exercise Areas.** UAS operations under the Defence Ranges and Exercise Areas Standard Scenario must comply with the following requirements and limitations: ▸GM

a) Operate only in airspace that enables the exclusion of civilian aircraft. ▸GM

b) Operate only over:

i. Defence Controlled Land, or
ii. water designated for a planned Defence exercise only during that exercise period.

c) UAS MTOW must not exceed 150 kg.

d) Not operate in a Prohibited Area or Restricted Area unless approved by the authority controlling the area.

e) Not operate over an area where a fire, police or other public safety or emergency operation is being conducted without the approval of the person in charge of the operation.

f) Not operate in such a manner as to create an obstruction to another aircraft.

g) Not operate over an aerodrome runway/movement area without approval from the relevant authority. ▸GM

h) Not operate in the approach or departure path of a runway, landing area or ship without approval from the relevant authority. ▸GM

i) Be controlled by a RP who meets training, qualification and experience requirements defined by the relevant Command/Group/Industry.

j) For each air vehicle, have a dedicated RP.

k) Allow RP intervention during all stages of the flight. ▸GM

l) Employ suitable risk controls when operating: ▸AMC

i. beyond visual line of sight
ii. outside of daylight hours
iii. in cloud or reduced visibility
iv. above 400 ft AGL
v. over or in proximity of MEP
vi. over or in proximity of vessels in the exercise area
vii. over or in proximity of critical infrastructure.

4. **Standard Scenario for High Seas.** UAS operations under the High Seas Standard Scenario must comply with the following requirements and limitations: ▸GM

a) Operate no closer than 12 nm to land, except for operations within 12 nm of rocks, shoals, and islands which have no permanent human inhabitants.

b) UAS MTOW must not exceed 150 kg.

c) Not operate in a Prohibited or Restricted Area unless approved by the authority controlling the area.

d) Not operate over an area where a fire, police or other public safety or emergency operation is being conducted without the approval of the person in charge of the operation.

e) Not operate in such a manner as to create an obstruction to another aircraft.

f) Not operate in controlled airspace without approval of the relevant airspace authority.

g) Not operate in the approach or departure path of a ship's runway/landing area without approval from the relevant authority. ▸GM

h) Be controlled by a RP who meets training, qualification and experience requirements defined by the relevant Command/Group/Industry.

i) For each air vehicle, have a dedicated RP.

j) Allow RP intervention during all stages of the flight. ▸GM

k) Employ suitable risk controls when operating: ▸AMC

i. beyond visual line of sight
ii. outside of daylight hours
iii. in cloud or reduced visibility
iv. above 400 ft Above Mean Sea Level (AMSL)
v. over or in proximity of MEP
vi. over or in proximity of vessels
vii. over or in proximity of critical infrastructure.

5. **Standard Scenario for Trials and Experimentation.** UAS operations under the Trials and Experimentation Standard Scenario must comply with the following requirements and limitations: ▸GM

   a) Operate only in airspace that enables the exclusion of civilian and military aircraft, except those specifically planned as part of the trial. ▸GM

   b) Operate only over:

      i. Defence Controlled Land that precludes GP access, or

      ii. Defence Group Controlled Land or Defence Industry Controlled Test Range that precludes GP access, or

      iii. water where the UAS is not in the proximity of, or overhead of, GP.

   c) Operate well clear of MEP, except where operation in their proximity is essential to a trial outcome. ▸GM

   d) Not operate in a Prohibited Area or Restricted Area unless approved by the authority controlling the area.

   e) Be controlled by a RP who meets training, qualification and experience requirements defined by the relevant Command/Group/Industry.

   f) Allow RP intervention during all stages of the flight. ▸GM

   g) Employ suitable risk controls when operating: ▸AMC

      i. beyond visual line of sight

      ii. outside of daylight hours

      iii. in cloud or reduced visibility

      iv. above 400 ft AGL

      v. in proximity of MEP

      vi. more than one UA per RP.

UAS.40 – OPEN CATEGORY UAS

1. Micro, Very Small and Small UAS shall only be eligible for operation under Open Category if they comply with the requirements and limitations contained in the following Standard Operating Conditions: ▸GM ▸AMC

   a) Micro UAS (< 0.1 kg) must:

      i. be operated within visual line of sight

      ii. be operated no higher than 400 ft above ground level (AGL)

      iii. be operated during daytime and not in cloud

      iv. not operate in a way that creates a hazard to another aircraft, person or critical infrastructure

      v. not operate in a Prohibited Area, or a Restricted Area unless approved by the authority controlling the area

vi. not operate in the movement area or the approach or departure path of a runway of an aerodrome/ship without approval from the relevant authority

vii. not operate in such a manner as to create an obstruction to an aircraft

viii. be controlled by a RP who meets training, qualification and experience requirements defined by the relevant Command/Group/Industry ▸ AMC

ix. allow RP intervention during all stages of the flight

x. be registered in accordance with UAEMAR UAS.10 (4).

b) Very Small UAS (0.1–2 kg), in addition to the requirements and limitations for Micro UAS, must:

i. not be operated within 30 m of the GP

ii. not operate over populous areas

iii. not operate within 3 nm (5.5 km) of the movement area of a controlled aerodrome without approval of the relevant airspace authority ▸ AMC

iv. not operate over an area where a fire, police or other public safety or emergency operation is being conducted without approval of the person in charge of the operation

v. for each air vehicle, have a dedicated RP.

c) Small UAS (2–25 kg), in addition to the requirements and limitations for Very Small UAS, must:

i. only operate over land/water controlled by Defence

ii. not operate in controlled airspace without approval of the relevant airspace authority.

UAS.50 – WEAPONISATION AND CARRIAGE OF PASSENGERS

1. Integration of weapons onto Defence UAS must require approval by the Authority. ▸ GM
2. Carriage of persons on Defence UAS shall require approval by the Authority. ▸ GM

UAS.60 – OCCURRENCE REPORTING

1. The operator of a UAS must report any identified UAS aviation safety event. ▸ GM ▸ AMC
2. The operator of a UAS under any one of the following UAS categories must report any identified UAS aviation safety issue:

a) **Certified.**

b) **Specific Type A.** The Authority will define the minimum reporting requirements as part of the UASOP approval process.

UAS.70 – SUPPORT OF AUTHORITY COMPLIANCE ASSURANCE

1. Upon request, all data and access to support initial and on-going compliance assurance of UAS operations must be made available to the Authority. ▸GM

UAS.80 – FOREIGN UAS OPERATIONS

1. Foreign military UAS must have authorisation from an organisation within Defence e.g. UAE Armed Forces Joint Operations Command (JOC), or an approved Defence Group prior to conducting flight operations in UAE airspace. ▸GM
2. The organisation within Defence sponsoring the foreign military UAS must ensure the risks to other airspace users and persons/critical infrastructure are eliminated or otherwise minimised So Far As is Reasonably Practicable (SFARP). ▸GM

UAEMAR UAS – GUIDANCE MATERIAL & ACCEPTABLE MEANS OF COMPLIANCE

GM No. 1 to UAS.10 – Concept of Authority Approval and Command/Group/Industry Authorisation

1. This GM defines the respective roles of the Authority and the relevant Defence Command/Group/Industry with respect to UAS operations.

2. For certain combinations of UAS and operating environments, the Authority will issue a discrete Authority approval, through either:

   a) the issue of a Military Type Certificate (MTC), (for the UAS), and a Military Air Operator Certificate (MAOC), (for the UAS Operator)

   b) the issue of a UASOP (covering both the UAS and the UAS Operator).

3. For some UAS operations, an explicit Authority approval is not required. Rather, the Command/Group/Industry may authorise a UAS operation provided certain Authority-defined risk controls have been implemented, as presented in Standard Scenarios (see UAEMAR.UAS.30 (3) or Standard Operating Conditions (see UAEMAR.UAS.40).

4. Irrespective of whether the Authority issues a discrete approval, the relevant Command/Group/Industry always maintains responsibility for ensuring the safe operation of UAS under their control. Consequently, the Command/Group/Industry must authorise all UAS operations.

GM No. 2 to UAS.10 – Applicability

1. UAEMAR.UAS is applicable to all UAS including unmanned targets, decoys and simulated weapons with a programmed or remotely piloted flight path and which have a recoverable and reusable airframe. UAEMAR.UAS may be applicable to disposable/one time use UA such as submarine launched or air dropped UA. It is not applicable to guided missiles/rockets designed for single flight, including guided weapons with a loiter capability, provided the safety of those systems is assured via Defence's regulations for guided weapons. Where doubt exists as to regulation applicability, advice should be sought from the Authority.

2. For UAS operated by or on behalf of Defence, UAEMAR.UAS is applicable in its entirety. Furthermore, UAEMAR.UAS presents the complete set of initial airworthiness, continuing airworthiness and operations regulations relevant to UAS. Notably, other UAEMAR are only relevant to UAS if explicitly invoked through UAEMAR.UAS.

3. Even where an external party is providing the UAS as a service to Defence, the relevant Command/Group/Industry are to retain shared responsibility for ensuring the health and safety of Defence and non-Defence personnel and the General Public (GP). This statutory duty cannot be transferred in its entirety to the external party.

4. **UAS regulated by another National Airworthiness Authority (NAA) or Military Airworthiness Authority (MAA).** Where a UAS is being used for Defence purposes but is regulated by another NAA or MAA:

   a) Authorisation by the relevant Command/Group/Industry is required for UAS operations, under UAEMAR.UAS.10 (1).

   b) The statutory obligations for persons authorising UAS operations and operating the UAS must be met, under UAEMAR.UAS.10 (2).

   c) Where the Command/Group/Industry is not satisfied that compliance with another NAA or MAA regulations will promote an appropriate level of safety, the Command/Group/Industry is obliged to impose all additional controls necessary to manage that risk.

5. Where the role and extent of involvement of another NAA or MAA is unclear, or the NAA or MAA is not recognised by the Authority, Authority advice must be sought.

6. **Foreign UAS.** Where a Defence Organisation is sponsoring a foreign military UAS that is to operate in UAE airspace, only UAEMAR.UAS.80 applies. The remaining UAEMAR.UAS regulations are not applicable.

GM No. 3 to UAS.10 – Definitions

1. UAEMAR.UAS employs the following definitions:

   a) **Critical infrastructure** (UAS context). A facility that, if damaged by a UA, may have an immediate and adverse effect on MEP or GP health and safety.

   b) **Defence Controlled Land** (UAS context). Land where Defence controls access by the GP, such that Defence can ensure UAS operations can be conducted which are not in the proximity of, or overhead, the GP.

   c) **General Public (GP)** (UAS context). All persons not classed as MEP, including all persons not directly associated with the operation of the UAS or briefed as part of the UAS mission.

      NOTE: GP includes all persons not classed as MEP, including all persons not directly associated with the operation of the UAS or briefed as part of the UAS mission. GP may, depending on the UAS mission, include civilians, Defence personnel, and/or foreign military personnel.

   d) **Mission Essential Personnel (MEP)** (UAS context). All persons directly associated with the operation of the UAS or briefed as part of the UAS mission.

      NOTE: MEP includes all persons directly associated with the operation of the UAS or briefed as part of the UAS mission. MEP is broader than personnel directly associated with the launch, recovery and control during flight of the UAS. MEP may, depending on the UAS mission, include civilians, Defence personnel, and/or foreign defence personnel. MEP must be aware of the UAS operations, the associated hazards and be essential to the conduct of the UAS task.

MEP may include ground troops within a Defence joint operation/exercise area, troops on a Defence ship or civilian personnel operating as part of a counter terrorism tasking.

e) **Populous area** (UAS context). An area in relation to the operation of a UA that has a sufficient density of population for some aspect of the operation, or some event that might happen during the operation (in particular, a fault in, or failure of, the UA) to pose an unreasonable risk to the life or safety of somebody who is in the area, but is not connected with the operation.

f) **Remote Pilot (RP).** The person in direct command/control of the UAS, including manipulating flight controls or programming waypoints during flight.

g) **Remote Pilot Station (RPS).** A station at which the RP manages the flight of a UA.

h) **Segregated Airspace.** Airspace of specified dimensions allocated for exclusive use to a specific user(s).

i) **Standard Scenario.** A description of a UAS operation in the Specific category, for which risk mitigation measures have been determined based on a risk assessment, and introduced by the Authority.

j) **Unmanned Aircraft (UA).** An air vehicle that flies under RP control or autonomous programming without a human on board in control.

k) **Unmanned Aircraft System (UAS).** The entire system consisting of the Unmanned Aircraft (UA), Remote Pilot Station (RPS), communications/data links, networks, launch and recovery systems, and personnel required to fly/control the UA.

l) **UAS Operator.** The organisation, e.g. MAO; or person with Operational Control (OPCON) or tasking authorisation for the UAS.

m) **UAS Operating Permit (UASOP).** Approval to operate a UAS that is not certified. Issued by the Authority, based on a risk assessment and implementation of related mitigation measures.

2. To promote international harmonisation, definitions per ICAO Doc 10019—Manual on RPAS; are employed by Defence where applicable. Consequently, the definitions for UAS, UA, UAS Operator, RP, RPS and segregated airspace are drawn from ICAO Doc 10019, with minor adaptation to suit the military context where necessary. Where additional UAS definitions are required, preference should be given to those in ICAO Doc 10019.

3. The MEP and GP concepts are drawn from the USA Range Commanders Council Standard 321.10—Common Risk Criteria Standards for National Test Ranges; but adapted for Defence UAS operations.

4. The definition for ‘populous area’ is drawn from Australian Civil Aviation Safety Authority (CASA) Advisory Circular (AC) 101.10—Remotely Piloted Aircraft Systems - licensing and operations; however, reference to property belonging to people in the area has been removed as it is not relevant to the Defence aviation safety context. While AC 101.10 also provides for explanatory material for the concept of populous areas in the civil context, the information contained within is not entirely relevant to the Defence context. Consequently, the material in UAEMAR.UAS takes precedence.

5. In the Defence aviation safety context 'critical infrastructure' is defined slightly differently to the civilian context as it relates only to facilities where UAS damage may have an 'immediate and adverse' affect. Examples may include chemical plants, armament storage and fuel storage facilities.

AMC UAS.10 (1) – Responsibility for UAS Authorisation

1. **Purpose.** The purpose of this regulation is to emphasise the primacy of commanders and managers in ensuring the safety of UAS under their control.
2. Authorisation is required by the relevant Command/Group/Industry for all Defence UAS operations, irrespective of whether the UAS is operated by or on behalf of Defence, and whether the UAS operation is regulated by another NAA or MAA. The level and the mechanism to issue such authorisations is determined by the Command/Group/Industry.
3. **Authorisations by Defence Groups or Defence Industry.** Where a Defence UAS is being operated by a Service (Navy, Army or Air Force), the responsibility for authorising UAS operations falls on Command. Where a UAS is being operated by a Defence Group e.g. Ministry of Defence directorates or Defence Industry, the responsibility for authorising UAS operations falls on the legally appointed Organisation Head. The Group or Industry Head is responsible for determining who within their Organisation has the authority to make UAS safety risk decisions for their own staff and for external parties. Where no such determination has been made, the Group or Industry Head should be approached to authorise the UAS operation.

GM UAS.10 (2) – Responsibilities

1. **Purpose.** The purpose of this regulation is to emphasise the statutory responsibilities held by persons who authorise and/or operate UAS, to eliminate or minimise risks So Far As is Reasonably Practicable (SFARP).
2. While adherence to the risk controls inherent in UAEMAR.UAS will assist in executing this responsibility, it is up to Command/Group/Industry to assess the risks and decide on the controls they need to put in place to meet their statutory responsibilities to the persons potentially affected by the activity. Also, in authorising UAS operations by a RP who may be less familiar with the broader concepts of flight operations safety management, the relevant Command/Group/Industry may need to apply additional risk controls.
3. While RP are not explicitly included in this regulation, they still have a statutory duty to take reasonable care that their acts or omissions do not adversely affect the health and safety of other persons.

GM UAS.10 (3) – Operation under UAS Categories

1. **Purpose.** The purpose of this regulation is to allow the relevant Command/Group/Industry to authorise UAS operations with the risk treatment and Authority oversight applicable to that operation.

2. A central tenet of UAEMAR is to provide the Command/Group/Industry with a defensible safety framework, tailored to the hazards peculiar to aviation and based on contemporary global practice. UAS operations are to be permitted within recognised categories of operation while still allowing the Command/Group/Industry freedom to conduct missions/tasking.

3. UAEMAR.UAS does not require UAS to operate within a fixed category from acquisition. Rather, once the category classification is confirmed by the Authority, any UAS that meets all the requirements of a given category may be operated in that category under Command/Group/Industry authorisation. Three categories of UAS operation are:

   a) **Certified Category.** Intended for UAS operations where the UAS Operator expects to operate in all airspaces and over all populous areas. Consequently, robust initial, continuing and operational airworthiness regulation and Authority oversight is required to manage the safety risk to other parties. Authority approvals for initial and continuing airworthiness and operations are analogous to manned aircraft.

   b) **Specific Category.** Intended for UAS operations where the UAS is not certified to robust airworthiness standards. Consequently, increased operational constraints and risk assessment provide justification for safe operation. UAS may operate either:

      i. under an Authority issued UASOP, or

      ii. in accordance with an Authority-published 'Standard Scenario', without a discrete Authority approval, after notifying the Authority by submitting UAEMAR Form 150.

   c) **Open Category.** Intended for UA weighing less than 25 kg, and UAS operations within Authority-defined Standard Operating Conditions. UAS operations may proceed without a discrete Authority approval, under Command/Group/Industry authorisation.

4. UAEMAR Form 145 application for military UAS classification shall be submitted to the Authority for all UAS, for initial classification and operational assessment, prior to the first time operation under this regulation.

AMC No. 1 to UAS.10 (3) – Applicability of this Regulation

1. All UAS operated by or on behalf of Defence are to operate in accordance with the requirements and limitations of Certified, Specific or Open category.

AMC No. 2 to UAS.10 (3) – UAS Categorisation

1. UAS categories are defined by the intended UAS operations and technical specifications of the UAS. Each UAS category imposes particular requirements and limitations, and these requirements/limitations are to be met in their entirety if operations under a particular UAS category are to be pursued. Following receipt of a completed Form 145, the Authority shall confirm the UAS category by issuing a Letter of Endorsed Categorisation (LEC). The LEC should remain valid for the life of the UAS, provided the conditions specified in the LEC remain extant. Any expansion of conditions shall require a new submission.

GM UAS.10 (4) – Registration of Defence UAS

The purpose of this regulation is to allow the Authority to best determine what type of registration is required for UAS.

AMC UAS.10 (4) – Registration of Defence UAS

All Defence UAS should be registered on the Defence Register (where directed by the Authority) or a local register prior to first operation. For UAS that require only local registration, a centralised register for each Service/Group/Industry is recommended. Local registers need be no more complex than an asset list and are to be made available to the Authority.

GM UAS.20 (1) – Scope

1. **Purpose.** The purpose of this regulation is to require UAS operated in the Certified category to be airworthy and operated to equivalent standards of safety to that of manned aircraft.

2. UAS operated under the Certified category are intended to operate over both GP and MEP, and in all classes of civil and military administered airspace for which they are equipped, and demonstrate the ability to act and respond, similarly to manned aircraft.

AMC UAS.20 (1)(c) – Initial Airworthiness

1. The airworthiness of the UAS design (including through-life modifications) must be demonstrated to the satisfaction of the Authority under UAEMAR.21. The European Military Airworthiness Certification Criteria Handbook or equivalent, presents design requirements for Certified category UAS. In addition to design requirements common to manned aircraft, it includes those systems and functions that are needed to address the UAS-unique hazards due to the RP being separated from the UA. This includes, for example, communications relay capability between the RP and ATC, timely reaction to ATC instructions, systems to maintain safe separation and collision avoidance with other air traffic, and the ability to recover the UA under abnormal emergency conditions.

AMC UAS.20 (1)(f) – Standard Rules of the Air

1. UAS operated under the Certified category are intended to operate over both MEP and GP, and in all classes of civil and military administered airspace for which they are equipped, and therefore demonstrate the ability to act and respond, similarly to manned aircraft.

2. In applying UAE Armed Forces Standard Rules of the Air, Command/Group/Industry must ensure that degraded modes of UAS operation, which can impose hazards that are unique to UAS (for example, failure of the Detect and Avoid capability), are robustly identified and risk managed. An Air Traffic Management Plan (ATMP), as described in UAEMAR AMC UAS.30 (2) presents one means of documenting these unique hazards and risk treatments.

AMC UAS.20 (1)(g) – RP Qualifications

1. UAS operated under the Certified category are to be controlled by an appropriately qualified RP.
2. The requirement for a RP to be a qualified military pilot is not applicable to Defence Groups and Industry Groups. The Authority will approve and issue RP licenses to Defence Groups and Industry Groups where it can be shown that suitable pilot qualifications have been attained through a MAA approved Remote Pilot Training Organisation or facility.
3. RP must have a current medical certificate valid for a period not greater than 12 months and maintain medical fitness standards for flying related duties.
4. In the future, Simulator regulation may be developed and be included.

GM UAS.30 (1) – Eligibility Criteria

1. **Purpose.** The purpose of this regulation is to define the eligibility criteria for Defence UAS operations under Specific category.
2. Defence UAS operating under Specific category shall employ a risk assessment as the primary basis for managing the safety risk to other airspace users, and persons/critical infrastructure on the ground or water. There are several means available to manage this safety risk:
    a) **Design mitigation.** Design mitigation concerns the application of rigour to the design and construction process such that system's likelihood of catastrophic failure is known and controlled. Through the application of more rigorous design standards, or inclusion of systems designed to support safe operation, the likelihood of failure can be reduced.
    b) **Operational mitigation.** Operational mitigation concerns the application of restrictions and limitations to the operating environment of the system. This may include such measures as limiting operation to segregated airspace, over a designated ground or water safety area or restricting flight over the GP.
    c) **Systemic mitigation.** Systemic mitigation concerns the application of regulatory standards to organisations involved in the design, construction, maintenance and operation of the system. Systemic mitigation is intended to reduce the occurrence of organisational and human errors which can contribute to failure of a system. Systemic mitigation supports design mitigation, operational mitigation, and continuing airworthiness of the system.
3. Commonly, UAS operating under Specific category will exhibit deficiencies in their design (or in the available evidence to confirm the adequacy of the design) compared to certified category UAS. Further, eliminating these design deficiencies is not always considered reasonably practicable, particularly for smaller UAS. Consequently, safety risk due to Specific category UAS operations is managed through operational and systemic controls.

4. **Authority Approval.** Under Defence Specific category, a UAS operation may be explicitly approved by the Authority via the issue of a UASOP. An alternative approach is for the Command/Group/Industry to authorise the UAS operation without an explicit Authority approval, after notifying the Authority by submitting UAEMAR Form 150, provided every requirement and limitation of an Authority-published Standard Scenario has been met and risk controls implemented. The alternative approach is intended to reduce the administrative work for Command/Group/Industry and the Authority, since those same requirements, limitations and risk controls would have been agreed by the Authority had they been included in an application for a UASOP.

5. Defence may elect to refer to UAS operations approved by the Authority via a UASOP as 'Specific Type A', and UAS operations authorised by the relevant Command/Group/Industry under a Standard Scenario as 'Specific Type B'.

GM No. 1 to UAS.30 (2) – Eligibility for a UASOP

1. **Purpose.** The purpose of this regulation is to define the Authority's requirements for issue of a UASOP for UAS that are to be operated under Specific category, but whose operations do not conform to an Authority-published Standard Scenario.

2. The UASOP is an instrument issued by the Authority for certain Specific category UAS operations. A UASOP would normally only be pursued where:

   a) the operating freedoms of Certified category are either not necessary or not achievable

   b) the UAS design and/or its proposed operations do not meet the entirety of the requirements of an Authority-published Standard Scenario

   c) (for UA with a Maximum Take-Off Weight (MTOW) of less than 25 kg) the proposed UAS operations do not meet the entirety of Standard Operating Conditions under Open Category.

GM No. 2 to UAS.30 (2) – Extent of Compliance

1. UAEMAR.UAS.30 (2)(b) to UAEMAR.UAS.30 (2)(e) recognise that many UAEMAR were created for the context of manned aircraft, so the burden of full compliance may be disproportionate to the safety benefit for certain UAS designs and operations. Consequently, each provides scope for the Authority to moderate the required level of compliance.

2. Normal practice would be for the UASOP Applicant to propose a suitable extent of compliance, for Authority approval.

AMC UAS.30 (2) – Authority Requirements for Issue of a UASOP

1. This AMC presents the Authority's minimum application requirements for the issue of a UASOP and provides a means to assist Command/Group/Industry risk analysis.

2. Compliance with this regulation requires disclosure of the intended operating environment for the UAS and an understanding of the design deficiencies of the UAS. Provided constraints in the operating environment minimise risks due to the design deficiencies of the UAS, So Far As is Reasonably Practicable (SFARP), the Authority will issue a UASOP for the particular UAS and scope of UAS operations if satisfied that the relevant Command/Group/Industry:

    a) has clearly defined the intended operating environment for the UAS

    b) has provided a meaningful characterisation of the risks presented by the UA to other aircraft, and people/critical infrastructure on the ground or water

    c) has implemented robust operational risk controls to minimise the risk to other aircraft, and people/critical infrastructure on the ground or water SFARP

    d) is supported in minimising these risks by sufficient UAS initial and continuing airworthiness arrangements

    e) fully comprehends and has retained any remaining risks at a suitable level after risk minimisation.

3. The UASOP should include the UAS basis of technical approval, key initial and continuing airworthiness requirements, and special conditions to balance the operational requirements with the risk of the UAS operation. A UASOP enables the UAS to operate in its designated Configuration, Role and operating Environment (CRE), and will:

    a) identify the UAS

    b) reference the approved SOIU, or Orders, Instructions and Publications (OIP) defining the designated CRE

    c) reference appropriate design documentation which identifies the approved configuration(s)

    d) identify operational restrictions applied to mitigate the risk the UAS presents to personnel, critical infrastructure and other aircraft

    e) identify, or reference, any unique aviation safety management arrangements required for ongoing operations with the UAS type

    f) identify operational, maintenance and engineering authority for the UAS

    g) identify the approved UAS operating units

    h) identify the authoritative operating and maintenance documentation

    i) identify any applicable operating limitations resulting from:

        i. the immaturity of the supporting management arrangements

        ii. airworthiness issues affecting the system’s suitability for the SOIU purpose and scope

        iii. Test and Evaluation activities performed prior to issue of the UASOP.

4. AMC for each of these elements is included below.

RISK ASSESSMENT – RISK TO OTHER AIRSPACE USERS

1. For a UAS to have the benefit of unimpeded access to an airspace class, it should include all equipage required for the airspace and be operated by a RP with the pre-requisite qualifications for the airspace. Unless the UAS has been specifically designed with particular airspace in mind, including all equipage required for the airspace can be problematic. Issues such as replacements for pilot 'see-and-avoid' capability, and the integrity of positional and altitude information sources require dedicated design effort and are difficult to retrofit.

2. Where a UAS requires access to an airspace class but does not exhibit the required equipage or RP qualifications, operational risk treatments will be required. Provided the Authority is satisfied the risk to other airspace users has been eliminated or otherwise minimised SFARP, then a UASOP may still be issued by the Authority. Importantly, the Authority expects explicit written confirmation that the Command/Group/Industry had comprehensively understood the risks to other airspace users, and that the Command/Group/Industry had effectively executed its duties to eliminate/minimise those risks SFARP.

   NOTE: While airspace modelling might contribute to the relevant Command/Group/Industry risk management endeavours, a modelling conclusion that risk is 'low' would not normally be sufficient justification to omit higher order controls. Rather, the difficulty of modelling collision likelihoods may require the risk to be considered in absolute, worst case terms, i.e. the likelihood that a collision will occur is assumed to be certain if the aircraft is operating within a certain density level or volume of airspace.

3. Systems should be included in the UAS to prevent inadvertent UA flight beyond authorised airspace, or the absence of such systems should be managed through operational risk controls.

4. **Segregated Airspace.** In considering the risk presented by a UAS to other airspace users, the term Segregated Airspace is used. Mixing of other aircraft (manned or unmanned) and a UA within a Segregated Airspace intended for use by the UA should be avoided. Specific operational restrictions pertaining to UA flight within Segregated Airspace (sustained, limited or otherwise), should be identified to ensure the UAS presents risks that are minimised SFARP to other airspace users. Airspace Control Measures (ACM) may be used to facilitate the containment of a UA within Segregated Airspace.

5. Additional considerations for segregated airspace include air traffic density, particularly if the UA airspace is other than controlled airspace, as other aircraft may be able to enter the airspace without a clearance. Danger Areas designed for General Aviation (GA) transit and similar flight paths should be avoided. Importantly, the 'see and avoid' principle is a main safety defence for any shared airspace.

6. The Authority will require assurance that UAS operations will remain within the allocated Segregated Airspace, including an assessment of the level of confidence that escape will not occur. Factors that affect this confidence may include the integrity of UAS positional information, UAS communications performance, RP experience and maturity of procedures.

7. **Air Traffic Management Plan.** An ATMP is one means of documenting the specific risks of collision with other airspace users, and the operational or airspace limitations needed to maintain the safety of the airspace. It may include:

    a) operational restriction and mitigation measures to enable operation in the required airspace, in the absence of approved navigation and communication capability

    b) operational restriction and mitigation measures to enable separation in the required airspace, such as Air Traffic Service (ATS) in controlled airspace, in the absence of approved means of self-separation and/or collision avoidance or Certified detect and avoid capability

    c) approved RPs (as per Certified category UAS) or suitably trained RPs restricted to operate in specific airspace only.

8. In achieving the above outcomes, an ATMP may include:

    a) where the UA is required or likely to operate

    b) the nature and density of the air traffic in the required area of operations, noting such specifications are likely to change as mission objectives change post UASOP approval

    c) the size and velocity of the UA, and unique characteristics of the UAS

    d) the accuracy, integrity and reliability of fitted systems such as positional information, collision avoidance, flight control, communication and other relevant UAS systems

    e) the strategy or method for the safe interaction or de-confliction with all other airspace users

    f) the requirements for notification to other airspace users of intended operations with the UA

    g) the requirements for notification to other airspace users of any segregated airspace required for the intended UAS operations

    h) the anticipated segregated airspace volumes required to support UAS operations, including airspace boundary buffers

    i) any utilisation of unique ACMs such as Flexible Use Airspace (FUA), User Preferred Trajectories (UPTs) or UAS Transit Corridors.

9. UAE Armed Forces Joint Operations Command (JOC) provides support for the development or amendment of UAS ATMPs and should be used to gain SME advice before an ATMP is recommended for endorsement by the airspace management agencies and the Authority. UA transit through non-segregated airspace may be conducted where UA transit routes have been designated and activated by the appropriate airspace management agency. Any desire for permanent transit routes should be processed via the JOC in all cases.

RISK ASSESSMENT – RISKS TO PEOPLE

1. A UAS is normally assigned to a Specific category because the design cannot, or need not, meet certified aircraft airworthiness standards. Where reasonably practicable, these safety risks should be eliminated or otherwise minimised through engineering effort. However, such design solutions may not always be practicable, especially for smaller off-the-shelf UAS.

2. Consequently, a Specific category UAS may suffer catastrophic failures more often than a Certified category UAS. These failures may result in either controlled or uncontrolled descent of the UA. Failures resulting in controlled descents, e.g. engine failure; should present minimal risk to people and critical infrastructure, but only to the extent that pre-flight planning has identified appropriate forced landing sites, or on-board systems enable the RP to identify suitable sites in real time. Failures resulting in uncontrolled descents, e.g. structural failure, system-induced stalls, seized control surface; on the other hand, will present risks to people on the ground or water, depending on the location and orientation of the UA at the time of the failure.

3. Risk may be eliminated or otherwise minimised SFARP by limiting the exposure of people to the risk, which in turn could be achieved by limiting where and how a Specific category UAS can operate. For the Authority to issue a UASOP, it must be satisfied that the relevant Command/Group/Industry has made informed decisions on eliminating/minimising risk to people. A systematic process is therefore required to identify, analyse and treat all risks to people (both MEP and GP) on the ground or water.

4. The Authority broadly separates UAS operations into three operating environments, with each logically increasing the level of risk to people on the ground or water, as follows:

    a) UAS operations in a sufficiently remote area, such that a catastrophic UAS failure is very unlikely to result in an impact to a person

    b) UAS operations in proximity, i.e. near but not over; of a population (whether GP or MEP), and therefore certain catastrophic failures could result in an impact to a person

    c) UAS operations overhead of a population (whether GP or MEP), and therefore certain catastrophic failures will likely result in an impact to a person.

5. Each of these three operating environments requires a tailored approach to risk characterisation, sufficient for the Command/Group/Industry to make informed decisions on eliminating or otherwise minimising risk SFARP, and therefore warranting issue of a UASOP.

6. **UAS operations in remote areas.** Regardless of UA size, the Authority would normally issue a UASOP for this operating environment provided:

    a) The applicant has confirmed that technical issues, including the following, have been addressed:

        i. Systems are included in the UAS to prevent inadvertent UA flight beyond authorised area of operation, or the absence of such systems has been managed through operational risk controls.

ii. The likelihood of controlled and uncontrolled ground or water impacts have been estimated and communicated to UAS Operators.

iii. Potential spectrum conflicts between the UAS and local transmitters/receivers have been managed.

iv. The UA has been designed for immunity to electro-magnetic interference, or operational controls have been employed to reduce the likelihood of adverse effects.

b) The relevant Command/Group/Industry has confirmed the sufficiency of operational measures, including the following:

i. OIP has been issued to guide UAS Operators on identifying and avoiding any isolated populations, e.g. homesteads, busy roads.

ii. OIP precludes UAS operations in other than remote areas, unless the UASOP covers other areas.

iii. RPs have the qualifications, training and supervision to safely retain the UAS within the assigned area.

iv. OIP requires risks to the MEP in the area to be minimised SFARP.

v. A system is in place for authorising each flight that focuses on confirming risks have been minimised SFARP.

7. Occupational Safety and Health Administration (OSHA) legislation makes the Command/Group/Industry accountable for treating the broader hazards related to the handling of a UA, such as hazardous materials, sharp edges, or electric shock and these are not further amplified under UAEMAR.

8. **UAS operations in proximity of populations.** The likelihood of a ground fatality as a result of a catastrophic UAS failure when near (but not over) populations is likely to be a function of the UA size, failure type, distance from the population and the population density. Energy attenuation devices, e.g. a parachute, may also contribute, although the increased uncertainty in landing footprint needs to be taken into account.

9. The effort applied to characterising the risk should be proportionate to the time in proximity to people (since it affects collective risk), the closest approach distance (since it affects the likelihood of a dangerous impact) and the size of the UAS (since it affects the casualty expectation):

a) At the lower end of the scale would be a small UAS with only occasional fleeting proximity to the GP. In those cases, the Authority may issue a UASOP on the basis of confirmation that the Command/Group/Industry had a process in place for authorising such UAS operations, and OIP has been published to ensure risks were minimised SFARP.

b) At the higher end of the scale would be a large UAS that will loiter for extended periods in close proximity (near but not over) to densely populated areas. In those cases, the Authority would only issue a UASOP if the complex risk environment had been well-characterised, sufficient for the Command/Group/Industry to make informed decisions on eliminating/reducing risks, including:

i. effort to confirm the design deficiencies of the UAS are well understood and well communicated to RPs, so they can robustly identify and manage occurrences (and therefore reduce the likelihood of a ground impact)

> **NOTE:** While evidence may not always be available to confirm design deficiencies, professional engineering judgement will often suffice. For example, an integrated Global Positioning System (GPS)/Inertial Navigation System (INS) that appears markedly less complex than similar manned aircraft systems could reasonably be expected to exhibit higher drift rates when GPS signal is lost and may therefore display erroneous position information. The EMACC Handbook presents candidate systems for such assessments. Operational risk controls can be established on the basis of this judgement.

ii. confirmation via quantitative analysis that agreed individual risk and collective risk safety targets for GP will not be exceeded for discretionary UAS operations

> **NOTE:** Where quantitative assessments are not practicable, e.g. fleeting exposures; then conservative qualitative assessments may suffice.

iii. establishment of stand-off distances needed for discretionary UAS operations to maintain those safety targets

iv. OIP that clearly defines where stand-off distances can be exceeded for non-discretionary tasks, including the authorising authority, bounds on authority and criteria for exercising that authority

v. confirmation that initial and continuing airworthiness arrangements have been implemented to the extent that they contribute to minimising risks to GP/MEP SFARP

vi. operational aerodrome assessments, including qualitative runway assessments for take-off/departure and approach/landing, to robustly control the risk of uncontrolled ground impacts due to technical failures.

10. **UAS operations overhead of populations.** The likelihood of a ground fatality due to a catastrophic UAS failure when operating overhead of populations, is primarily a function of the UAS impact lethality (a function of weight, size, energy attenuation devices, etc.), the population distribution, and the effect and extent of sheltering. To estimate collective risk, the duration of UAS operations and the frequency of catastrophic UAS failures must also be accounted for.

11. For the Authority to issue a UASOP that includes flight over people:

a) Command/Group/Industry must confirm there are no reasonably practicable alternatives that eliminate the risk

b) all reasonably practicable technical measures to minimise the risk must be implemented

c) all reasonably practicable operational measures to minimise the risk must be implemented

d) all reasonably practicable RP training measures to minimise the risk must be implemented

e) OIP must be issued to guide the RP (and UAS Operator, if a separate person) in minimising the risk SFARP

f) the scope and conditions for discretionary, i.e. non-mission essential; flight over people must be well defined

g) the risk to MEP inherent in such UAS operations must have been well articulated to Chief of Staff, Commands or Head of Defence Group or Head of Defence Industry, (as appropriate), and residual risk, (including any uncertainty in residual risk) must have been retained

NOTE: UASOP Applicants considering MEP overflight should seek current advice from the UAE Joint Operations Command.

h) the risk to GP (if GP overflight is contemplated) inherent in such UAS operations must have been well articulated to Defence, and residual risk (including any uncertainty in residual risk) must have been retained.

NOTE: UASOP Applicants considering GP overflight should seek current advice from the UAE Joint Operations Command.

12. The Authority expects there should be an overriding and substantial capability imperative for flying a Specific category UAS over the GP, and that all reasonably practicable steps would have been considered to minimise the GP's risk exposure. Where these cannot be established to the Authority's satisfaction, a Certified category UAS should be employed.

RISK ASSESSMENT – RISKS TO CRITICAL INFRASTRUCTURE

1. Larger UAS have the potential to damage ground-based infrastructure. From an aviation safety perspective, only damage that may have an immediate and adverse effect on MEP or GP health and safety is considered within the scope of UAEMAR.UAS. Examples may include UAS damage to chemical plants, armament storage facilities, fuel storage facilities, and so on.

2. The Authority's requirement for issue of a UASOP is that Command/Group/Industry should approve and issue OIP that defines critical infrastructure (relevant to the size and operating environment of the UAS), and the measures to be taken by the UAS Operator to minimise risks to that critical infrastructure SFARP.

3. While the Authority's focus for critical infrastructure is confined to immediate and adverse safety effects, the Command/Group/Industry might elect to encompass a wider scope. For example, the USA military document RCC 323–99–Range Safety Criteria for Unmanned Air Vehicles, Rationale and Methodology Supplement; provides the following suggested criteria for significant facilities:

a) loss or degradation of a major function

b) significant monetary loss

c) significant environmental impact and/or cultural impeach.

ADDITIONAL OPERATIONAL CONTROLS

1. When formulating the operational controls identified in the previous sections for minimising risk to other airspace users and persons/critical infrastructure on the ground or water, the Command/Group/Industry must also identify where operational errors may impact safety. In each case, the risk must be robustly managed and may include:

   a) mid-air collision resulting from inadequate mission planning or RP induced error

   b) controlled flight into terrain

   c) loss of control through inadvertent operation outside approved limits

   d) incorrect use of on-board mission systems, e.g. laser designation systems.

      NOTE: In each case, the risk must be robustly managed.

AMC UAS.30 (2)(b) – Defining the UAS Operating Environment

1. An SOIU presents a common tool for the relevant Command/Group/Industry to disclose their intended operating environment for an aircraft and to account for UAS-unique hazards, and might include:

   a) the extent to which the UA is required to operate near or over people and critical infrastructure including the duration and expected population density, amplifying:

      i. population distributions of MEP to whom the UA may present a hazard

      ii. population distributions of the GP to whom the UA may present a hazard

   b) airspace environments in which the UA may operate, including the extent to which the UAS will operate in shared or non-segregated airspace

   c) the extent to which the UA is required to operate in the proximity of aerodromes and ships

   d) the extent to which the UA is required to operate near critical infrastructure.

      NOTE: The Authority may be able to issue a UASOP without the need for an SOIU in certain circumstances. Examples may include small UAS that do not qualify for operation under Open category due to exceeding a Standard Operating Condition. Conversely, a large UAS operating in a diverse and complex operating environment will inevitably require a detailed SOIU. Consequently, the Authority will direct when a SOIU is required.

AMC UAS.30 (2)(c) – Initial Airworthiness, and Continuing Airworthiness Requirements

1. The Authority will direct compliance with UAEMAR initial and continuing airworthiness requirements only to the extent they make a tangible contribution to the safety of other airspace users, or persons/critical infrastructure on the ground or water.

The extent of compliance directed by the Authority ultimately depends on the complexity of the proposed operating environment and the robustness of the UAS design. While the level of compliance will be agreed with the Authority, some upper and lower examples are illustrative:

a) At the lower end of the scale would be a small UAS with only occasional fleeting proximity to the GP. In those cases, the Authority may impose no requirements for initial and continuing airworthiness. This does not preclude the Command/Group/Industry from imposing UAS design and maintenance support requirements, in an effort to ensure health and safety, and improve capability through reduced attrition.

b) At the higher end of the scale would be a large UAS that will loiter near/over the GP, or a UAS that will operate in shared airspace. In those cases, the Authority would require compliance to initial and continuing airworthiness requirements, to the extent that it makes a direct and meaningful contribution to safety.

AMC UAS.30 (2)(d) – UAS Operations under a Military Air Operator Certificate

1. The Authority may require a particular UAS to be operated under a MAOC, where the risks to other airspace users and/or persons/critical infrastructure on the ground or water warrants the robust approach to aviation safety management provided by a MAOC.
2. MAO regulation for Flying Management System (FMS) captaincy, crewing and flight authorisation apply to UAS. However, they should be appropriately contextualised by the Command/Group/Industry to adapt to the UAS role and operating environment.
3. UAS operations not under a MAOC. Even where the risk due to UAS operations does not justify operations under a MAOC, the Authority would still require an FMS based on the following requirements, contextualised for each UAS role and operating environment:

    a) key staff are identified and appointed

    b) OIP are applicable, approved, available and relevant to the scope of operations

    c) crew competency is defined, assessed and maintained

    d) the authorisation process for conduct of UAS operations is defined

    e) Aviation Risk Management (AvRM) is applied relevant to the impact of UAS operations on other airspace users, people and critical infrastructure

    f) any necessary ground or water safety or exclusion templates are implemented and controlled

    g) use of ground and air collision avoidance, flight termination and emergency recovery systems is defined and controlled

    h) OIP issued to manage UAS flying operations take into account the CRE and any unique operating characteristics of the UAS

    i) the UAS is only operated when serviceable and suitable for the proposed operations.

AMC UAS.30 (2)(e) – Compliance with UAEMAR Air Operations and Standard Rules of the Air

1. Unless operational controls preclude any need, UAS are expected to comply with UAE Armed Forces Air Operations and Standard Rules of the Air, and GCAA equivalent civil regulations when operating in civil airspace, to the extent needed to manage risks to other airspace users or persons/critical infrastructure.

AMC UAS.30 (2)(f) – RP Qualifications

1. When proposing a new or updated UASOP to the Authority, the Command/Group/Industry should define:
    a) the required RP qualifications
    b) any requirement for the RP to hold a current aviation medical certificate.

AMC UAS.30 (2)(g) – Requirements for Embarked UAS operations

1. Where a UASOP allows for embarked UAS operations, the Command/Group/Industry should ensure that any potential requirements and limitations have been evaluated and documented within the UASOP where relevant, including:
    a) any impact to the Ship's Aviation Facilities Certification (AFC)
    b) identified vessel operational restrictions
    c) safety assessment of the ship and air operations interface.

GM UAS.30 (3) – Standard Scenarios

1. **Purpose.** The purpose of this regulation is to outline the Authority's requirements for the Command/Group/Industry to authorise operation of a UAS under an Authority-published Standard Scenario.
2. Defence UAS operating under Specific category employ a risk assessment as the primary basis for managing the safety risk to other airspace users, and persons/critical infrastructure on the ground or water. Commonly, UAS operating under this category will exhibit deficiencies in their design compared to Certified UAS, so the safety risk due to these deficiencies is managed through imposing constraints in their airspace access and constraints in their operations near or over people/critical infrastructure.
3. Authority-published Standard Scenarios present an alternative to the issue of a UASOP for a particular UAS and operating environment. A Standard Scenario defines each of the technical and operational risk controls that, had the Command/Group/Industry presented them to the Authority, should justify Authority issue of a UASOP. Consequently, both approaches should achieve similar levels of safety, but Standard Scenarios provide a means for reducing administrative overheads.

4. Standard Scenarios are best suited to UAS that are employed in benign and predictable operating environments, and therefore technical and operational risk controls are likely to be more straightforward. For larger UAS that are intended to conduct diverse operations in non-benign environments, a UASOP under UAEMAR.UAS.30 (2) is likely to be more suitable.

5. **New Standard Scenarios.** Standard Scenarios are raised by the Authority where there is an expectation of multiple future Defence UAS being operated in a similar operating environment, and where the required risk controls can be clearly identified by the Authority. Suggestions for new Standard Scenarios may be proposed to the Authority. Development of new Standard Scenarios will normally involve a collaborative effort between the Command/Group/Industry and the Authority.

AMC UAS.30 (3) – Operations under a Standard Scenario

1. If a Standard Scenario is to be employed by the Command/Group/Industry, the requirements of the Standard Scenario must be met in their entirety. Where an element of a Standard Scenario cannot be met, use of that Standard Scenario is precluded and the Command/Group/Industry are to pursue a UASOP under UAEMAR.UAS.30 (2).

2. The Command/Group/Industry intention to operate a UAS under a Standard Scenario must be communicated in writing to the Authority prior to commencement of UAS operations. Written notification must be via UAEMAR Form 150 through the MAA Registry email address: UAEMAA@mod.gov.ae. This notification should include:

   a) identification of the Command/Group/Industry accountable person responsible for authorising the operation

   b) a description of the UAS

   c) a description of the intended use of the UAS

   d) a reference to the Standard Scenario(s) under which the UAS shall be operated

   e) the date or period of time that the operation is intended to occur (may be open ended).

3. Authority acknowledgement of receipt of the declaration is required prior to first operation. There is nil requirement to re-declare to the Authority any subsequent intentions to operate that same UAS under the same Standard Scenario(s} provided details in the original declaration remain unchanged.

4. Amendment and Withdrawal. Where the Authority elects to make a minor amendment to a Standard Scenario, the Authority will notify all registered users of that Standard Scenario. The Authority will include in the notification any flexibility for the Command/Group/Industry in implementing the updated Standard Scenario. Where the Authority elects to withdraw a Standard Scenario, the Authority will individually negotiate a transitional arrangement until the issue of a UASOP, with each affected UAS Operator.

GM UAS.35 (1) – Standard Scenario for Micro UAS

1. **Purpose.** The purpose of this regulation is to provide an Authority-published Standard Scenario under which Micro UAS may be safely operated within Specific Type B category.

2. **Applicability.** This Standard Scenario may be applied to all UAS with MTOW not exceeding 0.1 kg, provided that every requirement and limitation of the Scenario is met. UAS operations may include, but are not limited to, trials, training, Defence exercises, Defence Force assistance to the civilian authorities, and Defence operations.

GM UAS.35 (1)(d) – Aerodrome operators

1. UAE Aeronautical Information Publications (AIP) can be referred to for contact details of aerodrome operators.

GM UAS.35 (1)(e) – Approach and departure paths

1. Approach and departure paths are considered three dimensional airspace and UA may operate under an approach/departure path provided the UA remains well clear of other aircraft at all times. These are generally considered to extend 5 nm from the end of the runway.

2. UAE AIP can be referred to for contact details of aerodrome operators.

GM UAS.35 (1)(g) – Intervention by the RP

1. Intervention refers to an action, command or input by the RP to dictate the UA's flight actions. In all situations (apart from when link is lost), the RP should be able to alter the flight path of the UA or perform any other suitable actions as necessary to ensure safe flight.

AMC UAS.35 (1)(h) – Risk Controls for Micro UAS

1. Operations permitted under Standard Scenario for Micro UAS require suitable risk controls to treat safety risks to other airspace users, people and critical infrastructure. This AMC provides the Command/Group/Industry authorising UAS operations under this standard scenario the means to develop and/or employ suitable risk controls. These are grouped into technical, operational and RP training and management risk controls.

> **NOTE:** This AMC should not be interpreted as presenting a complete set of risk controls and additional controls may need to be implemented to eliminate or otherwise minimise risks So Far As is Reasonably Practicable (SFARP) for Command/Group/Industry to meet their statutory obligations.

2. **Technical risk controls.** Technical risk controls for this standard scenario should include design features that:

   a) trigger automatic flight actions upon loss of datalink, e.g. Autonomous Recovery System (ARS), Go-Home mode; and

   b) positively contain the UA within a pre-programmed volume, e.g. geo-fencing, tether, range limiter, programmable maximum and minimum altitude; and

   c) enable the RP to locate and avoid GP/MEP, e.g. on-board EO/IR camera; and

   d) enable manual termination of flight by the RP during emergencies.

   NOTE: Some technical risk controls might not be suitable for UAS operations where tactical time constraints do not permit pre-programming. Alternate operational risk controls, documented in a specific instruction, should be developed for such UAS operations.

3. **Operational risk controls.** Operational risk controls for this standard scenario should include:

   a) pre-flight checks, carried out in accordance with documented Original Equipment Manufacturer (OEM) or locally produced procedures, that confirm the setup/functionality of:

      i. UA airframe and propellers/rotor blades

      ii. navigation system

      iii. technical risk controls, e.g. ARS, geo-fencing, altitude and range limiter, on-board camera

      iv. any other feature/system that may contribute to safe operation of the UAS.

   b) documented UA limitations, in a flight manual or equivalent document, that provide sufficient details on:

      i. range limits of the datalink

      ii. limitations of technical risk controls, e.g. limitations of ARS, geo-fencing, altitude and range limiter, on-board camera

      iii. any other design feature that may contribute to safe operation of the UAS.

   c) planning and procedures for intended operational airspace, documented in an ATMP or equivalent document, that enable:

      i. de-confliction and safe separation from other airspace users

      ii. co-ordination of UAS operations with other airspace users when operating as part of a military exercise or operation.

   d) emergency procedures, documented in a flight manual or equivalent document, for any reasonably foreseeable event that creates a hazard to GP, MEP, critical infrastructure or other airspace users.

e) emergency response procedures, documented in a local instruction, for the following events:

i. loss of positive control

ii. UA escape from operational area/assigned airspace, e.g. alerting GP/MEP and/or other airspace users.

NOTE: Some operational risk controls might not be suitable for UAS operations where tactical time constraints do not permit the carrying out of required tasks/checks. Alternate operational risk controls, documented in a specific instruction, should be developed for such UAS operations.

4. **RP Training and Management risk controls.** RP training and management risk controls for this standard scenario should include:

a) training that prepares the RP to:

i. perform the required action/tasks for employing/programming technical risk controls

ii. perform the required pre-flight checks

iii. operate within the documented UA limitations

iv. operate the UA in a way that minimises the risk to GP, MEP, critical infrastructure or other airspace users.

b) emergency procedure training that prepares the RP for all documented emergency procedures

c) RP qualification system that defines the requirements for training and experience.

GM UAS.35 (2) – Standard Scenario for Very Small UAS

1. **Purpose.** The purpose of this regulation is to provide an Authority-published Standard Scenario under which Very Small UAS may be safely operated within Specific Type B category.

2. **Applicability.** This Standard Scenario may be applied to all UAS with MTOW not exceeding 2 kg, provided that every requirement and limitation of the Scenario is met. UAS operations may include, but are not limited to, trials, training, Defence exercises, Defence Force assistance to the civilian authorities, and Defence operations.

GM UAS.35 (2)(e) – Operations in controlled airspace

1. ATC should be advised of all UAS operations in controlled airspace below 400 ft AGL.

GM UAS.35 (2)(f) – Aerodrome operators

1. UAE AIP can be referred to for contact details of aerodrome operators.

GM UAS.35 (2)(g) – Approach and Departure paths

1. Approach/departure path provided the UA remains well clear of other aircraft at all times. These are generally considered to extend 5 nm from the end of the runway.

2. UAE AIP can be referred to for contact details of aerodrome operators.

GM UAS.35 (2)(j) – Intervention by the RP

1. Intervention refers to an action, command or input by the RP to dictate the UA's flight actions. In all situations (apart from when link is lost), the RP should be able to alter the flight path of the UA or perform any other suitable actions as necessary to ensure safe flight.

AMC UAS.35 (2)(k) – Risk Controls for Very Small UAS

1. Operations permitted under Standard Scenario for Very Small UAS require suitable risk controls to treat safety risks to other airspace users, people and critical infrastructure. This AMC provides the Command/Group/Industry authorising UAS operations under this standard scenario the means to develop and/or employ suitable risk controls. These are grouped into technical, operational and RP training and management risk controls.

   NOTE: This AMC should not be interpreted as presenting a complete set of risk controls and additional controls may need to be implemented to eliminate or otherwise minimise risks So Far As is Reasonably Practicable (SFARP) for the Command/Group/Industry to meet their statutory obligations and to achieve compliance with UAEMAR.UAS.10 (2).

2. **Technical risk controls.** Technical risk controls for this standard scenario should include:

   a) design features that:

      i. trigger automatic flight actions upon loss of datalink, e.g. Autonomous Recovery System (ARS), Go-Home mode

      ii. positively contain the UA within a pre-programmed volume, e.g. geo-fencing, tether, range limiter, programmable maximum and minimum altitude;

      iii. enable the RP to locate and avoid GP/MEP, e.g. on-board EO/IR camera

      iv. enable manual termination of flight by the RP during emergencies

      v. display remaining battery/fuel level to the RP at all times

      vi. assists other aircraft to visually see the UA, where tactical constraints permit, e.g. lighting, hi-visibility colour scheme.

      vii. inspection, maintenance and testing that could prevent technical failures of the UAS, if carried out at regular intervals in accordance with documented OEM or locally produced procedures, e.g. maximum airframe/propeller hours, battery servicing/replacement.

NOTE: Some technical risk controls might not be suitable for UAS operations where tactical time constraints do not permit pre-programming. Alternate operational risk controls, documented in a specific instruction, should be developed for such UAS operations.

3. **Operational risk controls.** Operational risk controls for this standard scenario should include:

   a) pre-flight checks, carried out in accordance with documented OEM or locally produced procedures, that confirm the setup/functionality of:

      i. UA airframe, control surfaces and propellers/rotor blades

      ii. navigation system

      iii. technical risk controls, e.g. ARS, geo-fencing, altitude and range limiter, on-board camera

      iv. any other feature/system that may contribute to safe operation of the UAS.

   b) documented UA limitations, in a flight manual or equivalent document, that provide sufficient details on:

      i. UA endurance, e.g. battery/fuel limits and performance in different flight modes

      ii. range limits of the datalink

      iii. weather limitations of the UA, e.g. not to operate in rain, wind gusts

      iv. limitations of technical risk controls, e.g. limitations of ARS, geo-fencing, altitude and range limiter, on-board camera

      v. any other design feature that may contribute to safe operation of the UAS.

   c) planning and procedures for intended operational airspace, documented in an ATMP or equivalent document, that enable:

      i. de-confliction and safe separation from other airspace users

      ii. co-ordination of UAS operations with other airspace users when operating as part of a military exercise or operation

      iii. safe operation within 3 nm (5.5 km) of a controlled aerodrome, e.g. obtaining ATC approval and/or notifying ATC.

   d) planning and procedures for intended operational area, documented in a local instruction, that enable the RP to:

      i. operate the UAS within its weather limitations, e.g. obtaining weather forecast, monitoring weather radar

      ii. maintain a 30 m horizontal distance from GP unless essential for mission/training requirements, e.g. area survey, planning of ARS routes, geo-fencing

      iii. remain clear of populous areas unless essential for mission/training requirements, e.g. area survey, planning of ARS routes, geo-fencing

      iv. remain clear of critical infrastructure, e.g. area survey, planning of ARS routes, geo-fencing setup, minimum operating altitude.

e) specific procedures, documented in a local instruction, for UAS operations essential for mission/training requirements:

i. within 30 m horizontally of GP

ii. over populous areas

iii. over or in proximity of critical infrastructure.

f) emergency procedures, documented in a flight manual or equivalent document, for the following events:

i. change in weather conditions that could adversely affect the UA

ii. any other reasonably foreseeable event that creates a hazard to GP/MEP, critical infrastructure or other airspace users.

g) emergency response procedures, documented in a local instruction, for the following events:

i. loss of positive control

ii. UA escape from operational area/assigned airspace, e.g. alerting GP/MEP, ATC or other airspace users.

NOTE: Some operational risk controls might not be suitable for UAS operations where tactical time constraints do not permit the carrying out of required tasks/checks. Alternate operational risk controls, documented in a specific instruction, should be developed for such UAS operations.

4. **RP Training and Management risk controls.** RP training and management risk controls for this standard scenario should include:

a) training that prepares the RP to:

i. perform the required action/tasks for employing/programming technical risk controls

ii. perform the required pre-flight checks

iii. operate within the documented UA limitations

iv. operate the UA in a way that minimises the risk to GP/MEP, critical infrastructure or other airspace users

b) emergency procedure training that prepares the RP for all documented emergency procedures

c) RP qualification system that defines the requirements for training and experience.

GM UAS.35 (3) – Standard Scenario for Defence Ranges and Exercise Areas

1. **Purpose.** The purpose of this regulation is to provide an Authority-published Standard Scenario under which UAS may be safely operated in Defence Ranges and Exercise Areas within Specific Type B category.

2. **Applicability.** This Standard Scenario may be applied to all UAS with MTOW not exceeding 150 kg, provided that every requirement and limitation of the Scenario is met.

   UAS operations may include, but are not limited to, unit level training, Navy fleet exercises, and Joint Operations Command exercises. At all times, the UAS is to operate within airspace that enables the exclusion of civilian aircraft, and over Defence controlled land, or water where Defence can ensure that UAS operations are not in the proximity of the GP.

GM UAS.35 (3)(a) – Restricted airspace

1. UAS operation is confined to airspace that enables the exclusion of civilian aircraft.
2. Generally, this would be possible only in a Restricted Area. Clearance to operate in a Restricted Area must be granted by the airspace control authority, e.g. range control/safety officer.

GM UAS.35 (3)(g) – Aerodrome Operators

1. UAE AIP can be referred to for contact details of aerodrome operators.

GM UAS.35 (3)(h) – Approach and departure paths

1. Approach and departure paths are considered three dimensional airspace and UA may operate under an approach/departure path provided the UA remains well clear of other aircraft at all times. These are generally considered to extend 5 nm from the end of the runway.
2. UAE AIP can be referred to for contact details of aerodrome operators.

GM UAS.35 (3)(k) – Intervention by the RP

1. Intervention refers to an action, command or input by the RP to dictate the UA's flight actions. In all situations (apart from when link is lost), the RP should be able to alter the flight path of the UA or perform any other suitable actions as necessary to ensure safe flight.

AMC UAS.35 (3)(l) – Risk Controls for Defence Ranges and Exercise Areas

1. Operations permitted under Standard Scenario for Defence Ranges and Exercise Areas require suitable risk controls to treat safety risks to other airspace users, people and critical infrastructure. This AMC provides the Command/Group/Industry authorising UAS operations under this standard scenario the means to develop and/or employ suitable risk controls. These are grouped into technical, operational and RP training and management risk controls.

   NOTE: This AMC should not be interpreted as presenting a complete set of risk controls and additional controls may need to be implemented to eliminate or otherwise

minimise risks SFARP for Command/Group/Industry to meet their statutory obligations and for compliance with UAEMAR.UAS.10 (2).

2. **Technical risk controls.** Technical risk controls for this standard scenario should include:

   a) features that:

      i. trigger automatic flight actions upon loss of datalink, e.g. Autonomous Recovery System (ARS), Go-home mode

      ii. positively contain the UA within a pre-programmed volume, e.g. geo-fencing, tether, range limiter, programmable maximum and minimum altitude

      iii. enable the RP to locate and avoid GP/MEP, vessels, critical infrastructure and terrain, e.g. on-board EO/IR camera

      iv. enable manual termination of flight by the RP during emergencies

      v. display remaining battery/fuel level to the RP

      vi. enable the UA to be physically seen by other airspace users, where tactics permit, e.g. lighting, hi-visibility colour scheme.

      NOTE: Inspection, maintenance and testing is required to prevent technical failures of the UAS, if carried out at regular intervals in accordance with documented OEM or locally produced procedures.

3. **Operational risk controls.** Operational risk controls for this standard scenario should include:

   a) pre-flight checks, carried out in accordance with documented OEM or locally produced procedures, that confirm the setup/functionality of:

      i. UA airframe, control surfaces and propellers/rotor blades

      ii. UA navigation systems

      iii. technical risk controls, e.g. ARS, geo-fencing, altitude and range limiter, on-board camera

      iv. any other feature/system that may contribute to safe operation of the UAS.

   b) documented UA limitations, in a flight manual or equivalent document, that provide sufficient details on:

      i. UA endurance, e.g. battery/fuel limits and performance in different flight modes

      ii. range limits of the datalink

      iii. weather limitations of the UA, e.g. not to operate in rain, wind gusts

      iv. limitations of technical risk controls, e.g. limitations of ARS, geo-fencing, altitude and range limiter, on-board camera

      v. any other design feature that may contribute to safe operation of the UAS.

   c) planning and procedures for intended operational airspace, documented in an ATMP or equivalent document, that enable:

      i. containment of the UA within the assigned airspace, e.g. airspace buffers

      ii. de-confliction and safe separation from other airspace users

iii. co-ordination of UAS operations with other airspace users when operating as part of a military exercise or operation

iv. communication with ATC.

d) planning and procedures for intended operational areas, documented in a local instruction, that enable the RP to:

i. contain the UA within the operational area, e.g. area buffers

ii. operate the UAS within its weather limitations, e.g. obtaining weather forecast, monitoring weather radar

iii. remain clear of MEP, e.g. operational coordination, briefing for MEP, planning of ARS routes, geo-fencing

iv. remain clear of areas where GP could be present, e.g. area survey, planning of ARS routes, geo-fencing

v. remain clear of vessels in the exercise area, e.g. detect and avoid with EO/IR data, area survey, planning of ARS routes, geo-fencing

vi. remain clear of critical infrastructure, e.g. area survey, planning of ARS routes, geo-fencing setup, minimum operating altitude.

e) planning to avoid spectrum conflict and electromagnetic interference, e.g. coordination with relevant spectrum management authority, RF survey for high intensity emitters

f) specific procedures, documented in a local instruction, for UAS operations essential for mission/training requirements, over or in proximity of:

i. MEP

ii. vessels in the exercise area

iii. critical infrastructure.

NOTE: UAEMAR AMC UAS.30 (2) - Authority Requirements for Issue of a UASOP; provides detailed guidance on aspects to be considered for risk assessment of UAS operations over or in proximity of populations (GP/MEP) and critical infrastructure. This guidance should be followed to develop specific procedures in order to eliminate or otherwise minimise risks SFARP, proportionate to the risk presented by intended UAS operations.

g) handover procedures, documented in a local instruction, that enable the RP to perform an effective handover to another RP, e.g. checklists, crew coordination, monitoring during handover

h) emergency procedures, documented in a flight manual or equivalent document, for the following events:

i. change in weather conditions that could adversely affect the UA

ii. intrusion by GP into the operational area

iii. intrusion by another airspace user into the assigned airspace

iv. any other reasonably foreseeable event that creates a hazard to GP/MEP, critical infrastructure or other airspace users

i) emergency response procedures, documented in a local instruction, for the following events:

i. loss of positive control

ii. UA escape from operational area/assigned airspace, e.g. alerting GP/MEP, ATC or other airspace users,

iii. UA ground impact.

4. **RP Training and Management risk controls.** RP training and management risk controls for this standard scenario should include:

a) training that prepares the RP to:

i. perform the required action/tasks for employing/programming technical risk controls

ii. perform the required pre-flight checks

iii. operate within the documented UA limitations

iv. operate the UA in a way that minimises risk to GP/MEP, critical infrastructure or other airspace users

b) emergency procedure training that prepares the RP for all documented emergency procedures

c) RP qualification system that defines the requirements for training and experience

d) RP fatigue management system that defines crew requirements and restrictions on work hours

e) RP workload assessment, resource planning and procedures.

GM UAS.35 (4) – Standard Scenario for the High Seas

1. **Purpose.** The purpose of this regulation is to provide an Authority-published Standard Scenario under which UAS may be safely operated on the High Seas (>12 nm from land) within a Specific Type B category.

2. **Applicability.** This Standard Scenario may be applied to all UAS with MTOW not exceeding 150 kg, provided that every requirement and limitation of the Standard Scenario is met. UAS operations may include, but are not limited to, trials, training, exercises and operations.

GM UAS.35 (4)(g) – Approach and Departure paths

1. Approach and departure paths are considered three dimensional airspace and UA may operate under an approach/departure path provided the UA remains well clear of other aircraft at all times. These are generally considered to extend 5 nm from the end of the runway.

GM UAS.35 (4)(j) – Intervention by the RP

1. Intervention refers to an action, command or input by the RP to dictate the UA's flight actions. In all situations (apart from when link is lost), the RP should be able to alter the flight path of the UA or perform any other suitable actions as necessary to ensure safe flight.

AMC UAS.35 (4)(k) – Risk Controls for the High Seas

1. Operations permitted under Standard Scenario for High Seas require suitable risk controls to treat safety risks to other airspace users, people and critical infrastructure. This AMC provides the Command/Group/Industry authorising UAS operations under this standard scenario the means to develop and/or employ suitable risk controls. These are grouped into technical, operational and RP training and management risk controls.

   NOTE: This AMC should not be interpreted as presenting a complete set of risk controls and additional controls may need to be implemented to eliminate or otherwise minimise risks SAFARP for Command/Group/Industry to meet their statutory obligations and for compliance with UAEMAR.UAS.10 (2).

2. **Technical risk controls.** Technical risk controls for this standard scenario should include:

   a) design features that:

      i. trigger automatic flight actions upon loss of datalink, e.g. Autonomous Recovery System (ARS), Go-home mode

      ii. positively contain the UA within a pre-programmed volume, e.g. geo-fencing, tether, range limiter, programmable maximum and minimum altitude

      iii. enable the RP to locate and avoid GP/MEP, vessels, critical infrastructure and terrain, e.g. on-board EO/IR camera

      iv. enable manual termination of flight by the RP during emergencies

      v. display remaining battery/fuel level to the RP

      vi. enable the UA to be physically seen by other airspace users, where tactics permit, e.g. lighting, hi-visibility colour scheme.

   b) inspection, maintenance and testing that could prevent technical failures of the UAS, carried out at regular intervals in accordance with documented OEM or locally produced procedures.

3. **Operational risk controls.** Operational risk controls for this standard scenario should include:

   a) pre-flight checks, carried out in accordance with documented OEM or locally produced procedures, that confirm the setup/functionality of:

      i. UA airframe, control surfaces and propellers/rotor blades

      ii. navigation system

      iii. technical risk controls, e.g. ARS, geo-fencing, altitude and range limiter, on-board camera

iv. any other feature/system that may contribute to safe operation of the UAS.

b) documented UA limitations, in a Flight manual or equivalent document, that provide sufficient details on:

i. UA endurance, e.g. battery/fuel limits and performance in different flight modes

ii. range limits of the datalink

iii. weather limitations of the UA, e.g. not to operate in rain, wind gusts

iv. limitations of technical risk controls, e.g. limitations of ARS, geo-fencing, altitude and range limiter, on-board camera

v. any other design feature that may contribute to safe operation of the UAS.

c) planning and procedures for intended operational airspace, documented in an ATMP or equivalent document, that enable:

i. containment of the UA within the assigned airspace, e.g. airspace buffers

ii. de-confliction and safe separation from other airspace users

iii. co-ordination of UAS operations with other airspace users when operating as part of a military exercise or operation

iv. communication with ATC.

d) planning and procedures for intended operational area, documented in a local instruction, that enable the RP to:

i. contain the UA within the operational area, e.g. area buffers

ii. operate the UAS within its weather limitations, e.g. obtaining weather forecast, monitoring weather radar

iii. remain clear of MEP, e.g. operational coordination, briefing for MEP, planning of ARS routes, geo-fencing

iv. remain clear of vessels unless essential for training/operational requirement, e.g. detect and avoid with EO/IR data, obtaining information on vessel traffic/routes, planning of ARS routes, geo-fencing

v. remain clear of critical infrastructure, e.g. obtaining information for operational area, planning of ARS routes, geo-fencing setup, minimum operating altitude.

e) planning to avoid spectrum conflict and electromagnetic interference, e.g. coordination with relevant spectrum management authority, obtaining information on high intensity RF emitters or expected ships.

f) specific procedures, documented in a local instruction, for UAS operations essential for mission/training requirements, over or in proximity of:

i. MEP

ii. vessels

iii. critical infrastructure.

NOTE: UAEMAR AMC UAS.30 (2) - Authority Requirements for Issue of a UASOP, provides detailed guidance on aspects to be considered for risk assessment of UAS operations over or in proximity of populations (GP/MEP)

and critical infrastructure. This guidance should be followed to develop specific procedures in order to eliminate or otherwise minimise risks SFARP, proportionate to the risk presented by intended UAS operations.

g) specific requirements, documented in a local instruction, for risks unique to embarked UAS operations.

h) handover procedures, documented in a local instruction, that enable the RP to perform an effective handover to another RP (e.g. checklists, crew coordination, monitoring during handover).

i) emergency procedures, documented in a flight manual or equivalent document, for the following events:

   i. change in weather conditions that could adversely affect the UA.

   ii. intrusion by GP into the operational area.

   iii. any other reasonably foreseeable event that creates a hazard to GP, MEP, critical infrastructure or other airspace users.

j) emergency response procedures, documented in a local instruction, for the following events:

   i. loss of positive control

   ii. UA escape from operational area/assigned airspace, e.g. alerting GP/MEP, other airspace users, ATC

   iii. UA ship/vessel impact.

4. **RP Training and Management risk controls.** RP training and management risk controls for this standard scenario should include:

   a) training that prepares the RP to:

      i. perform the required action/tasks for employing/programming technical risk controls

      ii. perform the required pre-flight checks

      iii. operate within the documented UA limitations

      iv. conduct embarked UAS operations

      v. operate the UA in a way that minimises risk to GP/ MEP, critical infrastructure or other airspace users.

   b) emergency procedure training that prepares the RP for all documented emergency procedures.

   c) RP qualification system that defines the requirements for training and experience.

   d) RP fatigue management system that defines crew requirements and restrictions on work hours.

   e) RP workload assessment, resource planning and procedures.

GM UAS.35 (5) – Standard Scenarios for Trials and Experimentation

1. **Purpose.** The purpose of this regulation is to provide an Authority-published Standard Scenario under which UAS may be safely operated for the purposes of Trials and Experimentation within Specific Type B category.

2. **Applicability.** This Standard Scenario may be applied to all UAS, provided that every requirement and limitation of the Scenario is met. UAS trials/experimentation may include new aircraft/platforms, variation to equipment/sensor fit, new Configuration, Role, and operating Environment (CRE), operational evaluation, and flight test. UAS operation must only be in airspace that enables the exclusion of civilian and military aircraft and in a sufficiently remote area, such that a catastrophic UAS failure is very unlikely to result in impact to a person.

GM UAS.35 (5)(a) – Restricted airspace

1. UAS operation is confined to airspace that enables the exclusion of civilian and military aircraft, except those specifically planned as part of the trial.

2. Generally, this would be possible only in a Restricted Area. Clearance to operate in a Restricted Area must be granted by the airspace control authority, e.g. range control/safety officer.

GM UAS.35 (5)(c) – Separation of MEP

1. Trial and experimentation, by its nature, includes uncertainty. UAEMAR.UAS.35 (5)(c) therefore requires UAS operations to be conducted well clear of MEP. This specific requirement for physical separation of MEP from the hazard (unless that impedes an essential trial outcome) is a key risk control for the uncertainty of UAS operations under this Standard Scenario. It also inherently requires the UA to be kept well clear of critical infrastructure involving MEP (noting that critical infrastructure involving GP is protected under UAEMAR.UAS.35 (5)(b)).

GM UAS.35 (5)(f) – Intervention by the RP

1. Intervention refers to an action, command or input by the RP to dictate the UA's flight actions. In all situations (apart from when link is lost), the RP should be able to alter the flight path of the UA or perform any other suitable actions as necessary to ensure safe flight.

AMC UAS.35 (5)(g) – Risk Controls for Trials and Experimentation

1. Operations permitted under Standard Scenario for Trials and Experimentation require suitable risk controls to treat safety risks to other airspace users, people and critical infrastructure. This AMC provides the Command/Group/Industry authorising UAS operations under this standard scenario the means to develop and/or employ suitable risk controls. These are grouped into technical, operational and RP training and management risk controls.

NOTE: This AMC should not be interpreted as presenting a complete set of risk controls and additional controls may need to be implemented to eliminate or otherwise minimise risks So Far As is Reasonably Practicable (SFARP) for Command/Group/Industry to meet their statutory obligations and for compliance with UAEMAR.UAS.10 (2).

2. **Technical risk controls.** Technical risk controls for this standard scenario should include design features that:

   a) trigger automatic flight actions upon loss of datalink, e.g. Autonomous Recovery System (ARS), Go-Home mode

   b) positively contain the UA within a pre-programmed volume, e.g. geo-fencing, tether, range limiter, programmable maximum and minimum altitude

   c) enable manual termination of flight by the RP during emergencies.

   NOTE: Depending on the nature of the trial and the unique risks it presents, the need for additional technical risk controls, e.g. a fully independent flight termination system should be critically assessed.

3. **Operational risk controls.** Operational risk controls for this standard scenario should include:

   a) pre-flight checks, carried out in accordance with documented OEM or locally produced procedures, that confirm the setup/functionality of:

      i. UA airframe, control surfaces and propellers/rotor blades

      ii. UA navigation system

      iii. technical risk controls, e.g. ARS, geo-fencing, altitude and range limiter, on-board camera

      iv. any other feature/system that may contribute to safe operation of the UAS.

   b) documented UA limitations, in a Flight manual or equivalent document, that provide sufficient details on:

      i. range limits of the datalink

      ii. limitations of technical risk controls, e.g. limitations of ARS, geo-fencing, altitude and range limiter, on-board camera

      iii. any other design feature that may contribute to safe operation of the UAS.

   c) planning and procedures for intended operational airspace, documented in an ATMP or equivalent document, that enable:

      i. containment of the UA within the assigned airspace, e.g. airspace buffers

      ii. co-ordination and de-confliction of UAS operations with other airspace users when operating as part of a joint trial

      iii. communication with ATC.

   d) planning and procedures for intended operational area, documented in a local instruction, that enable the RP to:

i. contain the UA within the operational area, e.g. area buffers

ii. operate the UA in proximity of MEP, when essential to a trial outcome, e.g. operational coordination, briefing for MEP, planning of ARS routes, geo-fencing.

> **NOTE:** As highlighted in UAEMAR GM UAS.35 (5)(c) operations in proximity of MEP are only allowed when operation in their proximity is essential to a trial outcome. Due to the uncertainty of UAS operations under this Standard Scenario, other means of enhancing the risk control, for example limiting the number of MEP involved in the activity, providing sheltering for MEP, and so on, as part of planning and procedures for the intended operational area, should also be evaluated.

e) planning to avoid spectrum conflict and electromagnetic interference, e.g. coordination with relevant spectrum management authority, or RF survey for high intensity emitters

f) specific procedures, documented in a local instruction, for UAS operations involving more than one UA per RP

g) handover procedures, documented in a local instruction, that enable the RP to perform an effective handover to another RP, e.g. checklists, crew coordination, monitoring during handover

h) emergency procedures, documented in a flight manual or equivalent document, for the following events:

i. intrusion by GP into the operational area

ii. intrusion by another airspace user into the assigned airspace

iii. any other reasonably foreseeable event that creates a hazard to GP/MEP, critical infrastructure or other airspace users.

i) emergency response procedures, documented in a local instruction, for the following events:

i. loss of positive control

ii. UA escape from operational area/assigned airspace, e.g. alerting GP/MEP, other airspace users, ATC

iii. UA ground impact.

j) briefing for MEP covering risks unique to the trial/experiment.

> **NOTE:** Depending on the nature of the trial and the unique risks it presents, the need for additional operational risk controls, e.g. the requirement of a chase plane should be critically assessed.

4. **RP Training and Management risk controls.** RP training and management risk controls for this standard scenario should include:

a) training that prepares the RP to:

i. perform the required action/tasks for employing/programming technical risk controls

ii. perform the required pre-flight checks

iii. operate within the documented UA limitations

iv. operate the UA in a way that minimises risk to GP/ MEP, critical infrastructure or other airspace users

v. identify and manage risks unique to the trial/experiment.

b) emergency procedure training that prepares the RP for all documented emergency procedures

c) RP qualification system that defines the requirements for training and experience.

NOTE: Depending on the nature of the trial and the unique risks it presents, the need for additional RP training and management risk controls, e.g. increased supervision should be critically assessed.

GM UAS.40 (1) – Open Category

1. **Purpose.** The purpose of this regulation is to permit the operation of Open category UAS without the need for Authority approval.

2. Where 'AGL' is used, this can also be read as 'Above Mean Sea Level (AMSL)' for UAS operations over water.

3. The MTOW and limitations applied in UAEMAR UAS.40 (1) are similar to those of GCAA. This promotes a common approach to small UAS regulation across the UAE aerospace sector. Given Defence is increasing its use of civilian UAS service providers, the use of common regulations promotes a seamless approach.

AMC UAS.40 (1) – Operations under Open Category

1. UAEMAR.UAS.40 (1) presents explicit UAS weights (referring to Maximum Take-Off Weight (MTOW) and limitations on use). Where any of these limitations are exceeded, UAS operations under Open category are not permitted.

AMC UAS.40 (1)(a)(viii) – RP Qualifications

1. The relevant Command/Group/Industry retains the accountability for ensuring that RPs of UAS operating within the Open category are trained to a standard so that that risks to people and critical infrastructure are eliminated or otherwise minimised as far as is reasonably practicable. This approach provides flexibility to Command/Group/industry in ensuring Open category UAS are controlled by suitably qualified personnel without placing undue limitations on the Command/Group/Industry ability to conduct tasking.

2. The training standard for commercial civilian UAS RPs may provide the Command/Group/Industry with a useful benchmark.

AMC UAS.40 (1)(b)(iii) – UAS Operations near controlled aerodromes

1. For civilian controlled aerodromes, permission must be obtained from the air traffic control service for the aerodrome.
2. For military controlled aerodromes, standing permissions should be sought where practicable and written approval must be obtained from the Senior Air Traffic Control Officer (SATCO) which includes:
    a) details of the UAS
    b) the operating unit
    c) how the UAS operations will interact safely with other aviation activity
    d) provision for the Air Traffic Service (ATS) provider to suspend UAS operations for safety reasons
    e) the Command/Group/Industry position responsible for ensuring each RP abides by the requirements/limitations imposed by the SATCO.

GM UAS.50 (1) – Weaponised UAS

The Authority has determined that any form of ordnance adopted/included/attached to a Defence owned or operated UAS for the purposes of applying a kinetic effect to personnel and/or equipment, is to be classified as 'Weaponisation' under UAEMAR.

1. **Purpose.** The purpose of this regulation is to provide additional safety assurance as to the Airworthiness and Operational considerations of a UAS determined to be classified as Weaponised. It does not aim to prescribe any limitations on a Commander's decision of when or how to employ those weapons once approved by the Authority.
2. A weaponised UAS may only operate under a Certified or Specific Type A category UAS, after gaining specific Authority approval. The mitigation of risks in support of any application for the Weaponisation of a UAS should consider:
    a) Any undue exposure of MEP or the GP to hazards.
    b) Possible impacts to Airworthiness of the platform as a consequence of subsequent weapon release and/or separation.
    c) Hazards identified during launch/recovery and/or flight loads of the UAS/Weapon combination.
    d) Accuracy, integrity, availability and continuity of service of targeting applications upon the deploying of the weapon system, including any latency of the command and control link.
    e) Sufficient coverage within OIP of the likely risk profiles associated with the application and/or intended mission of the UAS to aid the RP.
    f) Safety requirements with the use of any laser technology.

NOTE 1: Any safety risks applicable with the adoption of laser technology to the UAS will require alternative assessment and Command/Group/Industry authorisation to operate safely. Normal Defence procedures for laser safety clearances apply as per the Defence Radiation Safety Manual**.**

NOTE 2: The use of smoke, flares, and methods of illumination utilised for Search and Rescue purposes should not be classified as weapons. The Command/Group/Industry remains responsible for ensuring that anything dropped or discharged from a UAS does not pose any undue risk. This includes ensuring the adequate safe carriage of stores to prevent unintentional release and/or discharge of those stores.

GM UAS.50 (2) – Carriage of Persons

1. **Purpose.** The purpose of this regulation is to provide additional safety assurance through Authority oversight of the airworthiness and operations elements of UAS that are intended for carriage of persons.

2. Airworthiness and operations requirements for a UAS that will also carry persons will be determined on a case-by-case basis. For discretionary UAS operations, the level of safety presented by manned aircraft airworthiness and operations regulations would normally be used by the Authority as a benchmark. For UAS operations where the carriage of personnel on a UAS reduces total mission risk, for example SAR or battlefield medical evacuation, airworthiness and operations requirements would be derived through Authority and the Command/Group/Industry consultation.

GM UAS.60 (1) – Occurrence Reporting

1. **Purpose.** Enhanced UAS safety and accident prevention will only be possible if information related to UAS aviation safety events and issues is available in sufficient quantity and quality, from a broad range of UAS settings in a protected and comparable format. Full, open, timely and accurate reporting of information related to UAS aviation safety events and issues allows Defence to respond to information received and apply corrections to prevent future reoccurrence of such events and issues. This regulation requires the operators of UAS to ensure reporting requirements are completed pertaining to UAS related aviation safety events and issues.

AMC UAS.60 (1) – Occurrence Reporting

1. UAS aviation safety events and issues should be reported by the operator of a UAS in accordance with the SEW Safety Occurrence Reporting requirements.

GM UAS.70 (1) – Support for Authority Compliance Assurance

1. **Purpose.** The purpose of this regulation is to provide the Authority with access to data and facilities, required for safety assurance activities.

2. The regulated community must regularly, and at any time on request from the Authority, provide to the Authority all data and access that will support the Authority undertaking,

reviewing, monitoring and updating its Assurance functions.

The Authority may from time to time request data as part of its safety assurance compliance and audit roles and in its administration of independent reviews such as Airworthiness Boards. The notification period for requesting data will be similar to that for safety assurance of manned aircraft; however, the data required will be commensurate to the complexity of relevant UAS operations.

3. The UAS Operator shall ensure arrangements are in place to allow the Authority to carry out any investigation, including investigation of partners or subcontractors, considered necessary to determine compliance and continued compliance with the applicable requirements of UAEMAR.UAS.

GM UAS.80 (1) – Authorisation of Foreign Military UAS Operations

1. **Purpose.** The purpose of this regulation is to require Defence to be aware of foreign military UAS operating in UAE airspace, and apply appropriate safety controls.

2. Foreign UAS Operators are not subject to the UAEMAR. However, a sponsor may require the foreign UAS Operator to operate in accordance with UAEMAR provisions. Foreign UAS Operators are obliged to protect the safety of UAE airspace users and persons/critical infrastructure.

3. For a foreign military UAS to operate in UAE, it must be sponsored by an organisation within Defence. It is the responsibility of that sponsor to ensure the foreign military understands UAE statutory safety responsibilities, and for ensuring the safety of the proposed UAS operations.

4. The level of safety implicit in UAEMAR.UAS provides a suitable benchmark for the sponsor to execute their responsibilities. That is, a sponsor could identify which UAS category an equivalent Defence UAS would operate within, and use this equivalent Categorisation as a basis for assessing the foreign UAS Operator's risk controls. For example, where a foreign UAS operation is within the scope of a Specific category Standard Scenario, or within scope of the Open category, the sponsor could reasonably confirm each of the inherent risk controls for those categories has been implemented.

5. To assist in the above assessment, the sponsor could request relevant information from the foreign UAS Operator, including:

   a) evidence and details of similar categorisation and approvals from another NAA or MAA

   b) full disclosure of the scope of proposed UAS operations in UAE

   c) information on operational conditions and limitations placed on the UAS operations

   d) confirmation that the RP has the skills commensurate with proposed airspace operations

   e) any relevant risk assessments produced by the foreign UAS Operator

   f) other documentation to assist the sponsor in drawing equivalence with UAEMAR.UAS.

6. Where the scope of foreign UAS operations is commensurate with a Defence Specific category Type A UAS (and therefore, if this was a Defence UAS, it would require Authority issue of a UASOP), the sponsor assessment can become complex. The Authority cannot provide an approval for the operation unless the foreign UAS Operator has agreed to be subject to UAEMAR. However, the MOD SEW may be approached for SME advice.

7. Foreign militaries seeking to operate aircraft (in this paragraph, meaning manned and unmanned) in UAE airspace may require additional clearances that are separate to this regulation. Diplomatic approvals for foreign military or government aircraft are managed by the Diplomatic Clearance Cell within the UAE JOC. Foreign military and foreign defence industry flight operations within UAE airspace should be planned with an UAE Defence aviation command, Defence Group or the UAE JOC. A diplomatic clearance would normally be required for foreign military UAS operating outside of Defence areas.

GM UAS.80 (2) – Risk Management of Foreign Military UAS Operations

1. **Purpose.** The purpose of this regulation is to promote compliance by foreign UAS Operators and RP with UAE safety requirements, legislated in the OSHA Decree, and reinforce that this compliance is to be ensured through the organisation in Defence sponsoring the foreign UAS Operator.

2. The risk presented by foreign UAS to other airspace users (both Defence and civilian) or persons/critical infrastructure on the ground or water (both GP and MEP) must be eliminated or otherwise minimised So Far As is Reasonably Practicable (SFARP).