

SERA, AIR NAVIGATION ORDER AND RULES OF THE AIR REGULATIONS 2015 - CONSOLIDATION

Correct as at 15 April 2019

(incorporating replacement of ORS4 No 1282 by ORS4 No 1302 (SERA.5001))

Published for the use of those concerned with air navigation

This consolidation sets out the provisions of Implementing Regulation (EU) 923/2012 (the Standardised European Rules of the Air (SERA)), the European Aviation Safety Agency's supporting Acceptable Means of Compliance (AMC) and Guidance Material (GM), specific articles of the Air Navigation Order, The Rules of the Air Regulations 2015 and supporting guidance prepared by the Civil Aviation Authority.

It also contains General Exemptions and General Permissions made against SERA and the Rules of the Air Regulations 2015. The Regulations and specific articles of the Air Navigation Order are in their currently amended form.

It has been prepared for those concerned with day-to-day matters relating to Air Navigation who require an up to date consolidation of the Orders and the Regulations mentioned above. It is edited by the Safety and Airspace Regulation Group of the Civil Aviation Authority. Courts of Law will however refer only to the source regulatory material.

Implementing Regulation (EU) 923/2012, supporting Acceptable Means of Compliance and Guidance Material can be found at <http://easa.europa.eu/regulations>.

EASA's consolidation of Implementing Regulation (EU) 923/2012, supporting Acceptable Means of Compliance and Guidance Material can be found at [Easy access rules for Standardised European Rules of the Air \(SERA\)](#).

The Air Navigation Order 2016 and associated amendments can be found at <http://www.legislation.gov.uk/uksi/2016/765/contents/made>.

The Rules of the Air 2015 and associated amendments can be found at http://www.legislation.gov.uk/uksi/2015/840/pdfs/uksi_20150840_en.pdf.

A consolidation of the Air Navigation Order 2016 and supporting regulations (including The Rules of the Air 2015), published by the CAA as CAP 393, can be found at

[The Air Navigation Order 2016 and Regulations](#).

The CAA publishes General Permissions and General Exemptions through Official Record Series 4 – Miscellaneous (ORS4), which can be found at <http://www.caa.co.uk/ors4>.

Reg (EU) 923/2012 (as amended), plus supporting AMC and GM	UK AltMOC/GM to SERA	The Air Navigation Order 2016 (as amended)	Rules of the Air 2015 (as amended)	UK General Permissions or General Exemptions
--	----------------------------	--	--	--

Article 1

Subject matter and scope

1. The objective of this Regulation is to establish the common rules of the air and operational provisions regarding services and procedures in air navigation that shall be applicable to general air traffic within the scope of Regulation (EC) No 551/2004.
2. This Regulation shall apply in particular to airspace users and aircraft engaged in general air traffic:
 - (a) operating into, within or out of the Union;
 - (b) bearing the nationality and registration marks of a Member State of the Union, and operating in any airspace to the extent that they do not conflict with the rules published by the country having jurisdiction over the territory overflown.
3. This Regulation shall also apply to the competent authorities of the Member States, air navigation service providers, aerodrome operators and ground personnel engaged in aircraft operations.
4. This Regulation shall not apply to model aircraft and toy aircraft. However, Member States shall ensure that national rules are established to ensure that model aircraft and toy aircraft are operated in such a manner as to minimise hazards related to civil aviation safety, to persons, property or other aircraft.

Article 2

Definitions

For the purpose of this Regulation the following definitions shall apply:

‘accuracy’ means a degree of conformance between the estimated or measured value and the true value.

‘ADS-C agreement’ means a reporting plan which establishes the conditions of ADSC data reporting (i.e. data required by the air traffic services unit and frequency of ADS-C reports which have to be agreed to prior to using ADS-C in the provision of air traffic services).

GM1 Article 2(2) ADS-C agreement

The terms of the ADS-C agreement, which establishes the conditions of the ADS-C data reporting, will be exchanged between the ground system and the aircraft by means of a contract, or a series of contracts.

‘advisory airspace’ means an airspace of defined dimensions, or designated route, within which air traffic advisory service is available.

‘advisory route’ means a designated route along which air traffic advisory service is available.

‘aerial work’ means an aircraft operation in which an aircraft is used for specialized services such as agriculture, construction, photography, surveying, observation and patrol, search and rescue, aerial advertisement, etc;

‘aerobatic flight’ means manoeuvres intentionally performed by an aircraft involving an abrupt change in its attitude, an abnormal attitude, or an abnormal variation in speed, not necessary for normal flight or for instruction for licenses or ratings other than aerobatic rating.

‘aerodrome’ means a defined area (including any buildings, installations and equipment) on land or water or on a fixed, fixed off-shore or floating structure intended to be used either wholly or in part for the arrival, departure and surface movement of aircraft

‘aerodrome control service’ means air traffic control service for aerodrome traffic.

‘aerodrome control tower’ means a unit established to provide air traffic control service to aerodrome traffic.

‘aerodrome traffic’ means all traffic on the manoeuvring area of an aerodrome and all aircraft flying in the vicinity of an aerodrome. An aircraft operating in the vicinity of an aerodrome includes but is not limited to aircraft entering or leaving an aerodrome traffic circuit.

‘aerodrome traffic circuit’ means the specified path to be flown by aircraft operating in the vicinity of an aerodrome.

‘aerodrome traffic zone’ means an airspace of defined dimensions established around an aerodrome for the protection of aerodrome traffic

‘Aeronautical Information Publication (AIP)’ means a publication issued by or with the authority of a State and

containing aeronautical information of a lasting character essential to air navigation.
'aeronautical mobile service' means a mobile service between aeronautical stations and aircraft stations, or between aircraft stations, in which survival craft stations may participate; emergency position-indicating radio beacon stations may also participate in this service on designated distress and emergency frequencies.
'aeronautical station' means a land station in the aeronautical mobile service. In certain instances, an aeronautical station may be located, for example, on board ship or on a platform at sea.
'aeroplane' means a power-driven heavier-than-air aircraft, deriving its lift in flight chiefly from aerodynamic reactions on surfaces which remain fixed under given conditions of flight.
'airborne collision avoidance system (ACAS)' means an aircraft system based on secondary surveillance radar (SSR) transponder signals which operates independently of ground-based equipment to provide advice to the pilot on potential conflicting aircraft that are equipped with SSR transponders.
'aircraft' means any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface.
'aircraft address' means a unique combination of 24 bits available for assignment to an aircraft for the purpose of air-ground communications, navigation and surveillance.
'aircraft observation' means the evaluation of one or more meteorological elements made from an aircraft in flight.
'AIRMET information' means information issued by a meteorological watch office concerning the occurrence or expected occurrence of specified en-route weather phenomena which may affect the safety of low-level aircraft operations and which was not already included in the forecast issued for low-level flights in the flight information region concerned or sub-area thereof.
'air-ground communication' means two-way communication between aircraft and stations or locations on the surface of the earth.
'air-ground control radio station' means an aeronautical telecommunication station having primary responsibility for handling communications pertaining to the operation and control of aircraft in a given area.
'air-report' means a report from an aircraft in flight prepared in conformity with requirements for position, and operational and/or meteorological reporting.
'air-taxiing' means movement of a helicopter/VTOL above the surface of an aerodrome, normally in ground effect and at a ground speed normally less than 37 km/h (20 kt).
GM1 Article 2(25) Air-taxiing The actual height during air-taxiing may vary, and some helicopters may require air-taxiing above 8 m (25 ft) AGL to reduce ground effect turbulence or provide clearance for cargo sling loads.
'air traffic' means all aircraft in flight or operating on the manoeuvring area of an aerodrome.
'air traffic advisory service' means a service provided within advisory airspace to ensure separation, in so far as practical, between aircraft which are operating on IFR flight plans.
'air traffic control clearance' means authorisation for an aircraft to proceed under conditions specified by an air traffic control unit.
GM1 Article 2(28) Air traffic control clearance (a) For convenience, the term 'air traffic control clearance' is frequently abbreviated to 'clearance' when used in appropriate contexts. (b) The abbreviated term 'clearance' may be prefixed by the words 'taxi', 'take-off', 'departure', 'en route', 'approach' or 'landing' to indicate the particular portion of flight to which the air traffic control clearance relates.
'air traffic control instruction' means directives issued by air traffic control for the purpose of requiring a pilot to take a specific action.
'air traffic control service' means a service provided for the purpose of: a) preventing collisions: 1) between aircraft, and 2) on the manoeuvring area between aircraft and obstructions; and b) expediting and maintaining an orderly flow of air traffic.
'air traffic control unit' means a generic term meaning variously, area control centre, approach control unit or aerodrome control tower.
'air traffic service (ATS)' means a generic term meaning variously, flight information service, alerting service,

air traffic advisory service, air traffic control service (area control service, approach control service or aerodrome control service).
'air traffic services airspaces' mean airspaces of defined dimensions, alphabetically designated, within which specific types of flights may operate and for which air traffic services and rules of operation are specified.
'air traffic services reporting office' means a unit established for the purpose of receiving reports concerning air traffic services and flight plans submitted before departure.
GM1 Article 2(34) Air traffic services reporting office An air traffic services reporting office may be established as a separate unit or combined with an existing unit, such as another air traffic services unit, or a unit of the aeronautical information service.
'air traffic services unit' means a generic term meaning variously, air traffic control unit, flight information centre, aerodrome flight information service unit or air traffic services reporting office.
'airway' means a control area or portion thereof established in the form of a corridor.
'alerting service' means a service provided to notify appropriate organizations regarding aircraft in need of search and rescue aid, and assist such organizations as required.
'alternate aerodrome' means an aerodrome to which an aircraft may proceed when it becomes either impossible or inadvisable to proceed to or to land at the aerodrome of intended landing. Alternate aerodromes include the following: a. 'take-off alternate' means an alternate aerodrome at which an aircraft can land should this become necessary shortly after take-off and it is not possible to use the aerodrome of departure. b. 'en-route alternate' means an aerodrome at which an aircraft would be able to land after experiencing an abnormal or emergency condition while en route. c. 'ETOPS en-route alternate' means a suitable and appropriate alternate aerodrome at which an aeroplane would be able to land after experiencing an engine shutdown or other abnormal or emergency condition while en route in an ETOPS operation. d. 'destination alternate' means an alternate aerodrome to which an aircraft may proceed should it become either impossible or inadvisable to land at the aerodrome of intended landing.
GM1 Article 2(38) Alternate aerodrome The aerodrome from which a flight departs may also be an en-route or a destination alternate aerodrome for that flight.
'altitude' means the vertical distance of a level, a point or an object considered as a point, measured from mean sea level (MSL).
GM1 Article 2(39) Altitude (a) A pressure type altimeter calibrated in accordance with the Standard Atmosphere when set to a QNH altimeter setting will indicate altitude (above the mean sea level). (b) The term 'altitude' indicates altimetric rather than geometric altitude.
'approach control service' means air traffic control service for arriving or departing controlled flights.
'approach control unit' means a unit established to provide air traffic control service to controlled flights arriving at, or departing from, one or more aerodromes.
GM1 Article 2(41) Approach control unit The purpose of the definition is to describe the specific services associated to approach control unit. This does not preclude the possibility for an approach control unit to provide air traffic control service to flights other than those arriving or departing.
'apron' means a defined area, intended to accommodate aircraft for purposes of loading or unloading passengers, mail or cargo, fuelling, parking or maintenance.
'area control centre (ACC)' means a unit established to provide air traffic control service to controlled flights in control areas under its jurisdiction.
'area control service' means air traffic control service for controlled flights in control areas.
'area navigation (RNAV)' means a method of navigation which permits aircraft operation on any desired flight path within the coverage of station-referenced navigation aids or within the limits of the capability of self-contained aids, or a combination of these.
GM1 Article 2(45) Area navigation (RNAV) Area navigation includes performance-based navigation as well as other operations that do not meet the definition of performance-based navigation.

<p>‘ATS route’ means a specified route designed for channelling the flow of traffic as necessary for the provision of air traffic services.</p>
<p>GM1 Article 2(46) ATS route</p> <p>(a) The term ‘ATS route’ is used to mean variously, airway, advisory route, controlled or uncontrolled route, arrival or departure route, etc.</p> <p>(b) An ATS route is defined by route specifications which include an ATS route designator, the track to or from significant points (waypoints), distance between significant points, reporting requirements and, as determined by the competent authority, the lowest safe altitude.</p>
<p>‘automatic dependent surveillance — broadcast (ADS-B)’ means a means by which aircraft, aerodrome vehicles and other objects can automatically transmit and/or receive data such as identification, position and additional data, as appropriate, in a broadcast mode via a data link.</p>
<p>‘automatic dependent surveillance — contract (ADS-C)’ means a means by which the terms of an ADS-C agreement will be exchanged between the ground system and the aircraft, via a data link, specifying under what conditions ADS-C reports would be initiated, and what data would be contained in the reports.</p>
<p>GM1 Article 2(48) Automatic dependent surveillance – contract</p> <p>The abbreviated term ‘ADS contract’ is commonly used to refer to ADS event contract, ADS demand contract, ADS periodic contract or an emergency mode.</p>
<p>‘automatic terminal information service (ATIS)’ means the automatic provision of current, routine information to arriving and departing aircraft throughout 24 hours or a specified portion thereof:</p> <p>a. Data link-automatic terminal information service (D-ATIS) means the provision of ATIS via data link.</p> <p>b. Voice-automatic terminal information service (Voice-ATIS) means the provision of ATIS by means of continuous and repetitive voice broadcasts.</p>
<p>‘ceiling’ means the height above the ground or water of the base of the lowest layer of cloud below 6 000 m (20 000 ft) covering more than half the sky.</p>
<p>‘change-over point’ means the point at which an aircraft navigating on an ATS route segment defined by reference to very high frequency omnidirectional radio ranges is expected to transfer its primary navigational reference from the facility behind the aircraft to the next facility ahead of the aircraft.</p>
<p>GM1 Article 2(51) Change-over point</p> <p>Change-over points are established to provide the optimum balance in respect of signal strength and quality between ground facilities at all levels to be used and to ensure a common source of azimuth guidance for all aircraft operating along the same portion of a route segment.</p>
<p>‘clearance limit’ means the point to which an aircraft is granted an air traffic control clearance.</p>
<p>‘cloud of operational significance’ means a cloud with the height of cloud base below 1 500 m (5 000 ft) or below the highest minimum sector altitude, whichever is greater, or a cumulonimbus cloud or a towering cumulus cloud at any height.</p>
<p>‘code (SSR)’ means the number assigned to a particular multiple pulse reply signal transmitted by a transponder in Mode A or Mode C.</p>
<p>‘competent authority’ means the authority designated by the Member State as competent to ensure compliance with the requirements of this Regulation’</p>
<p>‘control area’ means a controlled airspace extending upwards from a specified limit above the earth.</p>
<p>‘control zone’ means a controlled airspace extending upwards from the surface of the earth to a specified upper limit.</p>
<p>‘controlled aerodrome’ means an aerodrome at which air traffic control service is provided to aerodrome traffic regardless whether or not a control zone exists.</p>
<p>‘controlled airspace’ means an airspace of defined dimensions within which air traffic control service is provided in accordance with the airspace classification.</p>
<p>GM1 Article 2(58) Controlled airspace</p> <p>Controlled airspace is a generic term which covers ATS airspace Classes A, B, C, D and E.</p>
<p>‘controlled flight’ means any flight which is subject to an air traffic control clearance.</p>
<p>‘controller-pilot data link communications (CPDLC)’ mean a means of communication between controller and pilot, using data link for ATC communications.</p>
<p>‘cruise climb’ means an aeroplane cruising technique resulting in a net increase in altitude as the aeroplane mass decreases.</p>

‘cruising level’ means a level maintained during a significant portion of a flight.
‘current flight plan (CPL)’ means the flight plan, including changes, if any, brought about by subsequent clearances.
‘danger area’ means an airspace of defined dimensions within which activities dangerous to the flight of aircraft may exist at specified times.
‘data link communications’ mean a form of communication intended for the exchange of messages via a data link.
‘datum’ means any quantity or set of quantities that may serve as a reference or basis for the calculation of other quantities.
‘downstream clearance’ means a clearance issued to an aircraft by an air traffic control unit that is not the current controlling authority of that aircraft.
‘estimated elapsed time’ means the estimated time required to proceed from one significant point to another.
‘estimated off-block time’ means the estimated time at which the aircraft will commence movement associated with departure.
‘estimated time of arrival’ means for IFR flights, the time at which it is estimated that the aircraft will arrive over that designated point, defined by reference to navigation aids, from which it is intended that an instrument approach procedure will be commenced, or, if no navigation aid is associated with the aerodrome, the time at which the aircraft will arrive over the aerodrome. For VFR flights, the time at which it is estimated that the aircraft will arrive over the aerodrome.
‘expected approach time’ means the time at which ATC expects that an arriving aircraft, following a delay, will leave the holding fix to complete its approach for a landing. The actual time of leaving the holding fix will depend upon the approach clearance.
‘filed flight plan (FPL)’ means the flight plan as filed with an ATS unit by the pilot or a designated representative, without any subsequent changes.
‘flight crew member’ means a licensed crew member charged with duties essential to the operation of an aircraft during a flight duty period.
‘flight information centre’ means a unit established to provide flight information service and alerting service.
‘flight information region’ means an airspace of defined dimensions within which flight information service and alerting service are provided.
‘flight information service’ means a service provided for the purpose of giving advice and information useful for the safe and efficient conduct of flights.
‘flight level (FL)’ means a surface of constant atmospheric pressure which is related to a specific pressure datum, 1 013.2 hectopascals (hPa), and is separated from other such surfaces by specific pressure intervals.
GM1 Article 2(78) Flight level (a) A pressure type altimeter calibrated in accordance with the Standard Atmosphere: (1) when set to a QNH altimeter setting, will indicate altitude; (2) when set to a QFE altimeter setting, will indicate height above the QFE reference datum; (3) when set to a pressure of 1 013.2 hPa, may be used to indicate flight levels. (b) The terms ‘height’ and ‘altitude’, used in (a) above, indicate altimetric rather than geometric heights and altitudes.
‘flight plan’ means specified information provided to air traffic services units, relative to an intended flight or portion of a flight of an aircraft.
‘flight visibility’ means the visibility forward from the cockpit of an aircraft in flight.
‘forecast’ means a statement of expected meteorological conditions for a specified time or period, and for a specified area or portion of airspace.
‘ground visibility’ means the visibility at an aerodrome, as reported by an accredited observer or by automatic systems.
‘heading’ means the direction in which the longitudinal axis of an aircraft is pointed, usually expressed in degrees from North (true, magnetic, compass or grid).
‘height’ means the vertical distance of a level, a point or an object considered as a point, measured from a specified datum.

<p>GM1 Article 2(84) Height</p> <p>A pressure type altimeter calibrated in accordance with the Standard Atmosphere when set to a QFE altimeter setting, will indicate height (above the QFE reference datum).</p>
<p>'helicopter' means a heavier-than-air aircraft supported in flight chiefly by the reactions of the air on one or more power driven rotors on substantially vertical axes.</p>
<p>'high seas airspace' means airspace beyond land territory and territorial seas, as specified in the United Nations Convention on the Law of the Sea (Montego Bay, 1982).</p>
<p>'IFR' means the symbol used to designate the instrument flight rules.</p>
<p>'IFR flight' means a flight conducted in accordance with the instrument flight rules.</p>
<p>'IMC' means the symbol used to designate instrument meteorological conditions.</p>
<p>'instrument approach procedure (IAP)' means a series of predetermined manoeuvres by reference to flight instruments with specified protection from obstacles from the initial approach fix, or where applicable, from the beginning of a defined arrival route to a point from which a landing can be completed and thereafter, if a landing is not completed, to a position at which holding or en-route obstacle clearance criteria apply. Instrument approach procedures are classified as follows:</p> <p>a. <i>Non-precision approach (NPA) procedure</i> means an instrument approach procedure which utilizes lateral guidance but does not utilize vertical guidance.</p> <p>b. <i>Approach procedure with vertical guidance (APV)</i> means an instrument procedure which utilizes lateral and vertical guidance but does not meet the requirements established for precision approach and landing operations.</p> <p>c. <i>Precision approach (PA) procedure</i> means an instrument approach procedure using precision lateral and vertical guidance with minima as determined by the category of operation.</p>
<p>GM1 Article 2(90) Instrument approach procedure</p> <p>Lateral and vertical guidance utilized in an instrument approach procedure refers to the guidance provided either by:</p> <p>(a) a ground-based navigation aid; or</p> <p>(b) computer-generated navigation data.</p>
<p>'instrument meteorological conditions (IMC)' mean meteorological conditions expressed in terms of visibility, distance from cloud, and ceiling, less than the minima specified for visual meteorological conditions.</p>
<p>'landing area' means that part of a movement area intended for the landing or take-off of aircraft.</p>
<p>'level' means a generic term relating to the vertical position of an aircraft in flight and meaning variously, height, altitude or flight level.</p>
<p>'manoeuvring area' means that part of an aerodrome to be used for the take-off, landing and taxiing of aircraft, excluding aprons.</p>
<p>'mode (SSR)' means the conventional identifier related to specific functions of the interrogation signals transmitted by an SSR interrogator. There are four modes specified in ICAO Annex 10: A, C, S and intermode.</p>
<p>'movement area' means that part of an aerodrome to be used for the take-off, landing and taxiing of aircraft, consisting of the manoeuvring area and the apron(s).</p>
<p>'night' means the hours between the end of evening civil twilight and the beginning of morning civil twilight. Civil twilight ends in the evening when the centre of the sun's disc is 6 degrees below the horizon and begins in the morning when the centre of the sun's disc is 6 degrees below the horizon.</p>
<p>GM1 Article 2(97) Night</p> <p>To enable practical application of the definition of night, evening and morning civil twilight may be promulgated pertinent to the date and position.</p>
<p>The Air Navigation Order 2016 SCHEDULE 1 - INTERPRETATION</p> <p>"Night" means the time from half an hour after sunset until half an hour before sunrise (both times inclusive), sunset and sunrise being determined at surface level;</p>
<p>'obstacle' means all fixed (whether temporary or permanent) and mobile objects, or parts thereof, that:</p> <p>a) are located on an area intended for the surface movement of aircraft; or</p> <p>b) extend above a defined surface intended to protect aircraft in flight; or</p> <p>c) stand outside those defined surfaces and that have been assessed as being a hazard to air navigation.</p>

<p>‘operating site’ means a site, other than an aerodrome, selected by the operator or pilot-in-command or commander for landing, take-off and/or external load operations.</p>
<p>‘pilot-in-command’ means the pilot designated by the operator, or in the case of general aviation, the owner, as being in command and charged with the safe conduct of a flight.</p>
<p>‘pressure-altitude’ means an atmospheric pressure expressed in terms of altitude which corresponds to that pressure in the Standard Atmosphere, as defined in ICAO Annex 8, Part 1.</p>
<p>‘problematic use of substances’ means the use of one or more psychoactive substances by aviation personnel in a way that:</p> <p>a) constitutes a direct hazard to the user or endangers the lives, health or welfare of others; and/or</p> <p>b) causes or worsens an occupational, social, mental or physical problem or disorder.</p>
<p>‘prohibited area’ means an airspace of defined dimensions, above the land areas or territorial waters of a State, within which the flight of aircraft is prohibited.</p>
<p>‘psychoactive substances’ mean alcohol, opioids, cannabinoids, sedatives and hypnotics, cocaine, other psychostimulants, hallucinogens, and volatile solvents, whereas coffee and tobacco are excluded.</p>
<p>‘radar’ means a radio detection device which provides information on range, azimuth and/or elevation of objects.</p>
<p>‘radio mandatory zone (RMZ)’ means an airspace of defined dimensions wherein the carriage and operation of radio equipment is mandatory.</p>
<p>‘radio navigation service’ means a service providing guidance information or position data for the efficient and safe operation of aircraft supported by one or more radio navigation aids</p>
<p>‘radiotelephony’ means a form of radio communication primarily intended for the exchange of information in the form of speech.</p>
<p>‘repetitive flight plan’ means a flight plan related to a series of frequently recurring, regularly operated individual flights with identical basic features, submitted by an operator for retention and repetitive use by ATS units.</p>
<p>‘reporting point’ means a specified geographical location in relation to which the position of an aircraft can be reported.</p>
<p>‘restricted area’ means an airspace of defined dimensions, above the land areas or territorial waters of a State, within which the flight of aircraft is restricted in accordance with certain specified conditions.</p>
<p>‘route segment’ means a route or portion of route usually flown without an intermediate stop.</p>
<p>‘runway’ means a defined rectangular area on a land aerodrome prepared for the landing and take-off of aircraft.</p>
<p>‘runway-holding position’ means a designated position intended to protect a runway, an obstacle limitation surface, or an ILS/MLS critical/sensitive area at which taxiing aircraft and vehicles shall stop and hold, unless otherwise authorised by the aerodrome control tower.</p>
<p>GM1 Article 2(114) Runway-holding position</p> <p>In radiotelephony phraseologies, the expression ‘holding point’ is used to designate the runway-holding position.</p>
<p>‘runway visual range (RVR)’ means the range over which the pilot of an aircraft on the centre line of a runway can see the runway surface markings or the lights delineating the runway or identifying its centre line.</p>
<p>‘safety-sensitive personnel’ mean persons who might endanger aviation safety if they perform their duties and functions improperly including, but not limited to, crew members, aircraft maintenance personnel and air traffic controllers.</p>
<p>‘Sailplane’ means a heavier-than-air aircraft which is supported in flight by the dynamic reaction of the air against its fixed lifting surfaces, the free flight of which does not depend on an engine. For the purposes of this Regulation, all references to sailplanes are understood to include also hang gliders, paragliders and other comparable craft.</p>
<p>‘secondary surveillance radar (SSR)’ means a surveillance radar system which uses transmitters/receivers (interrogators) and transponders.</p>
<p>‘SIGMET information’ means information issued by a meteorological watch office concerning the occurrence or expected occurrence of specified en-route weather phenomena which may affect the safety of aircraft operations.</p>
<p>‘signal area’ means an area on an aerodrome used for the display of ground signals.</p>

<p>'significant point' means a specified geographical location used in defining an ATS route or the flight path of an aircraft and for other navigation and ATS purposes.</p>
<p>GM1 Article 2(121) Significant point</p> <p>There are three categories of significant points: ground based navigation aid, intersection and waypoint. In the context of this definition, intersection is a significant point expressed as radials, bearings and/or distances from ground-based navigation aids.</p>
<p>'special VFR flight' means a VFR flight cleared by air traffic control to operate within a control zone in meteorological conditions below VMC.</p>
<p>'strayed aircraft' means an aircraft which has deviated significantly from its intended track or which reports that it is lost.</p>
<p>'surveillance radar' means radar equipment used to determine the position of an aircraft in range and azimuth.</p>
<p>'taxiing' means movement of an aircraft on the surface of an aerodrome or an operating site under its own power, excluding take-off and landing.</p>
<p>'taxiway' means a defined path on a land aerodrome established for the taxiing of aircraft and intended to provide a link between one part of the aerodrome and another, including:</p> <p>a) <i>Aircraft stand taxilane</i> means a portion of an apron designated as a taxiway and intended to provide access to aircraft stands only.</p> <p>b) <i>Apron taxiway</i> means a portion of a taxiway system located on an apron and intended to provide a through taxi route across the apron.</p> <p>c) <i>Rapid exit taxiway</i> means a taxiway connected to a runway at an acute angle and designed to allow landing aeroplanes to turn off at higher speeds than are achieved on other exit taxiways thereby minimizing runway occupancy times.</p>
<p>'territory' means the land areas and territorial waters adjacent thereto under the sovereignty, suzerainty, protection or mandate of a State.</p>
<p>'threshold' means the beginning of that portion of the runway usable for landing.</p>
<p>'total estimated elapsed time' means</p> <p>a) for IFR flights, the estimated time required from take-off to arrive over that designated point, defined by reference to navigation aids, from which it is intended that an instrument approach procedure will be commenced, or, if no navigation aid is associated with the destination aerodrome, to arrive over the destination aerodrome.</p> <p>b) for VFR flights, the estimated time required from take-off to arrive over the destination aerodrome.</p>
<p>'track' means the projection on the earth's surface of the path of an aircraft, the direction of which path at any point is usually expressed in degrees from North (true, magnetic or grid).</p>
<p>'traffic avoidance advice' means an advice provided by an air traffic services unit specifying manoeuvres to assist a pilot to avoid a collision.</p>
<p>'traffic information' means information issued by an air traffic services unit to alert a pilot to other known or observed air traffic which may be in proximity to the position or intended route of flight and to help the pilot avoid a collision.</p>
<p>'transfer of control point' means a defined point located along the flight path of an aircraft, at which the responsibility for providing air traffic control service to the aircraft is transferred from one control unit or control position to the next.</p>
<p>'transition altitude' means the altitude at or below which the vertical position of an aircraft is controlled by reference to altitudes.</p>
<p>'transition level' means the lowest flight level available for use above the transition altitude.</p>
<p>'transponder mandatory zone (TMZ)' means an airspace of defined dimensions wherein the carriage and operation of pressure-altitude reporting transponders is mandatory.</p>
<p>'unidentified aircraft' means an aircraft which has been observed or reported to be operating in a given area but whose identity has not been established.</p>
<p>'unmanned free balloon' means a non-power-driven, unmanned, lighter-than-air aircraft in free flight.</p>
<p>GM1 Article 2(138) Unmanned free balloon</p> <p>Unmanned free balloons are classified as heavy, medium or light in accordance with specifications contained in Appendix 2 to this Regulation.</p>

<p>'VFR' means the symbol used to designate the visual flight rules.</p>
<p>'VFR flight' means a flight conducted in accordance with the visual flight rules.</p>
<p>'visibility' means visibility for aeronautical purposes is the greater of:</p> <p>a) the greatest distance at which a black object of suitable dimensions, situated near the ground, can be seen and recognized when observed against a bright background;</p> <p>b) the greatest distance at which lights in the vicinity of 1 000 candelas can be seen and identified against an unlit background.</p>
<p>GM1 Article 2(141) Visibility</p> <p>(a) The two distances which may be defined by a given visibility have different values in air of a given extinction coefficient. Visibility based on seeing and recognizing an object is represented by the meteorological optical range (MOR) Article 2(141)(a). Visibility based on seeing and identifying lights varies with the background illumination Article 2(141)(b).</p> <p>(b) The definition of visibility applies to the observations of visibility in local routine and special reports, to the observations of prevailing and minimum visibility reported in METAR and SPECI and to the observations of ground visibility.</p>
<p>'visual meteorological conditions' mean meteorological conditions expressed in terms of visibility, distance from cloud, and ceiling, equal to or better than specified minima.</p>
<p>'VMC' means the symbol used to designate visual meteorological conditions.</p>
<p><i>Article 3</i></p> <p>Compliance</p> <p>The Member States shall ensure compliance with the common rules and provisions set out in the Annex to this Regulation without prejudice to the flexibility provisions contained in Article 14 of the Regulation (EC) No 216/2008 and the safeguards contained in Article 13 of Regulation (EC) No 549/2004.</p>
<p><i>Article 4</i></p> <p>Exemptions for special operations</p> <p>1. The competent authorities may, either on their own initiative or based on applications by the entities concerned, grant exemptions to individual entities or to categories of entities from any of the requirements of this Regulation for the following activities of public interest and for the training necessary to carry out those activities safely:</p> <ul style="list-style-type: none"> (a) police and customs missions; (b) traffic surveillance and pursuit missions; (c) environmental control missions conducted by, or on behalf of public authorities; (d) search and rescue; (e) medical flights; (f) evacuations; (g) fire fighting; (h) exemptions required to ensure the security of flights by heads of State, Ministers and comparable State functionaries. <p>2. The competent authority authorising these exemptions shall inform EASA of the nature of the exemptions at latest two months after the exemption has been approved.</p> <p>3. This Article is without prejudice to Article 3 and may be applied in the cases where the activities listed under paragraph 1, cannot be carried out as operational air traffic or where they otherwise may not benefit from the flexibility provisions contained in this Regulation.</p> <p>This Article shall also be without prejudice to helicopter operating minima contained in the specific approvals granted by the competent authority, pursuant to Annex V to Commission Regulation (EU) No 965/2012¹.</p>

¹ Commission Regulation (EU) No 965/2012 of 5 October 2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (OJ L 296, 25.10.2012, p. 1).

GM1 Article 4 Exemptions for special operations

GENERAL

(a) The exemptions covered by Article 4 are intended for cases where the operation is of sufficient public interest to warrant allowing non-compliance with this Regulation, including the acceptance of the additional safety risks involved in such operations. Possible exemptions for normal operations, which are outside the scope of this Article, are covered by the specific provisions in the Annex (e.g. in provisions containing formulations such as 'as permitted by the competent authority', 'unless otherwise specified by the competent authority', etc.).

(b) Depending on the case, the competent authority may decide to grant the exemption to individual flights, groups of flights, or types of operations performed by specified operators.

(c) The exemptions may be granted either permanently, or as a temporary measure. Where the exemption is granted permanently, particular attention should be paid to ensuring that the conditions of the exemptions continue to be complied with over time.

(d) As referred to in Article 4(3), and depending on national rules, some of these operations may be performed under the Operational Air Traffic (OAT) rules in certain Member States and, thus, are entirely outside the scope of this Regulation.

GM2 Article 4 'Exemptions for special operations'

The competent authority, when granting exemptions in accordance with Article 4, should consider not only case-by-case requests coming from individual entities, but also may grant general exemptions for groups of entities entitled to carry out the listed activities.

Article 5

Differences

1. Further to the entry into force of this Regulation and at the latest by the date of its applicability, the Member States shall:

(a) Formally notify ICAO that all previously notified differences with respect to ICAO Standards and recommended practices that are covered by this Regulation are withdrawn, with the exception of those relating to essential security and defence policy interests of the Member States in accordance with Article 13 of the framework Regulation;

(b) notify ICAO of the commonly agreed differences contained in the supplement to the Annex to this Regulation.

2. In accordance with Annex 15 to the Chicago Convention, each Member State shall publish through its Aeronautical Information Publication the commonly agreed differences notified to ICAO in accordance with point b of paragraph 1 of this Article, as well as any other provisions necessitated by local air defence and security considerations in accordance with point (a) of paragraph 1 of this Article.

Article 8

Transitional and additional measures

1. Member States that have adopted prior to the entry into force of this Regulation additional provisions complementing an ICAO Standard shall ensure that those are compliant with this Regulation.

2. For the purpose of this Article, such additional provisions complementing an ICAO Standard shall not constitute a difference under the Chicago Convention. The Member States shall publish such additional provisions as well as any matters left to the decision of a Competent Authority under this Regulation, through their Aeronautical Information Publications. They shall also inform the Commission and EASA at the latest two months after entry into force of this Regulation, or when the additional provision has been adopted.

GM1 Article 8.2 'Transitional and additional measures'

Without prejudice to its publication in other relevant sections of the Aeronautical Information Publication (AIP), information pertaining to Article 8.2 should be grouped and published in the national AIP section GEN 1.6.

Examples:

(a) If the competent authority decides to permit VFR flights at night in accordance with SERA.5005(c), general information for the permission should be published in the AIP section GEN 1.6 with reference to the section in the AIP where the details for the conditions applicable for VFR flights at night are published;

(b) If the competent authority designates certain parts of airspace as Radio Mandatory Zones (RMZs) and/or as Transponder Mandatory Zones (TMZs) in accordance with SERA.6005, the general information for such designation should be published in the AIP section GEN 1.6 with reference to the section in the AIP where the details for the established RMZs and/or TMZs are published;

(c) If the competent authority selects separation minima in accordance with SERA.8010(c)(2), general information for such selection should be published in AIP section GEN 1.6 with reference to the section in the AIP where the details for the these minima are published.

It should be noted that the above examples do not cover all possible cases which may require publication of information relevant to Article 8.2 in the national AIP section GEN 1.6.

**ANNEX
RULES OF THE AIR**

SECTION 1 — FLIGHT OVER THE HIGH SEAS

SERA.1001 General

(a) For flight over the high seas, the rules specified in Annex 2 to the Chicago Convention shall apply without exception. For the purposes of continuity and seamless operation of air traffic services in particular within Functional Airspace Blocks, the provisions of Annex 11 to the Chicago Convention may be applied in airspace over high seas in a manner that is consistent with how those provisions are applied over the territory of the member States. This shall be without prejudice to the operations of State Aircraft under Article 3 of the Chicago Convention. This shall also be without prejudice to the responsibilities of Member States to ensure that aircraft operations within the Flight Information Regions within which they are responsible for the provision of air traffic services in accordance with ICAO regional air navigation agreements are undertaken in a safe, expeditious and efficient manner.

(b) For those parts of the high seas where a Member State has accepted, pursuant to an ICAO regional air navigation agreement, the responsibility of providing air traffic services, the Member State shall designate the ATS provider for providing those services.

SECTION 2 — APPLICABILITY AND COMPLIANCE

SERA.2001 Subject

Without prejudice to SERA.1001 above, this annex addresses, in accordance with Article 1, in particular airspace users and aircraft:

- (a) operating into, within or out of the Union;
- (b) bearing the nationality and registration marks of a Member State of the Union, and operating in any airspace to the extent that they do not conflict with the rules published by the State having jurisdiction over the territory overflown.

This annex addresses also the actions of the Competent Authorities of the Member States, Air Navigation Service Providers (ANSP), aerodrome operators and the relevant ground personnel engaged in aircraft operations.;

SERA.2005 Compliance with the Rules of the Air

The operation of an aircraft either in flight, on the movement area of an aerodrome or at an operating site shall be in compliance with the general rules, the applicable local provisions and, in addition, when in flight, either with:

- (a) the visual flight rules; or
- (b) the instrument flight rules.

GM1 SERA.2005(b) Compliance with the rules of the air

GENERAL

When determining whether to operate in accordance with the visual flight rules or the instrument flight rules, a pilot may elect to fly in accordance with instrument flight rules in visual meteorological conditions, or may be required to do so by the competent authority.

SERA.2010 Responsibilities

- (a) Responsibility of the Pilot-in-command

The pilot-in-command of an aircraft shall, whether manipulating the controls or not, be responsible for the operation of the aircraft in accordance with this Regulation, except that the pilot-in-command may depart from these rules in circumstances that render such departure absolutely necessary in the interests of safety.

- (b) Pre-flight Action

Before beginning a flight, the pilot-in-command of an aircraft shall become familiar with all available information appropriate to the intended operation. Pre-flight action for flights away from the vicinity of an aerodrome, and for all IFR flights, shall include a careful study of available current weather reports and forecasts, taking into consideration fuel requirements and an alternative course of action if the flight cannot be completed as planned.

SERA.2015 Authority of Pilot-in-command of an Aircraft

The pilot-in-command of an aircraft shall have final authority as to the disposition of the aircraft while in command.

SERA.2020 Problematic Use of Psychoactive Substances

No person whose function is critical to the safety of aviation (safety-sensitive personnel) shall undertake that function while under the influence of any psychoactive substance, by reason of which human performance is impaired. No such person shall engage in any kind of problematic use of substances.

Air Navigation Order 2016

249 Rules of the Air

- (1) The Secretary of State may make regulations (in this article called the "Rules of the Air") prescribing—
 - (a) the manner in which aircraft may move or fly including in particular provision for requiring aircraft to give way to military aircraft;
 - (b) the lights and other signals to be shown or made by aircraft or persons;
 - (c) the lighting and marking of aerodromes; and
 - (d) any other provisions for securing the safety of aircraft in flight and in movement and the safety of persons and property on the surface.
- (2) Subject to paragraphs (3) and (4), it is an offence to contravene, to permit the contravention of, or to fail to comply with, the Rules of the Air.
- (3) It is lawful for the Rules of the Air, or for any obligation in SERA the breach of which would otherwise be an offence under this Order, to be departed from to the extent necessary—
 - (a) for avoiding immediate danger;

(b) for complying with the law of any country other than the United Kingdom within which the aircraft then is; or

(c) for complying with MAA01: Military Aviation Authority Regulatory Policy (Issue 4, published on 17th December 2014 and updated on 1st April 2015) and Regulatory Articles 2000 Series Flying Regulations (published on 11th November 2014 and updated on 21st April 2015) issued by the Secretary of State.

(4) It is lawful for the Rules of the Air, or for any obligation in SERA the breach of which would otherwise be an offence under this Order, to be departed from by an aircraft of which the pilot in command is acting as such in the course of the pilot in command's duty as a member of any of Her Majesty's naval, military or air forces.

(5) If any departure from the Rules of the Air, or from any obligation in SERA the breach of which would otherwise be an offence under this Order, is made for the purpose of avoiding immediate danger, the pilot in command of the aircraft must cause written detailed information about the departure, and of the circumstances giving rise to it, to be given without delay, and in any event within 10 days of the departure, to the competent authority of the country in whose territory the departure was made or if the departure was made over the high seas, to the CAA.

(6) Nothing in the Rules of the Air exonerates any person from the consequences of any neglect in the use of lights or signals or of the neglect of any precautions required by ordinary aviation practice or by the special circumstances of the case.

RULES OF THE AIR REGULATIONS 2015

SECTION 2 APPLICATION AND COMPLIANCE

Application of Rules to aircraft

2. Subject to rule 6 and to articles 249(3) and 22(1) of the Air Navigation Order 2016 and insofar as these Rules apply to aircraft they apply—

- (a) to all aircraft within the United Kingdom; and
- (b) to all aircraft registered in the United Kingdom, wherever they may be ⁽²⁾.

Permissions

3. Wherever in these Rules there is provision for a permission to be granted by the CAA⁽³⁾ for the purposes of a rule, it may be granted—

- (a) in respect of classes of aircraft, persons or vehicles generally or in respect of any particular aircraft, person or vehicle or class of aircraft, person or vehicle; and
- (b) subject to such conditions as the CAA thinks fit.

² Article 249(3) of the Air Navigation Order 2016 provides that it is lawful for any of the Rules of the Air to be departed from to the extent necessary for avoiding immediate danger, complying with the law of any country other than the United Kingdom within which the aircraft then is or for complying with Military Flying Regulations or Flying Orders to Contractors issued by the Secretary of State. Article 22(1) of the Air Navigation Order 2016 provides that nothing in the Order applies to military aircraft apart from certain specified articles, including article 22(1). A "military aircraft" is defined in Schedule (1) of the Air Navigation Order 2016.

³ The CAA is a body corporate, called the Civil Aviation Authority, constituted under section 2 of the Civil Aviation Act 1982 (c.16). Section 2 is amended by section 95 of the Civil Aviation Act 2012 (c.19).

SECTION 3 - GENERAL RULES AND COLLISION AVOIDANCE
CHAPTER 1 - PROTECTION OF PERSONS AND PROPERTY

SERA.3101 Negligent or Reckless Operation of Aircraft

An aircraft shall not be operated in a negligent or reckless manner so as to endanger life or property of others.

SERA.3105 Minimum Heights

Except when necessary for take-off or landing, or except by permission from the competent authority, aircraft shall not be flown over the congested areas of cities, towns or settlements or over an open-air assembly of persons, unless at such a height as will permit, in the event of an emergency arising, a landing to be made without undue hazard to persons or property on the surface. The minimum heights for VFR flights shall be those specified in SERA.5005(f) and minimum levels for IFR flights shall be those specified in SERA.5015(b).

GM1 SERA.3105 Minimum heights

MINIMUM HEIGHTS ESTABLISHED BY THE COMPETENT AUTHORITY ABOVE THE REQUIRED MINIMUM HEIGHTS

In cases where it is considered that the minimum heights specified in SERA.5005 and SERA.5015 are not sufficient, the competent authority may establish appropriate structures, such as controlled, restricted or prohibited airspace, and define specific conditions through national arrangements. In all cases, the related Aeronautical Information Publication (AIP) and charts should be made easy to comprehend for airspace users.

GM2 SERA.3105 Minimum heights

MINIMUM HEIGHTS PERMITTED BY THE COMPETENT AUTHORITY BELOW THE REQUIRED MINIMUM HEIGHTS

The permission from the competent authority to fly at lower levels than those stipulated in SERA.5005(f) and SERA.5015(b) may be granted either as a general exception for unlimited number of cases or for a specific flight upon specific request. The competent authority is responsible for ensuring that the level of safety resulting from such permission is acceptable.

Official Record Series 4 No 1174 General Permissions

Standardised European Rules of the Air – Exceptions to the Minimum Height Requirements

1) Definition

In these permissions:

- a) 'SERA' means the Annex to Commission Implementing Regulation (EU) No. 923/2012 ('the Standardised European Rules of the Air' (and references to SERA followed by a number mean the corresponding provision of SERA)).
- b) 'licensed aerodrome' means an aerodrome licensed under the Air Navigation Order 2009 or an aerodrome certificated under Commission Regulation (EU) No.139/2014 of 12 February 2014 and
- c) 'Government aerodrome' means any aerodrome in the United Kingdom which is in the occupation of any Government Department or visiting force (as defined in article 255(1) of the Air Navigation Order 2009).
- d) 'notified' has the same meaning as in article 255(1) of the Air Navigation Order 2009.

2) General (SERA.5005(f)(2))

- a) The Civil Aviation Authority (CAA) permits, under SERA.3105 and SERA.5005(f), subject to the condition set out in subparagraph (b), an aircraft to fly elsewhere than as specified in SERA.5005(f)(1) at a height of:
 - i) less than 150 metres (500 feet) above the ground or water; or
 - ii) less than 150 metres (500) above the highest obstacle within a radius of 150 metres (500 feet) from the aircraft.
- b) The aircraft must not be flown closer than 150 metres (500 feet) to any person, vessel, vehicle or structure except with the permission of the CAA.

3) Approaches to Landing or Forced Landings

The Civil Aviation Authority permits, under SERA.3105, SERA.5005(f) and SERA.5015(b), an aircraft to fly below the heights specified in SERA.5005(f) and SERA.5015(b) if it is flying in accordance with normal aviation practice and:

- a) practising approaches to land at or checking navigational aids or procedures at an aerodrome;
- b) practising approaches to forced landings other than at an aerodrome if it is not flown closer than 150

metres (500 feet) to any person, vessel, vehicle or structure; or

c) flying in accordance with a notified procedure or when specifically authorised by the CAA in accordance with SERA.5015.

4) Glider Hill-Soaring

The Civil Aviation Authority permits, under SERA.3105 and SERA.5005(f) a glider to fly below 150 metres (500 feet) above the ground or water or closer than 150 metres (500 feet) to any person, vessel, vehicle or structure if it is hill-soaring.

5) Picking Up and Dropping at an Aerodrome

The Civil Aviation Authority permits, under SERA.3105 and SERA.5005(f) an aircraft picking up or dropping tow ropes, banners or similar articles at an aerodrome to fly below 150 metres (500 feet) above the ground or water or closer than 150 metres (500 feet) to any person, vessel, vehicle or structure.

6) Manoeuvring Helicopters

a) The Civil Aviation Authority permits, under SERA.3105 and SERA.5005(f) a helicopter to fly below 150 metres (500 feet) above the ground or water or closer than 150 metres (500 feet) to any person, vessel, vehicle or structure if it is conducting manoeuvres, in accordance with normal aviation practice, within the boundaries of an aerodrome, permitted sites detailed at subparagraph (c) or, if the operator or pilot-in-command of the aircraft has the written permission of the CAA, at other sites, subject to subparagraph (b).

b) When flying in accordance with this permission the helicopter must not be operated closer than 60 metres to any persons, vessels, vehicles or structures located outside the aerodrome or site.

c) Permitted sites

i) Great Yarmouth.

ii) Any helicopter landing site which is the main operating base of a PAOC or AOC operator.

iii) Any helicopter landing site used by an AOC operator for a helicopter A-to-A operation in accordance with the provisions of the operator's operations manual.

iv) Any helicopter landing site located at the premises of a CAA-approved aircraft maintenance organisation.

d) In subparagraph c):

i) 'AOC operator' means a person holding a valid air operator certificate issued by the CAA under Part 2 of the Air Navigation Order 2009 (other than a PAOC operator) or under Commission Regulation (EU) No 965/2012 of 5 October 2012,

ii) 'PAOC' means a person holding a valid air operator certificate issued by the CAA under article 13(5) of the Air Navigation Order 2009, and

iii) 'A-to-A operation' means a commercial air transport or public transport helicopter operation starting and ending at the same place (as defined in article 255(1) of the Air Navigation Order 2009).

7) Dropping Articles with CAA Permission

The Civil Aviation Authority permits, under SERA.3105, SERA.5005(f) and SERA.5015(b), an aircraft to fly below 150 metres (500 feet) above the ground or water or closer than 150 metres (500 feet) to any person, vessel, vehicle or structure if it is flying in accordance with:

a) article 129(3)(f) of the Air Navigation Order 2009 (dropping of articles); or

b) an aerial application certificate granted by the CAA under article 131(2) of the Air Navigation Order 2009.

8) Captive Balloons and Kites

a) The Civil Aviation Authority permits, under SERA.3105, SERA.5005(f) and SERA.5015(b), a captive balloon or kite to be flown at heights below the minimum height requirements specified in SERA.5005 and SERA.5015.

b) For the purposes of this permission, a captive kite is a kite that, when in flight, is attached by a restraining device to the surface.

9) Balloons over Congested Areas

The Civil Aviation Authority permits, under SERA.3105 and SERA.5005(f), a free balloon to be flown below 1,000 feet above the highest obstacle within a radius of 600 metres from the balloon within the congested areas of cities, towns or settlements or over an open air assembly of persons by day if it is landing because it

is becalmed.

10) Special Visual Flight Rules (VFR) Flight and Notified Route

a) Subject to subparagraph (b), the Civil Aviation Authority permits, under SERA.3105, SERA.5005(c) and SERA.5005(f), an aircraft to fly below 1,000 feet above the highest obstacle within a radius of 600 metres from the aircraft within the congested areas of cities, towns or settlements if:

- i) it is flying on a special VFR flight; or
- ii) it is operating in accordance with the procedures notified by the CAA for the route being flown.

b) Unless the permission of the CAA has been obtained, landings may only be made by an aircraft flying under this permission at a licensed aerodrome or a Government aerodrome.

c) In subparagraph a) a 'special VFR flight' means a special VFR flight conducted in accordance with Sections 5 or 8 of SERA.

11) Revocation

These permissions replace Official Record Series 4 Number 1124 which is revoked with effect from 18 August 2016.

12) Validity

These permissions have effect from 18 August 2016 until they are revoked.

Official Record Series 4 No 1061 General Exemption E 3931

Standardised European Rules of the Air – Operations in Accordance with a Police Air Operator's Certificate

1) The Civil Aviation Authority, on behalf of the United Kingdom and pursuant to article 4 of Commission Implementing Regulation (EU) No. 923/2012 ('the Standardised European Rules of the Air' (SERA)), exempts the operator and Commander of any aircraft flying in accordance with the terms of a police air operator's certificate from the requirements of SERA specified in paragraph 2 and subject to the conditions in paragraph 3.

2) The specified requirements of SERA in paragraph 1 are:

- a) SERA.3105 (Minimum heights);
- b) SERA.3135 (Formation Flights);
- c) SERA.3210(a) (Right-of-way); and
- d) SERA.5005(f) (Visual Flight Rules).

3) The conditions in paragraph 1 are:

- a) the Commander of any aircraft referred to in paragraph 1 shall only depart from the specified requirements of SERA at paragraph 2 to the extent necessary to achieve the purpose of the flight and in circumstances that render such departure necessary in the interests of safety; and
- b) the operator of the aircraft shall specify in the operations manual the procedures and minima appropriate to police flights.

4) In this exemption 'police air operator's certificate' and 'Commander' have the same meanings as in article 255(1) of the Air Navigation Order 2009.

Official Record Series 4 No 1063 General Exemption E 3935

Standardised European Rules of the Air – Operations in Accordance with a Helicopter Emergency Medical Service Specific Approval

1) The Civil Aviation Authority, on behalf of the United Kingdom and pursuant to article 4 of Commission Implementing Regulation (EU) No. 923/2012 ('the Standardised European Rules of the Air' (SERA)), exempts the operator and Commander of any helicopter flying on a Helicopter Emergency Medical Service (HEMS) flight in accordance with Commission Regulation (EU) No. 965/2012 ('the Air Operations Regulation') from the requirements of SERA specified in paragraph 2 and subject to the conditions in paragraph 3.

2) The specified requirements of SERA in paragraph 1 are:

- a) SERA.3105 (Minimum heights);
- b) SERA.5005(c)(5) (Visual Flight Rules); and
- c) SERA.5005(f) (Visual Flight Rules).

3) On any flight pursuant to this exemption, the following conditions apply:

- a) except when necessary for take-off or landing, the helicopter must not be flown closer than 500 feet to any person, vessel, vehicle or structure;
- b) the operator shall record the time at which the helicopter takes off or lands within a congested area

- together with details of the exact location by map grid reference;
- c) the operator shall retain any record required to be made under (b) for 12 months and shall, within a reasonable time of being demanded by an authorised person, produce the record to that authorised person;
- d) no persons shall be carried other than flight crew, HEMS crew members, medical passengers, authorised persons, patients and other persons directly involved in the HEMS flight and whom it is necessary to carry for that purpose; and
- e) each flight crew member, HEMS crew member and medical passenger shall wear a helmet which will provide substantial head protection in the event of an accident.
- 4) In this exemption:
- a) 'authorised person' has the same meaning as in article 255(1) of the Air Navigation Order 2009;
- b) 'flight crew member' has the same meaning as in SERA; and
- c) 'HEMS crew members', 'HEMS flight' and 'medical passenger' have the same meanings as in the Air Operations Regulation.

SERA.3110 Cruising Levels

- The cruising levels at which a flight or a portion of a flight is to be conducted shall be in terms of:
- (a) flight levels, for flights at or above the lowest usable flight level or, where applicable, above the transition altitude;
- (b) altitudes, for flights below the lowest usable flight level or, where applicable, at or below the transition altitude.

SERA.3115 Dropping or Spraying

- Dropping or spraying from an aircraft in flight shall only be conducted in accordance with:
- (a) Union legislation or, where applicable, national legislation for aircraft operations regulated by Member States; and
- (b) as indicated by any relevant information, advice and/or clearance from the appropriate air traffic services unit.

SERA.3120 Towing

- An aircraft or other object shall only be towed by an aircraft in accordance with:
- (a) Union legislation or, where applicable, national legislation for aircraft operations regulated by Member States; and
- (b) as indicated by any relevant information, advice and/or clearance from the appropriate air traffic services unit.

SERA.3125 Parachute Descents

- Parachute descents, other than emergency descents, shall only be made in accordance with:
- (a) Union legislation or, where applicable, national legislation for aircraft operations regulated by Member States; and
- (b) as indicated by any relevant information, advice and/or clearance from the appropriate air traffic services unit.

SERA.3130 Aerobatic Flight

- Aerobatic flights shall only be carried out in accordance with:
- (a) Union legislation or, where applicable, national legislation for aircraft operations regulated by Member States; and
- (b) as indicated by any relevant information, advice and/or clearance from the appropriate air traffic services unit.

SERA.3135 Formation Flights

- Aircraft shall not be flown in formation except by pre-arrangement among the pilots-in-command of the aircraft taking part in the flight and, for formation flight in controlled airspace, in accordance with the conditions prescribed by the competent authority. These conditions shall include the following:
- (a) one of the pilots-in-command shall be designated as the flight leader;
- (b) the formation operates as a single aircraft with regard to navigation and position reporting;
- (c) separation between aircraft in the flight shall be the responsibility of the flight leader and the pilots-in-command of the other aircraft in the flight and shall include periods of transition when aircraft are manoeuvring to attain their own separation within the formation and during join-up and breakaway; and
- (d) for State aircraft a maximum lateral, longitudinal and vertical distance between each aircraft and the flight leader in accordance with the Chicago Convention. For other than State aircraft a distance not exceeding 1

km (0.5nm) laterally and longitudinally and 30 m (100ft) vertically from the flight leader shall be maintained by each aircraft.

UK GM1 to SERA.3135(d) Formation flights

For the purposes of SERA.3135(d) military aircraft flying in formation should be flown at a distance not exceeding 1 nautical mile laterally and longitudinally and 30 metres (100 feet) vertically from the leading aircraft in the formation.

SERA.3140 Unmanned Free Balloons

An unmanned free balloon shall be operated in such a manner as to minimize hazards to persons, property or other aircraft and in accordance with the conditions specified in Appendix 2.

SERA.3145 Prohibited Areas and Restricted Areas

Aircraft shall not be flown in a prohibited area, or in a restricted area, the particulars of which have been duly published, except in accordance with the conditions of the restrictions or by permission of the Member State over whose territory the areas are established.

Air Navigation Order 2016

239 Power to prohibit or restrict flying

(1) If the Secretary of State decides it is necessary in the public interest to restrict or prohibit flying by reason of—

- (a) the intended gathering or movement of a large number of persons;
- (b) the intended holding of an aircraft race or contest or of a flying display; or
- (c) national defence or any other reason affecting the public interest,

the Secretary of State may make regulations prohibiting, restricting or imposing conditions on flights by aircraft specified in paragraph (2) flying in the circumstances specified in paragraph (2).

(2) The aircraft and circumstances are—

- (a) aircraft, whether or not they are registered in the United Kingdom, in any airspace over the United Kingdom or in the neighbourhood of an offshore installation; and
- (b) aircraft which are registered in the United Kingdom, in any other airspace, being airspace for which the United Kingdom has, under international arrangements, undertaken to provide navigation services for aircraft.

(3) Regulations made under this article may apply either generally or in relation to any class of aircraft.

(4) It is an offence to contravene, permit the contravention of or fail to comply with any regulations made under this article.

(5) If the pilot in command of an aircraft becomes aware that the aircraft is flying in contravention of any regulations which have been made for any reason referred to in paragraph (1)(c) the pilot in command must, unless otherwise instructed under paragraph (6), cause the aircraft to leave the area to which the regulations relate by flying to the least possible extent over such area and the aircraft must not begin to descend while over such an area.

(6) The pilot in command of an aircraft flying either within an area for which regulations have been made for any reason referred to in paragraph (1)(c) or within airspace notified as a Danger Area must immediately comply with instructions given by radio by the appropriate air traffic control unit or by, or on behalf of, the person responsible for safety within the relevant airspace.

RULES OF THE AIR REGULATIONS 2015

SECTION 3 GENERAL RULES, COLLISION AVOIDANCE AND PROTECTION OF PERSONS AND PROPERTY

Aerobatic flights

4. Aerobatic flight is not permitted—

- (a) over the congested area of any city, town or settlement; or
- (b) within notified controlled airspace other than with the consent of the appropriate air traffic control unit.

Taking off and landing within congested areas and near open-air assemblies of more than 1,000 persons

5.(1) For the purposes of SERA.3105, an aircraft must not take off or land within a congested area except—

- (a) at an aerodrome and in accordance with procedures notified by the CAA; or
- (b) at a landing site which is not an aerodrome in accordance with the permission of the CAA.

(2) An aircraft must not land or take-off within 1,000 metres of an open-air assembly of more than 1,000 persons except—

- (a) at an aerodrome and in accordance with procedures notified by the CAA; or

(b) at a landing site which is not an aerodrome in accordance with procedures notified by the CAA and with

the written permission of the organiser of the assembly.

Official Record Series 4 No 1127 General Exemption

Landing and Taking Off Near Open-Air Assemblies

- 1) The Civil Aviation Authority ('the CAA'), in exercise of its powers under article 242 of the Air Navigation Order 2009, hereby exempts any aircraft from the requirement to comply with Rule 5(2) of the Rules of the Air Regulations 2015 subject to the condition in paragraph 2.
- 2) The condition specified in paragraph 1 is that the aircraft must not land or take off within 1,000 metres of an organised, open-air assembly of more than 1,000 persons except:
 - a) at an aerodrome, in accordance with procedures notified by the CAA; or
 - b) at a landing site which is not an aerodrome, in accordance with procedures notified by the CAA and with the written permission of the organiser of the assembly.
- 3) This exemption has effect from the date it is signed until it is revoked.

Official Record Series 4 No 1128 General Exemption E 4078 and Permission

Emergency Services Helicopters - Landing and Taking Off Near Open-Air Assemblies

- 1) The Civil Aviation Authority ('the CAA'), in exercise of its powers under article 242 of the Air Navigation Order 2009 ('the Order'), exempts any helicopter for the time being operated as an Emergency Services Helicopter from the requirements of Rule 5(2)(b) of the Rules of the Air Regulations 2015 when landing or taking off near an organised open-air assembly of more than 1,000 persons subject to the conditions in paragraph 3.
- 2) The Civil Aviation Authority, pursuant to Rule 5(1)(b) of the Rules of the Air Regulations 2015, additionally permits any helicopter, for the time being operated by as an Emergency Services Helicopter, to take off or land at a landing site which is not an aerodrome within a congested area subject to the conditions in paragraph 3.
- 3) The conditions specified in paragraphs 1 and 2 are that:
 - a) the take-off and landing shall be conducted in accordance with procedures specified in the Emergency Services Helicopter operator's operations manual;
 - b) the operator shall make a record of the occasions on which flights pursuant to this exemption or permission are made; and
 - c) any record required to be made pursuant to this exemption or permission shall be retained by the operator for 12 months and shall, within a reasonable time of being demanded by an authorised person, be produced by the operator to that authorised person.
- 4) In this exemption and permission:
 - a) 'Emergency Services Helicopter' means any helicopter for the time being operated under an Air Operator Certificate or Police Air Operator Certificate granted by the Civil Aviation Authority for Search and Rescue operations or for a Helicopter Emergency Medical Service or in the service of a police authority; and
 - b) other terms used have the same meaning as in article 255(1) of the Air Navigation Order 2009.
- 5) This exemption and permission have effect from the date they are signed until they are revoked.

Test flying over congested areas

6.(1) Subject to paragraph (2) an aircraft to which this rule applies must not fly over a congested area of a city, town or settlement other than to the extent necessary in order to take off or land in accordance with normal aviation practice.

(2) Paragraph (1) does not apply if the CAA has given its written permission for the flight over the congested area.

(3) This rule applies to an aircraft that—

- (a) does not have a valid certificate of airworthiness in force; and
- (b) which is flying for the purpose of—
 - (i) experimenting with or testing—
 - (aa) the aircraft; or
 - (bb) any engines or equipment installed or carried in the aircraft; or
 - (ii) enabling the aircraft to qualify for—
 - (aa) the issue or validation of a certificate of airworthiness;
 - (bb) the approval of a modification of the aircraft; or
- (cc) the issue of a permit to fly.

Launching, picking up and dropping of tow ropes, etc.

7.(1) An aircraft must not take off with tow ropes, banners or similar articles towed by it at an aerodrome except in accordance with arrangements made with the air traffic control unit at the aerodrome or, if there is no such unit, the person in charge of the aerodrome.

(2) Tow ropes, banners or similar articles towed by aircraft must not be picked up by, or dropped from, an aircraft at an aerodrome except—

- (a) in accordance with arrangements made with the air traffic control unit at the aerodrome or, if there is no such unit, with the person in charge of the aerodrome; or
- (b) in the area designated by the marking described in rule 30(7), but only when the aircraft is flying in the direction appropriate for landing

**CHAPTER 2 –
AVOIDANCE OF COLLISIONS**

SERA.3201 General

Nothing in this Regulation shall relieve the pilot-in-command of an aircraft from the responsibility of taking such action, including collision avoidance manoeuvres based on resolution advisories provided by ACAS equipment, as will best avert collision.

GM1 SERA.3201 General

VIGILANCE ON BOARD AN AIRCRAFT

Regardless of the type of flight or the class of airspace in which the aircraft is operating, it is important that vigilance for the purpose of detecting potential collisions be exercised on board an aircraft. This vigilance is important at all times including while operating on the movement area of an aerodrome.

SERA.3205 Proximity

An aircraft shall not be operated in such proximity to other aircraft as to create a collision hazard.

SERA.3210 Right-of-way

- (a) The aircraft that has the right-of-way shall maintain its heading and speed.
- (b) An aircraft that is aware that the manoeuvrability of another aircraft is impaired shall give way to that aircraft.
- (c) An aircraft that is obliged by the following rules to keep out of the way of another shall avoid passing over, under or in front of the other, unless it passes well clear and takes into account the effect of aircraft wake turbulence.
 - (1) Approaching head-on. When two aircraft are approaching head-on or approximately so and there is danger of collision, each shall alter its heading to the right.
 - (2) Converging. When two aircraft are converging at approximately the same level, the aircraft that has the other on its right shall give way, except as follows:
 - (i) power-driven heavier-than-air aircraft shall give way to airships, sailplanes and balloons;
 - (ii) airships shall give way to sailplanes and balloons;
 - (iii) sailplanes shall give way to balloons;
 - (iv) power-driven aircraft shall give way to aircraft which are seen to be towing other aircraft or objects.
- (3) Overtaking. An overtaking aircraft is an aircraft that approaches another from the rear on a line forming

an angle of less than 70 degrees with the plane of symmetry of the latter, i.e. is in such a position with reference to the other aircraft that at night it should be unable to see either of the aircraft's left (port) or right (starboard) navigation lights. An aircraft that is being overtaken has the right-of-way and the overtaking aircraft, whether climbing, descending or in horizontal flight, shall keep out of the way of the other aircraft by altering its heading to the right, and no subsequent change in the relative positions of the two aircraft shall absolve the overtaking aircraft from this obligation until it is entirely past and clear.

(i) Sailplanes overtaking. A sailplane overtaking another sailplane may alter its course to the right or to the left.

(4) Landing. An aircraft in flight, or operating on the ground or water, shall give way to aircraft landing or in the final stages of an approach to land.

(i) When two or more heavier-than-air aircraft are approaching an aerodrome or an operating site for the purpose of landing, aircraft at the higher level shall give way to aircraft at the lower level, but the latter shall not take advantage of this rule to cut in front of another which is in the final stages of an approach to land, or to overtake that aircraft. Nevertheless, power-driven heavier-than-air aircraft shall give way to sailplanes.

(ii) Emergency landing. An aircraft that is aware that another is compelled to land shall give way to that aircraft.

(5) Taking off. An aircraft taxiing on the manoeuvring area of an aerodrome shall give way to aircraft taking off or about to take off.

(d) Surface movement of aircraft, persons and vehicles

(1) In case of danger of collision between two aircraft taxiing on the movement area of an aerodrome or equivalent part of an operating site, the following shall apply:

(i) when two aircraft are approaching head on, or approximately so, each shall stop or where practicable alter its course to the right so as to keep well clear;

(ii) when two aircraft are on a converging course, the one which has the other on its right shall give way;

(iii) an aircraft which is being overtaken by another aircraft shall have the right-of-way and the overtaking aircraft shall keep well clear of the other aircraft.

(2) At a controlled aerodrome an aircraft taxiing on the manoeuvring area shall stop and hold at all runway-holding positions unless an explicit clearance to enter or cross the runway has been issued by the aerodrome control tower.

(3) An aircraft taxiing on the manoeuvring area shall stop and hold at all lighted stop bars and may proceed further in accordance with (2) when the lights are switched off.

(4) Movement of persons and vehicles at aerodromes

(i) The movement of persons or vehicles, including towed aircraft, on the manoeuvring area of an aerodrome shall be controlled by the aerodrome control tower as necessary to avoid hazard to them or to aircraft landing, taxiing or taking off.

(ii) In conditions where low visibility procedures are in operation:

(A) persons and vehicles operating on the manoeuvring area of an aerodrome shall be restricted to the essential minimum, and particular regard shall be given to the requirements to protect the ILS/MLS sensitive area(s) when Category II or Category III precision instrument operations are in progress;

(B) subject to the provisions in (iii) the minimum separation between vehicles and taxiing aircraft shall be as specified by the ANSP and approved by the competent authority taking into account the aids available;

(C) when mixed ILS and MLS Category II or Category III precision instrument operations are taking place to the same runway continuously, the more restrictive ILS or MLS critical and sensitive areas shall be protected.

(iii) Emergency vehicles proceeding to the assistance of an aircraft in distress shall be afforded priority over all other surface movement traffic.

(iv) Subject to the provisions in (iii), vehicles on the manoeuvring area shall be required to comply with the following rules:

(A) vehicles and vehicles towing aircraft shall give way to aircraft which are landing, taking off, taxiing or being towed;

(B) vehicles shall give way to other vehicles towing aircraft;

(C) vehicles shall give way to other vehicles in accordance with air traffic services unit instructions;

(D) notwithstanding the provisions of (A), (B) and (C), vehicles and vehicles towing aircraft shall comply with instructions issued by the aerodrome control tower.

GM1 SERA.3210(d)(3) Right-of-way**USE OF STOP BARS — CONTINGENCY MEASURES**

When considering contingency arrangements for situations where the stop bars cannot be turned off because of a technical problem, the air traffic service provider should take into account that such contingency arrangements should significantly differ from normal operations and should not undermine the principle that a lit stop bar must not be crossed. The service provider may consider, inter alia, the following:

- (a) physically disconnecting the respective lit stop bar from its power supply;
- (b) physically obscuring the lights of the lit stop bar; or
- (c) providing for a marshaller or a follow-me vehicle to lead the aircraft to cross the lit stop bar.

GM1 SERA.3210(d)(4)(ii)(B) Right-of-way**CONTROL OF PERSONS AND VEHICLES AT AERODROMES**

In prescribing the minimum separation between vehicles and taxiing aircraft, the availability of lighting, markings, signals and signage should normally be taken into account.

SERA.3215 Lights to Be Displayed by Aircraft

- (a) Except as provided by (e), at night all aircraft in flight shall display:
 - (1) anti-collision lights intended to attract attention to the aircraft; and
 - (2) except for balloons, navigation lights intended to indicate the relative path of the aircraft to an observer. Other lights shall not be displayed if they are likely to be mistaken for these lights.
- (b) Except as provided by (e), at night:
 - (1) all aircraft moving on the movement area of an aerodrome shall display navigation lights intended to indicate the relative path of the aircraft to an observer and other lights shall not be displayed if they are likely to be mistaken for these lights;
 - (2) unless stationary and otherwise adequately illuminated, all aircraft on the movement area of an aerodrome shall display lights intended to indicate the extremities of their structure, as far as practicable;
 - (3) all aircraft taxiing or being towed on the movement area of an aerodrome shall display lights intended to attract attention to the aircraft; and
 - (4) all aircraft on the movement area of an aerodrome whose engines are running shall display lights which indicate that fact.
- (c) Except as provided by (e), all aircraft in flight and fitted with anti-collision lights to meet the requirement of (a)(1) shall display such lights also during day.
- (d) Except as provided by (e), all aircraft:
 - (1) taxiing or being towed on the movement area of an aerodrome and fitted with anti-collision lights, to meet the requirement of (b)(3) or
 - (2) on the movement area of an aerodrome and fitted with lights to meet the requirement of (b)(4) shall display such lights also during day.
- (e) A pilot shall be permitted to switch off or reduce the intensity of any flashing lights fitted to meet the requirements of (a), (b), (c) and (d) if they do or are likely to:
 - (1) adversely affect the satisfactory performance of duties; or
 - (2) subject an outside observer to harmful dazzle.

GM1 SERA.3215(a);(b) Lights to be displayed by aircraft**GENERAL**

Lights fitted for other purposes, such as landing lights and airframe floodlights, may be used in addition to the anti-collision lights to enhance aircraft conspicuity.

AMC1 SERA.3215(a)(1);(3) Lights to be displayed by aircraft**BALLOONS LIGHTS**

The anti-collision light required for free manned balloons which are certified for VFR at night in accordance with CS 31HB/GB.65 Night lighting should be considered as acceptable means to comply with SERA.3215(a)(1) and SERA.3215(a)(3).

GM1 SERA.3215(a)(1);(3) Lights to be displayed by aircraft**BALLOONS LIGHTS**

The technical specifications that such anti-collision lights specified in AMC1 SERA 3215(a)(1);(3) need to meet can be found in the special conditions 'SC D-01 31HB_GB External and Internal Lights for Free Balloon Night Flight Issue 2'⁴.

SERA.3220 Simulated Instrument Flights

An aircraft shall not be flown under simulated instrument flight conditions unless:

- (a) fully functioning dual controls are installed in the aircraft; and
- (b) an additional qualified pilot (in this rule called a safety pilot) occupies a control seat to act as safety pilot for the person who is flying under simulated instrument conditions. The safety pilot shall have adequate vision forward and to each side of the aircraft, or a competent observer in communication with the safety pilot shall occupy a position in the aircraft from which the observer's field of vision adequately supplements that of the safety pilot.

GM1 SERA.3220(b) Simulated instrument flights

SAFETY PILOT

- (a) For the purposes of this rule a safety pilot is a pilot who holds a licence which entitles him/her to act as pilot-in-command of the aircraft and is able and prepared to take control of the aircraft at any time during the flight. The safety pilot will maintain lookout, or a competent observer in case the safety pilot does not have full vision of each side of the aircraft, and avoid collisions on behalf of the person flying under simulated instrument conditions.
- (b) A control seat is a seat which affords the person sitting in it sufficient access to the flying controls so as to enable him/her to fly the aircraft unimpeded.

SERA.3225 Operation on and in the Vicinity of an Aerodrome

An aircraft operated on or in the vicinity of an aerodrome shall:

- (a) observe other aerodrome traffic for the purpose of avoiding collision;
- (b) conform with or avoid the pattern of traffic formed by other aircraft in operation;
- (c) except for balloons, make all turns to the left, when approaching for a landing and after taking off, unless otherwise indicated, or instructed by ATC;
- (d) except for balloons, land and take off into the wind unless safety, the runway configuration, or air traffic considerations determine that a different direction is preferable.

SERA.3230 Water Operations

(a) When two aircraft or an aircraft and a vessel are approaching one another and there is a risk of collision, the aircraft shall proceed with careful regard to existing circumstances and conditions including the limitations of the respective craft.

- (1) Converging. An aircraft which has another aircraft or a vessel on its right shall give way so as to keep well clear.
- (2) Approaching head-on. An aircraft approaching another aircraft or a vessel head-on, or approximately so, shall alter its heading to the right to keep well clear.
- (3) Overtaking. The aircraft or vessel which is being overtaken has the right of way, and the one overtaking shall alter its heading to keep well clear.
- (4) Landing and taking off. Aircraft landing on or taking off from the water shall, in so far as practicable, keep well clear of all vessels and avoid impeding their navigation.

(b) Lights to be displayed by aircraft on the water. At night or during any other period prescribed by the competent authority, all aircraft on the water shall display lights as required by the Convention on the International Regulations for Preventing Collisions at Sea, 1972, unless it is impractical for them to do so, in which case they shall display lights as closely similar as possible in characteristics and position to those required by the International Regulations.

GM1 SERA.3230 Water operations

INTERNATIONAL REGULATIONS FOR PREVENTING COLLISIONS AT SEA

In addition to the provisions of SERA.3230, rules set forth in the International Regulations for Preventing Collisions at Sea, developed by the International Conference on Revision of the International Regulations for Preventing Collisions at Sea (London, 1972), may be applicable in certain cases.

GM1 SERA.3230(b) Water operations

LIGHTS TO BE DISPLAYED BY AIRCRAFT ON THE WATER

The International Regulations for Preventing Collisions at Sea specify that the rules concerning lights shall be

⁴ This special condition can be found in http://easa.europa.eu/certification/docs/special-condition/SC%20D-01%2031HB_GB%20External%20and%20Internal%20Lights%20for%20Free%20Balloon%20Night%20Flight%20Issue%202.pdf

complied with from sunset to sunrise. Any lesser period between sunset and sunrise established in accordance with SERA.3230(b) cannot, therefore, be applied in areas where the International Regulations for Preventing Collisions at Sea apply, e.g. on the high seas.

UK GM1 TO SERA SECTION 3 (GENERAL RULES AND COLLISION AVOIDANCE) CHAPTER 2 (AVOIDANCE OF COLLISIONS)

Following Line Features

An aircraft which is flying within the United Kingdom with the surface in sight and following a road, railway, canal or coastline, or any other line of landmarks, should fly to the right of the line feature unless flying within controlled airspace in accordance with instructions given by the appropriate air traffic control unit.

UK GM2 TO SERA SECTION 3 (GENERAL RULES AND COLLISION AVOIDANCE) CHAPTER 2 (AVOIDANCE OF COLLISIONS) AND SECTION 5 (VISUAL METEOROLOGICAL CONDITIONS, VISUAL FLIGHT RULES, SPECIAL VFR AND INSTRUMENT FLIGHT RULES)

‘With the surface in sight’

‘With the surface in sight’ means with the flight crew being able to see sufficient surface features or surface illumination to enable the flight crew to maintain the aircraft in a desired attitude without reference to any flight instrument and ‘when the surface is not in sight’ is to be construed accordingly. (ANO 2016 Schedule 1 ‘Interpretation’)

UK GM3 TO SERA SECTION 3 (GENERAL RULES AND COLLISION AVOIDANCE) CHAPTER 2 (AVOIDANCE OF COLLISIONS)

Practice instrument approaches

When flying in VMC and where see and avoid is the primary means of collision avoidance, an observer should be carried and ATC notified if the pilot undertaking practice instrument approaches is flying by reference to instruments.

RULES OF THE AIR REGULATIONS 2015

SECTION 3 GENERAL RULES, COLLISION AVOIDANCE AND PROTECTION OF PERSONS AND PROPERTY

Avoiding aerial collisions

8. For the purposes of SERA.3201, SERA.3205 and SERA.3210a glider and a flying machine which is towing it must be considered to be a single aircraft under the command of the commander of the flying machine.

Order of landing

9. (1) If an air traffic control unit has communicated to aircraft an order of priority for landing, the aircraft must approach to land in that order.

(1) If the commander of an aircraft which has previously been given permission to land gives way to another aircraft that is making an emergency landing at night, that commander must not attempt to land until the commander has received further permission to do so.

Landing and take-off

10.(1) Subject to paragraph (4), a flying machine or glider must not land on a runway at an aerodrome if there are other aircraft on the runway.

(1) If take-offs and landings are not confined to a runway—

- (a) when landing, a flying machine or glider must leave clear on its left any aircraft which has landed, is already landing or is about to take off;
- (b) a flying machine or glider which is about to turn must turn to the left if the commander of the aircraft is satisfied that such action will not interfere with other traffic movements; and
- (c) a flying machine which is about to take off must take up position and manoeuvre in such a way as to leave clear on its left any aircraft which has already taken off or is about to take off.

(2) Subject to paragraph (4) a flying machine must move clear of the landing area as soon as it is possible to do so after landing.

(3) Paragraphs (1) and (3) do not apply if the air traffic control unit at the aerodrome otherwise authorises the flying machine or glider.

Flight within aerodrome traffic zones

11.(1) This rule applies in relation to such aerodromes described in Column 1 of Table 1 as are notified for the purposes of this rule and at such times as are specified in Column 2 of the Table..

Table 1

Table Column 1	Column 2
(a) A Government aerodrome	At such times as are notified
(b) An aerodrome having an air traffic control unit	During the notified hours of watch of the air traffic

or flight information service unit	control unit or the flight information service unit
(c) A national licensed aerodrome or EASA certificated aerodrome having a means of two-way radio communication with aircraft	During the notified hours of watch of the air/ground radio station

(2) An aircraft must not fly, take off or land within the aerodrome traffic zone of an aerodrome unless the commander of the aircraft has complied with paragraphs (3), (4) or (5), as appropriate.

(3) If the aerodrome has an air traffic control unit the commander must obtain the permission of the air traffic control unit to enable the flight to be conducted safely within the zone.

(4) If the aerodrome provides a flight information service the commander must obtain information from the person providing the flight information service to enable the flight to be conducted safely within the aerodrome traffic zone.

(5) If there is no flight information service centre at the aerodrome the commander must obtain information from the air/ground communication service to enable the flight to be conducted safely within the aerodrome traffic zone.

(6) The commander of an aircraft flying within the aerodrome traffic zone of an aerodrome must—

- (a) cause a continuous watch to be maintained on the appropriate radio frequency notified for communications at the aerodrome; or
- (b) if this is not possible, cause a watch to be kept for such instructions as may be issued by visual means; and
- (c) if the aircraft is fitted with means of communication by radio with the ground, communicate his position and height to the air traffic control unit, the flight information service unit or the air/ground communication service unit at the aerodrome (as the case may be) on entering the zone and immediately prior to leaving it.

Movement of aircraft on uncontrolled aerodromes

12. (1) An aircraft must not taxi on the apron or the manoeuvring area of an uncontrolled aerodrome without the permission of either—

- (a) the person in charge of the aerodrome; or
- (b) the aerodrome flight information service centre notified as being on watch at the aerodrome.

(2) In this rule “uncontrolled aerodrome” means an aerodrome at which no air traffic control service is provided to aerodrome traffic regardless of whether or not an air traffic zone exists.

Access to and movement of persons and vehicles on the aerodrome

13. (1) Unless there is a public right of way over it, a person or vehicle must—

- (a) not go onto any part of an aerodrome without the permission of the person in charge of that part of the aerodrome; and
- (b) comply with any conditions subject to which that permission may be granted.

(2) A person or vehicle must—

- (a) not go onto or move on the manoeuvring area of an aerodrome which provides a flight information service without the permission of the person providing that service; and
- (b) comply with any conditions subject to which that permission may be granted.

RULES OF THE AIR REGULATIONS 2015

SECTION 4 LIGHTS TO BE DISPLAYED BY AIRCRAFT

Stationary helicopters on an offshore installation

14. Notwithstanding SERA.3215 a helicopter may, when stationary on an offshore installation, switch off the red anti-collision light as long as that is done in accordance with a procedure contained in the operations manual of the helicopter operator as a signal to ground personnel that it is safe to approach the helicopter for the purpose of embarkation or disembarkation of passengers or the loading or unloading of cargo.

Failure of anti-collision and navigation lights

15. (1) If any light required by SERA.3215 fails during flight at night and cannot be immediately repaired or replaced, the aircraft must land as soon as it can safely do so, unless authorised by the appropriate air traffic control unit to continue its flight.

(2) An aircraft may continue to fly during the day in the event of a failure of an anti-collision light provided the light is repaired at the earliest practicable opportunity.

Airships by day

16. (1) An airship flying during the day in any of the circumstances referred to in paragraph (2) must display two black balls suspended below the control car so that one is at least 4 metres above the other and at least 8 metres below the control car.

- (2) The circumstances are—
- (a) the airship is not under command;
 - (b) the airship has voluntarily stopped its engines; or
 - (c) the airship is being towed.
- (3) For the purposes of this rule an airship is not under command when it is unable to execute a manoeuvre which it may be required to execute by these rules.

CHAPTER 3 – SIGNALS

SERA.3301 General

- (a) Upon observing or receiving any of the signals given in Appendix 1, aircraft shall take such action as may be required by the interpretation of the signal given in that Appendix.
- (b) The signals of Appendix 1 shall, when used, have the meaning indicated therein. They shall be used only for the purpose indicated and no other signals likely to be confused with them shall be used.
- (c) A signalman/marshaller shall be responsible for providing standard marshalling signals to aircraft in a clear and precise manner using the signals shown in Appendix 1.
- (d) Only persons trained, qualified and approved as required by the relevant Union or national legislation shall carry out the functions of a signalman/marshaller.
- (e) The signalman/marshaller shall wear a distinctive fluorescent identification vest to allow the flight crew to identify that he or she is the person responsible for the marshalling operation.
- (f) Daylight-fluorescent wands, table-tennis bats or gloves shall be used for all signalling by all participating ground staff during daylight hours. Illuminated wands shall be used at night or in low visibility.

RULES OF THE AIR REGULATIONS 2015

SECTION 5 AERODROME VISUAL SIGNALS AND MARKINGS

Aerodrome Visual Signals and Markings

17. Within the United Kingdom any signal or marking which is specified in SERA and these Rules and which is given or displayed—

- (a) by any person in an aircraft;
- (b) at an aerodrome; or
- (c) at any other place which is being used by aircraft for landing or take-off,

has the meaning assigned to it by this sub-section.

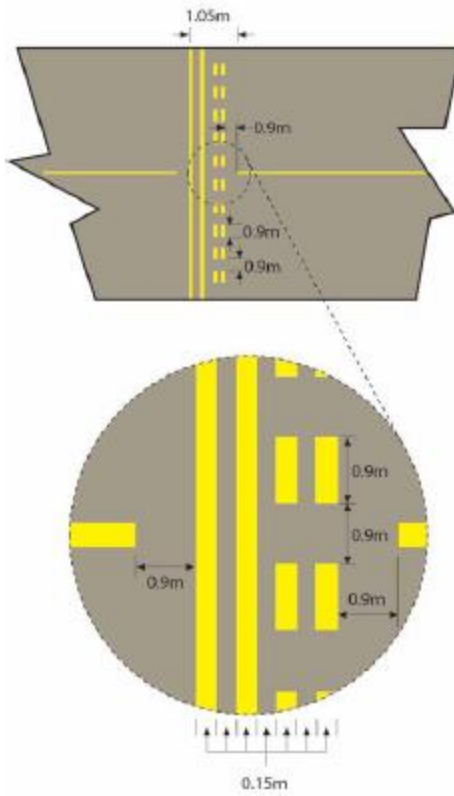
Misuse of signals and markings

18. A person in an aircraft or on an aerodrome or at any place at which an aircraft is taking off or landing must not—

- (a) make any signal which may be confused with a signal specified in SERA.3301 and Appendix 1 to SERA; or
- (b) except with lawful authority, make any signal which he knows or ought reasonably to know to be a signal in use for signalling to or from any of Her Majesty's naval, military or air force aircraft.

Markings for paved runways and taxiways

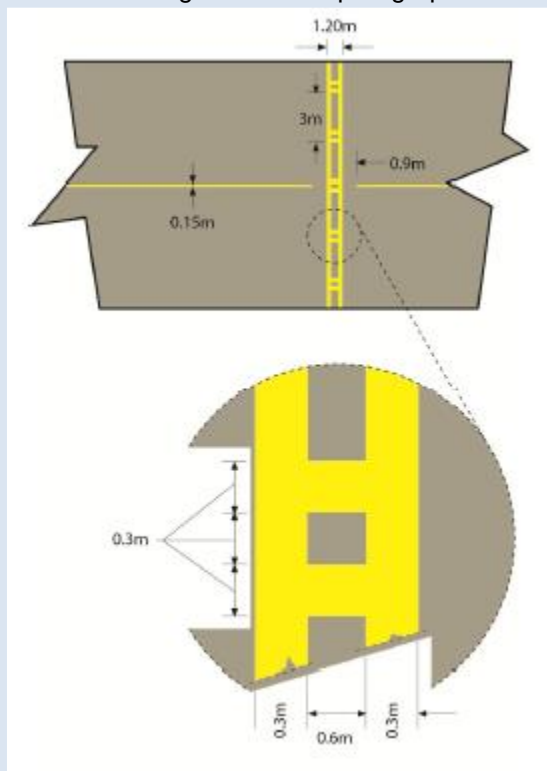
19. (1) Subject to paragraph (2), two yellow broken lines and two continuous lines as illustrated in the diagrams in this paragraph—



signify the designated visual holding position associated with a runway beyond which no part of a flying machine or vehicle must project in the direction of the runway without permission from the air traffic control unit at the aerodrome during the notified hours of watch of that unit.

(2) Outside the notified hours of watch of that unit or where there is no air traffic control unit at the aerodrome the markings referred to in paragraph (1) signify the position closest to the runway beyond which no part of a flying machine or vehicle must project in the direction of the runway when the flying machine or vehicle is required to give way to aircraft which are taking off from or landing on that runway.

(3) Subject to paragraph (4), a marking consisting of two yellow, parallel perpendicular lines intersected by horizontal yellow lines, as illustrated in the diagrams in this paragraph—

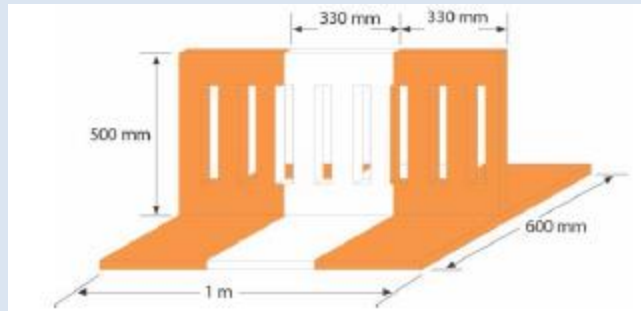


signifies a holding position other than that closest to the runway beyond which no part of a flying machine or

vehicle must project in the direction of the runway without permission from the air traffic control unit at the aerodrome during the notified hours of watch of that unit.

(4) Outside the notified hours of watch of that unit or where there is no air traffic control unit at the aerodrome the marking referred to in paragraph (3) may be disregarded.

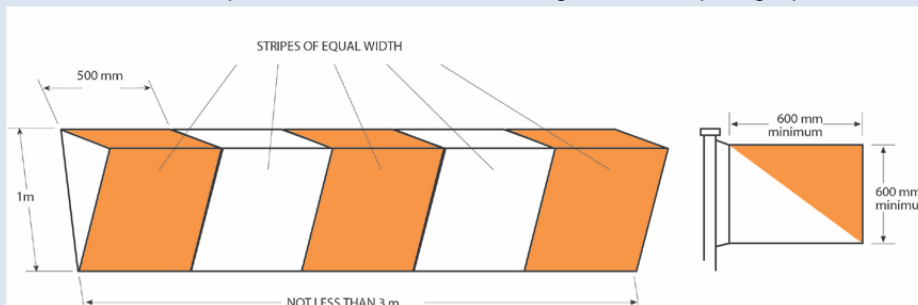
(5) Orange and white markers spaced not more than 15 metres apart, as illustrated in the diagram in this paragraph—



signify the boundary of that part of a paved runway, taxiway or apron which is unfit for the movement of aircraft.

Supplementary markings for use on unpaved manoeuvring areas

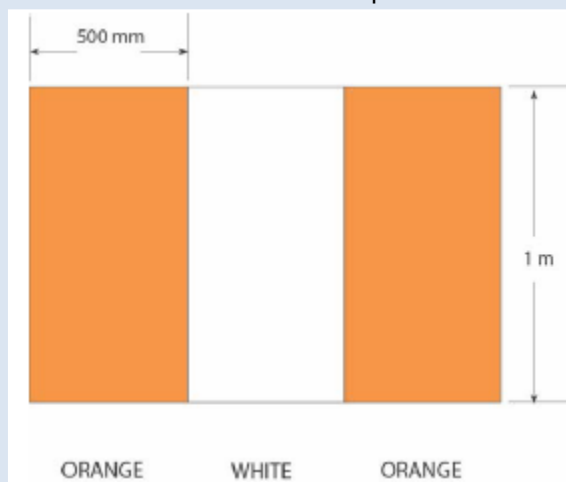
20. (1) Markers with orange and white stripes of an equal width of 50 centimetres, with an orange stripe at each end, alternating with flags 60 centimetres square showing equal orange and white triangular areas, spaced not more than 90 metres apart, as illustrated in the diagram in this paragraph—



indicate the boundary of an area unfit for the movement of aircraft.

(2) Striped markers, as specified in paragraph (1), spaced not more than 45 metres apart, indicate the boundary of an aerodrome.

(3) On structures markers with orange and white vertical stripes, of an equal width of 50 centimetres, with an orange stripe at each end, spaced not more than 45 metres apart

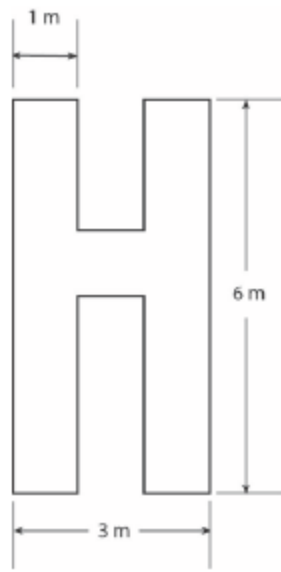


indicate the boundary of an aerodrome.

(4) The pattern of the marker referred to in paragraph (3) must be visible from inside and outside the aerodrome and the marker must be affixed not more than 15 centimetres from the top of the structure.

(5) White, flat, rectangular markers 3 metres long and 1 metre wide, at intervals not exceeding 90 metres, flush with the surface of an unpaved runway or stopway, indicate the boundary of the unpaved runway or stopway.

(6) A white letter H, as illustrated in the diagram in this paragraph—



indicates an area which must be used only for the taking off and landing of helicopters.

(7) A yellow cross with two arms each 6 metres long by 1 metre wide at right angles, indicates that tow ropes, banners and similar articles towed by aircraft must only be picked up and dropped in the area in which the cross is placed.

(8) A white letter T, as specified in SERA Appendix 1 paragraph 3.2.5.1, placed at the left-hand side of a runway (when viewed from the direction of landing) indicates the runway to be used for take-off and landing.

Signals visible from the ground

21. Black, Arabic numerals in two-figure groups and, where parallel runways are provided, the letter or letters L (left), LC (left centre), C (centre), RC (right centre) and R (right), placed against a yellow background, indicate the direction for take-off or the runway in use.

UK GM1 TO RULES OF THE AIR REGULATIONS 2015 SECTION 5 AERODROME VISUAL SIGNALS AND MARKINGS RULE 20(8)

The white landing T referred to in paragraph (8), when placed at an aerodrome with no runway, indicates the direction for take-off and landing.

CHAPTER 4 – TIME

SERA.3401 General

(a) Coordinated Universal Time (UTC) shall be used and shall be expressed in hours and minutes and, when required, seconds of the 24-hour day beginning at midnight.

(b) A time check shall be obtained prior to operating a controlled flight and at such other times during the flight as may be necessary.

(c) Wherever time is utilized in the application of data link communications, it shall be accurate to within 1 second of UTC.

(d) Time in air traffic services

(1) Aerodrome control towers shall, prior to an aircraft taxiing for take-off, provide the pilot with the correct time, unless arrangements have been made for the pilot to obtain it from other sources. Air traffic services units shall, in addition, provide aircraft with the correct time on request. Time checks shall be given at least to the nearest minute.

GM1 SERA.3401(d) General

TIME IN AIR TRAFFIC SERVICES

In most cases the correct time is obtained through alternative arrangements. The existence of such arrangements should be indicated in the State Aeronautical Information Publication (AIP).

SECTION 4 — FLIGHT PLANS

SERA.4001 Submission of a Flight Plan

(a) Information relative to an intended flight or portion of a flight, to be provided to air traffic services units, shall be in the form of a flight plan. The term “flight plan” is used to mean variously, full information on all items comprised in the flight plan description, covering the whole route of a flight, or limited information required, inter alia, when the purpose is to obtain a clearance for a minor portion of a flight such as to cross an airway, to take off from, or to land at a controlled aerodrome.

(b) A flight plan shall be submitted prior to operating:

- (1) any flight or portion thereof to be provided with air traffic control service;
- (2) any IFR flight within advisory airspace;
- (3) any flight within or into areas, or along routes designated by the competent authority, to facilitate the provision of flight information, alerting and search and rescue services;
- (4) any flight within or into areas or along routes designated by the competent authority, to facilitate coordination with appropriate military units or with air traffic services units in adjacent States in order to avoid the possible need for interception for the purpose of identification
- (5) any flight across international borders, unless otherwise prescribed by the States concerned;
- (6) any flight planned to operate at night, if leaving the vicinity of an aerodrome.

(c) A flight plan shall be submitted, before departure, to an air traffic services reporting office or, during flight, transmitted to the appropriate air traffic services unit or air-ground control radio station, unless arrangements have been made for submission of repetitive flight plans.

(d) Unless a shorter period of time has been prescribed by the competent authority for domestic VFR flights, a flight plan for any flight planned to operate across international borders or to be provided with air traffic control service or air traffic advisory service shall be submitted at least 60 minutes before departure, or, if submitted during flight, at a time which will ensure its receipt by the appropriate ATS unit at least 10 minutes before the aircraft is estimated to reach:

- (1) the intended point of entry into a control area or advisory area; or
- (2) the point of crossing an airway or advisory route.

GM1 SERA.4001 Submission of a flight plan

GENERAL

(a) A flight plan may cover only part of a flight, as necessary, to describe that portion of the flight or those manoeuvres which are subject to air traffic control.

(b) The term ‘submit a flight plan’ refers to the action by the pilot or the operator to provide ATS with flight plan information. The term ‘filed flight plan’ refers to the flight plan as received and accepted by ATS whereas ‘transmit a flight plan’ refers to the action by a pilot to submit the flight plan, or submit abbreviated flight plan by radiotelephony to the ATS unit concerned.

AMC1 SERA.4001(c) Submission of a flight plan

In cases where no air traffic services (ATS) reporting office has been established, the flight plan should be submitted to the ATS unit performing the functions of such an office, or via approved direct methods as indicated in the aeronautical information publication (AIP).

UK GM1 SERA.4001(c) Submission of a Flight Plan

If a flight plan is to be submitted before departure and an air traffic services reporting office is not established, it is the responsibility of the aircraft operator and/or the pilot-in-command to ensure submission by one of the following methods:

- i) Direct to IFPS via AFTN link.
- ii) Through the ATSU at the departure aerodrome using the FPL form.
- iii) Where available, internet-based services established for use by approved account holders.
- iv) Via the Parent AFTN Unit using a written or typed fax submission for onward transmission over AFTN.

SERA.4005 Contents of a Flight Plan

(a) A flight plan shall comprise information regarding such of the following items as are considered relevant by the competent authority:

- (1) Aircraft identification
- (2) Flight rules and type of flight
- (3) Number and type(s) of aircraft and wake turbulence category
- (4) Equipment
- (5) Departure aerodrome or operating site
- (6) Estimated off-block time
- (7) Cruising speed(s)
- (8) Cruising level(s)
- (9) Route to be followed
- (10) Destination aerodrome or operating site and total estimated elapsed time
- (11) Alternate aerodrome(s) or operating site(s)
- (12) Fuel endurance
- (13) Total number of persons on board
- (14) Emergency and survival equipment
- (15) Other information.

(b) For flight plans submitted during flight, the departure aerodrome or operating site provided shall be the location from which supplementary information concerning the flight may be obtained, if required. Additionally, the information to be provided in lieu of the estimated off-block time shall be the time over the first point of the route to which the flight plan relates.

GM1 SERA.4005(a) Contents of a flight plan

ABBREVIATED FLIGHT PLAN

An abbreviated flight plan transmitted in the air by radiotelephony for the crossing of controlled airspace, or any other areas or routes designated by the competent authority, normally contains, as a minimum: call sign, type of aircraft, point of entry, point of exit and level. Additional elements may be required by the competent authority.

GM2 SERA.4005(a) Contents of a flight plan

INFORMATION ABOUT THE OPERATOR IN THE FLIGHT PLAN IN CASE OF PROVIDING ALERTING SERVICE

According to ICAO Annex 11, an ATS unit shall, when practicable, inform the aircraft operator when an alerting service is provided to an aircraft. In order to facilitate quick and effective coordination, it is advisable to provide in the flight plan (item 18 'Other information') information sufficient to enable the ATS unit to contact the on-duty staff of the aircraft operator if such information has not been provided to the ATS unit by other means.

SERA.4010 Completion of a Flight Plan

(a) A flight plan shall contain information, as applicable, on relevant items up to and including "Alternate aerodrome(s) or operating site(s)" regarding the whole route or the portion thereof for which the flight plan is submitted.

(b) It shall, in addition, contain information, as applicable, on all other items when so prescribed by the competent authority or when otherwise deemed necessary by the person submitting the flight plan.

SERA.4015 Changes to a Flight Plan

(a) Subject to the provisions of SERA.8020 (b) all changes to a flight plan submitted for an IFR flight, or a VFR flight operated as a controlled flight, shall be reported as soon as practicable to the appropriate air traffic services unit. For other VFR flights, significant changes to a flight plan shall be reported as soon as practicable to the appropriate air traffic services unit.

(b) Information submitted prior to departure regarding fuel endurance or total number of persons carried on board, if incorrect at time of departure, constitutes a significant change to the flight plan and as such shall be reported.

SERA.4020 Closing a Flight Plan

(a) An arrival report shall be made in person, by radiotelephony, via data link or by other means as prescribed by the competent authority at the earliest possible moment after landing, to the appropriate air traffic services unit at the arrival aerodrome, by any flight for which a flight plan has been submitted covering the entire flight or the remaining portion of a flight to the destination aerodrome.

(b) Submission of an arrival report is not required after landing on an aerodrome where air traffic services are provided on condition that radio communication or visual signals indicate that the landing has been observed.

(c) When a flight plan has been submitted only in respect of a portion of a flight, other than the remaining portion of a flight to destination, it shall, when required, be closed by an appropriate report to the relevant air

traffic services unit.

(d) When no air traffic services unit exists at the arrival aerodrome or operating site, the arrival report, when required, shall be made as soon as practicable after landing and by the quickest means available to the nearest air traffic services unit.

(e) When communication facilities at the arrival aerodrome or operating site are known to be inadequate and alternate arrangements for the handling of arrival reports on the ground are not available, the following action shall be taken. Immediately prior to landing the aircraft shall, if practicable, transmit to the appropriate air traffic services unit, a message comparable to an arrival report, where such a report is required. Normally, this transmission shall be made to the aeronautical station serving the air traffic services unit in charge of the flight information region in which the aircraft is operated.

(f) Arrival reports made by aircraft shall contain the following elements of information:

- (1) aircraft identification;
- (2) departure aerodrome or operating site;
- (3) destination aerodrome or operating site (only in the case of a diversionary landing);
- (4) arrival aerodrome or operating site;
- (5) time of arrival.

GM1 SERA.4020 Closing a flight plan

ARRIVAL REPORTS

Whenever an arrival report is required, failure to comply with the provisions of SERA.4020 may cause serious disruption in the air traffic services and incur great expenses in carrying out unnecessary search and rescue operations.

UK GM1 to SERA.4020(b) Closing a Flight Plan

A pilot flying to a destination without an ATS or AFS facility, should prior to departure notify a responsible person at the destination of his EAT. The responsible person is required to inform the Parent ATSU if the aircraft fails to arrive within 30 minutes of the EAT. In the event of a pilot unable to find a responsible person at his destination he may request the Parent ATSU to act in this capacity. Should this occur, the pilot is required to inform the Parent ATSU within 30 minutes of his arrival at destination. This ensures that prompt alerting and overdue action is initiated.

SECTION 5 — VISUAL METEOROLOGICAL CONDITIONS, VISUAL FLIGHT RULES, SPECIAL VFR AND INSTRUMENT FLIGHT RULES

SERA.5001 VMC Visibility and Distance from Cloud Minima

VMC visibility and distance from cloud minima are contained in Table S5-1.

Table S5-1*

Altitude band	Airspace class	Flight visibility	Distance from cloud
At and above 3 050 m (10 000 ft) AMSL	A*** B C D E F G	8 km	1 500 m horizontally 300 m (1 000 ft) vertically
Below 3 050 m (10 000 ft) AMSL and above 900 m (3 000 ft) AMSL, or above 300 m (1 000 ft) above terrain, whichever is the higher	A***B C D E F G	5 km	1 500 m horizontally 300 m (1 000 ft) vertically
At and below 900 m (3 000 ft) AMSL, or 300 m (1 000 ft) above terrain, whichever is the higher	A***B C D E	5 km	1 500 m horizontally 300 m (1 000 ft) vertically
	F G	5 km**	Clear of cloud and with the surface in sight

* When the height of the transition altitude is lower than 3 050 m (10 000 ft) AMSL, FL 100 shall be used in lieu of 10 000 ft.

** When so prescribed by the competent authority:

- a) flight visibilities reduced to not less than 1 500 m may be permitted for flights operating:
 - 1) at speeds of 140 kts IAS or less to give adequate opportunity to observe other traffic or any obstacles in time to avoid collision; or
 - 2) in circumstances in which the probability of encounters with other traffic would normally be low, e.g. in areas of low volume traffic and for aerial work at low levels.
- b) helicopters may be permitted to operate in less than 1 500 m but not less than 800 m flight visibility, if manoeuvred at a speed that will give adequate opportunity to observe other traffic or any obstacles in time to avoid collision.

*** The VMC minima in Class A airspace are included for guidance to pilots and do not imply acceptance of VFR flights in Class A airspace.

Official Record Series 4 No 1067 General Permission

Standardised European Rules of the Air – Visual Meteorological Conditions (VMC) Visibility and Distance from Cloud Minima

- 1) The Civil Aviation Authority permits, under paragraph SERA.5001 of Commission Implementing Regulation (EU) No. 923/2012 ('the Standardised European Rules of the Air' (SERA)), flight visibilities reduced to not less than 1,500 m within Class G airspace for flights operating subject to the conditions set out in paragraph 2.
- 2) The conditions specified in paragraph 1 are that the aircraft is:
 - a) flying at or below 3,000 feet above mean sea level; and
 - b) flying at speeds of 140 kt Indicated Airspeed (IAS) or less to give adequate opportunity to observe other traffic or any obstacles in time to avoid collision.
- 3) This permission replaces Official Record Series 4 No. 1064, which is revoked.
- 4) This permission has effect from 10 December 2014 until it is revoked.

SERA.5005 Visual Flight Rules

- (a) Except when operating as a special VFR flight, VFR flights shall be conducted so that the aircraft is flown in conditions of visibility and distance from clouds equal to or greater than those specified in Table S5-1.
- (b) Except when a special VFR clearance is obtained from an air traffic control unit, VFR flights shall not take off or land at an aerodrome within a control zone, or enter the aerodrome traffic zone or aerodrome traffic circuit when the reported meteorological conditions at that aerodrome are below the following minima:

(1) the ceiling is less than 450 m (1 500 ft); or

(2) the ground visibility is less than 5 km.

(c) When so prescribed by the competent authority, VFR flights at night may be permitted under the following conditions:

(1) if leaving the vicinity of an aerodrome, a flight plan shall be submitted in accordance with SERA.4001 (b)(6);

(2) flights shall establish and maintain two-way radio communication on the appropriate ATS communication channel, when available;

(3) the VMC visibility and distance from cloud minima as specified in Table S5-1 shall apply except that:

i) the ceiling shall not be less than 450 m (1 500 ft);

ii) the reduced flight visibility provisions specified in Table S5-1(a) and (b) shall not apply;

iii) in airspace classes B, C, D, E, F and G, at and below 900 m (3 000 ft) AMSL or 300 m (1 000 ft) above terrain, whichever is the higher, the pilot shall maintain continuous sight of the surface; and

iv) deleted

v) for mountainous area, higher VMC visibility and distance from cloud minima may be prescribed by the competent authority.

(4) deleted.

(5) except when necessary for take-off or landing, or except when specifically authorised by the competent authority, a VFR flight at night shall be flown at a level which is not below the minimum flight altitude established by the State whose territory is overflown, or, where no such minimum flight altitude has been established:

i) over high terrain or in mountainous areas, at a level which is at least 600 m (2 000 ft) above the highest obstacle located within 8 km of the estimated position of the aircraft;

ii) elsewhere than as specified in i), at a level which is at least 300 m (1 000 ft) above the highest obstacle located within 8 km of the estimated position of the aircraft.

(d) VFR flights shall not be operated:

(1) at transonic and supersonic speeds unless authorised by the competent authority;

(2) above FL 195. Exceptions to this requirement are the following:

(i) an airspace reservation has been established, where practical, by the Member States, in which VFR flights may be allowed; or

(ii) airspace up to and including flight level 285, when VFR traffic in that airspace has been authorised by the responsible ATS unit in accordance with the authorisation procedures established by the Member States and published in the relevant aeronautical information publication.

(e) Authorisation for VFR flights to operate above FL 285 shall not be granted where a vertical separation minimum of 300 m (1 000 ft) is applied above FL 290.

(f) Except when necessary for take-off or landing, or except by permission from the competent authority, a VFR flight shall not be flown:

(1) over the congested areas of cities, towns or settlements or over an open-air assembly of persons at a height less than 300 m (1 000 ft) above the highest obstacle within a radius of 600 m from the aircraft;

(1) elsewhere than as specified in (1), at a height less than 150 m (500 ft) above the ground or water, or 150 m (500 ft) above the highest obstacle within a radius of 150 m (500 ft) from the aircraft.

(g) Except where otherwise indicated in air traffic control clearances or specified by the competent authority, VFR flights in level cruising flight when operated above 900 m (3 000 ft) from the ground or water, or a higher datum as specified by the competent authority, shall be conducted at a cruising level appropriate to the track as specified in the table of cruising levels in Appendix 3.

(h) VFR flights shall comply with the provisions of Section 8:

(1) when operated within Classes B, C and D airspace;

(2) when forming part of aerodrome traffic at controlled aerodromes; or

(3) when operated as special VFR flights.

(i) A VFR flight operating within or into areas or along routes designated by the competent authority, in

accordance with SERA.4001 (b)(3) or (4), shall maintain continuous air-ground voice communication watch on the appropriate communication channel of, and report its position as necessary to, the air traffic services unit providing flight information service.

(j) An aircraft operated in accordance with the visual flight rules which wishes to change to compliance with the instrument flight rules shall:

(1) if a flight plan was submitted, communicate the necessary changes to be effected to its current flight plan; or

(2) as required by SERA.4001 (b), submit a flight plan to the appropriate air traffic services unit as soon as practicable and obtain a clearance prior to proceeding IFR when in controlled airspace.

GM1 SERA.5005(c)(3)(iii) Visual flight rules

NIGHT VFR ON TOP

When flying in airspace classes B, C, D, E, F, or G, more than 900 m (3 000 ft) above mean sea level (MSL) or 300 m (1 000 ft) above terrain, whichever is higher, the pilot may elect to fly above a cloud layer (VFR on top). When making the decision on whether to fly above or below a cloud at night, consideration should be given at least but not limited to the following:

(a) The likelihood of weather at destination allowing a descent in visual conditions;

(b) Lighting conditions below and above the cloud layer;

(c) The likelihood of the cloud base descending, if flight below cloud is chosen, thus resulting in terrain clearance being lost;

(d) The possibility of flight above the cloud leading to flight between converging cloud layers;

(e) The possibility of successfully turning back and returning to an area where continuous sight of surface can be maintained; and

(f) The possibilities for the pilot to establish their location at any point of the route to be flown, taking into consideration also the terrain elevation and geographical and man-made obstacles.

AMC1 SERA.5005(f) Visual flight rules

VFR MINIMUM HEIGHTS — PERMISSION FROM THE COMPETENT AUTHORITY

The competent authority should specify the conditions under which the permission is or may be granted, including the minimum heights above the terrain, water or the highest obstacle within a radius of 150 m (500 ft) from an aircraft practising forced landings, a balloon or an aircraft executing ridge or hill soaring.

GM1 SERA.5005(f) Visual flight rules

VFR MINIMUM HEIGHTS — PERMISSION FROM THE COMPETENT AUTHORITY

Subject to an appropriate safety assessment, permission from the competent authority may also be granted for cases like:

(a) aircraft operating in accordance with the procedure promulgated for the notified route being flown;

(b) helicopters operating at a height that will permit, in the event of an emergency arising, a landing to be made without undue hazard to persons or property on the surface;

(c) aircraft picking up or dropping tow ropes, banners or similar articles at an aerodrome;

(d) any other flights not specified above, where specific exemption is required to accomplish a specific task.

Official Record Series 4 No 1068 General Permission

Standardised European Rules of the Air – Visual Flight Rules (VFR) Minima for Operations in Accordance with a Helicopter Emergency Medical Service Specific Approval

1) The Civil Aviation Authority ('the CAA'), on behalf of the United Kingdom (UK), permits the operator and Commander of any helicopter flying on a Helicopter Emergency Medical Service (HEMS) flight in accordance with Commission Regulation (EU) No. 965/2012 ('the Air Operations Regulation') and under the requirements of Commission Implementing Regulation (EU) No. 923/2012 ('the Standardised European Rules of the Air' (SERA)) to fly in the circumstance specified in paragraph 2, subject to the conditions set out in paragraph 3.

2) The circumstance specified in paragraph 1 is that, pursuant to SERA.5005(c)(4) (Visual Flight Rules), the helicopter may be operated with cloud ceiling, visibility and distance from cloud lower than those specified in SERA.5005(c)(3).

3) The conditions specified in paragraph 1 and applicable to paragraph 2 are:

a) operations shall be conducted in accordance with procedures specified in the operator's operations manual; and

b) the Commander of any helicopter referred to in paragraph 1 shall only depart from the specified

requirements of SERA.5005(c)(3) to the extent necessary to achieve the purpose of the flight and in circumstances that render such departure necessary in the interests of safety.

Official Record Series 4 No 1069 General Permission

Standardised European Rules of the Air – Visual Flight Rules (VFR) Minima for Operations in Accordance with a Police Air Operator’s Certificate

- 1) The Civil Aviation Authority (‘the CAA’), on behalf of the United Kingdom (UK), permits the operator and Commander of any helicopter flying in accordance with the terms of a police air operator’s certificate and under the requirements of Commission Implementing Regulation (EU) No. 923/2012 (‘the Standardised European Rules of the Air’ (SERA)) to fly in the circumstance specified in paragraph 2, subject to the conditions set out in paragraph 3.
- 2) The circumstance specified in paragraph 1 is that, pursuant to SERA.5005(c)(4) (Visual Flight Rules), the helicopter may be operated with cloud ceiling, visibility and distance from cloud lower than those specified in SERA.5005(c)(3).
- 3) The conditions specified in paragraph 1 and applicable to paragraph 2 are:
 - a) operations shall be conducted in accordance with procedures specified in the operator’s operations manual; and
 - b) the Commander of any helicopter referred to in paragraph 1 shall only depart from the specified requirements of SERA.5005(c)(3) to the extent necessary to achieve the purpose of the flight and in circumstances that render such departure necessary in the interests of safety.
- 4) In this permission ‘police air operator’s certificate’ and ‘Commander’ have the same meanings as in Article 255(1) of the Air Navigation Order 2009.
- 5) This permission has effect from 10 December 2014 until it is revoked.

Official Record Series 4 No 1302 Corrected General Exemption E 4869

Standardised European Rules of the Air - Visual Meteorological Conditions (VMC) Visibility and Distance from Cloud Minima within Class D Airspace

- 1) The Civil Aviation Authority, on behalf of the United Kingdom, with the consent of the Secretary of State for Transport and pursuant to article 71(1) of Regulation (EU) No. 2018/1139, exempts any aircraft being flown within the UK at or below 3,000 feet above mean sea level and within Class D airspace from the requirements of SERA.5001 (VMC visibility and distance from cloud minima) Table S5-1 and SERA.5005(a) (visual flight rules) of the Annex to Commission Implementing Regulation (EU) No. 923/2012 of 26 September 2012 (Standardised European Rules of the Air (SERA)) when it is flying in accordance with the conditions in paragraph 2.
- 2) The conditions specified in paragraph 1 are that the aircraft is flown:
 - a) by day only;
 - b) at a speed which, according to its airspeed indicator, is 140 knots or less, to give adequate opportunity to observe other traffic and any obstacles in time to avoid a collision; and,
 - c) clear of cloud, with the surface in sight and:
 - i) if the aircraft is not a helicopter, in a flight visibility of at least 5 km;
 - ii) if the aircraft is a helicopter, in a flight visibility of at least 1,500 m.
- 3) This exemption supersedes Official Record Series 4 No. 1282, which is revoked with effect from 30 April 2019.
- 4) This exemption has effect from 30 April 2019 until 12 September 2019, both dates inclusive, unless previously revoked..

Official Record Series 4 No 1222 General Exemption E4401 and Permission

Standardised European Rules of the Air – Air Traffic Control VFR and SVFR Clearances to Helicopter Operations Conducted by the Police, Helicopter Emergency Medical Service (HEMS), Search And Rescue (SAR) and SAR Training Flights or flights in support of the maintenance of the national infrastructure.

- 1) The Civil Aviation Authority (CAA), on behalf of the United Kingdom and pursuant to article 4 of Commission Implementing Regulation (EU) No. 923/2012 (‘the Standardised European Rules of the Air’ (SERA)), exempts the operator and commander of any flight by an Emergency Services Helicopter, including any training flights associated with these activities, and the associated Air Traffic Control Units, from complying with SERA.5005(b) subject to the conditions specified in paragraph 2.
- 2) The conditions specified in paragraph 1 are that, for VFR flights by Emergency Services Helicopters, including any associated training flights, taking off or landing at an aerodrome within a control zone or entering the aerodrome traffic zone or aerodrome traffic circuit:
 - a. the flights must be conducted in accordance with procedures detailed in operator’s Operations

Manuals and approved by the CAA;

b. helicopter operators conducting SAR training flights must do so in accordance with a Letter of Agreement with the appropriate Air Traffic Service Provider; and

c. Air Traffic Control Units must issue clearances for any such flights in accordance with procedures detailed in Civil Aviation Publication (CAP) 493, The Manual of Air Traffic Services (MATS) Part 1.

3) The Civil Aviation Authority permits, under SERA.5010, Air Traffic Control Units to issue a Special VFR clearance to an Emergency Services Helicopter other than in accordance with SERA.5010(b) subject to the condition specified in paragraph 4.

4) The condition specified in paragraph 3 is that:

a. an Air Traffic Control Unit shall only issue any clearance for such flights in accordance with procedures detailed Civil Aviation Publication (CAP) 493, The Manual of Air Traffic Services (MATS) Part 1.

5) In this Exemption and Permission:

a. 'Emergency Services Helicopter' means any helicopter for the time being operated under an Air Operator Certificate or Police Air Operator Certificate, granted by the Civil Aviation Authority for Search and Rescue operations or for a Helicopter Emergency Medical Service (HEMS) or in the service of a police authority or in support of the maintenance of the national infrastructure.

6) This exemption supersedes Official Record Series 4 No 1215 which is revoked.

7) This exemption has effect from 24 April 2017 and remains in force until it is revoked.

SERA.5010 Special VFR in control zones

Special VFR flights may be authorised to operate within a control zone, subject to an ATC clearance. Except when permitted by the competent authority for helicopters in special cases such as, but not limited to, police, medical, search and rescue operations and fire-fighting flights, the following additional conditions shall be applied:

(a) such special VFR flights may be conducted during day only, unless otherwise permitted by the competent authority;

(b) by the pilot:

(1) clear of cloud and with the surface in sight;

(2) the flight visibility is not less than 1 500 m or, for helicopters, not less than 800 m;

(3) fly at a speed of 140 kts IAS or less to give adequate opportunity to observe other traffic and any obstacles in time to avoid a collision; and

(c) an air traffic control unit shall not issue a special VFR clearance to aircraft to take off or land at an aerodrome within a control zone, or enter the aerodrome traffic zone or aerodrome traffic circuit when the reported meteorological conditions at that aerodrome are below the following minima:

(1) the ground visibility is less than 1 500 m or, for helicopters, less than 800 m;

(2) the ceiling is less than 180 m (600 ft).

AMC1 SERA.5010(a)(3) Special VFR in control zones

SPEED LIMIT TO BE APPLIED BY HELICOPTER PILOTS

The 140 kt speed should not be used by helicopters operating at a visibility below 1 500 m. In such case, a lower speed appropriate to the actual conditions should be applied by the pilot.

GM1 SERA.5010 Special VFR in control zones

The list of type of operations subject to permit by the competent authority to deviate from the requirements for special visual flight rules (VFR) flights is not exhaustive. The competent authority may grant a permit for other kind of helicopter operations such as power line inspections, helicopter hoist operations, etc.

GM1 SERA.5010(a)(3) Special VFR in control zones

SPEED LIMIT TO BE APPLIED BY HELICOPTER PILOTS

The 140 kt speed is to be considered as an absolute maximum acceptable speed in order to maintain an acceptable level of safety when the visibility is 1 500 m or more. Lower speeds should be applied according to elements such as local conditions, number and experience of pilots on board, using the guidance of the table below:

Visibility (m)	Advisory speed (kt)
---------------------------	----------------------------

800	50
1 500	100
2 000	120

GM1 SERA.5010(b)(2) Special VFR in control zones

When assessing the prevailing flight visibility, the pilots should use their best judgement. The assessment should be based, for example, on the pilot's overall flight experience, knowledge of local conditions and procedures, visible landmarks, etc. Furthermore, the pilot should possess the latest weather observations and forecasts.

AMC1 SERA.5010(b)(3) Special VFR in control zones

SPEED LIMIT TO BE APPLIED BY HELICOPTER PILOTS

The 140 kt-speed should not be used by helicopters operating at a visibility below 1 500 m. In such case, a lower speed appropriate to the actual conditions should be applied by the pilot.

GM1SERA.5010(c) Special VFR in control zones

When the reported ground visibility at the aerodrome is less than 1 500 m, ATC may issue a special VFR clearance for a flight crossing the control zone and not intending to take off or land at an aerodrome within a control zone, or enter the aerodrome traffic zone or aerodrome traffic circuit when the flight visibility reported by the pilot is not less than 1 500 m, or, for helicopters, not less than 800 m.

Official Record Series 4 No 1125 General Permissions and Authorisation

Standardised European Rules of the Air – Visual Flight Rules (VFR) and Special VFR Flight at Night

- 1) The Civil Aviation Authority permits, under SERA.5005(c) of the Annex to Commission Implementing Regulation (EU) No. 923/2012 of 26 September 2012 ('the Standardised European Rules of the Air' (SERA)), flight in accordance with the Visual Flight Rules at night in the United Kingdom.
- 2) The Civil Aviation Authority further authorises, under SERA.5005(c)(5)(ii), night VFR flights in the United Kingdom to be flown below a level which is at least 300 m (1,000 ft) above the highest obstacle located within 8 km of the estimated position of the aircraft subject to the conditions at paragraph 3.
- 3) The conditions specified in paragraph 2 are that the aircraft is flown:
 - a) at an altitude not exceeding 3,000 feet Above Mean Sea Level (AMSL);
 - b) clear of cloud and with the surface in sight;
 - c) at a height not less than 300 m (1,000 ft) above the highest obstacle within a radius of 600 m from the aircraft when over the congested areas of cities, towns or settlements or over an open-air assembly of persons: and
 - d) elsewhere than as specified in c), at a height of more than 150 m (500 ft) above the ground or water, or 150 m (500 ft) above the highest obstacle within a radius of 150m (500 ft) from the aircraft.
- 4) The Civil Aviation Authority permits, under SERA.5010(b) (Special VFR in control zones), a special VFR flight within a control zone at night in the United Kingdom.
- 5) These permissions and authorisation supersede Official Record Series 4 No. 1066, which is revoked.
- 6) These permissions and authorisation have effect from the date they are signed until they are revoked.

Official Record Series 4 No 1070 General Permission

Standardised European Rules of the Air – Visual Flight Rules (VFR) and Special VFR Minima for Search and Rescue Flights

- 1) The Civil Aviation Authority ('the CAA'), on behalf of the United Kingdom (UK), permits the operator and Commander of any helicopter registered in the UK and flying for the purpose of a Search and Rescue (SAR) operational flight in accordance with the terms of an air operator's certificate and under the requirements of Commission Implementing Regulation (EU) No. 923/2012 ('the Standardised European Rules of the Air' (SERA)) to fly in the circumstances specified in paragraph 2, subject to the conditions set out in paragraph 3.
- 2) The circumstances specified in paragraph 1 are that, pursuant to:
 - a) SERA.5001, Table S5-1, Note (***) , subparagraph (b) (VMC), the helicopter may be operated with a flight visibility of less than 800 m;
 - b) SERA.5005(c)(4) (Visual Flight Rules), the helicopter may be operated with cloud ceiling, visibility and distance from cloud lower than those specified in SERA.5005(c)(3); and
 - c) SERA.5010(a)(2) (Special VFR), the pilot may operate the helicopter with a flight visibility of less than 800 m.
- 3) The conditions specified in paragraph 1 and applicable to paragraph 2 are:
 - a) operations shall be conducted in accordance with procedures specified in the operator's SAR

operations manual;

b) the Commander of any helicopter referred to in paragraph 1 shall only depart from the specified requirements of SERA.5001, SERA.5005(c)(3) or SERA.5010(a)(2) to the extent necessary to achieve the purpose of the flight and in circumstances that render such departure necessary in the interests of safety; and

c) throughout all flights pursuant to this permission no persons shall be carried other than the flight crew members, SAR Technical Crew Member, CAA authorised persons and other persons directly involved in the SAR flight and whom it is necessary to carry for that purpose.

4) In this permission:

a) 'authorised person' and 'Commander' have the same meaning as in Article 255(1) of the Air Navigation Order 2009;

b) 'pilot' has the same meaning as 'Commander';

c) 'flight crew member' has the same meaning as in SERA; and

d) 'SAR Technical Crew member' means a member of the SAR crew other than flight crew who is assigned to a helicopter SAR flight for the purpose of operating specific aircraft and role equipment, assisting the flight crew during the mission and attending to any person in need of medical assistance.

5) This permission has effect from 10 December 2014 until it is revoked.

SERA.5015 Instrument Flight Rules (IFR) - Rules Applicable to All IFR Flights

(a) Aircraft Equipment

Aircraft shall be equipped with suitable instruments and with navigation equipment appropriate to the route to be flown and in accordance with the applicable air operations legislation.

(b) Minimum Levels

Except when necessary for take-off or landing, or except when specifically authorised by the competent authority, an IFR flight shall be flown at a level which is not below the minimum flight altitude established by the State whose territory is overflown, or, where no such minimum flight altitude has been established:

(1) over high terrain or in mountainous areas, at a level which is at least 600 m (2 000 ft) above the highest obstacle located within 8 km of the estimated position of the aircraft;

(2) elsewhere than as specified in a), at a level which is at least 300 m (1 000 ft) above the highest obstacle located within 8 km of the estimated position of the aircraft.

(c) Change from IFR Flight to VFR Flight

(1) An aircraft electing to change the conduct of its flight from compliance with the instrument flight rules to compliance with the visual flight rules shall notify the appropriate air traffic services unit specifically that the IFR flight is cancelled and communicate thereto the changes to be made to its current flight plan.

(2) When an aircraft operating under the instrument flight rules is flown in or encounters visual meteorological conditions it shall not cancel its IFR flight unless it is anticipated, and intended, that the flight will be continued for a reasonable period of time in uninterrupted visual meteorological conditions.

(3) Change from IFR flight to VFR flight shall only be acceptable when a message initiated by the pilot-in-command containing the specific expression 'CANCELLING MY IFR FLIGHT', together with the changes, if any, to be made to the current flight plan, is received by an ATS unit. No invitation to change from IFR flight to VFR flight shall be made by ATS either directly or by inference.

GM1 SERA.5015(b) Instrument flight rules (IFR) — Rules applicable to all IFR flights

MINIMUM LEVELS

When determining which are the highest obstacles within 8 km of the estimated position of the aircraft, the estimate will take account of the navigational accuracy which can be achieved on the relevant route segment, having regard to the navigational facilities available on the ground and in the aircraft.

GM1 SERA.5015(c)(3) Instrument flight rules (IFR) — Rules applicable to all IFR flights

No reply, other than the acknowledgment 'IFR FLIGHT CANCELLED AT ... (time)', should normally be made by an ATS unit.

SERA.5020 IFR - Rules Applicable to IFR Flights within Controlled Airspace

(a) IFR flights shall comply with the provisions of Section 8 when operated in controlled airspace.

(b) An IFR flight operating in cruising flight in controlled airspace shall be flown at a cruising level, or, if authorised by ATS unit to employ cruise climb techniques, between two levels or above a level, selected from the table of cruising levels in Appendix 3, except that the correlation of levels to track prescribed therein shall

not apply whenever otherwise indicated in air traffic control clearances or specified by the competent authority in Aeronautical Information Publications.

SERA.5025 IFR - Rules Applicable to IFR Flights Outside Controlled Airspace

(a) Cruising Levels

An IFR flight operating in level cruising flight outside of controlled airspace shall be flown at a cruising level appropriate to its track as specified in the table of cruising levels in Appendix 3, except when otherwise specified by the competent authority for flight at or below 900 m (3 000 ft) above mean sea level.

GM1 SERA.5025(a) IFR — Rules applicable to IFR flights outside controlled airspace

CRUISING LEVELS

Although an IFR flight operating in level cruising flight outside controlled airspace is to be flown at a cruising level appropriate to its track, as specified in the table of cruising levels, this does not preclude the use of cruise climb techniques.

GM1 SERA.5025(c) IFR — Rules applicable to IFR flights outside controlled airspace

POSITION REPORTS

Aircraft electing to use the air traffic advisory service whilst operating under IFR within specified advisory airspace are expected to comply with the provisions of 'Chapter 8 — Air traffic Control Service', except that the flight plan and changes thereto are not subject to clearances and that two-way communication will be maintained with the unit providing the air traffic advisory service.

(b) Communications

An IFR flight operating outside controlled airspace but within or into areas, or along routes, designated by the Competent Authority in accordance with SERA.4001 (b)(3) or (4) shall maintain an air-ground voice communication watch on the appropriate communication channel and establish two-way communication, as necessary, with the air traffic services unit providing flight information service.

(c) Position Reports

An IFR flight operating outside controlled airspace and required by the competent authority to maintain an air-ground voice communication watch on the appropriate communication channel and establish two-way communication, as necessary, with the air traffic services unit providing flight information service, shall report position, as specified in SERA.8025 for controlled flights.

Official Record Series 4 No 1126 General Permissions

Standardised European Rules of the Air – Compliance with Cruising Level Requirements

1) Definition

In these permissions 'SERA' means the Annex to Commission Implementing Regulation (EU) No. 923/2012 of 26 September 2012 ('the Standardised European Rules of the Air' (SERA)).

2) SERA.5005(g) (Visual flight rules)

The Civil Aviation Authority permits, under SERA.5005(g), an aircraft in level cruising flight and operated in accordance with the visual flight rules above 3,000 feet above mean sea level to be flown at a level other than a cruising level appropriate to its magnetic track, as specified in the table of cruising levels in Appendix 3 of SERA, unless flying in conformity with the conditions specified by the appropriate air traffic control unit.

3) SERA.5025(a) (IFR - Rules Applicable to IFR flights outside controlled airspace)

a) The Civil Aviation Authority permits, under SERA.5025(a), an aircraft in level flight outside controlled airspace below 3,000 feet above mean sea level and operated in accordance with the instrument flight rules to be flown at a level other than a cruising level appropriate to its magnetic track.

b) The Civil Aviation Authority further permits, under SERA.5025(a), an aircraft in level flight outside controlled airspace above 3,000 feet above mean sea level and operated in accordance with the instrument flight rules to be flown at a level other than a cruising level appropriate to its magnetic track if it flies:

- i) in conformity with the instructions of the appropriate air traffic service unit; or
- ii) in accordance with holding procedures notified by the Civil Aviation Authority in relation to an aerodrome.

c) In subparagraph (b) 'notified' has the same meaning as in article 255(1) of the Air Navigation Order 2009.

4) Validity

These permissions have effect from the date they are signed and remain in force until revoked.

RULES OF THE AIR REGULATIONS 2015

SECTION 6 VISUAL METEOROLOGICAL CONDITIONS, VISUAL FLIGHT RULES, SPECIAL VFR AND INSTRUMENT FLIGHT RULES

Classification of airspaces and rules for flight

22. Subject to rule 23, all aircraft must be flown in accordance with the requirements for flight in airspace that

has been notified in accordance with the airspace classifications and flight rules specified in SERA.6001 and in Appendix 4 of SERA.

Flight in Class C airspace in VMC

23(1) Subject to paragraph (2) an aircraft flying—

- (a) in Visual Meteorological Conditions in Class C airspace above flight level 195;
- (b) or along a Class C ATS route at any level,

must be flown in accordance with the Instrument Flight Rules.

(2) Paragraph (1) does not apply to an aircraft which is flying in accordance with a- permission issued by the CAA.

(3) In this Rule “Class C ATS route” means a route notified as such.

Use of radio navigation aids

24.(1) Subject to paragraph (2), the commander of an aircraft must not make use of a radio navigation aid without complying with such restrictions and procedures as may be notified in relation to that aid.

(2) The commander of an aircraft is not be required to comply with this rule if—

- (a) the aircraft is required to comply with an air traffic control clearance issued for the flight; or
- (b) the commander is otherwise authorised by an air traffic control unit.

25.Air traffic control clearance for flights by aircraft without radio equipment(1) An aircraft without radio equipment must not fly in Class B, Class C or Class D airspace during the notified hours of watch of the appropriate air traffic control unit unless it has been otherwise authorised by the appropriate air traffic control unit and is subject to the conditions at paragraph (3).

(2) An aircraft without radio equipment and flown in accordance with the Instrument Flight Rules must not fly in Class E airspace during the notified hours of watch of the appropriate air traffic control unit unless it has been otherwise authorised by the appropriate air traffic control unit and is subject to the conditions at paragraph (3).

(3) For the purposes of paragraphs (1) and (2), the conditions are that the aircraft must—

- (a) only fly during the day;
- (b) only fly within notified controlled airspace notified for the purpose of this paragraph;
- (c) remain at least 1,500 metres horizontally and 1,000 feet vertically away from cloud and in a flight visibility of at least 5 km;
- (d) comply with any other conditions specified by the appropriate air traffic control unit.

SECTION 6 – AIRSPACE CLASSIFICATION

SERA.6001 Classification of airspaces

(a) Member States shall designate airspace in accordance with the following airspace classification and in accordance with Appendix 4:

(1) *Class A.* IFR flights only are permitted. All flights are provided with air traffic control service and are separated from each other. Continuous air-ground voice communications are required for all flights. All flights shall be subject to ATC clearance.

(2) *Class B.* IFR and VFR flights are permitted. All flights are provided with air traffic control service and are separated from each other. Continuous air-ground voice communications are required for all flights. All flights shall be subject to ATC clearance.

(3) *Class C.* IFR and VFR flights are permitted. All flights are provided with air traffic control service and IFR flights are separated from other IFR flights and from VFR flights. VFR flights are separated from IFR flights and receive traffic information in respect of other VFR flights and traffic avoidance advice on request. Continuous air-ground voice communications are required for all flights. For VFR flights a speed limitation of 250 kts indicated airspeed (IAS) applies below 3 050 m (10 000 ft) AMSL, except where approved by the competent authority for aircraft types, which for technical or safety reasons, cannot maintain this speed. All flights shall be subject to ATC clearance.

(4) *Class D.* IFR and VFR flights are permitted and all flights are provided with air traffic control service. IFR flights are separated from other IFR flights, receive traffic information in respect of VFR flights and traffic avoidance advice on request. VFR flights receive traffic information in respect of all other flights and traffic avoidance advice on request. Continuous air-ground voice communications are required for all flights and a speed limitation of 250 kts IAS applies to all flights below 3 050 m (10 000 ft) AMSL, except where approved by the competent authority for aircraft types, which for technical or safety reasons, cannot maintain this speed. All flights shall be subject to ATC clearance.

(5) *Class E.* IFR and VFR flights are permitted. IFR flights are provided with air traffic control service and are separated from other IFR flights. All flights receive traffic information, as far as is practical. Continuous air-ground voice communications are required for IFR flights. A speed limitation of 250 kts IAS applies to all flights below 3 050 m (10 000 ft) AMSL, except where approved by the competent authority for aircraft types, which for technical or safety reasons cannot maintain this speed. All IFR flights shall be subject to ATC clearance. Class E shall not be used for control zones.

(6) *Class F.* IFR and VFR flights are permitted. All participating IFR flights receive an air traffic advisory service and all flights receive flight information service if requested. Continuous air-ground voice communications are required for IFR flights participating in the advisory service and all IFR flights shall be capable of establishing air-ground voice communications. A speed limitation of 250 kts IAS applies to all flights below 3 050 m (10 000 ft) AMSL, except where approved by the competent authority for aircraft types, which for technical or safety reasons cannot maintain this speed. ATC clearance is not required.

(7) *Class G.* IFR and VFR flights are permitted and receive flight information service if requested. All IFR flights shall be capable of establishing air-ground voice communications. A speed limitation of 250 kts IAS applies to all flights below 3 050 m (10 000 ft) AMSL, except where approved by the competent authority for aircraft types, which for technical or safety reasons cannot maintain this speed. ATC clearance is not required. (8) Implementation of Class F shall be considered as a temporary measure until such time as it can be replaced by an alternative classification.

(b) The designation of the airspace classification shall be appropriate to the needs of the Member States, except that all airspace above FL 195 shall be classified as Class C airspace.

AMC1 SERA.6001 Classification of airspaces

GENERAL

Where ATS airspaces adjoin vertically, i.e. one above the other, flights at a common level should comply with the requirements of, and be given services applicable to, the less restrictive class of airspace.

GM1 SERA.6001 Classification of airspaces

GENERAL

(a) Class B airspace is considered less restrictive than Class A airspace; Class C airspace less restrictive than Class B airspace, etc.

(b) The speed limitation of 250 kt for VFR flights in airspace Classes C, D, E, F, G and for IFR flights in airspace Classes D, E, F, G is intended to facilitate visual acquisition of flights which are not separated.

(c) Wherever there is a need to accommodate within a given airspace class operations compatible with a less restrictive class, the following may be used:

- (1) reclassification of the airspace concerned;
- (2) redesigning the volume of airspace concerned by defining airspace restrictions or reservations, or subvolumes of less restrictive classes of airspace (e.g. corridors).

AMC1 SERA.6001(d);(e);(f);(g) Classification of airspaces

SPEED LIMITATION — SAFETY ASSESSMENT AND APPROVAL BY THE COMPETENT AUTHORITY

Approval by the competent authority of an alleviation of the 250 kt speed limitation below 3 050 m (10 000 ft) should be based on a safety assessment. The conditions for granting such alleviation should be specified in the Member State Aeronautical Information Publication (AIP).

GM1 SERA.6001(d);(e);(f);(g) Classification of airspaces

SPEED LIMITATION — SAFETY ASSESSMENT AND APPROVAL BY THE COMPETENT AUTHORITY

- (a) The following should, as a minimum, be considered when developing the safety assessment:
- (1) air traffic, airspace classes requirements, and airspace design, the procedures designed for the airspace, and the potential use of clearances to maintain own separation as described in GM1 to SERA.8005(b);
 - (2) the minimum safe speed stated in the approved Aircraft Flight Manual (AFM) of the relevant aircraft types.
- (b) The safety assessment should be developed in coordination with the relevant airspace users.
- (c) Coordination should be ensured with the affected airspace users who should provide the data necessary for the development of the safety assessment.
- (d) The competent authority should ensure that the aircraft types eligible for such alleviation are specified in the Member State Aeronautical Information Publication.

GM2 SERA.6001(d);(e);(f);(g) Classification of airspaces

SPEED LIMITATION — SAFETY ASSESSMENT AND APPROVAL BY THE COMPETENT AUTHORITY

- (a) For localised alleviations from the speed limitation, the safety assessment is normally conducted by the ATS provider and is subject to approval by the competent authority.
- (b) Where alleviation is applied universally across the airspace of the Member State, the competent authority should ensure that appropriate safety assessment has been conducted.

AMC1 SERA.6001(h) Classification of airspaces

GENERAL

Class F airspace should only be implemented where the air traffic services are inadequate for the provision of air traffic control, and the limited advice on collision hazards otherwise provided by flight information service will not be adequate. Where air traffic advisory service is implemented, this should be considered as a temporary measure only until such time as it can be replaced by air traffic control service or, in cases where the traffic situation changes such that advisory service is no longer required, replaced by flight information service.

GM1 SERA.6001(h) Classification of airspaces

DURATION OF TEMPORARY MEASURE

- (a) When establishing Class F airspace, its intended temporary duration after which it should be replaced by an alternative classification should be specified in the AIP of the Member State.
- (b) The intended temporary duration of Class F airspace should not be longer than 3 years.

EXAMPLE

(c) Certain CTR airspace may change its classification on a daily basis (e.g. from 06:00 to 20:00 the airspace is classified as Class A, and from 20:00 until 23:59 and from 00:00 until 05:59 is classified as Class F). In this case, the duration of these arrangements should not exceed 3 years.

UK GM1 to SERA.6001(a) Classification of airspaces:

GLIDER OPERATIONS IN CLASS A AIRSPACE

In certain notified portions of Class A airspace, gliders are permitted to operate without reference to ATC in accordance with specified conditions and neither separation nor traffic information will be provided in respect of such flights.

When such activity occurs such airspace is to be segregated from other traffic, which is provided with at least

standard separation from the segregated airspace.

Such segregated activities are undertaken in accordance with the flexible use of airspace provisions contained within of Commission Regulation (EC) 2150 of 2005

SERA.6005 Requirements for communications and SSR transponder

(a) Radio Mandatory Zone (RMZ)

(1) VFR flights operating in parts of Classes E, F or G airspace and IFR flights operating in parts of Classes F or G airspace designated as a radio mandatory zone (RMZ) by the competent authority shall maintain continuous air-ground voice communication watch and establish two-way communication, as necessary, on the appropriate communication channel, unless in compliance with alternative provisions prescribed for that particular airspace by the ANSP.

(2) Before entering a radio mandatory zone, an initial call containing the designation of the station being called, call sign, type of aircraft, position, level, the intentions of the flight and other information as prescribed by the competent authority, shall be made by pilots on the appropriate communication channel.

(b) Transponder Mandatory Zone (TMZ)

(1) All flights operating in airspace designated by the competent authority as a transponder mandatory zone (TMZ) shall carry and operate SSR transponders capable of operating on Modes A and C or on Mode S, unless in compliance with alternative provisions prescribed for that particular airspace by the ANSP.

(2) Airspaces designated as radio mandatory zone and/or transponder mandatory zone shall be duly promulgated in the Aeronautical Information Publications.

UK GM1 to SERA.6005(b) Requirements for communications and SSR transponder

TRANSPONDER MANDATORY ZONE (TMZ)

(a) The pilot of an aircraft that wishes to operate in a TMZ without such serviceable transponder equipment may be granted access to the TMZ subject to specific ATC approval.

(b) A TMZ is established for overriding safety reasons, where the airspace classification would not ordinarily require aircraft to carry a transponder.

(c) A TMZ may be established outside or within controlled airspace.

SECTION 7 – AIR TRAFFIC SERVICES

SERA.7001.General - Objectives of the air traffic services

The objectives of the air traffic services shall be to:

- (a) prevent collisions between aircraft;
- (b) prevent collisions between aircraft on the manoeuvring area and obstructions on that area;
- (c) expedite and maintain an orderly flow of air traffic;
- (d) provide advice and information useful for the safe and efficient conduct of flights;
- (e) notify appropriate organisations regarding aircraft in need of search and rescue aid, and assist such organisations as required.

GM1 SERA.7001 General — Objectives of the air traffic services

GENERAL

These provisions are general statements which represent high-level safety objectives to be met when providing ATS and which are the basis of all the provisions of this Part.

SERA.7002 Collision hazard information when ATS based on surveillance are provided

(a) When an identified controlled flight is observed to be on a conflicting path with an unknown aircraft, deemed to constitute a collision hazard, the pilot of the controlled flight shall, whenever practicable:

- (1) be informed of the unknown aircraft, and, if the pilot so requests, or if the situation so warrants in the opinion of the controller, avoiding action shall be suggested; and
- (2) be notified when the conflict no longer exists.

AMC1 SERA.7002(a)(1) Collision hazard information when ATS based on surveillance are provided

INFORMATION REGARDING TRAFFIC ON CONFLICTING PATH

(a) Information regarding traffic on a conflicting path should be given, whenever practicable, in the following form:

- (1) relative bearing of the conflicting traffic in terms of the 12-hour clock;
- (2) distance from the conflicting traffic in kilometres or nautical miles;
- (3) direction in which the conflicting traffic appears to be proceeding; and
- (4) level and type of aircraft or, if unknown, relative speed of the conflicting traffic, e.g. slow or fast.

(b) Pressure-altitude-derived level information, even when unverified, should be used in the provision of collision hazard information because such information, particularly if available from an otherwise unknown aircraft (e.g. a VFR flight) and given to the pilot of a known aircraft, could facilitate the location of a collision hazard. If the level information has not been verified, the accuracy of the information should be considered uncertain and the pilot should be informed accordingly.

GM1 to (a)(1) of AMC1 SERA.7002(a)(1) Collision hazard information when ATS based on surveillance are provided

In cases where using the terms of the 12-hour clock is not practicable, like when the aircraft is turning, the direction of the unknown aircraft may be given by compass points, e.g. northwest, south, etc.;

GM1 to (a)(4) of AMC1 SERA.7002(a)(1) Collision hazard information when ATS based on surveillance are provided

The level may be described either as a flight level, altitude or height, or as a relative vertical distance from the aircraft provided with traffic information (e.g. 1 000 ft above or 1 000 ft below).

GM1 SERA.7002(a)(1) Collision hazard information when ATS based on surveillance are provided

INFORMATION REGARDING TRAFFIC ON CONFLICTING PATH OUTSIDE CONTROLLED AIRSPACE

When an identified IFR flight operating outside controlled airspace is observed to be on a conflicting path with another aircraft, the pilot should be:

- (a) informed of the traffic, and if so requested by the pilot or if, in the opinion of the controller, the situation warrants, a course of avoiding action should be suggested; and
- (b) notified when the conflict no longer exists.

GM2 SERA.7002(a)(1) Collision hazard information when ATS based on surveillance are provided

The information presented on a situation display may be used to provide identified aircraft with information regarding any aircraft observed to be on a conflicting path with the identified aircraft, and suggestions or advice regarding avoiding action.

GM3 SERA.7002(a)(1) Collision hazard information when ATS based on surveillance are provided

The provision of collision hazard information does not absolve pilots of VFR flights from their responsibilities for avoiding terrain/obstacles and for maintaining visual meteorological conditions.

GM4 SERA.7002(a)(1) Collision hazard information when ATS based on surveillance are provided

Collision hazard information should be provided where practicable. This should be done taking account of the priorities related to various tasks, such as provision of separation in accordance with the airspace classification, as well as equipment and workload limitations,

SERA.7005 Coordination between the aircraft operator and air traffic services

(a) Air traffic services units, in carrying out their objectives, shall have due regard for the requirements of the aircraft operators consequent on their obligations as specified in the relevant Union legislation on Air Operations, and, if so required by the aircraft operators, shall make available to them or their designated representatives such information as may be available to enable them or their designated representatives to carry out their responsibilities.

GM1 SERA.7005(a) Coordination between the aircraft operator and air traffic services

GENERAL

The expression 'due regard' is meant to indicate that the air traffic services units, in their coordination with the aircraft operators, should take into account the obligations of the operators in accordance with the European Union rules on air operations, and provide them with the information they require to operate in accordance with those rules.

(b) When so requested by an aircraft operator, messages (including position reports) received by air traffic services units and relating to the operation of the aircraft for which operational control service is provided by that aircraft operator shall, so far as practicable, be made available immediately to the aircraft operator or a designated representative in accordance with locally agreed procedures.

SECTION 8 – AIR TRAFFIC CONTROL SERVICE

SERA.8001 Application

Air traffic control service shall be provided:

- (a) to all IFR flights in airspace Classes A, B, C, D and E;
- (b) to all VFR flights in airspace Classes B, C and D;
- (c) to all special VFR flights;
- (d) to all aerodrome traffic at controlled aerodromes.

SERA.8005 Operation of air traffic control service

(a) In order to provide air traffic control service, an air traffic control unit shall:

- (1) be provided with information on the intended movement of each aircraft, or variations therefrom, and with current information on the actual progress of each aircraft;
- (2) determine from the information received, the relative positions of known aircraft to each other;
- (3) issue clearances and information for the purpose of preventing collision between aircraft under its control and of expediting and maintaining an orderly flow of traffic;
- (4) coordinate clearances as necessary with other units:
 - (i) whenever an aircraft might otherwise conflict with traffic operated under the control of such other units;
 - (ii) before transferring control of an aircraft to such other units.

(b) Clearances issued by air traffic control units shall provide separation:

- (1) between all flights in airspace Classes A and B;
- (2) between IFR flights in airspace Classes C, D and E;
- (3) between IFR flights and VFR flights in airspace Class C;
- (4) between IFR flights and special VFR flights;
- (5) between special VFR flights unless otherwise prescribed by the competent authority;

except that, when requested by the pilot of an aircraft and agreed by the pilot of the other aircraft and if so prescribed by the competent authority for the cases listed under b) above in airspace Classes D and E, a flight may be cleared subject to maintaining own separation in respect of a specific portion of the flight below 3 050 m (10 000 ft) during climb or descent, during day in visual meteorological conditions.

GM1 SERA.8005(b) Operation of air traffic control service

CLEARANCES TO MAINTAIN OWN SEPARATION

Clearances for a pilot to maintain own separation in respect of a specific portion of the flight in airspace Classes D and E below 3 050 m (10 000 ft) during climb or descent, during day in visual meteorological conditions are based on the fact that in those airspace classes a speed restriction of 250 kt is applied to all flights, allowing pilots of both aircraft to observe other flights in time to avoid collision.

(b) Except for cases when a reduction in separation minima in the vicinity of aerodromes can be applied, separation by an air traffic control unit shall be obtained by at least one of the following:

- (1) vertical separation, obtained by assigning different levels selected from the table of cruising levels in Appendix 3 to the Annex to this Regulation, except that the correlation of levels to track as prescribed therein shall not apply whenever otherwise indicated in appropriate aeronautical information publications or air traffic control clearances. The vertical separation minimum shall be a nominal 300 m (1 000 ft) up to and including FL 410 and a nominal 600 m (2 000 ft) above this level;
- (2) horizontal separation, obtained by providing:
 - (i) longitudinal separation, by maintaining an interval between aircraft operating along the same, converging or reciprocal tracks, expressed in time or distance; or
 - (ii) lateral separation, by maintaining aircraft on different routes or in different geographical areas.

SERA.8010 Separation minima

(a) The selection of separation minima for application within a given portion of airspace shall be made by the ANSP responsible for the provision of air traffic services and approved by the competent authority concerned.

(b) For traffic that will pass from one into the other of neighbouring airspaces and for routes that are closer to the common boundary of the neighbouring airspaces than the separation minima applicable in the circumstances, the selection of separation minima shall be made in consultation between the ANSPs responsible for the provision of air traffic services in neighbouring airspace.

GM1 SERA.8010(b) Separation minima

GENERAL

The purpose of this provision is to ensure, in the first case, compatibility on both sides of the line of transfer of

traffic and, in the other case, adequate separation between aircraft operating on both sides of the common boundary.

(c) Details of the selected separation minima and of their areas of application shall be notified:

- (1) to the air traffic services units concerned; and
- (2) to pilots and aircraft operators through aeronautical information publications, where separation is based on the use by aircraft of specified navigation aids or specified navigation techniques.

SERA.8012 Application of wake turbulence separation

(a) Wake turbulence separation minima shall be applied to aircraft in the approach and departure phases of flight under the following circumstances:

- (1) an aircraft is operating directly behind another aircraft at the same altitude or less than 300 m (1 000 ft) below it; or
- (2) both aircraft are using the same runway or parallel runways separated by less than 760 m (2 500 ft); or
- (3) an aircraft is crossing behind another aircraft at the same altitude or less than 300 m (1 000 ft) below it.

SERA.8015 Air traffic control clearances

(a) Air traffic control clearances shall be based solely on the following requirements for providing air traffic control service:

- (1) Clearances shall be issued solely for expediting and separating air traffic and be based on known traffic conditions which affect safety in aircraft operation. Such traffic conditions include not only aircraft in the air and on the manoeuvring area over which control is being exercised, but also any vehicular traffic or other obstructions not permanently installed on the manoeuvring area in use.
- (2) ATC units shall issue such ATC clearances as necessary to prevent collisions and to expedite and maintain an orderly flow of air traffic.
- (3) ATC clearances shall be issued early enough to ensure that they are transmitted to the aircraft in sufficient time for it to comply with them.

(b) Operation subject to clearance

- (1) An air traffic control clearance shall be obtained prior to operating a controlled flight, or a portion of a flight as a controlled flight. Such clearance shall be requested through the submission of a flight plan to an air traffic control unit.
- (2) The pilot-in-command of an aircraft shall inform ATC if an air traffic control clearance is not satisfactory. In such cases, ATC will issue an amended clearance, if practicable.
- (3) Whenever an aircraft has requested a clearance involving priority, a report explaining the necessity for such priority shall be submitted, if requested by the appropriate air traffic control unit.
- (4) Potential reclearance in flight. If, prior to departure, it is anticipated that, depending on fuel endurance and subject to reclearance in flight, a decision may be taken to proceed to a revised destination aerodrome, the appropriate air traffic control units shall be so notified by the insertion in the flight plan of information concerning the revised route (where known) and the revised destination.
- (5) An aircraft operated on a controlled aerodrome shall not taxi on the manoeuvring area without clearance from the aerodrome control tower and shall comply with any instructions given by that unit.

(c) Clearances for transonic flight

- (1) The air traffic control clearance relating to the transonic acceleration phase of a supersonic flight shall extend at least to the end of that phase.
- (2) The air traffic control clearance relating to the deceleration and descent of an aircraft from supersonic cruise to subsonic flight shall seek to provide for uninterrupted descent at least during the transonic phase.

(d) Contents of clearances

An air traffic control clearance shall indicate:

- (1) aircraft identification as shown in the flight plan;
- (2) clearance limit;
- (3) route of flight;
 - (i) the route of flight shall be detailed in each clearance when deemed necessary; and
 - (ii) the phrase "cleared via flight planned route" shall not be used when granting a re-clearance.;
- (4) level(s) of flight for the entire route or part thereof and changes of levels if required;
- (5) any necessary instructions or information on other matters such as approach or departure manoeuvres, communications and the time of expiry of the clearance.

(e) Read-back of clearances and safety-related information

(1) The flight crew shall read back to the air traffic controller safety-related parts of ATC clearances and instructions which are transmitted by voice. The following items shall always be read back:

- (i) ATC route clearances;
- (ii) clearances and instructions to enter, land on, take off from, hold short of, cross, taxi and backtrack on any runway; and
- (iii) runway-in-use, altimeter settings, SSR codes, newly assigned communication channels, level instructions, heading and speed instructions; and
- (iv) transition levels, whether issued by the controller or contained in ATIS broadcasts.

(2) Other clearances or instructions, including conditional clearances and taxi instructions, shall be read back or acknowledged in a manner to clearly indicate that they have been understood and will be complied with.

(3) The controller shall listen to the read-back to ascertain that the clearance or instruction has been correctly acknowledged by the flight crew and shall take immediate action to correct any discrepancies revealed by the read-back.

(4) Voice read-back of CPDLC messages shall not be required, unless otherwise specified by the ANSP.

(ea) Changes in clearance regarding route or level

(1) When issuing a clearance covering a requested change in route or level, the exact nature of the change shall be included in the clearance.

(2) When traffic conditions will not permit clearance of a requested change, the word "UNABLE" shall be used. When warranted by circumstances, an alternative route or level shall be offered.

(eb) Clearance related to altimetry

(1) For flights in areas where a transition altitude is established, the vertical position of the aircraft shall, except as provided for in (5) below, be expressed in terms of altitudes at or below the transition altitude and in terms of flight levels at or above the transition level. While passing through the transition layer, the vertical position shall be expressed in terms of flight levels when climbing and in terms of altitudes when descending.

(2) The flight crew shall be provided with the transition level in due time prior to reaching it during descent.

(3) A QNH altimeter setting shall be included in the descent clearance when first cleared at an altitude below the transition level, in approach clearances or clearances to enter the traffic circuit, and in taxi clearances for departing aircraft except when it is known that the aircraft has already received the information in a directed transmission.

(4) A QFE altimeter setting shall be provided to aircraft on request or on a regular basis in accordance with local arrangements. (5) When an aircraft which has been given clearance to land is completing its approach using atmospheric pressure at aerodrome elevation (QFE), the vertical position of the aircraft shall be expressed in terms of height above aerodrome elevation during that portion of its flight for which QFE may be used, except that it shall be expressed in terms of height above runway threshold elevation:

- (i) for instrument runways if the threshold is 2 m (7 ft) or more below the aerodrome elevation; and
- (ii) for precision approach runways.

(ec) Conditional clearances Conditional phrases, such as 'behind landing aircraft' or 'after departing aircraft', shall not be used for movements affecting the active runway(s), except when the aircraft or vehicles concerned are seen by the appropriate controller and pilot. The aircraft or vehicle causing the condition in the clearance issued shall be the first aircraft/vehicle to pass in front of the other aircraft concerned. In all cases, a conditional clearance shall be given in the following order and consist of:

- (1) the call sign;
- (2) the condition;
- (3) the clearance; and
- (4) a brief reiteration of the condition.;

(f) Coordination of clearances

(1) An air traffic control clearance shall be coordinated between air traffic control units to cover the entire route of an aircraft or a specified portion thereof as described in provisions (2) to (6).

(2) An aircraft shall be cleared for the entire route to the aerodrome of first intended landing:

- (i) when it has been possible, prior to departure, to coordinate the clearance between all the units under whose control the aircraft will come; or
- (ii) when there is reasonable assurance that prior coordination will be effected between those units under whose control the aircraft will subsequently come.

(3) When coordination as in (2) has not been achieved or is not anticipated, the aircraft shall be cleared only to that point where coordination is reasonably assured; prior to reaching such point, or at such point,

the aircraft shall receive further clearance, holding instructions being issued as appropriate.

(4) When prescribed by the ATS unit, aircraft shall contact a downstream air traffic control unit, for the purpose of receiving a downstream clearance prior to the transfer of control point.

(i) Aircraft shall maintain the necessary two-way communication with the current air traffic control unit whilst obtaining a downstream clearance.

(ii) A clearance issued as a downstream clearance shall be clearly identifiable as such to the pilot.

(iii) Unless coordinated, downstream clearances shall not affect the aircraft's original flight profile in any airspace, other than that of the air traffic control unit responsible for the delivery of the downstream clearance.

(5) When an aircraft intends to depart from an aerodrome within a control area to enter another control area within a period of thirty minutes, or such other specific period of time as has been agreed between the area control centres concerned, coordination with the subsequent area control centre shall be effected prior to issuance of the departure clearance.

(6) When an aircraft intends to leave a control area for flight outside controlled airspace, and will subsequently re-enter the same or another control area, a clearance from the point of departure to the aerodrome of first intended landing may be issued. Such clearance or revisions thereto shall apply.

GM1 SERA.8015(a) Air traffic control clearances

Clearances to VFR flights in airspace classes C and D do not imply any form of separation:

(a) in Class C — between VFR flights; and

(b) in Class D — between IFR and VFR flights or between VFR flights.

For the case of special VFR flights, refer to SERA.8005(b).

GM1 SERA.8015(b)(4) Air traffic control clearances

OPERATION SUBJECT TO CLEARANCE — POTENTIAL RECLEARANCE IN FLIGHT

The intent of the provision relating to potential reclearance is to facilitate reclearance to a revised destination, normally beyond the filed destination aerodrome.

GM1 SERA.8015(d)(5) Air traffic control clearances

CONTENT OF THE CLEARANCES — TIME OF EXPIRY

The time of expiry of the clearance indicates the time after which the clearance will be automatically cancelled if the flight has not been commenced.

GM1 SERA.8015(e)(1) Air traffic control clearances

The nature of the change should include a description of the route and levels to the point where it joins the previously cleared route, or, if the aircraft will not re-join the previous route, to the destination.

GM1 SERA.8015(e)(4) Air traffic control clearances

READ-BACK OF CPDLC MESSAGES

When so indicated by local safety assessments, ANSP may require that the receipt of some of the CPDLC message types (in particular those addressing trajectory changes) be acknowledged by voice.

GM1 SERA.8015(f)(2) Air traffic control clearances

PROVISIONS FOR CLEARANCES AND INSTRUCTIONS — ALTIMETRY

The provision of transition level may be accomplished by voice communications, ATIS broadcast or data link.

GM1 SERA.8015(f)(4) Air traffic control clearances

COORDINATION OF CLEARANCES — DOWNSTREAM CLEARANCE

(a) In such cases it is assumed that contact of a downstream ATC unit is initiated by the pilot. Therefore, the rules require that the aircraft maintain the necessary two-way communication with the current ATC unit.

(b) In cases where an aircraft cannot maintain two-way communication whilst obtaining a downstream clearance, the pilot needs to seek the acceptance to leave momentarily the communication channel of the current ATC unit prior to contacting a downstream ATC unit.

GM1 SERA.8015(g) Air traffic control clearances

CONDITIONAL CLEARANCES

An example of a conditional clearance is 'SCANDINAVIAN 941, BEHIND DC9 ON SHORT FINAL, LINE UP BEHIND'. This implies the need for the aircraft receiving the conditional clearance to identify the aircraft or vehicle causing the conditional clearance.

SERA.8020 Adherence to Flight Plan

(a) Except as provided for in (b) and (d) an aircraft shall adhere to the current flight plan or the applicable portion of a current flight plan submitted for a controlled flight unless a request for a change has been made and clearance obtained from the appropriate air traffic control unit, or unless an emergency situation arises which necessitates immediate action by the aircraft, in which event as soon as circumstances permit, after

such emergency authority is exercised, the appropriate air traffic services unit shall be notified of the action taken and that this action has been taken under emergency authority.

(1) Unless otherwise authorised by the competent authority, or directed by the appropriate air traffic control unit, controlled flights shall, in so far as practicable:

- (i) when on an established ATS route, operate along the defined centre line of that route; or
- (ii) when on any other route, operate directly between the navigation facilities and/or points defining that route.

(2) Unless otherwise authorised by the competent authority, or directed by the appropriate air traffic control unit, an aircraft operating along an ATS route segment defined by reference to very high frequency omnidirectional radio ranges shall change over for its primary navigation guidance from the facility behind the aircraft to that ahead of it at, or as close as operationally feasible to, the changeover point, where established.

(3) Deviation from the requirements in point (1) shall be notified to the appropriate ATS unit.

(b) Inadvertent changes. In the event that a controlled flight inadvertently deviates from its current flight plan, the following action shall be taken:

(1) Deviation from track: if the aircraft is off track, action shall be taken forthwith to adjust the heading of the aircraft to regain track as soon as practicable.

(2) Variation in true airspeed: if the average true airspeed at cruising level between reporting points varies or is expected to vary by plus or minus 5 per cent of the true airspeed, from that given in the flight plan, the appropriate air traffic services unit shall be so informed.

(3) Change in time estimate: if the time estimate for the next applicable reporting point, flight information region boundary or destination aerodrome, whichever comes first, is found to be in error in excess of 2 minutes from that notified to ATS or such other period of time as prescribed by the competent authority, a revised estimated time shall be notified as soon as possible to the appropriate ATS unit.

(4) Additionally, when an ADS-C agreement is in place, the air traffic services unit shall be informed automatically via data link whenever changes occur beyond the threshold values stipulated by the ADS-C event contract.

(c) Intended changes. Requests for flight plan changes shall include information as indicated hereunder:

(1) Change of cruising level: aircraft identification; requested new cruising level and cruising speed at this level, revised time estimates (when applicable) at subsequent flight information region boundaries.

(2) Change of route:

(i) Destination unchanged: aircraft identification; flight rules; description of new route of flight including related flight plan data beginning with the position from which requested change of route is to commence; revised time estimates; any other pertinent information.

(ii) Destination changed: aircraft identification; flight rules; description of revised route of flight to revised destination aerodrome including related flight plan data, beginning with the position from which requested change of route is to commence; revised time estimates; alternate aerodrome(s); any other pertinent information.

(d) Weather deterioration below the VMC. When it becomes evident that flight in VMC in accordance with its current flight plan will not be practicable, a VFR flight operated as a controlled flight shall:

(1) request an amended clearance enabling the aircraft to continue in VMC to destination or to an alternative aerodrome, or to leave the airspace within which an ATC clearance is required; or

(2) if no clearance in accordance with a) can be obtained, continue to operate in VMC and notify the appropriate ATC unit of the action being taken either to leave the airspace concerned or to land at the nearest suitable aerodrome; or

(3) if operated within a control zone, request authorisation to operate as a special VFR flight; or

(4) request clearance to operate in accordance with the instrument flight rules.

SERA.8025 Position Reports

(a) Unless exempted by the competent authority or by the appropriate air traffic services unit under conditions specified by that authority, a controlled flight shall report to the appropriate air traffic services unit, as soon as possible, the time and level of passing each designated compulsory reporting point, together with any other required information. Position reports shall similarly be made in relation to additional points when requested by the appropriate air traffic services unit. In the absence of designated reporting points, position reports shall

be made at intervals prescribed by the competent authority or specified by the appropriate air traffic services unit.

(1) Controlled flights providing position information to the appropriate air traffic services unit via data link communications shall only provide voice position reports when requested.

(2) When a controlled flight has been exempted from the requirement to report at compulsory reporting points, pilots shall, unless automated position reporting is in effect, resume voice or CPDLC position reporting:

(i) when so instructed;

(ii) when advised that the ATS surveillance service has been terminated; or

(iii) when advised that the ATS surveillance identification is lost. (3) The format of position reports shall be in accordance with Appendix 5, Point A.

(b) The Member States shall comply with the appropriate provisions on communication failures as have been adopted under the Chicago Convention. The Commission shall propose common European procedures by 31 December 2015 at latest, for implementation of the said ICAO provisions in Union law.

GM1 SERA.8025(a)(2) Position reports

RESUMPTION OF CPDLC POSITION REPORTING

The resumption of controller–pilot data link communications (CPDLC) position reporting can be achieved through automatic dependent surveillance — contract (ADS-C).

SERA.8030 Termination of Control

A controlled flight shall, except when landing at a controlled aerodrome, advise the appropriate ATC unit as soon as it ceases to be subject to air traffic control service.

SERA.8035 Communications

(a) An aircraft operated as a controlled flight shall maintain continuous air-ground voice communication watch on the appropriate communication channel of, and establish two-way communication as necessary with, the appropriate air traffic control unit, except as may be prescribed by the relevant ANSP in respect of aircraft forming part of aerodrome traffic at a controlled aerodrome.

(1) The requirement for an aircraft to maintain an air-ground voice communication watch shall remain in effect when CPDLC has been established.

(b) The Member States shall comply with the appropriate provisions on communication failures as have been adopted under the Chicago Convention. The Commission shall take the necessary measures for the transposition of those provisions into Union law so as to establish common European procedures on communication failures by 31 December 2017 at the latest.

AMC1 SERA.8035 Communications

ESTABLISHMENT OF PILOT–CONTROLLER COMMUNICATIONS

Direct pilot–controller communications should be established prior to the provision of ATS surveillance services unless special circumstances, such as emergencies, dictate otherwise.

AMC2 SERA.8035 Communications

ACKNOWLEDGEMENT OF MESSAGES

(a) When a CPDLC emergency message is received, the controller shall acknowledge receipt of the message by the most efficient means available.

(b) Except as provided by (a), when a controller or pilot communicates via CPDLC, the response should be via CPDLC. When a controller or pilot communicates via voice, the response should be via voice.

GM1 SERA.8035(a) Communications

GENERAL

(a) In a HF environment, SELCAL or similar automatic signalling devices satisfy the requirement to maintain an air-ground voice communication watch.

(b) An aircraft may be permitted to communicate temporarily with a control unit other than the unit controlling the aircraft.

(b) The Member States shall comply with the appropriate provisions on communication failures as have been adopted under the Chicago Convention. The Commission shall propose common European procedures by 31 December 2015 at latest, for implementation of the said ICAO provisions in Union law.

SECTION 9 — FLIGHT INFORMATION SERVICE

SERA.9001 Application

(a) Flight information service shall be provided by the appropriate air traffic services units to all aircraft which are likely to be affected by the information and which are:

- (1) provided with air traffic control service; or
- (2) otherwise known to the relevant air traffic services units.

(b) The reception of flight information service does not relieve the pilot-in-command of an aircraft of any responsibilities and the pilot-in-command shall make the final decision regarding any suggested alteration of flight plan.

(c) Where air traffic services units provide both flight information service and air traffic control service, the provision of air traffic control service shall have precedence over the provision of flight information service whenever the provision of air traffic control service so requires.

SERA.9005 Scope of flight information service

(a) Flight information service shall include the provision of pertinent:

- (1) SIGMET and AIRMET information;
- (2) information concerning pre-eruption volcanic activity, volcanic eruptions and volcanic ash clouds;
- (3) information concerning the release into the atmosphere of radioactive materials or toxic chemicals;
- (3) information on changes in the availability of radio navigation services;
- (4) information on changes in condition of aerodromes and associated facilities, including information on the state of the aerodrome movement areas when they are affected by snow, ice or significant depth of water;
- (5) information on unmanned free balloons;

and of any other information likely to affect safety.

(a) Flight information service provided to flights shall include, in addition to that outlined in (a), the provision of information concerning:

- (1) weather conditions reported or forecast at departure, destination and alternate aerodromes;
- (2) collision hazards, to aircraft operating in airspace Classes C, D, E, F and G;
- (3) for flight over water areas, in so far as practicable and when requested by a pilot, any available information such as radio call sign, position, true track, speed, etc., of surface vessels in the area.

(c) Flight information service provided to VFR flights shall include, in addition to that outlined in (a), the provision of available information concerning traffic and weather conditions along the route of flight that are likely to make operation under the visual flight rules impracticable.

GM1 SERA.9005(b)(1) Scope of flight information service

INFORMATION RELATED TO WEATHER CONDITIONS AT DEPARTURE, DESTINATION, AND ALTERNATE AERODROMES

Pilots normally obtain information on the weather conditions from the appropriate office before the flight. When available, outstanding or safety-relevant information is normally provided by radio communication within 60 minutes from the aerodrome of destination unless the information has been made available through other means..

GM1 SERA.9005(b)(2) Scope of flight information service

INFORMATION RELATED TO COLLISION HAZARDS

Information relating to collision hazards includes only known activities that constitute risks to the aircraft concerned. The availability of such information to air traffic services may sometimes be incomplete (e.g. limitations in radar or radio coverage, optional radio contact by pilots, limitations in the accuracy of reported information by pilots, or unconfirmed level of information) and, therefore, air traffic services cannot assume responsibility for its issuance at all times or for its accuracy.

SERA.9010 Automatic Terminal Information Service (ATIS)

(a) Use of the ATIS messages in directed request/reply transmissions

- (1) When requested by the pilot, the applicable ATIS message(s) shall be transmitted by the appropriate air traffic services unit.
- (2) Whenever Voice-ATIS and/or D-ATIS is provided:
 - (i) aircraft shall acknowledge receipt of the information upon establishing communication with the ATS unit providing approach control service, the aerodrome control tower or Aerodrome Flight Information Service (AFIS), as appropriate; and
 - (ii) the appropriate air traffic services unit shall, when replying to an aircraft acknowledging receipt of an

ATIS message or, in the case of arriving aircraft, at such other time as may be prescribed by the competent authority, provide the aircraft with the current altimeter setting.

(3) Information contained in a current ATIS, the receipt of which has been acknowledged by the aircraft concerned, need not be included in a directed transmission to the aircraft, with the exception of the altimeter setting, which shall be provided in accordance with (2).

(4) If an aircraft acknowledges receipt of an ATIS that is no longer current, any element of information that needs updating shall be transmitted to the aircraft without delay.

(b) ATIS for arriving and departing aircraft

ATIS messages containing both arrival and departure information shall contain the following elements of information in the order listed:

- (1) name of aerodrome;
- (2) arrival and/or departure indicator;
- (3) contract type, if communication is via D-ATIS;
- (4) designator;
- (5) time of observation, if appropriate;
- (6) type of approach(es) to be expected;
- (7) the runway(s) in use; status of arresting system constituting a potential hazard, if any;
- (8) significant runway surface conditions and, if appropriate, braking action;
- (9) holding delay, if appropriate;
- (10) transition level, if applicable;
- (11) other essential operational information;
- (12) surface wind direction (in degrees magnetic) and speed, including significant variations and, if surface wind sensors related specifically to the sections of runway(s) in use are available and the information is required by aircraft operators, the indication of the runway and the section of the runway to which the information refers;
- (13) visibility and, when applicable, RVR (*) and, if visibility/RVR sensors related specifically to the sections of runway(s) in use are available and the information is required by operators, the indication of the runway and the section of the runway to which the information refers;
- (14) cloud below 1 500 m (5 000 ft) or below the highest minimum sector altitude, whichever is greater; cumulonimbus; if the sky is obscured, vertical visibility when available; (°)
- (15) air temperature;
- (16) dew point temperature;
- (17) altimeter setting(s);
- (18) any available information on significant meteorological phenomena in the approach and climb-out areas including wind shear, and information on recent weather of operational significance;
- (19) trend forecast, when available; and
- (20) specific ATIS instructions.

(c) ATIS for arriving aircraft

ATIS messages containing arrival information only shall contain the following elements of information in the order listed:

- (1) name of aerodrome;
- (2) arrival indicator;
- (3) contract type, if communication is via D-ATIS;
- (4) designator;
- (5) time of observation, if appropriate;
- (6) type of approach(es) to be expected;
- (7) main landing runway(s); status of arresting system constituting a potential hazard, if any;
- (8) significant runway surface conditions and, if appropriate, braking action;
- (9) holding delay, if appropriate;
- (10) transition level, if applicable;
- (11) other essential operational information;
- (12) surface wind direction (in degrees magnetic) and speed, including significant variations and, if surface wind sensors related specifically to the sections of runway(s) in use are available and the information is required by aircraft operators, the indication of the runway and the section of the runway to which the information refers;

(13) visibility and, when applicable, RVR (*) and, if visibility/RVR sensors related specifically to the sections of runway(s) in use are available and the information is required by operators, the indication of the runway and the section of the runway to which the information refers; cloud below 1 500 m (5 000 ft) or below the highest minimum sector altitude, whichever is greater; cumulonimbus; if the sky is obscured, vertical visibility when available; (*)

(14) air temperature;

(15) dew point temperature;

(16) altimeter setting(s);

(17) any available information on significant meteorological phenomena in the approach area including wind shear, and information on recent weather of operational significance;

(18) trend forecast, when available; and

(19) specific ATIS instructions.

(d) ATIS for departing aircraft

ATIS messages containing departure information only shall contain the following elements of information in the order listed:

(1) name of aerodrome;

(2) departure indicator;

(3) contract type, if communication is via D-ATIS;

(4) designator;

(5) time of observation, if appropriate;

(6) runway(s) to be used for take-off; status of arresting system constituting a potential hazard, if any;

(7) significant surface conditions of runway(s) to be used for take-off and, if appropriate, braking action;

(8) departure delay, if appropriate;

(9) transition level, if applicable;

(10) other essential operational information;

(11) surface wind direction (in degrees magnetic) and speed, including significant variations and, if surface wind sensors related specifically to the sections of runway(s) in use are available and the information is required by aircraft operators, the indication of the runway and the section of the runway to which the information refers;

(12) visibility and, when applicable RVR (*) and, if visibility/RVR sensors related specifically to the sections of runway(s) in use are available and the information is required by operators, the indication of the runway and the section of the runway to which the information refers; cloud below 1 500 m (5 000 ft) or below the highest minimum sector altitude, whichever is greater; cumulonimbus; if the sky is obscured, vertical visibility when available; (*)

(13) air temperature;

(14) dew point temperature;

(15) altimeter setting(s);

(16) any available information on significant meteorological phenomena in the climb-out area including wind shear;

(17) trend forecast, when available; and

(18) specific ATIS instructions.

(*) These elements are replaced by the term 'CAVOK' when the following conditions occur simultaneously at the time of observation: a) visibility, 10 km or more, and the lowest visibility not reported; b) no cloud of operational significance; and c) no weather of significance to aviation.

SECTION 10 – ALERTING SERVICE

SERA.10001 Application

- (a) Alerting service shall be provided by the air traffic services units:
- (1) for all aircraft provided with air traffic control service;
 - (2) in so far as practicable, to all other aircraft having filed a flight plan or otherwise known to the air traffic services; and
 - (3) to any aircraft known or believed to be the subject of unlawful interference.
- (b) Unless otherwise prescribed by the competent authority, aircraft equipped with suitable two-way radio-communications shall report during the period 20 to 40 minutes following the time of the last contact, whatever the purpose of such contact, merely to indicate that the flight is progressing according to plan, such report to comprise identification of the aircraft and the words “Operations normal”.
- (c) The “Operations normal” message shall be transmitted air-ground to an appropriate ATS unit.

GM1 SERA.10001(b) Application

The absence of an ‘operations normal’ message does not constitute a situation of urgency. In the absence of such a report, ATS should endeavour to contact the aircraft on available frequencies. A failure to contact the aircraft could lead to any type of measure including the declaration of ‘uncertainty phase’.

SERA.10005 Information to aircraft operating in the vicinity of an aircraft in a state of emergency

- (a) When it has been established by an air traffic services unit that an aircraft is in a state of emergency, other aircraft known to be in the vicinity of the aircraft involved shall, except as provided in (b), be informed of the nature of the emergency as soon as practicable.
- (b) When an air traffic services unit knows or believes that an aircraft is being subjected to unlawful interference, no reference shall be made in ATS air-ground communications to the nature of the emergency unless it has first been referred to in communications from the aircraft involved and it is certain that such reference will not aggravate the situation.

SECTION 11 – INTERFERENCE, EMERGENCY CONTINGENCIES AND INTERCEPTION

SERA.11001 General

(a) An aircraft which is being subjected to unlawful interference shall endeavour to set the transponder to Code 7500 and notify the appropriate ATS unit of, any significant circumstances associated therewith and any deviation from the current flight plan necessitated by the circumstances, in order to enable the ATS unit to give priority to the aircraft and to minimize conflict with other aircraft.

(b) If an aircraft is subjected to unlawful interference, the pilot-in-command shall attempt to land as soon as practicable at the nearest suitable aerodrome or at a dedicated aerodrome assigned by the competent authority unless considerations aboard the aircraft dictate otherwise.

(c) In case of an aircraft known or believed to be in a state of emergency, including being subjected to unlawful interference, ATS units shall give the aircraft maximum consideration, assistance and priority over other aircraft, as may be necessitated by the circumstances.

(d) Subsequent ATC actions shall be based on the intentions of the pilot, the overall air traffic situation and the real-time dynamics of the contingency.

GM1 SERA.11001 General

EMERGENCY DESCENT PROCEDURES

(a) When an aircraft operated as a controlled flight experiences sudden decompression or a malfunction requiring an emergency descent, the aircraft should, if able:

- (1) initiate a turn away from the assigned route or track before commencing the emergency descent;
- (2) advise the appropriate ATC unit as soon as possible of the emergency descent;
- (3) set transponder to Code 7700 and select the emergency mode on the automatic dependent surveillance/controller–pilot data link communications (ADS/CPDLC) system, if applicable;
- (4) turn on aircraft exterior lights;
- (5) watch for conflicting traffic both visually and by reference to airborne collision avoidance system (ACAS) (if equipped); and
- (6) coordinate its further intentions with the appropriate ATC unit.

(b) The aircraft is not to descend below the lowest published minimum altitude that will provide a minimum vertical clearance of 300 m (1 000 ft) or, in designated mountainous terrain, of 600 m (2 000 ft) above all obstacles located in the area specified.

(c) Immediately upon recognising that an emergency descent is in progress, ATC units are to acknowledge the emergency on radiotelephony.

In particular, when recognising that an emergency descent is in progress, ATC may, as required by the situation:

- (1) suggest a heading to be flown, if able, by the aircraft carrying out the emergency descent in order to achieve separation from other aircraft concerned;
- (2) state the minimum altitude for the area of operation, only if the level-off altitude stated by the pilot is below such minimum altitude, together with the applicable QNH altimeter setting; and
- (3) as soon as possible, provide separation from conflicting traffic, or issue essential traffic information, as appropriate.

When deemed necessary, ATC will broadcast an emergency message, or cause such message to be broadcast, to other aircraft concerned to warn them of the emergency descent.

SERA.11005 Unlawful interference

(aa) An aircraft which is being subjected to unlawful interference shall endeavour to set the transponder to Code 7500 and notify the appropriate ATS unit of any significant circumstances associated therewith and any deviation from the current flight plan necessitated by the circumstances, in order to enable the ATS unit to give priority to the aircraft and to minimise conflict with other aircraft.

(ab) If an aircraft is subjected to unlawful interference, the pilot-in-command shall attempt to land as soon as practicable at the nearest suitable aerodrome or at a dedicated aerodrome assigned by the competent authority, unless considerations aboard the aircraft dictate otherwise.

(b) When an occurrence of unlawful interference with an aircraft takes place or is suspected, air traffic services units shall attend promptly to requests by the aircraft. Information pertinent to the safe conduct of the flight shall continue to be transmitted and necessary action shall be taken to expedite the conduct of all phases of the flight, especially the safe landing of the aircraft.

(c) When an occurrence of unlawful interference with an aircraft takes place or is suspected, ATS units shall, in accordance with locally agreed procedures, immediately inform the appropriate authority designated by the State and exchange necessary information with the aircraft operator or its designated representative.;

AMC1 SERA.11005 Unlawful interference

(a) Whenever unlawful interference with an aircraft is known or suspected or a bomb threat warning has been received, ATS units should promptly attend to requests by, or to anticipated needs of, the aircraft, including requests for relevant information relating to air navigation facilities, procedures and services along the route of flight and at any aerodrome of intended landing, and should take such action as is necessary to expedite the conduct of all phases of the flight.

ATS units should also:

(1) transmit, and continue to transmit, information pertinent to the safe conduct of the flight, without expecting a reply from the aircraft;

(2) monitor and plot the progress of the flight with the means available, and coordinate transfer of control with adjacent ATS units without requiring transmissions or other responses from the aircraft, unless communication with the aircraft remains normal;

(3) inform, and continue to keep informed, appropriate ATS units, including those in adjacent flight information regions (FIRs), which may be concerned with the progress of the flight;

(4) notify:

(i) the operator or its designated representative;

(ii) the appropriate rescue coordination centre in accordance with appropriate alerting procedures; and

(iii) the appropriate authority designated by the State; and

(5) relay appropriate messages, relating to the circumstances associated with the unlawful interference, between the aircraft and designated authorities.

(b) The following additional procedures should apply if a threat is received indicating that a bomb or other explosive device has been placed on board a known aircraft. The ATS unit receiving the threat information should:

(1) if in direct communication with the aircraft, advise the flight crew without delay of the threat and the circumstances surrounding the threat; or

(2) if not in direct communication with the aircraft, advise the flight crew by the most expeditious means through other ATS units or other channels.

(c) The ATS unit in communication with the aircraft should ascertain the intentions of the flight crew and report those intentions to other ATS units which may be concerned with the flight.

(d) The aircraft should be handled in the most expeditious manner while ensuring, to the extent possible, the safety of other aircraft and that personnel and ground installations are not put at risk.

(e) Aircraft in flight should be given re-clearance to a requested new destination without delay. Any request by the flight crew to climb or descend for the purpose of equalising or reducing the differential between the outside air pressure and the cabin air pressure should be approved as soon as possible.

(f) An aircraft on the ground should be advised to remain as far away from other aircraft and installations as possible and, if appropriate, to vacate the runway. The aircraft should be instructed to taxi to a designated or isolated parking area in accordance with local instructions. Should the flight crew disembark passengers and crew immediately, other aircraft, vehicles and personnel should be kept at a safe distance from the threatened aircraft.

(g) ATS units should not provide any advice or suggestions concerning action to be taken by the flight crew in relation to an explosive device.

(h) An aircraft known or believed to be the subject of unlawful interference or which for other reasons needs isolation from normal aerodrome activities should be cleared to the designated isolated parking position. Where such an isolated parking position has not been designated, or if the designated position is not available, the aircraft should be cleared to a position within the area or areas selected by prior agreement with the aerodrome authority. The taxi clearance should specify the taxi route to be followed to the parking position. This route should be selected with a view to minimising any security risks to the public, other aircraft and installations at the aerodrome.

GM1 SERA.11005 Unlawful interference

The following procedures are intended as guidance for use by aircraft when unlawful interference occurs and the aircraft is unable to notify an ATS unit of this fact.

(a) If the pilot-in-command cannot proceed to an aerodrome, they should attempt to continue flying on the assigned track and at the assigned cruising level at least until able to notify an ATS unit or until within radar or ADS-B coverage.

(b) When an aircraft subjected to an act of unlawful interference must depart from its assigned track or its assigned cruising level without being able to make radiotelephony contact with ATS, the pilot-in-command should, whenever possible:

(1) attempt to broadcast warnings on the VHF channel in use or the VHF emergency frequency, and other appropriate channels, unless considerations aboard the aircraft dictate otherwise. Other equipment such as

on-board transponders and data links should also be used when it is advantageous to do so and circumstances permit; and

(2) proceed in accordance with applicable special procedures for in-flight contingencies, where such procedures have been established and promulgated in the Regional Supplementary Procedures (Doc 7030); or

(3) if no applicable regional procedures have been established, proceed at a level which differs from the cruising levels normally used for an IFR flight by:

(i) 150 m (500 ft) in an area where a vertical separation minimum of 300 m (1 000 ft) is applied; or

(ii) 300 m (1 000 ft) in an area where a vertical separation minimum of 600 m (2 000 ft) is applied.

GM1 to AMC1 SERA.11005(a)(1) Unlawful interference

Verbal reference to unlawful interference should not be made by the controller unless it is first made by the pilot in a radio communication transmission, since it might attract the attention of the hijacker (or of other aircraft) and have detrimental consequences.

SERA.11010 Strayed or unidentified aircraft

(a) As soon as an air traffic services unit becomes aware of a strayed aircraft it shall take all necessary steps as outlined in (1) and (3) to assist the aircraft and to safeguard its flight.

(1) If the aircraft's position is not known, the air traffic services unit shall:

(i) attempt to establish two-way communication with the aircraft, unless such communication already exists;

(ii) use all available means to determine its position;

(iii) inform other air traffic services units into whose area the aircraft may have strayed or may stray, taking into account all the factors which may have affected the navigation of the aircraft in the circumstances;

(iv) inform, in accordance with locally agreed procedures, appropriate military units and provide them with pertinent flight plan and other data concerning strayed aircraft;

(v) request from the units referred to in (iii) and (iv) and from other aircraft in flight every assistance in establishing communication with the aircraft and determining its position.

(2) The requirements in (1)(iv) and (1)(v) shall apply also to air traffic services units informed in accordance with (1)(iii).

(3) When the aircraft's position is established, the air traffic services unit shall:

(i) advise the aircraft of its position and the corrective action to be taken. This advice shall be immediately provided when the ATS unit is aware that there is a possibility of interception or other hazard to the safety of the aircraft; and

(ii) provide, as necessary, other air traffic services units and appropriate military units with relevant information concerning the strayed aircraft and any advice given to that aircraft.

(b) As soon as an air traffic services unit becomes aware of an unidentified aircraft in its area, it shall endeavour to establish the identity of the aircraft whenever this is necessary for the provision of air traffic services or required by the appropriate military authorities in accordance with locally agreed procedures. To this end, the air traffic services unit shall take such of the following steps as are appropriate in the circumstances:

(1) attempt to establish two-way communication with the aircraft;

(2) inquire of other air traffic services units within the flight information region about the flight and request their assistance in establishing two-way communication with the aircraft;

(3) inquire of air traffic services units serving the adjacent flight information regions about the flight and request their assistance in establishing two-way communication with the aircraft;

(4) attempt to obtain information from other aircraft in the area.

(5) the air traffic services unit shall, as necessary, inform the appropriate military unit as soon as the identity of the aircraft has been established.

(c) In the case of a strayed or unidentified aircraft, the possibility of the aircraft being subject of unlawful interference shall be taken into account. Should the air traffic services unit consider that a strayed or unidentified aircraft may be the subject of unlawful interference, the appropriate authority designated by the State shall immediately be informed, in accordance with locally agreed procedures.

GM1 SERA.11010 In-flight contingencies

STRAYED OR UNIDENTIFIED AIRCRAFT — GENERAL

(a) An aircraft may be considered, at the same time, as a 'strayed aircraft' by one unit and as an 'unidentified aircraft' by another unit. This possibility should be taken into account when complying with the provisions of SERA.11010(a)(1)(iii) and SERA.11010(b)(2) and (b)(3).

(b) Navigational assistance by an air traffic services unit is particularly important if the unit becomes aware of an aircraft straying, or about to stray, into an area where there is a risk of interception or other hazard to its safety.

SERA.11012 Minimum Fuel and Fuel Emergency

(a) When a pilot reports a state of minimum fuel, the controller shall inform the pilot as soon as practicable of any anticipated delays or that no delays are expected.

(b) When the level of fuel renders declaring a situation of distress necessary, the pilot, in accordance with SERA.14095, shall indicate that by using the radiotelephony distress signal (MAYDAY), preferably spoken three times, followed by the nature of the distress condition (FUEL).

GM1 SERA.11012 Minimum fuel and fuel emergency

The declaration of MINIMUM FUEL informs ATC that all planned aerodrome options have been reduced to a specific aerodrome of intended landing, and any change to the existing clearance may result in landing with less than planned final reserve fuel. This is not an emergency situation but an indication that an emergency situation is possible should any additional delay occur.

SERA.11013 Degraded aircraft performance

(a) Whenever, as a result of failure or degradation of navigation, communications, altimetry, flight control or other systems, aircraft performance is degraded below the level required for the airspace in which it is operating, the flight crew shall advise the ATC unit concerned without delay. Where the failure or degradation affects the separation minimum currently being employed, the controller shall take action to establish another appropriate type of separation or separation minimum.

(b) Degradation or failure of the RNAV system

When an aircraft cannot meet the specifications as required by the RNAV route or procedure, as a result of a failure or degradation of the RNAV system, a revised clearance shall be requested by the pilot.

(c) Loss of vertical navigation performance required for reduced vertical separation minima (RVSM) airspace

(1) The pilot shall inform ATC as soon as possible of any circumstances where the vertical navigation performance requirements for RVSM airspace cannot be maintained. In such cases, the pilot shall obtain a revised ATC clearance prior to initiating any deviation from the cleared route and/or flight level, whenever possible. When a revised ATC clearance cannot be obtained prior to such a deviation, the pilot shall obtain a revised clearance as soon as possible thereafter.

(2) During operations in, or vertical transit through, RVSM airspace with aircraft not approved for RVSM operations, pilots shall report non-approved status as follows:

- (i) at initial call on any channel within RVSM airspace;
- (ii) in all requests for level changes; and
- (iii) in all read-backs of level clearances.

(3) Air traffic controllers shall explicitly acknowledge receipt of messages from aircraft reporting RVSM non-approved status.

(4) Degradation of aircraft equipment — pilot-reported:

(i) When informed by the pilot of an RVSM-approved aircraft operating in RVSM airspace that the aircraft's equipment no longer meets the RVSM requirements, ATC shall consider the aircraft as non-RVSM-approved.

(ii) ATC shall take action immediately to provide a minimum vertical separation of 600 m (2 000 ft) or an appropriate horizontal separation from all other aircraft concerned that are operating in RVSM airspace. An aircraft rendered non-RVSM-approved shall normally be cleared out of RVSM airspace by ATC when it is possible to do so.

(iii) Pilots shall inform ATC, as soon as practicable, of any restoration of the proper functioning of equipment required to meet the RVSM requirements.

(iv) The first ACC to become aware of a change in an aircraft's RVSM status shall coordinate with adjacent ACCs, as appropriate.

(5) Severe turbulence — not forecast:

(i) When an aircraft operating in RVSM airspace encounters severe turbulence due to weather or wake vortex that the pilot believes will impact the aircraft's capability to maintain its cleared flight level, the pilot shall inform ATC. ATC shall establish either an appropriate horizontal separation or an increased minimum vertical separation.

(ii) ATC shall, to the extent possible, accommodate pilot requests for flight level and/or route changes and shall pass on traffic information, as required.

(iii) ATC shall solicit reports from other aircraft to determine whether RVSM should be suspended entirely or within a specific flight level band and/or area.

(iv) The ACC suspending RVSM shall coordinate with adjacent ACCs such suspension(s) and any required adjustments to sector capacities, as appropriate, to ensure an orderly progression of the transfer of traffic.

(6) Severe turbulence — forecast:

(i) When a meteorological forecast is predicting severe turbulence within RVSM airspace, ATC shall determine whether RVSM should be suspended and, if so, for how long and for which specific flight level(s) and/or area.

(ii) In cases where RVSM will be suspended, the ACC suspending RVSM shall coordinate with adjacent ACCs with regard to the flight levels appropriate for the transfer of traffic, unless a contingency flight level allocation scheme has been determined by letter of agreement. The ACC suspending RVSM shall also coordinate applicable sector capacities with adjacent ACCs, as appropriate.

GM1 SERA.11013(b) Degraded aircraft performance

DEGRADATION OR FAILURE OF THE RNAV SYSTEM

(a) If an aircraft cannot meet the requirements due to a failure or degradation of the RNAV system that is detected before departure from an aerodrome where it is not practicable to effect a repair, the aircraft concerned should be permitted to proceed to the nearest suitable aerodrome where the repair can be made. When granting clearance to such aircraft, ATC should take into consideration the existing or anticipated traffic situation and may have to modify the time of departure, flight level or route of the intended flight. Subsequent adjustments may become necessary during the course of the flight.

With respect to the degradation/failure in flight of an RNAV system, while the aircraft is operating on an ATS route requiring the use of RNAV 5:

(1) aircraft should be routed via VOR/DME-defined ATS routes; or

(2) if no such routes are available, aircraft should be routed via conventional navigation aids, i.e. VOR/DME; or

When the above procedures are not feasible, the ATC unit should, where practicable, provide the aircraft with radar vectors until the aircraft is capable of resuming its own navigation.

With respect to the degradation/failure in flight of an RNAV system, while the aircraft is operating on an arrival or departure procedure requiring the use of RNAV:

(1) the aircraft should be provided with radar vectors until the aircraft is capable of resuming its own navigation; or

(2) the aircraft should be routed by conventional navigation aids, i.e. VOR/DME.

Subsequent ATC action in respect of an aircraft that cannot meet the specified requirements due to a failure or degradation of the RNAV system, will be dependent upon the nature of the reported failure and the overall traffic situation. Continued operation in accordance with the current ATC clearance may be possible in many situations. When this cannot be achieved, a revised clearance may be required to revert to VOR/DME navigation.

GM1 SERA.11013(c) Degraded aircraft performance

LOSS OF VERTICAL NAVIGATION PERFORMANCE REQUIRED FOR RVSM

An in-flight contingency affecting flight in RVSM airspace pertains to unforeseen circumstances that directly impact on the ability of one or more aircraft to operate in accordance with the vertical navigation performance requirements of RVSM airspace.

SERA.11014 ACAS resolution advisory (RA)

(a) ACAS II shall be used during flight, except as provided in the minimum equipment list specified in Commission Regulation (EU) No 965/2012 (*) in a mode that enables RA indications to be produced for the flight crew when undue proximity to another aircraft is detected. This shall not apply if inhibition of RA indication mode (using traffic advisory (TA) indication only or equivalent) is called for by an abnormal procedure or due to performance-limiting conditions.

(b) In the event of an ACAS RA, pilots shall:

(1) respond immediately by following the RA, as indicated, unless doing so would jeopardise the safety of the aircraft;

(2) follow the RA even if there is a conflict between the RA and an ATC instruction to manoeuvre;

(3) not manoeuvre in the opposite sense to an RA;

(4) as soon as possible, as permitted by flight crew workload, notify the appropriate ATC unit of any RA which requires a deviation from the current ATC instruction or clearance;

(5) promptly comply with any modified RAs;

(6) limit the alterations of the flight path to the minimum extent necessary to comply with the RAs;

- (7) promptly return to the terms of the ATC instruction or clearance when the conflict is resolved; and
- (8) notify ATC when returning to the current clearance.

(c) When a pilot reports an ACAS RA, the controller shall not attempt to modify the aircraft flight path until the pilot reports 'CLEAR OF CONFLICT'.

(d) Once an aircraft departs from its ATC clearance or instruction in compliance with an RA, or a pilot reports an RA, the controller ceases to be responsible for providing separation between that aircraft and any other aircraft affected as a direct consequence of the manoeuvre induced by the RA. The controller shall resume responsibility for providing separation to all the affected aircraft when:

- (1) the controller acknowledges a report from the flight crew that the aircraft has resumed the current clearance; or
- (2) the controller acknowledges a report from the flight crew that the aircraft is resuming the current clearance and issues an alternative clearance which is acknowledged by the flight crew.

(*) Commission Regulation (EU) No 965/2012 of 5 October 2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (OJ L 296, 25.10.2012, p.1).

GM1 SERA.11014 ACAS resolution advisory (RA)

Nothing in the procedures specified in SERA.11014 should prevent pilots-in-command from exercising their best judgement and full authority in the choice of the best course of action to resolve a traffic conflict or avert a potential collision.

GM2 SERA.11014 ACAS resolution advisory (RA)

The ability of ACAS to fulfil its role of assisting pilots in the avoidance of potential collisions is dependent on the correct and timely response by pilots to ACAS indications. Operational experience has shown that the correct response by pilots is dependent on the effectiveness of the initial and recurrent training in ACAS procedures.

GM3 SERA.11014 ACAS resolution advisory (RA)

Pilots should not manoeuvre their aircraft in response to traffic advisories (TAs) only.

GM4 SERA.11014 ACAS resolution advisory (RA) Visually acquired traffic may not be the same traffic causing an RA. The visual perception of an encounter may be misleading, particularly at night.

GM5 SERA.11014 ACAS resolution advisory (RA)

In the case of an ACAS–ACAS coordinated encounter, the RAs complement each other in order to reduce the potential for a collision. Manoeuvres, or lack of manoeuvres, that result in vertical rates opposite to the sense of an RA could result in a collision with the intruder aircraft.

GM6 SERA.11014 ACAS resolution advisory (RA)

Unless informed by the pilot, ATC does not know when ACAS issues RAs. It is possible for ATC to issue instructions that are unknowingly contrary to ACAS RA indications. Therefore, it is important that ATC be notified when an ATC instruction or clearance is not being followed because it conflicts with an RA.

GM7 SERA.11014 ACAS resolution advisory (RA)

Pilots should use appropriate procedures by which an aeroplane climbing or descending to an assigned altitude or flight level may do so at a rate less than 8 m/s (or 1 500 ft/min) throughout the last 300 m (or 1 000 ft) of climb or descent to the assigned altitude or flight level when the pilot is made aware of another aircraft at or approaching an adjacent altitude or flight level, unless otherwise instructed by ATC. These procedures are intended to avoid unnecessary ACAS II RAs in aircraft at or approaching adjacent altitudes or flight levels. For commercial operations, these procedures should be specified by the operator.

SERA.11015 Interception

(a) Except for intercept and escort service provided on request to an aircraft, interception of civil aircraft shall be governed by appropriate regulations and administrative directives issued by Member States in compliance with the Convention on International Civil Aviation, and in particular Article 3(d) under which ICAO Contracting States undertake, when issuing regulations for their State aircraft, to have due regard for the safety of navigation of civil aircraft.

(b) The pilot-in-command of a civil aircraft, when intercepted, shall:

- (1) immediately follow the instructions given by the intercepting aircraft, interpreting and responding to visual signals in accordance with the specifications in Tables S11-1 and S11-2;
- (2) notify, if possible, the appropriate air traffic services unit;
- (3) attempt to establish radio-communication with the intercepting aircraft or with the appropriate intercept control unit, by making a general call on the emergency frequency 121.5 MHz, giving the identity of the intercepted aircraft and the nature of the flight; and if no contact has been established and if practicable, repeating this call on the emergency frequency 243 MHz;
- (4) if equipped with SSR transponder, select Mode A, Code 7700, unless otherwise instructed by the

appropriate air traffic services unit.

(5) if equipped with ADS-B or ADS-C, select the appropriate emergency functionality, if available, unless otherwise instructed by the appropriate air traffic services unit.

TABLE S11 – 1

SIGNALS INITIATED BY INTERCEPTING AIRCRAFT AND RESPONSES BY INTERCEPTED AIRCRAFT

#	<i>INTERCEPTING Aircraft Signals</i>	<i>Meaning</i>	<i>INTERCEPTED Aircraft Responds</i>	<i>Meaning</i>
1	<p>DAY or NIGHT — Rocking aircraft and flashing navigational lights at irregular intervals (and landing lights in the case of a helicopter) from a position slightly above and ahead of, and normally to the left of, the intercepted aircraft (or to the right if the intercepted aircraft is a helicopter) and, after acknowledgement, a slow level turn, normally to the left (or to the right in the case of a helicopter) on the desired heading.</p> <p><i>Note 1.— Meteorological conditions or terrain may require the intercepting aircraft to reverse the positions and direction of turn given above in Series 1.</i></p> <p><i>Note 2.— If the intercepted aircraft is not able to keep pace with the intercepting aircraft, the latter is expected to fly a series of race-track patterns and to rock the aircraft each time it passes the intercepted aircraft.</i></p>	You have been intercepted. Follow me.	DAY or NIGHT — Rocking aircraft, flashing navigational lights at irregular intervals and following.	Understood, will comply.
2	DAY or NIGHT — An abrupt breakaway manoeuvre from the intercepted aircraft consisting of a climbing turn of 90 degrees or more without crossing the line of flight of the intercepted aircraft.	You may proceed.	DAY or NIGHT — Rocking the aircraft.	Understood, will comply.
3	DAY or NIGHT — Lowering landing gear (if fitted), showing steady landing lights and overflying runway in use or, if the intercepted aircraft is a helicopter, overflying the helicopter landing area. In the case of helicopters, the intercepting helicopter makes a landing approach, coming to hover near to the landing area.	Land at this aerodrome.	DAY or NIGHT — Lowering landing gear, (if fitted), showing steady landing lights and following the intercepting aircraft and, if, after overflying the runway in use or helicopter landing area, landing is considered safe, proceeding to land.	Understood, will comply.

TABLE S11 – 2

SIGNALS INITIATED BY INTERCEPTED AIRCRAFT AND RESPONSES BY INTERCEPTING AIRCRAFT

#	<i>INTERCEPTED Aircraft Signals</i>	<i>Meaning</i>	<i>INTERCEPTING Aircraft Responds</i>	<i>Meaning</i>
4	DAY or NIGHT — Raising landing gear (if fitted) and flashing landing lights while passing over runway in	Aerodrome you have designated is inadequate.	DAY or NIGHT — If it is desired that the intercepted aircraft	Understood, follow me.

	use or helicopter landing area at a height exceeding 300 m (1 000 ft) but not exceeding 600 m (2 000 ft) (in the case of a helicopter, at a height exceeding 50 m (170 ft) but not exceeding 100 m (330 ft)) above the aerodrome level, and continuing to circle runway in use or helicopter landing area. If unable to flash landing lights, flash any other lights available.		follow the intercepting aircraft to an alternate aerodrome, the intercepting aircraft raises its landing gear (if fitted) and uses the Series 1 signals prescribed for intercepting aircraft.	
			If it is decided to release the intercepted aircraft, the intercepting aircraft uses the Series 2 signals prescribed for intercepting aircraft.	Understood, you may proceed.
5	DAY or NIGHT — Regular switching on and off of all available lights but in such a manner as to be distinct from flashing lights.	Cannot comply.	DAY or NIGHT — Use Series 2 signals prescribed for intercepting aircraft.	Understood.
6	DAY or NIGHT — Irregular flashing of all available lights.	In distress.	DAY or NIGHT — Use Series 2 signals prescribed for intercepting aircraft.	Understood.

(c) If any instructions received by radio from any sources conflict with those given by the intercepting aircraft by visual signals, the intercepted aircraft shall request immediate clarification while continuing to comply with the visual instructions given by the intercepting aircraft.

(d) If any instructions received by radio from any sources conflict with those given by the intercepting aircraft by radio, the intercepted aircraft shall request immediate clarification while continuing to comply with the radio instructions given by the intercepting aircraft.

(e) If radio contact is established during interception but communication in a common language is not possible, attempts shall be made to convey instructions, acknowledgement of instructions and essential information by using the phrases and pronunciations in Table S11-3 and transmitting each phrase twice:

**TABLE S11-3
PHRASES FOR USE BY INTERCEPTING AIRCRAFT**

<i>Phrase</i>	<i>Pronunciation¹</i>	<i>Meaning</i>
CALL SIGN	<u>KOL</u> SA-IN	What is your call sign?
FOLLOW	<u>FOL</u> -LO	Follow me
DESCEND	<u>DEE</u> -SEND	Descend for landing
YOU LAND	<u>YOU LA</u> AND	Land at this aerodrome
PROCEED	<u>PRO</u> -SEED	You may proceed

PHRASES FOR USE BY INTERCEPTED AIRCRAFT

<i>Phrase</i>	<i>Pronunciation¹</i>	<i>Meaning</i>
CALL SIGN (call sign) ²	<u>KOL</u> SA-IN (call sign)	My call sign is (call sign)
WILCO	<u>VILL</u> -KO	Understood, will comply
CAN NOT	<u>KANN</u> NOTT	Unable to comply
REPEAT	<u>REE</u> -PEET	Repeat your instruction
AM LOST	<u>AM LOS</u> ST	Position unknown
MAYDAY	MAYDAY	I am in distress
HIJACK ³	<u>HI</u> -JACK	I have been hijacked
LAND (place name)	LAAND (place name)	I request to land at (place name)
DESCEND	<u>DEE</u> -SEND	I require descent

1. In the second column, syllables to be emphasized are underlined.
2. The call sign required to be given is that used in radiotelephony communications with air traffic services units and corresponding to the aircraft identification in the flight plan.
3. Circumstances may not always permit, nor make desirable, the use of the phrase "HIJACK".

(f) As soon as an air traffic services unit learns that an aircraft is being intercepted in its area of responsibility, it shall take such of the following steps as are appropriate in the circumstances:

- (1) attempt to establish two-way communication with the intercepted aircraft via any means available, including the emergency radio frequency 121.5 MHz, unless such communication already exists;
- (2) inform the pilot of the intercepted aircraft of the interception;
- (3) establish contact with the intercept control unit maintaining two-way communication with the intercepting aircraft and provide it with available information concerning the aircraft;
- (4) relay messages between the intercepting aircraft or the intercept control unit and the intercepted aircraft, as necessary;
- (5) in close coordination with the intercept control unit take all necessary steps to ensure the safety of the intercepted aircraft;
- (6) inform air traffic services units serving adjacent flight information regions if it appears that the aircraft has strayed from such adjacent flight information regions.

(g) As soon as an air traffic services unit learns that an aircraft is being intercepted outside its area of responsibility, it shall take such of the following steps as are appropriate in the circumstances:

- (1) inform the air traffic services unit serving the airspace in which the interception is taking place, providing this unit with available information that will assist in identifying the aircraft and requesting it to take action in accordance with (f);
- (2) relay messages between the intercepted aircraft and the appropriate air traffic services unit, the intercept control unit or the intercepting aircraft.

AMC1 SERA.11015(a) Interception

REGULATIONS AND ADMINISTRATIVE DIRECTIVES ISSUED BY MEMBER STATES GOVERNING INTERCEPTION OF CIVIL AIRCRAFT

(a) In accordance with the provisions on interception of civil aircraft in Annex 2 to the Convention on the International Civil Aviation, the national provisions put in place under SERA.11015(a) should ensure that:

- (1) interception of civil aircraft is undertaken only as a last resort;
- (2) an interception is limited to determining the identity of the aircraft, unless it is necessary to return the aircraft to its planned track, direct it beyond the boundaries of national airspace, guide it away from a prohibited, restricted or danger area or congested areas, or instruct it to effect a landing at a designated aerodrome;
- (3) practice interception of civil aircraft is not undertaken, unless it has been previously agreed with the pilot-in-command of the aircraft to be intercepted and ATC has been informed accordingly that the interception is to take place;
- (4) navigational guidance and related information is given to an intercepted aircraft by radiotelephony, whenever radio contact can be established; and
- (5) in the case where an intercepted civil aircraft is required to land in the territory overflown, the aerodrome designated for the landing is suitable for the safe landing of the aircraft type concerned.

(b) Member States should publish a standard method that has been established for the manoeuvring of aircraft intercepting a civil aircraft. Such method should be designed to avoid any hazard for the intercepted aircraft.

(c) Member States should ensure that provision is made for the use of secondary surveillance radar or ADS-B, where available, to identify civil aircraft in areas where they may be subject to interception.

GM1 SERA.11015(a) Interception

REGULATIONS AND ADMINISTRATIVE DIRECTIVES ISSUED BY MEMBER STATES GOVERNING INTERCEPTION OF CIVIL AIRCRAFT

Member States that comply with an alternative means of compliance different from AMC1 SERA.11015(a) Interception over the territory and territorial waters of the State are required to notify ICAO of a difference to ICAO Annex 2. Over the high seas ICAO Annex 2 is to be applied without exception in accordance with the Chicago Convention and SERA.1001(a).

GM2 SERA.11015 Interception

1. General

1.1 Interception of civil aircraft should be avoided and should be undertaken only as a last resort. If undertaken, the interception should be limited to determining the identity of the aircraft, unless it is necessary to return the aircraft to its planned track, direct it beyond the boundaries of national airspace, guide it away from a prohibited, restricted or danger area or instruct it to effect a landing at a designated aerodrome. Practice interception of civil aircraft is not to be undertaken unless prior agreement has been reached to conduct such activity with the pilot and operator of the civil aircraft concerned.

1.2 To eliminate or reduce the need for interception of civil aircraft, it is important that:

(a) all possible efforts be made by intercept control units to secure identification of any aircraft which may be a civil aircraft, and to issue any necessary instructions or advice to such aircraft, through the appropriate ATS units. To this end, it is essential that means of rapid and reliable communications between intercept control units and ATS units be established and that agreements be formulated concerning exchanges of information between such units on the movements of civil aircraft, in accordance with the provisions of SERA.4001(b)(4), SERA.11010(a)(1)(iv), SERA.11010(a)(3)(ii), SERA.11010(b), and SERA.11010(b)(5);

(b) areas prohibited to all civil flights and areas in which civil flight is not permitted without special authorisation by the State be clearly promulgated in the AIP together with the risk, if any, of interception in the event of penetration of such areas. When delineating such areas in close proximity to promulgated ATS routes, or other frequently used tracks, account should be taken of the availability and overall systems accuracy of the navigation systems to be used by civil aircraft and their ability to remain clear of the delineated areas;

(c) the establishment of additional navigation aids be considered where necessary to ensure that civil aircraft are able to safely circumnavigate prohibited or, as required, restricted areas.

1.3 To eliminate or reduce the hazards inherent in interceptions undertaken as a last resort, all possible efforts should be made to ensure coordinated actions by the pilots and ground units concerned. To this end, it is essential that steps be taken to ensure that:

(a) all pilots of civil aircraft are made fully aware of the actions to be taken by them and the visual signals to be used;

(b) operators or pilots-in-command of civil aircraft implement the capability of aircraft to communicate on 121.5 MHz and the availability of interception procedures and visual signals on board aircraft;

(c) all ATS personnel are made fully aware of the actions to be taken by them in accordance with the provisions of SERA.4001(b)(4), SERA.11010(a)(1)(iv), SERA.11010(a)(3)(ii), SERA.11010(b) and SERA.11010(b)(5);

(d) all pilots-in-command of intercepting aircraft are made aware of the general performance limitations of civil aircraft and of the possibility that intercepted civil aircraft may be in a state of emergency due to technical difficulties or unlawful interference;

(e) clear and unambiguous instructions are issued to intercept control units and to pilots-in-command of potential intercepting aircraft, covering interception manoeuvres, guidance of intercepted aircraft, action by intercepted aircraft, air-to-air visual signals, radio-communication with intercepted aircraft, and the need to refrain from resorting to the use of weapons;

Note. See paragraphs 2 to 6.

(f) intercept control units and intercepting aircraft are provided with radiotelephony equipment so as to enable them to communicate with intercepted aircraft on the emergency frequency 121.5 MHz;

(g) secondary surveillance radar and/or ADS-B facilities are made available to the extent possible to permit intercept control units to identify civil aircraft in areas where they might otherwise be intercepted. Such facilities should permit recognition of aircraft identity and immediate recognition of any emergency or urgency conditions.

2. Interception manoeuvres

2.1 A standard method should be established for the manoeuvring of aircraft intercepting a civil aircraft in order to avoid any hazard for the intercepted aircraft. Such method should take due account of the performance limitations of civil aircraft, the need to avoid flying in such proximity to the intercepted aircraft that a collision hazard may be created, and the need to avoid crossing the aircraft's flight path or to perform any other manoeuvre in such a manner that the wake turbulence may be hazardous, particularly if the intercepted aircraft is a light aircraft.

2.2 An aircraft equipped with an ACAS, which is being intercepted, may perceive the interceptor as a collision threat and thus initiate an avoidance manoeuvre in response to an ACAS RA. Such a manoeuvre might be misinterpreted by the interceptor as an indication of unfriendly intentions. It is important therefore that pilots of

intercepting aircraft equipped with a secondary surveillance radar (SSR) transponder suppress the transmission of pressure-altitude information (in Mode C replies or in the AC field of Mode S replies) within a range of at least 37 km (20 NM) of the aircraft being intercepted. This prevents the ACAS in the intercepted aircraft from using RAs in respect of the interceptor, while the ACAS traffic advisory information will remain available.

2.3 Manoeuvres for visual identification

The following method is recommended for the manoeuvring of intercepting aircraft for the purpose of visually identifying a civil aircraft:

Phase I

The intercepting aircraft should approach the intercepted aircraft from astern. The element leader, or the single intercepting aircraft, should normally take up a position on the left (port) side, slightly above and ahead of the intercepted aircraft, within the field of view of the pilot of the intercepted aircraft, and initially not closer to the aircraft than 300 m. Any other participating aircraft should stay well clear of the intercepted aircraft, preferably above and behind. After speed and position have been established, the aircraft should, if necessary, proceed with Phase II of the procedure.

Phase II

The element leader, or the single intercepting aircraft, should begin closing in gently on the intercepted aircraft, at the same level, until no closer than absolutely necessary to obtain the information needed. The element leader, or the single intercepting aircraft, should use caution to avoid startling the flight crew or the passengers of the intercepted aircraft, keeping constantly in mind the fact that manoeuvres considered normal to an intercepting aircraft may be considered hazardous to passengers and crews of civil aircraft. Any other participating aircraft should continue to stay well clear of the intercepted aircraft. Upon completion of identification, the intercepting aircraft should withdraw from the vicinity of the intercepted aircraft as outlined in Phase III.

Phase III

The element leader, or the single intercepting aircraft, should break gently away from the intercepted aircraft in a shallow dive. Any other participating aircraft should stay well clear of the intercepted aircraft and re-join their leader.

2.4 Manoeuvres for navigational guidance

2.4.1 If, following the identification manoeuvres in Phase I and Phase II above, it is considered necessary to intervene in the navigation of the intercepted aircraft, the element leader, or the single intercepting aircraft, should normally take up a position on the left (port) side, slightly above and ahead of the intercepted aircraft, to enable the pilot-in-command of the latter aircraft to see the visual signals given.

2.4.2 It is indispensable that the pilot-in-command of the intercepting aircraft be satisfied that the pilot-in-command of the intercepted aircraft is aware of the interception and acknowledges the signals given. If repeated attempts to attract the attention of the pilot-in-command of the intercepted aircraft by use of the Series 1 signal in Table S11-1, are unsuccessful, other methods of signalling may be used for this purpose, including as a last resort the visual effect of the reheat/afterburner, provided that no hazard is created for the intercepted aircraft.

2.5 It is recognised that meteorological conditions or terrain may occasionally make it necessary for the element leader, or the single intercepting aircraft, to take up a position on the right (starboard) side, slightly above and ahead of the intercepted aircraft. In such case, the pilot-in-command of the intercepting aircraft must take particular care that the intercepting aircraft is clearly visible at all times to the pilot-in-command of the intercepted aircraft.

3. Guidance of an intercepted aircraft

3.1 Navigational guidance and related information should be given to an intercepted aircraft by radiotelephony, whenever radio contact can be established.

3.2 When navigational guidance is given to an intercepted aircraft, care must be taken that the aircraft is not led into conditions where the visibility may be reduced below that required to maintain flight in visual meteorological conditions and that the manoeuvres demanded of the intercepted aircraft do not add to already existing hazards in the event that the operating efficiency of the aircraft is impaired.

3.3 In the exceptional case where an intercepted civil aircraft is required to land in the territory overflown, care must also be taken that:

- (a) the designated aerodrome is suitable for the safe landing of the aircraft type concerned, especially if the aerodrome is not normally used for civil air transport operations;

- (b) the surrounding terrain is suitable for circling, approach and missed approach manoeuvres;
- (c) the intercepted aircraft has sufficient fuel remaining to reach the aerodrome;
- (d) if the intercepted aircraft is a civil transport aircraft, the designated aerodrome has a runway with a length equivalent to at least 2 500 m at MSL and a bearing strength sufficient to support the aircraft; and
- (e) whenever possible, the designated aerodrome is one that is described in detail in the relevant AIP.

3.4 When requiring a civil aircraft to land at an unfamiliar aerodrome, it is essential that sufficient time be allowed for it to prepare for a landing, bearing in mind that only the pilot-in-command of the civil aircraft can judge the safety of the landing operation in relation to runway length and aircraft mass at the time.

3.5 It is particularly important that all information necessary to facilitate a safe approach and landing be given to the intercepted aircraft by radiotelephony.

4. Air-to-air visual signals

The visual signals to be used by intercepting and intercepted aircraft are those set forth in Tables S11-1 and S11-2. It is essential that intercepting and intercepted aircraft adhere strictly to those signals and interpret correctly the signals given by the other aircraft, and that the intercepting aircraft pay particular attention to any signals given by the intercepted aircraft to indicate that it is in a state of distress or urgency.

5. Radio communication between the intercept control unit or the intercepting aircraft and the intercepted aircraft

5.1 When an interception is being made, the intercept control unit and the intercepting aircraft should:

- (a) first attempt to establish two-way communication with the intercepted aircraft in a common language on the emergency frequency 121.5 MHz, using the call signs 'INTERCEPT CONTROL', 'INTERCEPTOR (call sign)' and 'INTERCEPTED AIRCRAFT' respectively; and
- (b) failing this, attempt to establish two-way communication with the intercepted aircraft on such other frequency or frequencies as may have been prescribed by the competent authority, or to establish contact through the appropriate ATS unit(s).

5.2 If radio contact is established during interception, but communication in a common language is not possible, attempts must be made to convey instructions, acknowledgement of instructions and essential information by using the phrases and pronunciations in Table S11-3 and transmitting each phrase twice.

6. Refraining from the use of weapons

The use of tracer bullets to attract attention is hazardous, and it is expected that measures will be taken to avoid their use so that the lives of persons on board and the safety of aircraft will not be endangered.

7. Coordination between intercept control units and ATS units

It is essential that close coordination be maintained between an intercept control unit and the appropriate ATS unit during all phases of an interception of an aircraft which is, or might be, a civil aircraft, in order for the ATS unit to be kept fully informed of the developments and of the action required of the intercepted aircraft.

UK GM1 SERA.11015(f) Interception

INTERCEPTION OF CIVIL AIRCRAFT

Not all UK interception aircraft and intercept control units have the capability to communicate on 121.500 MHz. Where an intercept control unit does not have such a capability use would be made of direct communications between that unit and another ATC Unit which does have a 121.500 MHz capability. This would ensure that the establishment of communication on 121.500 MHz is not jeopardised.

SECTION 12 — SERVICES RELATED TO METEOROLOGY — AIRCRAFT OBSERVATIONS AND REPORTS BY VOICE COMMUNICATIONS

SERA.12001 Types of aircraft observations

- (a) The following aircraft observations shall be made during any phase of the flight:
- (1) special aircraft observations; and
 - (2) other non-routine aircraft observations.

SERA.12005 Special aircraft observations

- (a) Special observations shall be made and reported by all aircraft whenever the following conditions are encountered or observed:
- (1) moderate or severe turbulence; or
 - (2) moderate or severe icing; or
 - (3) severe mountain wave; or
 - (4) thunderstorms, without hail, that are obscured, embedded, widespread or in squall lines; or
 - (5) thunderstorms, with hail, that are obscured, embedded, widespread or in squall lines; or
 - (6) heavy dust storm or heavy sandstorm; or
 - (7) volcanic ash cloud; or
 - (8) pre-eruption volcanic activity or a volcanic eruption.
- (b) Competent authorities shall prescribe as necessary other conditions which shall be reported by all aircraft when encountered or observed.
- (c) Flight crews shall compile the reports using forms based on the model AIREP SPECIAL form as set out in point A of Appendix 5. Those reports shall comply with the detailed instructions for reporting, as provided in point 2 of Appendix 5.
- (1) The detailed instructions, including the formats of messages and the phraseologies provided in Appendix 5, shall be used by flight crews when transmitting air-reports and by ATS units when retransmitting such reports.
 - (2) Special air-reports containing observations of volcanic activity shall be recorded on the special air-report of volcanic activity form. Forms based on the model form for special air-reports of volcanic activity set out in point B of Appendix 5 shall be provided for flight crews operating on routes which could be affected by volcanic ash clouds.

GM1 SERA.12005(c) Special aircraft observations

In a busy environment where the transmission of complete special aircraft observations would have a negative impact on the frequency occupancy, ATC may instruct the aircraft to make the complete report on an alternative frequency.

SERA.12010 Other non-routine aircraft observations

When other meteorological conditions not listed under SERA.12005(a), e.g. wind shear, are encountered and which, in the opinion of the pilot-in-command, may affect the safety or markedly affect the efficiency of other aircraft operations, the pilot-in-command shall advise the appropriate air traffic services unit as soon as practicable.

SERA.12015 Reporting of aircraft observations by voice communication

- (a) Aircraft observations shall be reported during flight at the time the observation is made or as soon thereafter as is practicable.
- (b) Aircraft observations shall be reported as air-reports and shall comply with the technical specifications in Appendix 5.

SERA.12020 Exchange of air-reports

- (a) ATS units shall transmit, as soon as practicable, special and non-routine air-reports to:
- (1) other aircraft concerned;
 - (2) the associated meteorological watch office (MWO) in accordance with point 3 of Appendix 5; and
 - (3) other ATS units concerned.
- (b) Transmissions to aircraft shall be repeated at a frequency and continued for a period of time which shall be determined by the ATS unit concerned.

AMC1 SERA.12020 Exchange of air-reports

SPECIAL AIR-REPORTS

Special air-reports should be transmitted with the least possible delay to aircraft likely to be affected and

should cover the portion of the route up to one hour's flying time ahead of the aircraft.

GM1 SERA.12020(a)(3) Exchange of air-reports

OTHER ATS UNITS CONCERNED

Other ATS units concerned are those that have flights under their jurisdiction which are expected to enter the airspace concerned at a later stage of flight. Those flights could, for instance, require rerouting before entering the airspace concerned. As an example, a special air-report concerning volcanic ash or volcanic eruption could be necessary to transmit to aircraft by ATS units in the FIR adjacent to that affected by the air-report.

SECTION 13 — SSR TRANSPONDER

SERA.13001 Operation of an SSR transponder

(a) When an aircraft carries a serviceable SSR transponder, the pilot shall operate the transponder at all times during flight, regardless of whether the aircraft is within or outside airspace where SSR is used for ATS purposes.

(b) Pilots shall not operate the IDENT feature unless requested by ATS.

(c) Except for flight in airspace designated by the competent authority for mandatory operation of transponder, aircraft without sufficient electrical power supply are exempted from the requirement to operate the transponder at all times.

GM1 SERA.13001 Operation of an SSR transponder

Pilots of aircraft engaged in formation join-ups are expected to continue operating the transponder until established in formation. Once established in formation, all except the lead aircraft should be instructed to 'squawk standby'.

GM1 SERA.13001(c) Operation of an SSR transponder

Pilots of non-powered aircraft are also encouraged to operate the transponder during flight outside airspace where carriage and operation of SSR transponder is mandatory.

SERA.13005 SSR transponder Mode A code setting

(a) To indicate that it is in a specific contingency situation, the pilot of an aircraft equipped with SSR shall:

(1) select Code 7700 to indicate a state of emergency unless ATC has previously directed the pilot to operate the transponder on a specified code. In the latter case, a pilot may nevertheless select Code 7700 whenever there is a specific reason to believe that this would be the best course of action;

(2) select Code 7600 to indicate a state of radio-communication failure;

(3) attempt to select Code 7500 to indicate a state of unlawful interference. If circumstances so warrant, Code 7700 should be used instead.

(b) Except in the cases described in (a) above, the pilot shall:

(1) select codes as instructed by the ATS unit; or

(2) in the absence of ATS instructions related to code setting, select code 2000 or another code as prescribed by the competent authority; or

(3) when not receiving air traffic services, select code 7000 in order to improve the detection of suitably equipped aircraft unless otherwise prescribed by the competent authority.

(c) When it is observed that the code shown on the situation display is different from what has been assigned to the aircraft:

(1) the pilot shall be requested to confirm the code selected and, if the situation warrants, to reselect the correct code; and

(2) if the discrepancy between assigned and displayed codes still persists, the pilot may be requested to stop the operation of the aircraft's transponder. The next control position and any other affected unit using SSR and/or multilateration (MLAT) in the provision of ATS shall be informed accordingly.

GM1 SERA.13005(a) SSR transponder Mode A code setting

If a pilot has selected Mode A Code 7500 and has been requested to confirm this code by ATC, the pilot should, according to circumstances, either confirm this or not reply at all. If the pilot does not reply, ATC should take this as confirmation that the use of Code 7500 is not an inadvertent false code selection.

AMC1 SERA.13005(c) SSR transponder Mode A code setting

When requested by ATC to confirm the code selected, the pilot should:

(a) verify the Mode A code setting on the transponder;

(b) reselect the assigned code if necessary; and

(c) confirm to ATC the setting displayed on the controls of the transponder.

SERA.13010 Pressure-altitude-derived information

(a) When the aircraft carries serviceable Mode C equipment, the pilot shall continuously operate this mode unless otherwise dictated by ATC.

(b) Unless otherwise prescribed by the competent authority, verification of the pressure-altitude-derived level information displayed to the controller shall be effected at least once by each suitably equipped ATC unit on initial contact with the aircraft concerned or, if this is not feasible, as soon as possible thereafter.

GM1 SERA.13010(b) Pressure-altitude-derived information

ERRONEOUS LEVEL INFORMATION

(a) If the displayed level information is not within the approved tolerance value or when a discrepancy in excess of the approved tolerance value is detected subsequent to verification, the pilot should be advised accordingly and requested to check the pressure setting and confirm the aircraft's level.

(b) If, following confirmation of the correct pressure setting, the discrepancy continues to exist, the following action should be taken by ATC according to circumstances:

(1) request the pilot to select and operate an alternative transponder, if available, and re-verify that the displayed level information is within the approved tolerance; or

(2) request the pilot to stop Mode C or ADS-B altitude data transmission, provided this does not cause the loss of position and identity information, and notify the next control positions or ATC unit concerned with the aircraft of the action taken; or

(3) inform the pilot of the discrepancy and request that the relevant operation continue in order to prevent loss of position and identity information of the aircraft and, when so prescribed by the local instructions, override the label-displayed level information with the reported level. In addition, the ATC unit should notify the next control position or ATC unit concerned with the aircraft of the action taken.

(c) It should be highlighted that ACAS will accept mode C replies that are erroneous, and it is possible to issue an RA based on these inputs. When the measures described in (b)(1) cannot be implemented, the controller should take into account the likelihood of generating ACAS RA in the provision of ATS.

SERA.13015 SSR transponder Mode S aircraft identification setting

(a) Aircraft equipped with Mode S having an aircraft identification feature shall transmit the aircraft identification as specified in Item 7 of the ICAO flight plan or, when no flight plan has been filed, the aircraft registration.

(b) Whenever it is observed on the situation display that the aircraft identification transmitted by a Mode S-equipped aircraft is different from that expected from the aircraft, the pilot shall be requested to confirm and, if necessary, re-enter the correct aircraft identification.

(c) If, following confirmation by the pilot that the correct aircraft identification has been set on the Mode S identification feature, the discrepancy continues to exist, the controller shall take the following actions:

(1) inform the pilot of the persistent discrepancy;

(2) where possible, correct the label showing the aircraft identification on the situation display; and

(3) notify the next control position and any other unit concerned using Mode S for identification purposes that the aircraft identification transmitted by the aircraft is erroneous.

SERA.13020 SSR transponder failure when the carriage of a functioning transponder is mandatory

(a) In case of a transponder failure after departure, ATC units shall attempt to provide for continuation of the flight to the destination aerodrome in accordance with the flight plan. Pilots may, however, be expected to comply with specific restrictions.

(b) In the case of a transponder which has failed and cannot be restored before departure, pilots shall:

(1) inform ATS as soon as possible, preferably before submission of a flight plan;

(2) insert in Item 10 of the ICAO flight plan form under SSR the character 'N' for complete unserviceability of the transponder or, in case of partial transponder failure, insert the character corresponding to the remaining transponder capability; and

(3) comply with any published procedures for requesting an exemption from the requirements to carry a functioning SSR transponder.

GM1 SERA.13020(a) SSR transponder failure when the carriage of a functioning transponder is mandatory

TRANSPONDER FAILURE AFTER DEPARTURE

When an aircraft experiencing transponder failure after departure is operating or expected to operate in an area where the carriage of a functioning transponder with specified capabilities is mandatory, the ATC units concerned should endeavour to provide for continuation of the flight to the aerodrome of first intended landing in accordance with the flight plan. However, in certain traffic situations, either in terminal areas or en-route, continuation of the flight may not be possible, particularly when failure is detected shortly after take-off. The aircraft may then be required to return to the departure aerodrome or to land at the nearest suitable aerodrome acceptable to the operator concerned and to ATC.

GM1 SERA.13020(b) SSR transponder failure when the carriage of a functioning transponder is mandatory

TRANSPONDER FAILURE BEFORE DEPARTURE

In case of a transponder failure which is detected before departure from an aerodrome where it is not practicable to effect a repair, the aircraft concerned should be permitted to proceed, as directly as possible, to the nearest suitable aerodrome where repair can be made. When granting clearance to such aircraft, ATC should take into consideration the existing or anticipated traffic situation and may have to modify the time of

departure, flight level or route of the intended flight. Subsequent adjustments may become necessary during the course of the flight. Note that Article 4(4) of Commission Implementing Regulation (EU) No 1207/20112 also addresses this issue.

SECTION 14 — VOICE COMMUNICATION PROCEDURES

SERA.14001 General

Standardised phraseology shall be used in all situations for which it has been specified. Only when standardised phraseology cannot serve an intended transmission, plain language shall be used.

AMC1 SERA.14001 General

For standardised phraseology, refer to the Appendix to Section 14.

FOR THE PURPOSES OF THIS CONSOLIDATION THE APPENDIX TO SECTION 14 IS PRESENTED AS A SEPARATE FILE

GM1 SERA.14001 General

Messages concerning acts of unlawful interference constitute a case of exceptional circumstances which may preclude the use of recognised communication procedures used to determine message category and priority.

GM2 SERA.14001 General

When a general call 'ALL STATIONS' has been made, meaning that the call is addressed to all stations likely to intercept, no reply is expected unless individual stations are subsequently called to acknowledge receipt.

SERA.14005 Categories of messages

(a) The categories of messages handled by the aeronautical mobile service, and the order of priority in the establishment of communications and the transmission of messages shall be in accordance with Table S14-1.

Table S14-1

Message category and radiotelephony order of priority signal	Radiotelephony signal
(a) Distress calls, distress messages and distress traffic	MAYDAY
(b) Urgency messages, including messages preceded by the medical transports signal	PAN PAN or PAN PAN MEDICAL
(c) Communications relating to direction finding	—
(d) Flight safety messages	—
(e) Meteorological messages	—
(f) Flight regularity messages	—

(b) Distress messages and distress traffic shall be handled in accordance with the provisions of point SERA.14095.

(c) Urgency messages and urgency traffic, including messages preceded by the medical transports signal, shall be handled in accordance with the provisions of point SERA.14095.

SERA.14010 Flight safety messages

Flight safety messages shall comprise the following:

- (a) movement and control messages;
- (b) messages originated by an aircraft operator or by an aircraft, of immediate concern to an aircraft in flight;
- (c) meteorological advice of immediate concern to an aircraft in flight or about to depart (individually communicated or for broadcast);
- (d) other messages concerning aircraft in flight or about to depart.

SERA.14015 Language to be used in air-ground communication

(a) The air-ground radiotelephony communications shall be conducted in the English language or in the language normally used by the station on the ground.

(b) The English language shall be available, on request of any aircraft, at all stations on the ground serving designated aerodromes and routes used by international air services. Unless otherwise prescribed by the competent authority for specific cases, the English language shall be used for communications between the ATS unit and aircraft, at aerodromes with more than 50 000 international IFR movements per year. Member States, where at the date of entry into force of this Regulation, the English language is not the only language used for communications between the ATS unit and aircraft at such aerodromes, may decide not to apply the requirement to use the English language and inform the Commission accordingly. In that case, those Member States shall, by 31 December 2017 at the latest, conduct a study on the possibility to require the use of the English language for communications between the ATS unit and aircraft at those aerodromes for reasons of safety, so as to avoid incursions of aircraft on an occupied runway or other safety risks, while taking into account the applicable provisions of Union and national law on the use of languages. They shall make that study public and communicate its conclusions to the Agency and the Commission.

(c) The languages available at a given station on the ground shall form part of the Aeronautical Information

Publications and other published aeronautical information concerning such facilities.

AMC1 SERA.14015 Language to be used in air-ground communication

The competent authority should only prescribe other conditions for the use of English language at aerodromes with more than 50 000 international IFR movements per year for specific cases, based on an individual assessment of the local arrangements. In any case, deviation from the requirement should be limited to exceptional cases and should be accompanied with a safety assessment.

In States which decide not to apply the requirement to use the English language, the study referred to in SERA.14015 should include an independent and comprehensive assessment of the impact of not using English for air-ground radio communications. Such an assessment should in particular take into account:

- (a) Any available accident and incident investigation reports at least at EU level, where the use of language has been identified as a contributing factor. For this purpose, the central repository created in accordance with Commission Regulations (EC) Nos 1321/2007 and 996/2010 for such reports should also be consulted.
- (b) The proportion of pilots frequenting that airport, with English language proficiency endorsement.
- (c) The proportion of pilots frequenting that airport, lacking language proficiency endorsement in the alternative language to be used.
- (d) A consultation of flight crews operating at the airport in question, on their preferences and ability to use the languages in question.
- (e) A consultation of the safety investigation authority.

GM1 SERA.14015 Language to be used in air-ground communication

In addition to the requirement in SERA.14015, positive consideration should be given by competent authorities to the benefits of situational awareness which could improve safety on airports and relevant surrounding airspace sectors by extending the use of the English language on some safety critical frequencies at aerodromes and relevant surrounding airspace sectors also with less than 50 000 commercial IFR movements per year, but with international traffic, and a large majority of qualified pilots with acceptable level of English. This consideration would in particular encompass:

- (a) use of a single frequency for all the safety-critical operations on a runway or a set of runways;
- (b) the need to and feasibility of applying the requirement for English-only communications also to communications with vehicles in order to enhance situational awareness.

where this consideration could lead to a change in current communication arrangements, it should be based on the outcome of a local safety assessment;

GM2 SERA.14015 Language to be used in air-ground communication

The competent authority should also consider extending the requirement for the use of English language to aerodromes with less than 50 000 international IFR movements per year based on local needs, such as seasonally high levels of international air traffic.

SERA.14020 Word spelling in radiotelephony

When proper names, service abbreviations and words of which the spelling is doubtful are spelled out in radiotelephony, the alphabet in the Table S14-2 shall be used.

Table S14-2

The radiotelephony spelling alphabet

Letter	Word	Approximate pronunciation (Latin alphabet representation)
A	Alfa	AL FAH
B	Bravo	BRAH VOH
C	Charlie	CHAR LEE <i>or</i> SHAR LEE
D	Delta	DELL TAH
E	Echo	ECK OH
F	Foxtrot	FOKS TROT
G	Golf	GOLF
H	Hotel	HO TELL
I	India	IN DEE AH
J	Juliett	JEW LEE ETT
K	Kilo	KEY LOH
L	Lima	LEE MAH

M	Mike	MIKE
N	November	NO VEM BER
O	Oscar	OSS CAH
P	Papa	PAH PAH
Q	Quebec	KEH BECK
R	Romeo	ROW ME OH
S	Sierra	SEE AIR RAH
T	Tango	TANG GO
U	Uniform	YOU NEE FORM <i>or</i> OO NEE FORM
V	Victor	VIK TAH
W	Whiskey	WISS KEY
X	X-ray	ECKS RAY
Y	Yankee	YANG KEY
Z	Zulu	ZOO LOO
<i>In the approximate representation using the Latin alphabet, syllables to be emphasised are underlined.</i>		

SERA.14025 Principles governing the identification of ATS routes other than standard departure and arrival routes

(a) Use of ATS route designators in communications

(1) In voice communications, the basic letter of a designator shall be spoken in accordance with the spelling alphabet as defined in Table S14-2.

(2) Where the prefixes K, U or S are used, they shall, in voice communications, be spoken as follows:

- (i) K —KOPTER
- (ii) U —UPPER
- (iii) S —SUPERSONIC

(b) The word “kopter” shall be pronounced as in the word “helicopter” and the words “upper” and “supersonic” as in the English language.

AMC1 SERA.14025 Principles governing the identification of ATS routes other than standard departure and arrival routes

LETTERS ‘F’ AND ‘G’

Where letters ‘F’ or ‘G’ are added after the basic designator of the ATS route in question, in order to indicate the type of service provided:

- (a) letter ‘F’ indicates that on the route or portion thereof advisory service only is provided; and
- (b) letter ‘G’ indicates that on the route or portion thereof flight information service only is provided,
- (c) the flight crew are not required to use them in voice communications.

SERA.14026 Significant points

Normally the plain language name for significant points marked by the site of a radio navigation aid, or the unique five-letter pronounceable “name-code” for significant points not marked by the site of a radio navigation aid, shall be used to refer to the significant point in voice communications. If the plain language name for the site of a radio navigation aid is not used, it shall be replaced by the coded designator which, in voice communications, shall be spoken in accordance with the spelling alphabet.

SERA.14030 Use of designators for standard instrument departure and arrival routes

The plain language designator for standard instrument departure or arrival routes shall be used in voice communications.

GM1 SERA.14030 Use of designators for standard instrument departure and arrival routes

For the purpose of identification of routes, the words ‘departure’, ‘arrival’, and ‘visual’ are considered to be an integral element of the plain language designator.

SERA.14035 Transmission of numbers in radiotelephony

(a) Transmission of numbers

(1) All numbers used in the transmission of aircraft call sign, headings, runway, wind direction and speed shall be transmitted by pronouncing each digit separately.

- (i) Flight levels shall be transmitted by pronouncing each digit separately, except for the case of flight

levels in whole hundreds.

(ii) The altimeter setting shall be transmitted by pronouncing each digit separately, except for the case of a setting of 1 000 hPa, which shall be transmitted as “ONE THOUSAND”.

(iii) All numbers used in the transmission of transponder codes shall be transmitted by pronouncing each digit separately except that, when the transponder codes contain whole thousands only, the information shall be transmitted by pronouncing the digit in the number of thousands followed by the word “THOUSAND”.

(2) All numbers used in transmission of other information than those described in point (a)(1) shall be transmitted by pronouncing each digit separately, except that all numbers containing whole hundreds and whole thousands shall be transmitted by pronouncing each digit in the number of hundreds or thousands followed by the word “HUNDRED” or “THOUSAND”, as appropriate. Combinations of thousands and whole hundreds shall be transmitted by pronouncing each digit in the number of thousands followed by the word “THOUSAND”, followed by the number of hundreds followed by the word “HUNDRED”.

(3) In cases where there is a need to clarify the number transmitted as whole thousands and/or whole hundreds, the number shall be transmitted by pronouncing each digit separately.

(4) When providing information regarding the relative bearing to an object or to conflicting traffic in terms of the 12-hour clock, the information shall be given pronouncing the digits together such as “TEN O’CLOCK” or “ELEVEN O’CLOCK”.

(5) Numbers containing a decimal point shall be transmitted as prescribed in point (a)(1) with the decimal point in appropriate sequence, indicated by the word “DECIMAL”.

(6) All six digits of the numerical designator shall be used to identify the transmitting channel in very high frequency (VHF) radiotelephony communications, except in the case of both the fifth and sixth digits being zeros, in which case only the first four digits shall be used.

GM1 SERA.14035(a)(1) Transmission of numbers in radiotelephony

CALL SIGN, HEADING, RUNWAY AND WIND

The following examples illustrate the application.

<i>aircraft call signs</i>	<i>transmitted as</i>
CCA 238	Air China two three eight
OAL 242	Olympic two four two

<i>headings</i>	<i>transmitted as</i>
100 degrees	heading one zero zero
080 degrees	heading zero eight zero

<i>runway</i>	<i>transmitted as</i>
27	runway two seven
30	runway three zero

<i>wind direction and speed</i>	<i>transmitted as</i>
200 degrees 70 knots	wind two zero zero degrees seven zero knots
160 degrees 18 knots gusting 30 knots	wind one six zero degrees one eight knots gusting three zero knots

GM2 SERA.14035(a)(1)(i) Transmission of numbers in radiotelephony

FLIGHT LEVELS

The following examples illustrate the application.

<i>flight levels</i>	<i>transmitted as</i>
FL 180	flight level one eight zero
FL 200	flight level two hundred

GM3 SERA.14035(a)(1)(ii) Transmission of numbers in radiotelephony

ALTIMETER SETTING

The following examples illustrate the application.

<i>setting</i>	<i>transmitted as</i>
1009 hPa	QNH one zero zero nine

1000 hPa	QNH one thousand
993 hPa	QNH nine nine three

GM4 SERA.14035(a)(1)(iii) Transmission of numbers in radiotelephony

TRANSPONDER CODES

The following examples illustrate the application.

<i>transponder codes</i>	<i>transmitted as</i>
2400	squawk two four zero zero
1000	squawk one thousand
2000	squawk two thousand

GM1 SERA.14035(a)(2) Transmission of numbers in radiotelephony

ALTITUDE

The following examples illustrate the application.

<i>altitude</i>	<i>transmitted as</i>
800	eight hundred
3 400	three thousand four hundred
12 000	one two thousand

GM2 SERA.14035(a)(2) Transmission of numbers in radiotelephony

CLOUD HEIGHT

The following examples illustrate the application.

<i>cloud height</i>	<i>transmitted as</i>
2 200	two thousand two hundred
4 300	four thousand three hundred

GM3 SERA.14035(a)(2) Transmission of numbers in radiotelephony

VISIBILITY

The following examples illustrate the application.

<i>visibility</i>	<i>transmitted as</i>
1 000	visibility one thousand
700	visibility seven hundred

GM4 SERA.14035(a)(2) Transmission of numbers in radiotelephony

RUNWAY VISUAL RANGE

The following examples illustrate the application.

<i>runway visual range</i>	<i>transmitted as</i>
600	RVR six hundred
1 700	RVR one thousand seven hundred

GM5 SERA.14035(a)(5) Transmission of numbers in radiotelephony

DECIMALS

The following examples illustrate the application.

<i>number</i>	<i>transmitted as</i>
100.3	ONE ZERO ZERO DECIMAL THREE
38 143.9	THREE EIGHT ONE FOUR THREE DECIMAL NINE

GM1 SERA.14035(a)(6) Transmission of numbers in radiotelephony

TRANSMISSION OF NUMBERS FOR RADIOTELEPHONY CHANNEL FREQUENCIES

(a) The following examples illustrate the application of the procedure.

<i>Channel</i>	<i>Transmitted as</i>
118.000	ONE ONE EIGHT DECIMAL ZERO

118.005	ONE ONE EIGHT DECIMAL ZERO ZERO FIVE
118.010	ONE ONE EIGHT DECIMAL ZERO ONE ZERO
118.025	ONE ONE EIGHT DECIMAL ZERO TWO FIVE
118.050	ONE ONE EIGHT DECIMAL ZERO FIVE ZERO
118.100	ONE ONE EIGHT DECIMAL ONE

(b) Caution must be exercised with respect to the indication of transmitting channels in VHF radiotelephony communications when all six digits of the numerical designator are used in airspace where communication channels are separated by 25 kHz, because on aircraft installations with a channel separation capability of 25 kHz or more, it is only possible to select the first five digits of the numerical designator on the radio management panel.

SERA.14040 Pronunciation of numbers

When the language used for communication is English, numbers shall be transmitted using the pronunciation shown in Table S14-3:

Table S14-3

Numeral or numeral element	Pronunciation
0	ZE-RO
1	WUN
2	TOO
3	TREE
4	FOW-er
5	FIFE
6	SIX
7	SEV-en
8	AIT
9	NIN-er
10	TEN
11	EE-LE-VEN
12	TWELF
Decimal	DAY-SEE-MAL
Hundred	HUN-dred
Thousand	TOU-SAND

SERA.14045 Transmitting technique

(a) Transmissions shall be conducted concisely in a normal conversational tone.

(b) The following words and phrases shall be used in radiotelephony communications as appropriate and shall have the meaning ascribed in Table S14-4:

Table S14-4

Phrase	Meaning
ACKNOWLEDGE	"Let me know that you have received and understood this message."
AFFIRM	"Yes."
APPROVED	"Permission for proposed action granted."
BREAK	"I hereby indicate the separation between portions of the message."
BREAK BREAK	"I hereby indicate the separation between messages transmitted to different aircraft in a very busy environment."
CANCEL	"Annul the previously transmitted clearance."
CHECK	"Examine a system or procedure."

CLEARED	"Authorised to proceed under the conditions specified."
CONFIRM	"I request verification of: (<i>clearance, instruction, action, information</i>)."
CONTACT	"Establish communications with..."
CORRECT	"True" or "Accurate".
CORRECTION	"An error has been made in this transmission (<i>or message indicated</i>). The correct version is..."
DISREGARD	"Ignore."
HOW DO YOU READ	"What is the readability of my transmission?" (see point SERA.14070(c))
I SAY AGAIN	"I repeat for clarity or emphasis."
MAINTAIN	"Continue in accordance with the condition(s) specified" or in its literal sense.
MONITOR	"Listen out on (frequency)."
NEGATIVE	"No" or "Permission not granted" or "That is not correct" or "Not capable".
OVER	"My transmission is ended, and I expect a response from you."
OUT	"This exchange of transmissions is ended and no response is expected."
READ BACK	"Repeat all, or the specified part, of this message back to me exactly as received."
RECLEARED	"A change has been made to your last clearance and this new clearance supersedes your previous clearance or part thereof."
REPORT	"Pass me the following information..."
REQUEST	"I should like to know..." or "I wish to obtain..."
ROGER	"I have received all of your last transmission."
SAY AGAIN	"Repeat all, or the following part, of your last transmission."
SPEAK SLOWER	"Reduce your rate of speech."
STANDBY	"Wait and I will call you."
UNABLE	"I cannot comply with your request, instruction, or clearance."
WILCO	(<i>Abbreviation for "will comply"</i>) "I understand your message and will comply with it."
WORDS TWICE	(a) <i>As a request</i> : "Communication is difficult. Please send every word, or group of words, twice." (b) <i>As information</i> : "Since communication is difficult, every word, or group of words, in this message will be sent twice."

GM1 SERA.14045 Transmitting technique

BREAK

'BREAK' is to be used where there is no clear distinction between the text and other portions of the message.

GM2 SERA.14045 Transmitting technique

CHECK

'CHECK' is not to be used in any other context than 'examine a system or procedure'. No answer is normally expected.

GM3 SERA.14045 Transmitting technique

MAINTAIN

For example, 'Maintain VFR'.

GM4 SERA.14045 Transmitting technique

OVER

'OVER' is not normally used in VHF communications.

GM5 SERA.14045 Transmitting technique

OUT

'OUT' is not normally used in VHF communications.

GM6 SERA.14045 Transmitting technique

ROGER

'ROGER' is under no circumstances to be used in reply to a question requiring 'READ BACK' or a direct answer in the affirmative (AFFIRM) or negative (NEGATIVE).

GM7 SERA.14045 Transmitting technique

STANDBY

The caller would normally re-establish contact if the delay is lengthy. 'STANDBY' is not an approval or denial.

GM8 SERA.14045 Transmitting technique

UNABLE

'UNABLE' is normally followed by a reason.

SERA.14050 Radiotelephony call signs for aircraft

(a) Full call signs: An aircraft radiotelephony call sign shall be one of the following types:

- (1) Type (a)—the characters corresponding to the registration marking of the aircraft; or
- (2) Type (b)—the telephony designator of the aircraft operator, followed by the last four characters of the registration marking of the aircraft;
- (3) Type (c)—the telephony designator of the aircraft operator, followed by the flight identification.

(b) Abbreviated call signs: The aircraft radiotelephony call signs shown in point (a), with the exception of Type (c), may be abbreviated under the circumstances prescribed in point SERA.14055(c). Abbreviated call signs shall be in the following form:

- (1) Type (a)—the first character of the registration and at least the last two characters of the call sign;
- (2) Type (b)—the telephony designator of the aircraft operator, followed by at least the last two characters of the call sign;
- (3) Type (c)—no abbreviated form.

GM1 SERA.14050 Radiotelephony call signs for aircraft

PREFIX TO CALL SIGNS

The name of the aircraft manufacturer or of the aircraft model may be used as a radiotelephony prefix to the Type (a) call sign.

GM2 SERA.14050 Radiotelephony call signs for aircraft

EXAMPLES OF FULL AND ABBREVIATED CALL SIGNS

	<i>Type a)</i>			<i>Type b)</i>	<i>Type c)</i>
Full call sign	N57826	*CESSNA FABCD	*CITATION FABCD	VARIG PVMA	SCANDINAVIAN 937
Abbreviated call sign	N26 or N826	CESSNA CD or CESSNA BCD	CITATION CD or CITATION BCD	VARIG MA or VARIG VMA	(no abbreviated form)

*The examples illustrate the application of GM1 SERA.14050.

GM1 SERA.14055(b) Radiotelephony procedures

RADIOTELEPHONY CALLING PROCEDURE*

	<i>Type a)</i>	<i>Type b)</i>	<i>Type c)</i>
Designation of the station called	NEW YORK RADIO	NEW YORK RADIO	NEW YORK RADIO
Designation of the station calling	GABCD**	SPEEDBIRD ABCD**	AEROFLOT 321**

* In certain cases where the call is initiated by the aeronautical station, the call may be effected by transmission of coded tone signals.

** With the exception of the telephony designators and the type of aircraft, each character in the call sign is to be spoken separately. When individual letters are spelled out, the radiotelephony spelling alphabet prescribed in SERA.14020 is to be used. Numbers are to be spoken in accordance with SERA.14040.

RADIOTELEPHONY REPLY PROCEDURE

	<i>Type a)</i>	<i>Type b)</i>	<i>Type c)</i>
Designation of the station calling	GABCD**	SPEEDBIRD ABCD**	AEROFLOT 321**
Designation of the station called	NEW YORK RADIO	NEW YORK RADIO	NEW YORK RADIO

* With the exception of the telephony designator and the type of aircraft, each character in the call sign is to be spoken separately. When individual letters are spelled out, the radiotelephony spelling alphabet prescribed in SERA.14020 is to be used. Numbers are to be spoken in accordance with SERA.14040.

SERA.14055 Radiotelephony procedures

(a) An aircraft shall not change the type of its radiotelephony call sign during flight, except temporarily on the instruction of an ATC unit in the interests of safety. Except for reasons of safety, no transmission shall be directed to an aircraft during take-off, during the last part of the final approach or during the landing roll.

(b) Establishment of radiotelephony communications

(1) Full radiotelephony call signs shall always be used when establishing communication. When establishing communication, aircraft shall start their call by the designation of the station called, followed by the designation of the station calling.

(2) The reply to the above calls shall use the call sign of the station calling, followed by the call sign of the station answering, which shall be considered an invitation to proceed with transmission by the station calling. For transfers of communication within one ATS unit, the call sign of the ATS unit may be omitted, when so authorised by the competent authority.

(3) Communications shall commence with a call and a reply when it is desired to establish contact, except that, when it is certain that the station called will receive the call, the calling station may transmit the message, without waiting for a reply from the station called.

(c) Subsequent radiotelephony communications

(1) Abbreviated radiotelephony call signs, as prescribed in point SERA.14050(b), shall be used only after satisfactory communication has been established and provided that no confusion is likely to arise. An aircraft shall use its abbreviated call sign only after it has been addressed in this manner by the aeronautical station.

(2) When issuing ATC clearances and reading back such clearances, controllers and pilots shall always add the call sign of the aircraft to which the clearance applies. For other than those occasions, continuous two-way communication after contact has been established shall be permitted without further identification or call until termination of the contact.

AMC1 SERA.14055(b)(2) Radiotelephony procedures

Where authorised by the competent authority, after the initial establishment of radiotelephony contact between an aircraft and an ATS unit, for subsequent transfers of communication within the same ATS unit, the ATS position being called need not reply with its call sign. Such authorisation will be agreed with the ATS provider and duly promulgated.

SERA.14060 Transfer of VHF communications

(a) An aircraft shall be advised by the appropriate ATS unit to transfer from one radio frequency to another in accordance with agreed procedures. In the absence of such advice, the aircraft shall notify the ATS unit before such a transfer takes place.

(b) When establishing initial contact on, or when leaving, a VHF frequency, an aircraft shall transmit such information as may be prescribed by the ANSP responsible for the provision of services and approved by the competent authority.

SERA.14065 Radiotelephony procedures for air-ground voice communication channel changeover

(a) Unless otherwise prescribed by the ANSP responsible for the provision of services and approved by the competent authority, the initial call to an ATS unit after a change of air-ground voice communication channel shall contain the following elements:

(1) the designation of the ATS unit being called;

(2) call sign and, for aircraft in the heavy wake turbulence category, the word "Heavy" or "Super" if that aircraft has been so identified by the competent authority;

(3) level, including passing and cleared levels, if not maintaining the cleared level;

(4) speed, if assigned by ATC; and

(5) additional elements, as required by the ANSP responsible for the provision of services and approved by the competent authority.

(b) Pilots shall provide level information at the nearest full 30 m or 100 ft as indicated on the pilot's altimeter.

(c) Initial call to aerodrome control tower For aircraft being provided with aerodrome control service, the initial call shall contain:

(1) the designation of the ATS unit being called;

(2) call sign and, for aircraft in the heavy wake turbulence category, the word "Heavy" or "Super" if that aircraft has been so identified by the competent authority;

(3) position; and

(4) additional elements, as required by the ANSP responsible for the provision of services and approved by the competent authority.

SERA.14070 Test procedures

(a) The form of test transmissions shall be as follows:

- (1) the identification of the station being called;
 - (2) the identification of the station calling;
 - (3) the words "RADIO CHECK";
 - (4) the frequency being used.
- (b) The reply to a test transmission shall be as follows:
- (1) the identification of the station requesting the test;
 - (2) the identification of the station replying;
 - (3) information regarding the readability of the station requesting the test transmission.
- (c) When the tests are made, the following readability scale shall be used: Readability Scale
- (1) 1 Unreadable
 - (2) 2 Readable now and then
 - (3) 3 Readable but with difficulty
 - (4) 4 Readable
 - (5) 5 Perfectly readable

SERA.14075 Exchange of communications

- (a) Communications shall be concise and unambiguous, using standard phraseology whenever available.
- (1) When transmitted by an aircraft, the acknowledgement of receipt of a message shall comprise the call sign of that aircraft.
 - (2) When acknowledgement of receipt is transmitted by an ATS unit to an aircraft, it shall comprise the call sign of the aircraft, followed if considered necessary, by the call sign of the ATS unit.
- (b) End of conversation. A radiotelephone conversation shall be terminated by the receiving ATS unit or the aircraft using its own call sign.
- (c) Corrections and repetitions
- (1) When an error has been made in transmission, the word "CORRECTION" shall be spoken, the last correct group or phrase repeated, and then the correct version transmitted.
 - (2) If a correction can best be made by repeating the entire message, the phrase "CORRECTION, I SAY AGAIN" shall be used before the message is transmitted a second time.
 - (3) If the receiving station is in doubt as to the correctness of the message received, a repetition either in full or in part shall be requested.
 - (4) If repetition of an entire message is required, the words "SAY AGAIN" shall be spoken. If repetition of a portion of a message is required, the phrase: "SAY AGAIN ALL BEFORE... (first word satisfactorily received)" shall be used; or "SAY AGAIN... (word before missing portion) TO...(word after missing portion)"; or "SAY AGAIN ALL AFTER... (last word satisfactorily received)".
- (d) If, in checking the correctness of a read-back, incorrect items are noticed, the words "NEGATIVE I SAY AGAIN" shall be transmitted at the conclusion of the read-back followed by the correct version of the items concerned.

GM1 SERA.14075(c)(4) Exchange of communications

REPETITIONS

Specific items are to be requested, as appropriate, such as 'SAY AGAIN ALTIMETER', 'SAY AGAIN WIND'.

SERA.14080 Communications watch/Hours of service

- (a) During flight, aircraft shall maintain watch as required by the competent authority and shall not cease watch, except for reasons of safety, without informing the ATS unit concerned.
- (1) Aircraft on long over-water flights or on flights over designated areas over which the carriage of an emergency locator transmitter (ELT) is required, shall continuously guard the VHF emergency frequency 121,5 MHz, except for those periods when aircraft carry out communications on other VHF channels or when airborne equipment limitations or cockpit duties do not permit simultaneous guarding of two channels.
 - (2) Aircraft shall continuously guard the VHF emergency frequency 121,5 MHz in areas or over routes where the possibility of interception of aircraft or other hazardous situations exists, and a requirement has been established by the competent authority.
- (b) Aeronautical stations shall maintain a continuous listening watch on VHF emergency channel 121,5 MHz during the hours of service of the units at which it is installed. Where two or more such stations are co-located, provision of 121,5 MHz listening watch at one of them shall meet that requirement.
- (c) When it is necessary for an aircraft or ATS unit to suspend operation for any reason, it shall, if possible, so inform other stations concerned, giving the time at which it is expected that operation will be resumed. When operation is resumed, other stations concerned shall be so informed. When it is necessary to suspend

<p>operation beyond the time specified in the original notice, a revised time of resumption of operation shall, if possible, be transmitted at or near the time first specified.</p> <p>AMC1 SERA.14080 Communications watch/Hours of service GUARD ON FREQUENCY 121.5 MHZ</p> <p>Aircraft on flights other than those specified should guard the emergency frequency 121.5 MHz to the extent possible.</p>
<p>SERA.14085 Use of blind transmission</p> <p>(a) When an aircraft fails to establish contact on the designated channel, on the previous channel used or on another channel appropriate to the route, and fails to establish communication with the appropriate ATS unit, other ATS unit or other aircraft using all available means, the aircraft shall transmit its message twice on the designated channel(s), preceded by the phrase "TRANSMITTING BLIND" and, if necessary, include the addressee (s) for which the message is intended.</p> <p>(b) When an aircraft is unable to establish communication due to receiver failure, it shall transmit reports at the scheduled times, or positions, on the channel in use preceded by the phrase "TRANSMITTING BLIND DUE TO RECEIVER FAILURE". The aircraft shall:</p> <ol style="list-style-type: none"> (1) transmit the intended message, following this by a complete repetition; (2) advise the time of its next intended transmission; (3) when provided with ATS, transmit information regarding the intention of the pilot-in-command with respect to the continuation of the flight.
<p>SERA.14087 Use of relay communication technique</p> <p>(a) When an ATS unit has been unable to establish contact with an aircraft after calls on the frequencies on which the aircraft is believed to be listening, it shall:</p> <ol style="list-style-type: none"> (1) request other ATS units to render assistance by calling the aircraft and relaying traffic, if necessary; and (2) request aircraft on the route to attempt to establish communication with the aircraft and relay traffic, if necessary. <p>(b) The provisions of point (a) shall also be applied:</p> <ol style="list-style-type: none"> (1) at request of the ATS unit concerned; (2) when an expected communication from an aircraft has not been received within a time period such that the occurrence of a communication failure is suspected.
<p>SERA.14090 Specific communication procedures</p> <p>(a) Movement of vehicles Phraseologies for the movement of vehicles, other than tow-tractors, on the manoeuvring area shall be the same as those used for the movement of aircraft, with the exception of taxi instructions, in which case the word "PROCEED" shall be substituted for the word "TAXI" when communicating with vehicles.</p> <p>(b) Air traffic advisory service Air traffic advisory service does not deliver "clearances" but only "advisory information" and it shall use the word "advise" or "suggest" when a course of action is proposed to an aircraft.</p> <p>(c) Indication of heavy wake turbulence category</p> <ol style="list-style-type: none"> (1) For aircraft in the heavy wake turbulence category, the word "Heavy" shall be included immediately after the aircraft call sign in the initial radiotelephony contact between such aircraft and ATS units. (2) For specific aircraft in the heavy wake turbulence category, as identified by the competent authority, the word "Super" shall be included immediately after the aircraft call sign in the initial radiotelephony contact between such aircraft and ATS units. <p>(d) Procedures related to weather deviation When the pilot initiates communications with ATC, a rapid response may be obtained by stating "WEATHER DEVIATION REQUIRED" to indicate that priority is desired on the frequency and for ATC response. When necessary, the pilot shall initiate communications using the urgency call "PAN PAN" (preferably spoken three times).</p>
<p>SERA.14095 Distress and urgency radiotelephony communication procedures</p> <p>(a) General</p> <ol style="list-style-type: none"> (1) Distress and urgency traffic shall comprise all radiotelephony messages relative to the distress and urgency conditions respectively. Distress and urgency conditions are defined as: <ol style="list-style-type: none"> (i) <i>Distress</i>: a condition of being threatened by serious and/or imminent danger and of requiring immediate assistance. (ii) <i>Urgency</i>: a condition concerning the safety of an aircraft or other vehicle, or of some person on board or within sight, but which does not require immediate assistance. (2) The radiotelephony distress signal "MAYDAY" and the radiotelephony urgency signal "PAN PAN" shall

be used at the commencement of the first distress and urgency communication respectively. At the commencement of any subsequent communication in distress and urgency traffic, it shall be permissible to use the radiotelephony distress and urgency signals.

(3) The originator of messages addressed to an aircraft in distress or urgency condition shall restrict to the minimum the number and volume and content of such messages as required by the condition.

(4) If no acknowledgement of the distress or urgency message is made by the ATS unit addressed by the aircraft, other ATS units shall render assistance as prescribed in points (b)(2) and (b)(3) respectively.

(5) Distress and urgency traffic shall normally be maintained on the frequency on which such traffic was initiated until it is considered that better assistance can be provided by transferring that traffic to another frequency.

(6) In cases of distress and urgency communications, in general, the transmissions by radiotelephony shall be made slowly and distinctly, each word being clearly pronounced to facilitate transcription.

(b) Radiotelephony distress communications

(1) Action by the aircraft in distress In addition to being preceded by the radiotelephony distress signal "MAYDAY" in accordance with point (a)(2), preferably spoken three times, the distress message to be sent by an aircraft in distress shall:

- (i) be on the air-ground frequency in use at the time;
- (ii) consist of as many as possible of the following elements spoken distinctly and, if possible, in the following order:
 - (A) the name of the ATS unit addressed (time and circumstances permitting);
 - (B) the identification of the aircraft;
 - (C) the nature of the distress condition;
 - (D) the intention of the pilot-in-command;
 - (E) present position, level and heading.

(2) Action by the ATS unit addressed or by the first ATS unit acknowledging the distress message The ATS unit addressed by an aircraft in distress, or the first ATS unit acknowledging the distress message, shall:

- (i) immediately acknowledge the distress message;
- (ii) take control of the communications or specifically and clearly transfer that responsibility, advising the aircraft if a transfer is made; and
- (iii) take immediate action to ensure that all necessary information is made available, as soon as possible, to:
 - (A) the ATS unit concerned;
 - (B) the aircraft operator concerned, or its representative, in accordance with pre-established arrangements;
- (iv) warn other ATS units, as appropriate, in order to prevent the transfer of traffic to the frequency of the distress communication.

(3) Imposition of silence

(i) The aircraft in distress, or the ATS unit in control of distress traffic, shall be permitted to impose silence, either on all stations of the mobile service in the area or on any station which interferes with the distress traffic. It shall address these instructions 'to all stations' or to one station only, according to the circumstances. In either case, it shall use:

- (A) "STOP TRANSMITTING";
- (B) the radiotelephony distress signal "MAYDAY".

(ii) The use of the signals specified in point (b)(3)(i) shall be reserved for the aircraft in distress and for the ATS unit controlling the distress traffic.

(4) Action by all other ATS units/aircraft

(i) The distress communications have absolute priority over all other communications and ATS units/aircraft aware of them shall not transmit on the frequency concerned unless:

- (A) the distress is cancelled or the distress traffic is terminated;
- (B) all distress traffic has been transferred to other frequencies;
- (C) the ATS unit controlling communications gives permission;
- (D) it has itself to render assistance.

(ii) Any ATS unit/aircraft which has knowledge of distress traffic, and which cannot itself assist the aircraft in distress, shall nevertheless continue listening to such traffic until it is evident that assistance is being provided.

(5) Termination of distress communications and of silence

(i) When an aircraft is no longer in distress, it shall transmit a message cancelling the distress condition.

(ii) When the ATS unit which has controlled the distress communication traffic becomes aware that the distress condition is ended, it shall take immediate action to ensure that this information is made available, as soon as possible, to:

(A) the ATS units concerned;

(B) the aircraft operator concerned, or its representative, in accordance with pre-established arrangements.

(iii) The distress communication and silence conditions shall be terminated by transmitting a message, including the words "DISTRESS TRAFFIC ENDED", on the frequency or frequencies being used for the distress traffic. This message shall be originated only by the ATS unit controlling the communications when, after the reception of the message prescribed in point (b)(5)(i), it is authorised to do so by the competent authority.

(c) Radiotelephony urgency communications

(1) Action by the aircraft reporting an urgency condition except as indicated in point (c)(4) In addition to being preceded by the radiotelephony urgency signal "PAN PAN" in accordance with point (a)(2), preferably spoken three times and each word of the group pronounced as the French word "panne", the urgency message to be sent by an aircraft reporting an urgency condition shall:

(i) be on the air-ground frequency in use at the time;

(ii) consist of as many as required of the following elements spoken distinctly and, if possible, in the following order:

(A) the name of the ATS unit addressed;

(B) the identification of the aircraft;

(C) the nature of the urgency condition;

(D) the intention of the pilot-in-command;

(E) present position, level and heading;

(F) any other useful information.

(2) Action by the ATS unit addressed or first ATS unit acknowledging the urgency message The ATS unit addressed by an aircraft reporting an urgency condition or the first ATS unit acknowledging the urgency message shall:

(i) acknowledge the urgency message;

(ii) take immediate action to ensure that all necessary information is made available, as soon as possible, to:

(A) the ATS unit concerned;

(B) the aircraft operator concerned, or its representative, in accordance with pre-established arrangements;

(iii) if necessary, exercise control of communications.

(3) Action by all other ATS units/aircraft The urgency communications have priority over all other communications except distress communications and all ATS units/aircraft shall take care not to interfere with the transmission of urgency traffic. (4) Action by an aircraft used for medical transports

(i) The use of the signal described in point (c)(4)(ii) shall indicate that the message which follows concerns a protected medical transport pursuant to the 1949 Geneva Conventions and Additional Protocols.

(ii) For the purpose of announcing and identifying aircraft used for medical transports, a transmission of the radiotelephony urgency signal "PAN PAN", preferably spoken three times, and each word of the group pronounced as the French word "panne", shall be followed by the radiotelephony signal for medical transports "MAY-DEE-CAL", pronounced as in the French "medical". The use of the signals described above indicates that the message which follows concerns a protected medical transport. The message shall convey the following data:

(A) the call sign or other recognised means of identification of the medical transports;

(B) position of the medical transports;

(C) number and type of the medical transports;

(D) intended route;

(E) estimated time en-route and of departure and arrival, as appropriate; and

(F) any other information such as flight altitude, radio frequencies guarded, languages used and secondary surveillance radar modes and codes.

(5) Action by the ATS units addressed, or by other stations receiving a medical transports message The provisions of points (c)(2) and (c)(3) shall apply as appropriate to ATS units receiving a medical transports message.'

GM1 SERA.14095(b)(1) Distress and urgency radiotelephony communication procedures

ACTION BY THE AIRCRAFT IN DISTRESS

(a) The provisions may be supplemented by the following measures:

- (1) the distress message of an aircraft in distress being made on the emergency frequency 121.5 MHz or another aeronautical mobile frequency, if considered necessary or desirable. Not all aeronautical stations maintain a continuous guard on the emergency frequency;
- (2) the distress message of an aircraft in distress being broadcast if time and circumstances render this course preferable;
- (3) the aircraft transmitting on the maritime mobile service radiotelephony calling frequencies;
- (4) the aircraft using any means at its disposal to attract attention and make known its conditions (including the activation of the appropriate SSR mode and code);
- (5) any station taking any means at its disposal to assist an aircraft in distress;
- (6) any variation on the elements listed, when the transmitting station is not itself in distress, provided that such circumstance is clearly stated in the distress message.

(b) The ATS unit addressed will normally be that ATS unit communicating with the aircraft or in whose area of responsibility the aircraft is operating.

GM1 SERA.14095(b)(2)(iii)(B) Distress and urgency radiotelephony communication procedures

ACTION BY THE ATS UNIT

The requirement to inform the aircraft operator concerned does not have priority over any other action which involves the safety of the flight in distress, or of any other flight in the area, or which might affect the progress of expected flights in the area.

GM1 SERA.14095(c)(1) Distress and urgency radiotelephony communication procedures

ACTION BY AIRCRAFT REPORTING AN URGENCY CONDITION

(a) These provisions are not intended to prevent an aircraft from broadcasting an urgency message if time and circumstances render this course preferable.

(b) The ATS unit addressed will normally be that ATS unit communicating with the aircraft or in whose area of responsibility the aircraft is operating.

GM1 SERA.14095(c)(1)(ii)(F) Distress and urgency radiotelephony communication procedures

Any other useful information may consist of information such as but not limited to remaining aircraft endurance/fuel, number of persons on board, possible presence of hazardous materials and the nature thereof, aircraft colour/markings, survival aids, etc. and may also be transmitted in situation of distress.

GM1 SERA.14095(c)(2) Distress and urgency radiotelephony communication procedures

ACTION BY ATS WHEN AN URGENCY CONDITION IS REPORTED

The requirement to inform the aircraft operating agency concerned does not have priority over any other action which involves the safety of the flight in distress, or of any other flight in the area, or which might affect the progress of expected flights in the area.

**APPENDIX 1
SIGNALS**

1. DISTRESS AND URGENCY SIGNALS

1.1. General

1.1.1. Notwithstanding the provisions in 1.2 and 1.3, an aircraft in distress shall use any means at its disposal to attract attention, make known its position and obtain help.

1.1.2. The telecommunication transmission procedures for the distress and urgency signals shall be in accordance with Section 14..

1.2. Distress Signals

1.2.1. The following signals, used either together or separately, mean that grave and imminent danger threatens, and immediate assistance is requested:

- (a) a signal made by radiotelegraphy or by any other signalling method consisting of the group SOS (. . . — — — . . . in the Morse Code);
- (b) a radiotelephony distress signal consisting of the spoken word MAYDAY;
- (c) a distress message sent via data link which transmits the intent of the word MAYDAY;
- (d) rockets or shells throwing red lights, fired one at a time at short intervals;
- (e) a parachute flare showing a red light;
- (f) setting of the transponder to Mode A Code 7700.

1.3. Urgency Signals

1.3.1. The following signals, used either together or separately, mean that an aircraft wishes to give notice of difficulties which compel it to land without requiring immediate assistance:

- (a) the repeated switching on and off of the landing lights; or
- (b) the repeated switching on and off of the navigation lights in such manner as to be distinct from flashing navigation lights.

1.3.2. The following signals, used either together or separately, mean that an aircraft has a very urgent message to transmit concerning the safety of a ship, aircraft or other vehicle, or of some person on board or within sight:

- (a) a signal made by radiotelegraphy or by any other signalling method consisting of the group XXX (— . — — . — — . — in the Morse Code);
- (b) a radiotelephony urgency signal consisting of the spoken words PAN, PAN;
- (c) an urgency message sent via data link which transmits the intent of the words PAN, PAN.

2. VISUAL SIGNALS USED TO WARN AN UNAUTHORISED AIRCRAFT FLYING IN OR ABOUT TO ENTER A RESTRICTED, PROHIBITED OR DANGER AREA

2.1. When visual signals are used to warn unauthorised aircraft flying in or about to enter a restricted, prohibited or danger area by day and by night, a series of projectiles discharged from the ground at intervals of 10 seconds, each showing, on bursting, red and green lights or stars shall indicate to an unauthorised aircraft that it is flying in or about to enter a restricted, prohibited or danger area, and that the aircraft is to take such remedial action as may be necessary.

3. SIGNALS FOR AERODROME TRAFFIC

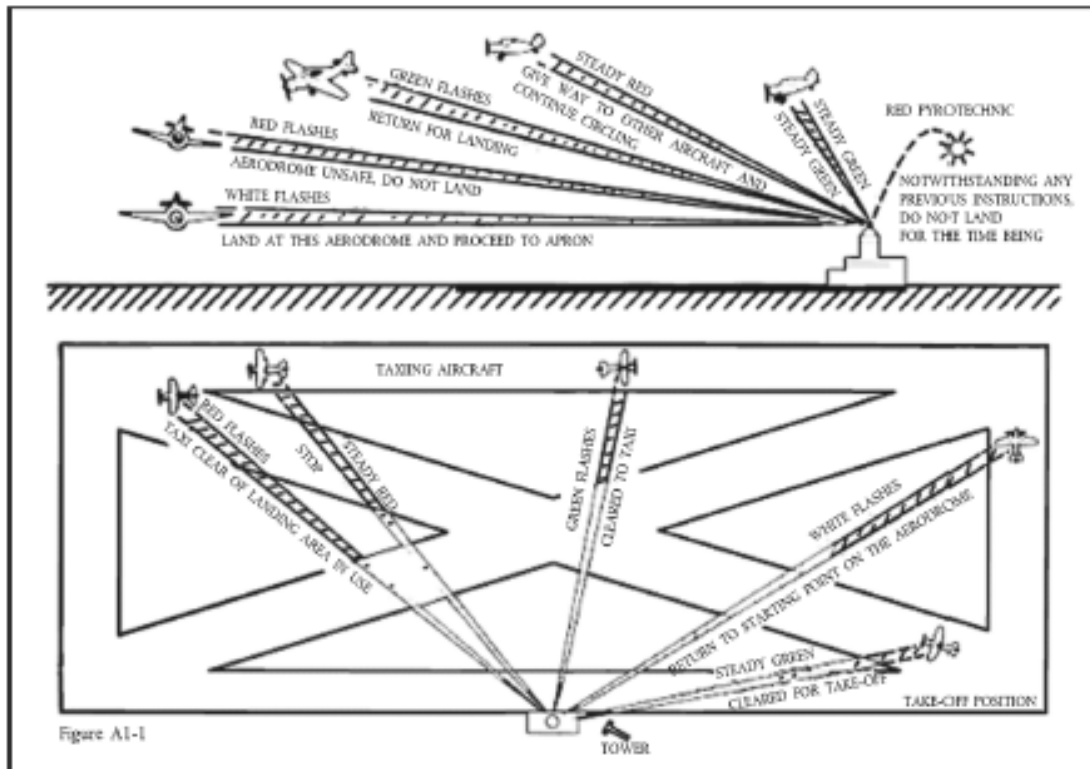
3.1 Light and Pyrotechnic Signals

3.1.1. Instructions

Table AP 1 – 1

Light	From Aerodrome Control to:		
	Aircraft in flight	Aircraft on the ground	
Directed towards aircraft concerned (see Figure A1-1).	Steady green	Cleared to land	Cleared for take-off
	Steady red	Give way to other aircraft and continue circling	Stop
	Series of green flashes	Return for landing (*)	Cleared to taxi
	Series of red flashes	Aerodrome unsafe, do not land	Taxi clear of landing area in use
	Series of white flashes	Land at this aerodrome and proceed to apron (*)	Return to starting point on the aerodrome
Red pyrotechnic	Notwithstanding any previous instructions, do not land for the time being		

(*) Clearances to land and to taxi will be given in due course.



3.1.2. Acknowledgement by an aircraft

(a) When in flight:

(1) during the hours of daylight:

– by rocking the aircraft's wings, except for the base and final legs of the approach;

(2) during the hours of darkness:

– by flashing on and off twice the aircraft's landing lights or, if not so equipped, by switching on and off twice its navigation lights.

(b) When on the ground:

(1) during the hours of daylight:

– by moving the aircraft's ailerons or rudder;

(2) during the hours of darkness:

– by flashing on and off twice the aircraft's landing lights or, if not so equipped, by switching on and off twice its navigation lights.

3.2. Visual Ground Signals

3.2.1. Prohibition of Landing

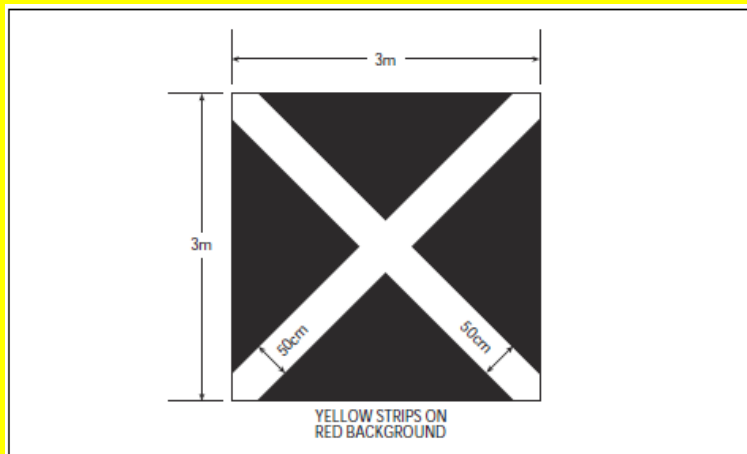
3.2.1.1. A horizontal red square panel with yellow diagonals (Figure A1-2) when displayed in a signal area indicates that landings are prohibited and that the prohibition is liable to be prolonged.



Figure A1-2

UK GM1 to SERA Appendix 1 3.2.1.1 Visual Ground Signals

A horizontal red square panel with yellow diagonals 3 metres square with a yellow strip along each diagonal of dimensions as illustrated in this paragraph and when displayed in a signal area indicates that landings are prohibited and that the prohibition is liable to be prolonged.



3.2.2. Need for Special Precautions while Approaching or Landing

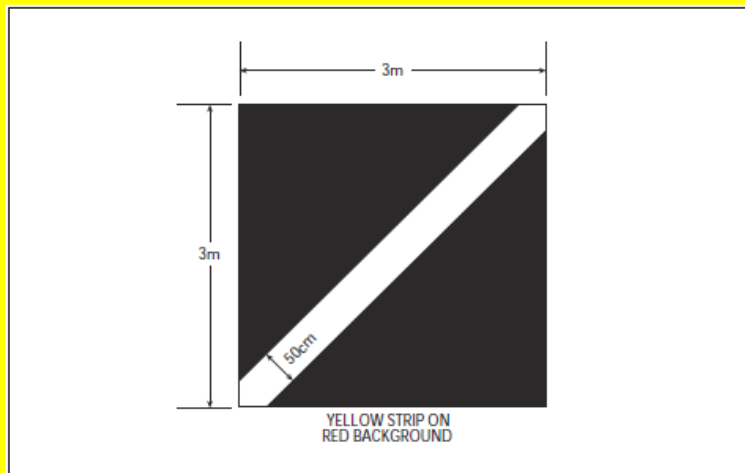
3.2.2.1. A horizontal red square panel with one yellow diagonal (Figure A1-3) when displayed in a signal area indicates that owing to the bad state of the manoeuvring area, or for any other reason, special precautions must be observed in approaching to land or in landing.



Figure A1-3

UK GM1 to SERA Appendix 1 3.2.2.2 Visual Ground Signals

A red panel 3 metres square with a yellow strip along one diagonal of dimensions as illustrated in this paragraph when displayed in a signal area indicates that owing to the bad state of the manoeuvring area, or for any other reason, special precautions must be observed in approaching to land or in landing.



3.2.3. Use of Runways and Taxiways

3.2.3.1. A horizontal white dumb-bell (Figure A1-4) when displayed in a signal area indicates that aircraft are required to land, take off and taxi on runways and taxiways only.



Figure A1-4

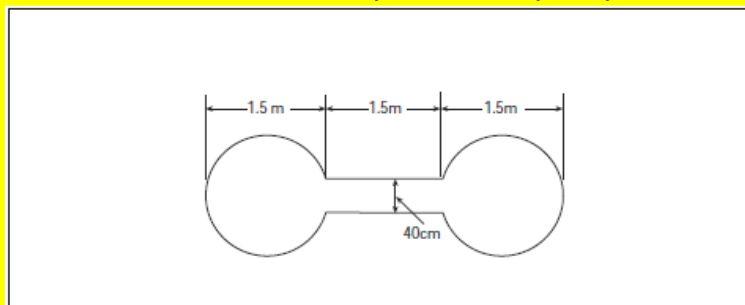
3.2.3.2. The same horizontal white dumb-bell as in 3.2.3.1 but with a black bar placed perpendicular to the shaft across each circular portion of the dumb-bell (Figure A1-5) when displayed in a signal area indicates that aircraft are required to land and take off on runways only, but other manoeuvres need not be confined to runways and taxiways.



Figure A1-5

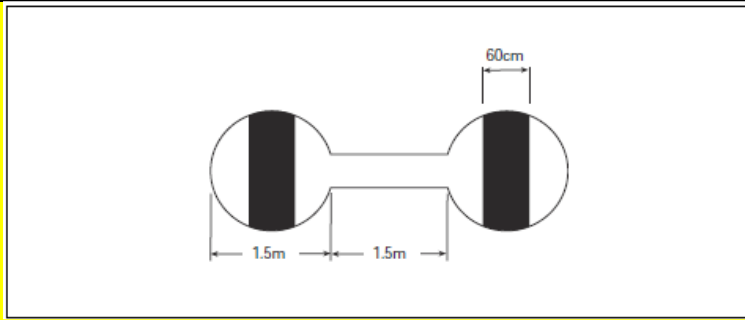
UK GM1 to SERA Appendix 1 3.2.3.1 Visual Ground Signals

A horizontal white dumb-bell (as illustrated in this paragraph) when displayed in a signal area indicates that aircraft are required to land, take off and taxi on runways and taxiways only.



UK GM2 to SERA Appendix 1 3.2.3.2 Visual Ground Signals

A horizontal white dumb-bell as in but with a black bar placed perpendicular to the shaft across each circular portion of the dumb-bell of dimensions (as illustrated in this paragraph) when displayed in a signal area indicates that aircraft are required to land and take off on runways only, but other manoeuvres need not be confined to runways and taxiways.



3.2.4. Closed Runways or Taxiways

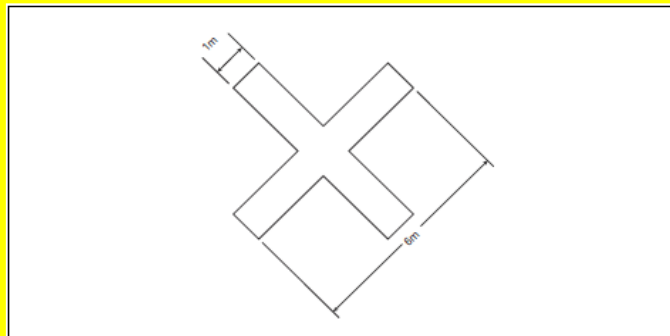
3.2.4.1. Crosses of a single contrasting colour, white on runways and yellow on taxiways (Figure A1-6), displayed horizontally on runways and taxiways or parts thereof indicate an area unfit for movement of aircraft.



Figure A1-6

UK GM to SERA Appendix 1 paragraph 3.2.4.1

Two or more white crosses displayed on a runway or on a taxiway two or more yellow crosses, with the arms of the crosses at an angle of 45° to the centre line of the runway, at intervals of not more than 300 metres signify that the section of the runway or taxiway marked by them is unfit for the movement of aircraft.



3.2.5. Directions for Landing or Take-off

3.2.5.1. A horizontal white or orange landing T (Figure A1-7) indicates the direction to be used by aircraft for landing and take-off, which shall be in a direction parallel to the shaft of the T towards the cross arm. When used at night, the landing T shall be either illuminated or outlined in white lights.

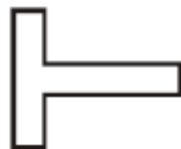
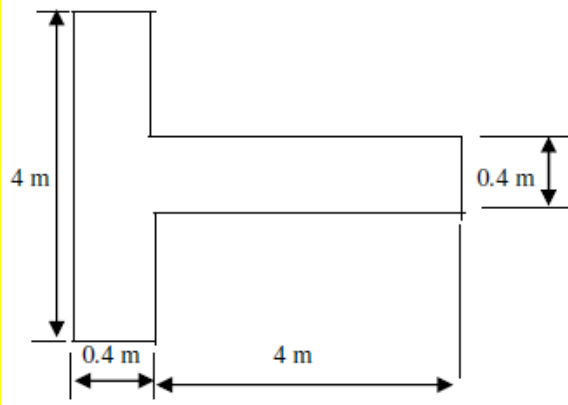


Figure A1-7

UK GM to SERA Appendix 1 3.2.5.1 Visual Ground Signals

A horizontal white or orange landing T of dimensions as illustrated in this paragraph indicates the direction to be used by aircraft for landing and take-off, which shall be in a direction parallel to the shaft of the T towards the cross arm. When used at night, the landing T shall be either illuminated or outlined in white lights.



3.2.5.2. A set of two digits (Figure A1-8) displayed vertically at or near the aerodrome control tower indicates to aircraft on the manoeuvring area the direction for take-off, expressed in units of 10 degrees to the nearest 10 degrees of the magnetic compass.

09

Figure A1-8

3.2.6. Right-hand Traffic

3.2.6.1. When displayed in a signal area, or horizontally at the end of the runway or strip in use, a right-hand arrow of conspicuous colour (Figure A1-9) indicates that turns are to be made to the right before landing and after take-off.

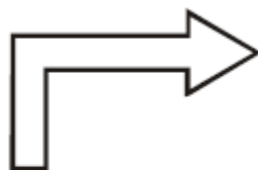
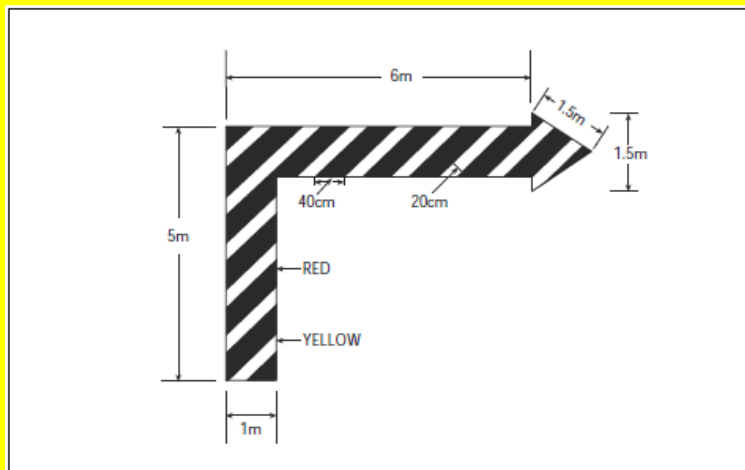


Figure A1-9

UK GM to SERA Appendix 1 3.2.6.1 Visual Ground Signals

A red and yellow striped arrow as illustrated in this paragraph, the shaft of which is one metre wide placed along the whole or a total of 11 metres of two adjacent sides of the signals area and pointing in a clockwise direction indicates that turns are to be made to the right before landing and after take-off.



3.2.7. Air Traffic Services Reporting Office

3.2.7.1. The letter C displayed vertically in black against a yellow background (Figure A1-10) indicates the

location of the air traffic services reporting office.



Figure A1-10

3.2.8. Sailplane Flights in Operation

3.2.8.1. A double white cross displayed horizontally (Figure A1-11) in the signal area indicates that the aerodrome is being used by sailplanes and that sailplane flights are being performed.

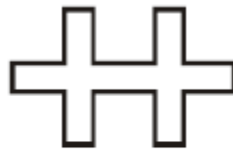
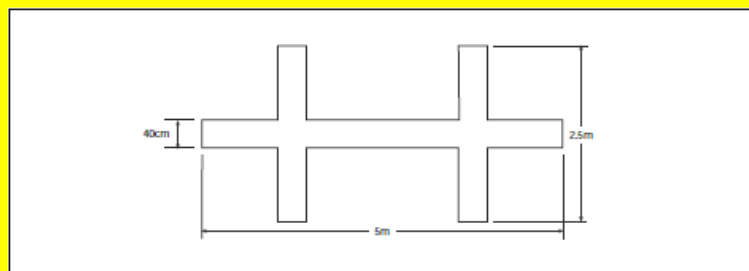


Figure A1-11

UK GM to SERA Appendix 1 3.2.8.1 Visual Ground Signals

A double white cross displayed horizontally in the signal area and of dimensions as illustrated in this paragraph signifies that the aerodrome is being used by sailplanes and that sailplane flights are being performed.



UK GM to SERA Appendix 1 3.2. Visual Ground Signals

All dimensions of signals or markings specified in SERA and the Rules of the Air Regulations should be subject to a tolerance of plus or minus 10 per cent. The ICAO Aerodrome Design Manual (Doc 9157) Part 4 provides guidance on the design of visual ground signals.

4. MARSHALLING SIGNALS

4.1. From a Signalman/Marshaller to an Aircraft

4.1.1. The signals for use by the signalman/marshaller, with hands illuminated as necessary to facilitate observation by the pilot, and facing the aircraft in a position shall be:








- (a) for fixed-wing aircraft, on left side of aircraft, where best seen by the pilot; and
- (b) for helicopters, where the signalman/marshaller can best be seen by the pilot.








4.1.2 Prior to using the following signals, the signalman/marshaller shall ascertain that the area within which an aircraft is to be guided is clear of objects which the aircraft, in complying with SERA.3301 (a), might otherwise strike.












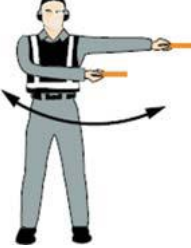




1. **Wingwalker/guide** (*) Raise right hand above head level with wand pointing up; move left-hand wand pointing down toward body.

(*) This signal provides an indication by a person positioned at the aircraft wing tip, to the pilot/ marshaller/push-back operator, that the aircraft movement on/off a parking position would be unobstructed.

	<p>2. Identify gate Raise fully extended arms straight above head with wands pointing up.</p>
	<p>3. Proceed to next signalman/marshaller or as directed by tower/ground control Point both arms upward; move and extend arms outward to sides of body and point with wands to direction of next signalman/ marshaller or taxi area.</p>
	<p>4. Straight ahead Bend extended arms at elbows and move wands up and down from chest height to head.</p>
	<p>5(a) Turn left (from pilot's point of view) With right arm and wand extended at a 90-degree angle to body, make 'come ahead' signal with left hand. The rate of signal motion indicates to pilot the rate of aircraft turn.</p>
	<p>5(b) Turn right (from pilot's point of view) With left arm and wand extended at a 90-degree angle to body, make 'come ahead' signal with right hand. The rate of signal motion indicates to pilot the rate of aircraft turn.</p>
	<p>6(a) Normal stop Fully extend arms and wands at a 90- degree angle to sides and slowly move to above head until wands cross</p>
	<p>6(b) Emergency stop Abruptly extend arms and wands to top of head, crossing wands.</p>

	<p>7(a) Set brakes Raise hand just above shoulder height with open palm. Ensuring eye contact with flight crew, close hand into a fist. Do not move until receipt of 'thumbs up' acknowledgement from flight crew.</p>
	<p>7(b) Release brakes Raise hand just above shoulder height with hand closed in a fist. Ensuring eye contact with flight crew, open palm. Do not move until receipt of 'thumbs up' acknowledgement from flight crew.</p>
	<p>8(a) Chocks inserted With arms and wands fully extended above head, move wands inward in a 'jabbing' motion until wands touch. Ensure acknowledgement is received from flight crew.</p>
	<p>8(b) Chocks removed With arms and wands fully extended above head, move wands outward in a 'jabbing' motion. Do not remove chocks until authorised by flight crew.</p>
	<p>9. Start engine(s) Raise right arm to head level with wand pointing up and start a circular motion with hand; at the same time, with left arm raised above head level, point to engine to be started.</p>
	<p>10. Cut engines Extend arm with wand forward of body at shoulder level; move hand and wand to top of left shoulder and draw wand to top of right shoulder in a slicing motion across throat.</p>
	<p>11. Slow down Move extended arms downwards in a 'patting' gesture, moving wands up and down from waist to knees.</p>

	<p>12. Slow down engine(s) on indicated side With arms down and wands toward ground, wave either <i>right</i> or <i>left</i> wand up and down indicating engine(s) on <i>left</i> or <i>right</i> side respectively should be slowed down.</p>
	<p>13. Move back With arms in front of body at waist height, rotate arms in a forward motion. To stop rearward movement, use signal 6(a) or 6(b).</p>
	<p>14(a) Turns while backing (for tail to starboard) Point left arm with wand down and bring right arm from overhead vertical position to horizontal forward position, repeating right-arm movement.</p>
	<p>14(b) Turns while backing (for tail to port) Point right arm with wand down and bring left arm from overhead vertical position to horizontal forward position, repeating left-arm movement.</p>
	<p>15. Affirmative/all clear (*) Raise right arm to head level with wand pointing up or display hand with 'thumbs up'; left arm remains at side by knee. (*) This signal is also used as a technical/ servicing communication signal.</p>
	<p>16. Hover (*) Fully extend arms and wands at a 90- degree angle to sides. (*) For use to hovering helicopters.</p>
	<p>17. Move upwards (*) Fully extend arms and wands at a 90- degree angle to sides and, with palms turned up, move hands upwards. Speed of movement indicates rate of ascent. (*) For use to hovering helicopters.</p>

	<p>18. Move downwards (*) Fully extend arms and wands at a 90-degree angle to sides and, with palms turned down, move hands downwards. Speed of movement indicates rate of descent. (*) For use to hovering helicopters.</p>
	<p>19(a) Move horizontally left (from pilot's point of view) (*) Extend arm horizontally at a 90-degree angle to right side of body. Move other arm in same direction in a sweeping motion. (*) For use to hovering helicopters.</p>
	<p>19(b) Move horizontally right (from pilot's point of view) (*) Extend arm horizontally at a 90-degree angle to left side of body. Move other arm in same direction in a sweeping motion. (*) For use to hovering helicopters.</p>
	<p>20. Land (*) Cross arms with wands downwards and in front of body. (*) For use to hovering helicopters</p>
	<p>21. Hold position/stand by Fully extend arms and wands downwards at a 45-degree angle to sides. Hold position until aircraft is clear for next manoeuvre.</p>
	<p>22. Dispatch aircraft Perform a standard salute with right hand and/or wand to dispatch the aircraft. Maintain eye contact with flight crew until aircraft has begun to taxi.</p>
	<p>23. Do not touch controls (technical/ servicing communication signal) Extend right arm fully above head and close fist or hold wand in horizontal position; left arm remains at side by knee.</p>

	<p>24. Connect ground power (technical/ servicing communication signal) Hold arms fully extended above head; open left hand horizontally and move finger tips of right hand into and touch open palm of left hand (forming a 'T'). At night, illuminated wands can also be used to form the 'T' above head.</p>
	<p>25. Disconnect power (technical/servicing communication signal) Hold arms fully extended above head with finger tips of right hand touching open horizontal palm of left hand (forming a 'T'); then move right hand away from the left. Do not disconnect power until authorised by flight crew. At night, illuminated wands can also be used to form the 'T' above head.</p>
	<p>26. Negative (technical/servicing communication signal) Hold right arm straight out at 90 degrees from shoulder and point wand down to ground or display hand with 'thumbs down'; left hand remains at side by knee.</p>
	<p>27. Establish communication via interphone (technical/servicing communication signal) Extend both arms at 90 degrees from body and move hands to cup both ears.</p>
	<p>28. Open/close stairs (technical/servicing communication signal) (*) With right arm at side and left arm raised above head at a 45-degree angle, move right arm in a sweeping motion towards top of left shoulder. (*) This signal is intended mainly for aircraft with the set of integral stairs at the front.</p>






GM1 to Appendix 1 (4.1) MARSHALLING SIGNALS

FROM A SIGNALMAN/MARSHALLER TO AN AIRCRAFT — GENERAL

- (a) The meaning of the relevant signals remains the same if bats, illuminated wands or torch lights are held rather than the signalman's hands being illuminated.
- (b) The aircraft engines are numbered, for the signalman facing the aircraft, from right to left (i.e. No 1 engine being the port outer engine).
- (c) References to wands may also be read to refer to daylight-fluorescent table-tennis bats or gloves (daytime only).
- (d) References to the signalman may also be read to refer to marshaller.
- (e) The design of many aircraft is such that the path of the wing tips, engines and other extremities cannot always be monitored visually from the flight deck while the aircraft is being manoeuvred on the ground.

4.2. From the pilot of an aircraft to a signalman/marshaller

4.2.1. These signals shall be used by a pilot in the cockpit with hands plainly visible to the signalman/marshaller, and illuminated as necessary to facilitate observation by the signalman/marshaller.

	<p>(a) Brakes engaged: raise arm and hand, with fingers extended, horizontally in front of face, then clench fist.</p>
	<p>(b) Brakes released: raise arm, with fist clenched, horizontally in front of face, then extend fingers.</p>
	<p>(c) Insert chocks: arms extended, palms outwards, move hands inwards to cross in front of face.</p>
	<p>(d) Remove chocks: hands crossed in front of face, palms outwards, move arms outwards.</p>
	<p>(e) Ready to start engine(s): Raise the appropriate number of fingers on one hand indicating the number of the engine to be started.</p>

4.3. Technical/servicing communication signals

4.3.1. Manual signals shall only be used when verbal communication is not possible with respect to technical/servicing communication signals. 4.3.2. Signalmen/marshalls shall ensure that an acknowledgement is received from the flight crew with respect to technical/servicing communication signals.


GM1 to Appendix 1 (4.2) MARSHALLING SIGNALS




FROM THE PILOT OF AN AIRCRAFT TO A SIGNALMAN/MARSHALLER — BRAKES

When providing the signal for 'brakes engaged' the moment the fist is clenched indicates the moment of brake engagement. When providing the signal for 'brakes released' the moment the fingers are extended indicates the moment of brake release.

5. STANDARD EMERGENCY HAND SIGNALS

5.1. The following hand signals are established as the minimum required for emergency communication between the ARFF incident commander/ARFF firefighters and the cockpit and/or cabin crews of the incident aircraft. ARFF emergency hand signals should be given from the left front side of the aircraft for the cockpit crew.

	<p>1. Recommend evacuation Evacuation recommended based on aircraft rescue and fire-fighting and Incident Commander's assessment of external situation. Arm extended from body, and held horizontal with hand upraised at eye level. Execute beckoning arm motion angled backward. Non-beckoning arm held against body. Night — same with wands.</p>
---	--

	<p>2. Recommend stop Recommend evacuation in progress be halted. Stop aircraft movement or other activity in progress. Arms in front of head — Crossed at wrists Night — same with wands.</p>
	<p>3. Emergency contained No outside evidence of dangerous conditions or 'all-clear.' Arms extended outward and down at a 45 degree angle. Arms moved inward below waistline simultaneously until wrists crossed, then extended outward to starting position. Night — same with wands.</p>
	<p>4. Fire Move right-hand in a 'fanning' motion from shoulder to knee, while at the same time pointing with left hand to area of fire. Night — same with wands.</p>

GM1 to Appendix 1 (5.1) STANDARD EMERGENCY HAND SIGNALS

GENERAL

In order to communicate more effectively with the cabin crew, emergency hand signals may be given by ARFF firefighters from positions other than those that would be used by a signalman to provide marshalling signals.

APPENDIX 2
UNMANNED FREE BALLOONS

1. CLASSIFICATION OF UNMANNED FREE BALLOONS

1.1. Unmanned free balloons shall be classified as (see Figure AP3-1):

(a) light: an unmanned free balloon which carries a payload of one or more packages with a combined mass of less than 4 kg, unless qualifying as a heavy balloon in accordance with c) 2), 3) or 4); or

(b) medium: an unmanned free balloon which carries a payload of two or more packages with a combined mass of 4 kg or more, but less than 6 kg, unless qualifying as a heavy balloon in accordance with c) 2), 3) or 4) below; or

(c) heavy: an unmanned free balloon which carries a payload which:

(1) has a combined mass of 6 kg or more; or

(2) includes a package of 3 kg or more; or

(3) includes a package of 2 kg or more with an area density of more than 13 g per square centimetre, determined by dividing the total mass in grams of the payload package by the area in square centimetres of its smallest surface; or

(4) uses a rope or other device for suspension of the payload that requires an impact force of 230 N or more to separate the suspended payload from the balloon.

2. GENERAL OPERATING RULES

2.1. An unmanned free balloon shall not be operated without authorisation from the State from which the launch is made.

2.2. An unmanned free balloon, other than a light balloon used exclusively for meteorological purposes and operated in the manner prescribed by the competent authority, shall not be operated across the territory of another State without authorisation from the other State concerned.

2.3. The authorisation referred to in 2.2 shall be obtained prior to the launching of the balloon if there is reasonable expectation, when planning the operation, that the balloon may drift into airspace over the territory of another State. Such authorisation may be obtained for a series of balloon flights or for a particular type of recurring flight, e.g. atmospheric research balloon flights.

2.4. An unmanned free balloon shall be operated in accordance with conditions specified by the State of Registry and the State(s) expected to be overflown.

2.5. An unmanned free balloon shall not be operated in such a manner that impact of the balloon, or any part thereof, including its payload, with the surface of the earth, creates a hazard to persons or property.

2.6. A heavy unmanned free balloon shall not be operated over the high seas without prior coordination with the ANSP(s).

CHARACTERISTICS		PAYLOAD MASS (kilogrammes)					
		1	2	3	4	5	6 or more
ROPE or OTHER SUSPENSION 230 Newtons or MORE		HEAVY					
INDIVIDUAL PAYLOAD PACKAGE AREA DENSITY more than 13 g/cm ²	AREA DENSITY CALCULATION MASS (g) Area of smallest surface (cm ²)	LIGHT		MEDIUM			
	AREA DENSITY less than 13 g/cm ²	LIGHT					
COMBINED MASS (if Suspension OR Area density OR Mass of individual package are not factors)				LIGHT		MEDIUM	

Figure AP2-1

3. OPERATING LIMITATIONS AND EQUIPMENT REQUIREMENTS

3.1. A heavy unmanned free balloon shall not be operated without authorisation from the ANSP(s) at or through any level below 18 000 m (60 000 ft) pressure-altitude at which:

- (a) there are clouds or obscuring phenomena of more than four oktas coverage; or
- (b) the horizontal visibility is less than 8 km.

3.2. A heavy or medium unmanned free balloon shall not be released in a manner that will cause it to fly lower than 300 m (1 000 ft) over the congested areas of cities, towns or settlements or an open-air assembly of persons not associated with the operation.

3.3. A heavy unmanned free balloon shall not be operated unless:

- (a) it is equipped with at least two payload flight-termination devices or systems, whether automatic or operated by telecommand, that operate independently of each other;
- (b) for polyethylene zero-pressure balloons, at least two methods, systems, devices, or combinations thereof, that function independently of each other are employed for terminating the flight of the balloon envelope;
- (c) the balloon envelope is equipped with either a radar reflective device(s) or radar reflective material that will present an echo to surface radar operating in the 200 MHz to 2 700 MHz frequency range, and/or the balloon is equipped with such other devices as will permit continuous tracking by the operator beyond the range of ground-based radar.

3.4. A heavy unmanned free balloon shall not be operated under the following conditions:

- (a) in an area where ground-based SSR equipment is in use, unless it is equipped with a secondary surveillance radar transponder, with pressure-altitude reporting capability, which is continuously operating on an assigned code, or which can be turned on when necessary by the tracking station; or
- (b) in an area where ground-based ADS-B equipment is in use, unless it is equipped with an ADS-B

transmitter, with pressure-altitude reporting capability, which is continuously operating or which can be turned on when necessary by the tracking station.

3.5. An unmanned free balloon that is equipped with a trailing antenna that requires a force of more than 230 N to break it at any point shall not be operated unless the antenna has coloured pennants or streamers that are attached at not more than 15 m intervals.

3.6. A heavy unmanned free balloon shall not be operated below 18 000 m (60 000 ft) pressure-altitude at night or during any other period prescribed by the competent authority, unless the balloon and its attachments and payload, whether or not they become separated during the operation, are lighted.

3.7. A heavy unmanned free balloon that is equipped with a suspension device (other than a highly conspicuously coloured open parachute) more than 15 m long shall not be operated during night below 18 000 m (60 000 ft) pressure-altitude unless the suspension device is coloured in alternate bands of high conspicuity colours or has coloured pennants attached.

4. TERMINATION

4.1. The operator of a heavy unmanned free balloon shall activate the appropriate termination devices required by 3.3 a) and b):

- (a) when it becomes known that weather conditions are less than those prescribed for the operation;
- (b) if a malfunction or any other reason makes further operation hazardous to air traffic or to persons or property on the surface; or
- (c) prior to unauthorised entry into the airspace over another State's territory.

5. FLIGHT NOTIFICATION

5.1. Pre-flight Notification

5.1.1. Early notification of the intended flight of an unmanned free balloon in the medium or heavy category shall be made to the appropriate air traffic services unit not less than seven days before the date of the intended flight.

5.1.2. Notification of the intended flight shall include such of the following information as may be required by the appropriate air traffic services unit:

- (a) balloon flight identification or project code name;
- (b) balloon classification and description;
- (c) SSR code, aircraft address or NDB frequency as applicable;
- (d) operator's name and telephone number;
- (e) launch site;
- (f) estimated time of launch (or time of commencement and completion of multiple launches);
- (g) number of balloons to be launched and the scheduled interval between launches (if multiple launches);
- (h) expected direction of ascent;
- (i) cruising level(s) (pressure-altitude);
- (j) the estimated elapsed time to pass 18 000 m (60 000 ft) pressure-altitude or to reach cruising level if at or below 18 000 m (60 000 ft), together with the estimated location. If the operation consists of continuous launchings, the time to be included shall be the estimated time at which the first and the last in the series will reach the appropriate level (e.g. 122136Z-130330Z);
- (k) the estimated date and time of termination of the flight and the planned location of the impact/recovery area. In the case of balloons carrying out flights of long duration, as a result of which the date and time of termination of the flight and the location of impact cannot be forecast with accuracy, the term "long duration" shall be used. If there is to be more than one location of impact/recovery, each location shall be listed together with the appropriate estimated time of impact. If there is to be a series of continuous impacts, the time to be included shall be the estimated time of the first and the last in the series (e.g. 070330Z-072300Z).

5.1.3. Any changes in the pre-launch information notified in accordance with point 5.1.2 shall be forwarded to the ATS unit concerned not less than 6 hours before the estimated time of launch, or in the case of solar or cosmic disturbance investigations involving a critical time element, not less than 30 minutes before the estimated time of the commencement of the operation.'

5.2. Notification of Launch

5.2.1. Immediately after a medium or heavy unmanned free balloon is launched the operator shall notify the

appropriate air traffic services unit of the following:

- (a) balloon flight identification;
- (b) launch site;
- (c) actual time of launch;
- (d) estimated time at which 18 000 m (60 000 ft) pressure-altitude will be passed, or the estimated time at which the cruising level will be reached if at or below 18 000 m (60 000 ft), and the estimated location; and
- (e) any changes to the information previously notified in accordance with 5.1.2 g) and h).

5.3. Notification of Cancellation

5.3.1. The operator shall notify the appropriate air traffic services unit immediately it is known that the intended flight of a medium or heavy unmanned free balloon, previously notified in accordance with Paragraph 5.1, has been cancelled.

6. POSITION RECORDING AND REPORTS

6.1. The operator of a heavy unmanned free balloon operating at or below 18 000 m (60 000 ft) pressure-altitude shall monitor the flight path of the balloon and forward reports of the balloon's position as requested by air traffic services. Unless air traffic services require reports of the balloon's position at more frequent intervals, the operator shall record the position every 2 hours.

6.2. The operator of a heavy unmanned free balloon operating above 18 000 m (60 000 ft) pressure-altitude shall monitor the flight progress of the balloon and forward reports of the balloon's position as requested by air traffic services. Unless air traffic services require reports of the balloon's position at more frequent intervals, the operator shall record the position every 24 hours.

6.3. If a position cannot be recorded in accordance with 6.1 and 6.2, the operator shall immediately notify the appropriate air traffic services unit. This notification shall include the last recorded position. The appropriate air traffic services unit shall be notified immediately when tracking of the balloon is re-established.

6.4. One hour before the beginning of planned descent of a heavy unmanned free balloon, the operator shall forward to the appropriate ATS unit the following information regarding the balloon:

- (a) the current geographical position;
- (b) the current level (pressure-altitude);
- (c) the forecast time of penetration of 18 000 m (60 000 ft) pressure-altitude, if applicable;
- (d) the forecast time and location of ground impact.

6.5. The operator of a heavy or medium unmanned free balloon shall notify the appropriate air traffic services unit when the operation is ended.

GM1 to Appendix 2(3.3b)) OPERATING LIMITATIONS AND EQUIPMENT REQUIREMENTS

SUPER-PRESSURE BALLOONS

Super-pressure balloons do not require flight termination devices as they quickly rise after payload discharge and burst without the need for a device or system designed to puncture the balloon envelope. In this context a super-pressure balloon is a simple non-extensible envelope capable of withstanding a differential of pressure, higher inside than out. It is inflated so that the smaller night-time pressure of the gas still fully extends the envelope. Such a super-pressure balloon will keep essentially constant level until too much gas diffuses out of it.

**APPENDIX 3
TABLE OF CRUISING LEVELS**

1.1 The cruising levels to be observed are as follows:

TRACK*											
From 000 degrees to 179 degrees						From 180 degrees to 359 degrees					
IFR Flights			VFR Flights			IFR Flights			VFR Flights		
Level			Level			Level			Level		
FL	Feet	Metres	FL	Feet	Metres	FL	Feet	Metres	FL	Feet	Metres
010	1 000	300	–	–	–	020	2 000	600	–	–	–
030	3 000	900	035	3 500	1 050	040	4 000	1 200	045	4 500	1 350
050	5 000	1 500	055	5 500	1 700	060	6 000	1 850	065	6 500	2 000
070	7 000	2 150	075	7 500	2 300	080	8 000	2 450	085	8 500	2 600
090	9 000	2 750	095	9 500	2 900	100	10 000	3 050	105	10 500	3 200
110	11 000	3 350	115	11 500	3 500	120	12 000	3 650	125	12 500	3 800
130	13 000	3 950	135	13 500	4 100	140	14 000	4 250	145	14 500	4 400
150	15 000	4 550	155	15 500	4 700	160	16 000	4 900	165	16 500	5 050
170	17 000	5 200	175	17 500	5 350	180	18 000	5 500	185	18 500	5 650
190	19 000	5 800	195	19 500	5 950	200	20 000	6 100	205	20 500	6 250
210	21 000	6 400	215	21 500	6 550	220	22 000	6 700	225	22 500	6 850
230	23 000	7 000	235	23 500	7 150	240	24 000	7 300	245	24 500	7 450
250	25 000	7 600	255	25 500	7 750	260	26 000	7 900	265	26 500	8 100
270	27 000	8 250	275	27 500	8 400	280	28 000	8 550	285	28 500	8 700
290	29 000	8 850				300	30 000	9 150			
310	31 000	9 450				320	32 000	9 750			
330	33 000	10 050				340	34 000	10 350			
350	35 000	10 650				360	36 000	10 950			
370	37 000	11 300				380	38 000	11 600			
390	39 000	11 900				400	40 000	12 200			
410	41 000	12 500				430	43 000	13 100			
450	45 000	13 700				470	47 000	14 350			
490	49 000	14 950				510	51 000	15 550			
etc.	etc.	etc.	etc.			etc.	etc.	etc.			

* Magnetic track, or in polar areas at latitudes higher than 70 degrees and within such extensions to those areas as may be prescribed by the competent authorities, grid tracks as determined by a network of lines parallel to the Greenwich Meridian superimposed on a polar stereographic chart in which the direction towards the North Pole is employed as the Grid North.

APPENDIX 4 — ATS AIRSPACE CLASSES — SERVICES PROVIDED AND FLIGHT REQUIREMENTS

(Part B, Chapter 1, 1.2.1 and Part A, Chapter 5, 5.3.2.1 refers)

<i>Class</i>	<i>Type of flight</i>	<i>Separation provided</i>	<i>Service provided</i>	<i>Speed limitation (*)</i>	<i>Radio communication capability requirement</i>	<i>Continuous two-way air-ground voice communication required</i>	<i>Subject to an ATC clearance</i>
A	IFR only	All aircraft	Air traffic control service	Not applicable	Yes	Yes	Yes
B	IFR	All aircraft	Air traffic control service	Not applicable	Yes	Yes	Yes
	VFR	All aircraft	Air traffic control service	Not applicable	Yes	Yes	Yes
C	IFR	IFR from IFR IFR from VFR	Air traffic control service	Not applicable	Yes	Yes	Yes
	VFR	VFR from IFR	1) Air traffic control service for separation from IFR; (2) Air traffic control service, VFR/VFR traffic information (and traffic avoidance advice on request),	250 kts IAS below 3 050 m (10 000 ft) AMSL	Yes	Yes	Yes
D	IFR	IFR from IFR	Air traffic control service, traffic information about VFR flights (and traffic avoidance advice on request)	250 kts IAS below 3 050 m (10 000 ft) AMSL	Yes	Yes	Yes
	VFR	Nil	Air traffic control service,	250 kts IAS below 3 050	Yes	Yes	Yes

			IFR/VFR and VFR/VFR traffic information (and traffic avoidance advice on request)	m (10 000 ft) AMSL			
E	IFR	IFR from IFR	Air traffic control service and, as far as practical, traffic information about VFR flights	250 kts IAS below 3 050 m (10 000 ft) AMSL	Yes	Yes	Yes
	VFR	Nil	Traffic information as far as practical	250 kts IAS below 3 050 m (10 000 ft) AMSL	No (**)	No (**)	No
F	IFR	IFR from IFR as far as practical	Air traffic advisory service; flight information service if requested	250 kts IAS below 3 050 m (10 000 ft) AMSL	Yes (***)	No (***)	No
	VFR	Nil	Flight information service if requested	250 kts IAS below 3 050 m (10 000 ft) AMSL	No (**)	No (**)	No
G	IFR	Nil	Flight information service if requested	250 kts IAS below 3 050 m (10 000 ft) AMSL	Yes (**)	No (**)	No
	VFR	Nil	Flight information service if requested	250 kts IAS below 3 050 m (10 000 ft) AMSL	No (**)	No (**)	No

(*) When the level of the transition altitude is lower than 3 050 m (10 000 ft) AMSL, FL 100 should be used in lieu of 10 000 ft.

(**) Pilots shall maintain continuous air-ground voice communication watch and establish two-way communication, as necessary, on the appropriate communication channel in RMZ.

(***) Air-ground voice communications mandatory for flights participating in the advisory service. Pilots shall maintain continuous air-ground voice communication watch and establish two-way communication, as necessary, on the appropriate communication channel in RMZ.

GM1 to Appendix 4 ATS AIRSPACE CLASSES — SERVICES PROVIDED AND FLIGHT REQUIREMENTS
GENERAL

The purpose of this Appendix is to show the requirements related to each specific airspace class in a concise manner. Therefore, it does not provide any specifications additional to those already expressed in the implementing rule.

APPENDIX 5 - TECHNICAL SPECIFICATIONS RELATED TO AIRCRAFT OBSERVATIONS AND REPORTS BY VOICE COMMUNICATIONS

A. REPORTING INSTRUCTIONS

MODEL AIREP SPECIAL

ITEM	PARAMETER	TRANSMIT IN TELEPHONY as appropriate
—	Message- type designator — special air-report	[AIREP] SPECIAL

Section 1	1	Aircraft identification	<i>(aircraft identification)</i>	
	2	Position	POSITION <i>(latitude and longitude)</i> OVER <i>(significant point)</i> ABEAM <i>(significant point)</i> <i>(significant point) (bearing) (distance)</i>	
		3	Time	<i>(time)</i>
		4	Level	FLIGHT LEVEL <i>(number)</i> or <i>(number)</i> METRES or FEET CLIMBING TO FLIGHT LEVEL <i>(number)</i> or <i>(number)</i> METRES or FEET DESCENDING TO FLIGHT LEVEL <i>(number)</i> or <i>(number)</i> METRES or FEET
	5	Next position and estimated time over	<i>(position) (time)</i>	
	6	Ensuing significant point	<i>(position)</i> NEXT	
Section 2	7	Estimated time of arrival	<i>(aerodrome) (time)</i>	
	8	Endurance	ENDURANCE <i>(hours and minutes)</i>	
Section 3	9	Phenomenon encountered or observed prompting a special air-report:		
		— Moderate turbulence	TURBULENCE MODERATE	
		— Severe turbulence	TURBULENCE SEVERE	
		— Moderate icing	ICING MODERATE	
		— Severe icing	ICING SEVERE	
		— Severe mountain wave	MOUNTAINWAVE SEVERE	
		— Thunderstorms without hail	THUNDERSTORMS	
		— Thunderstorms with hail	THUNDERSTORMS WITH HAIL	
		— Heavy dust/sandstorm	DUSTSTORM or SANDSTORM HEAVY	
— Volcanic ash cloud	VOLCANIC ASH CLOUD			
— Pre-eruption volcanic activity or volcanic eruption	PRE-ERUPTION VOLCANIC ACTIVITY or VOLCANIC ERUPTION			

1. CONTENTS OF AIR-REPORTS

1.1. Position reports and special air-reports

1.1.1. Section 1 of the model set out in point A is obligatory for position reports and special air-reports, although Items 5 and 6 thereof may be omitted. Section 2 shall be added, in whole or in part, only when so requested by the operator or its designated representative, or when deemed necessary by the pilot-in-command. Section 3 shall be included in special air-reports.

1.1.2. Condition prompting the issuance of a special air-report are to be selected from the list presented in point SERA.12005(a).

1.1.3. In the case of special air-reports containing information on volcanic activity, a post-flight report shall be made using the volcanic activity reporting form (Model VAR) set out in point B. All elements which are observed shall be recorded and indicated respectively in the appropriate places on the form Model VAR.

1.1.4. Special air-reports shall be issued as soon as practicable after a phenomenon calling for a special air-report has been observed.

2. DETAILED REPORTING INSTRUCTIONS

2.1. Items of an air-report shall be reported in the order in which they are listed in the model AIREP SPECIAL form.

— MESSAGE TYPE DESIGNATOR. Report “SPECIAL” for a special air-report.

Section 1

Item 1 — AIRCRAFT IDENTIFICATION. Report the aircraft radiotelephony call sign as prescribed in point SERA.14050.

Item 2 — POSITION. Report position in latitude (degrees as 2 numerics or degrees and minutes as 4 numerics, followed by “North” or “South”) and longitude (degrees as 3 numerics or degrees and minutes as 5 numerics followed by “East” or “West”), or as a significant point identified by a coded designator (2 to 5 characters), or as a significant point followed by magnetic bearing (3 numerics) and distance in nautical miles from the point. Precede significant point with “ABEAM”, if applicable.

Item 3 — TIME. Report time in hours and minutes UTC (4 numerics) unless reporting time in minutes past the hour (2 numerics) is prescribed on the basis of regional air navigation agreements. The time reported must be the actual time of the aircraft at the position and not the time of origination or transmission of the report. Time shall always be reported in hours and minutes UTC when issuing a special air-report.

Item 4 — FLIGHT LEVEL OR ALTITUDE. Report flight level by 3 numerics when on standard pressure altimeter setting. Report altitude in metres followed by “METRES” or in feet followed by “FEET” when on QNH. Report “CLIMBING” (followed by the level) when climbing or “DESCENDING” (followed by the level) when descending to a new level after passing the significant point.

Item 5 — NEXT POSITION AND ESTIMATED TIME OVER. Report the next reporting point and the estimated time over such reporting point, or report the estimated position that will be reached one hour later, according to the position reporting procedures in force. Use the data conventions specified in Item 2 for position. Report the estimated time over this position. Report time in hours and minutes UTC (4 numerics) unless reporting time in minutes past the hour (2 numerics) as prescribed by regional air navigation agreements.

Item 6 — ENSUING SIGNIFICANT POINT. Report the ensuing significant point following the ‘next position and estimated time over’.

Section 2

Item 7 — ESTIMATED TIME OF ARRIVAL. Report the name of the aerodrome of the first intended landing, followed by the estimated time of arrival at this aerodrome in hours and minutes UTC (4 numerics).

Item 8 — ENDURANCE. Report “ENDURANCE” followed by fuel endurance in hours and minutes (4 numerics).

Section 3

Item 9 — PHENOMENON PROMPTING A SPECIAL AIR-REPORT. Report one of the following phenomena encountered or observed:

— moderate turbulence as “TURBULENCE MODERATE”, and

— severe turbulence as “TURBULENCE SEVERE”.

The following specifications apply:

— Moderate—Conditions in which moderate changes in aircraft attitude and/or altitude may occur but the aircraft remains in positive control at all times. Usually, small variations in airspeed. Changes in accelerometer readings of 0,5 g to 1,0 g at the aircraft's centre of gravity. Difficulty in walking. Occupants feel strain against seat belts. Loose objects move about.

— Severe—Conditions in which abrupt changes in aircraft attitude and/or altitude occur; aircraft may be out of control for short periods. Usually, large variations in airspeed. Changes in accelerometer readings greater than 1,0 g at the aircraft's centre of gravity. Occupants are forced violently against seat belts. Loose objects are tossed about.

— moderate icing as “ICING MODERATE”, severe icing as “ICING SEVERE”;

The following specifications apply:

— Moderate—Conditions in which change of heading and/or altitude may be considered desirable.

— Severe—Conditions in which immediate change of heading and/or altitude is considered essential.

— Severe mountain wave as “MOUNTAIN WAVE SEVERE”;

The following specification applies:

— Severe—Conditions in which the accompanying downdraft is 3,0 m/s (600 ft/min) or more and/or severe turbulence is encountered.

— Thunderstorm without hail as “THUNDERSTORM”, thunderstorm with hail as “THUNDERSTORM WITH HAIL”;

The following specification applies:

Only report those thunderstorms which are:

- obscured in haze, or
- embedded in cloud, or
- widespread, or
- forming a squall line.

— Heavy duststorm or sandstorm as “DUSTSTORM HEAVY” or “SANDSTORM HEAVY”;

— Volcanic ash cloud as “VOLCANIC ASH CLOUD”;

— Pre-eruption volcanic activity or a volcanic eruption as “PRE-ERUPTION VOLCANIC ACTIVITY” or “VOLCANIC ERUPTION”;

The following specification applies:

“Pre-eruption volcanic activity” in this context means unusual and/or increasing volcanic activity which could presage a volcanic eruption.

2.2. Information recorded on the volcanic activity reporting form (Model VAR) is not for transmission by RTF but, on arrival at an aerodrome, is to be delivered without delay by the operator or a flight crew member to the aerodrome meteorological office. If such an office is not easily accessible, the completed form shall be delivered in accordance with local arrangements agreed upon between MET and ATS providers and the aircraft operator.

3. FORWARDING OF METEOROLOGICAL INFORMATION RECEIVED BY VOICE COMMUNICATIONS

When receiving special air-reports, ATS units shall forward these air-reports without delay to the associated meteorological watch office (MWO). In order to ensure assimilation of air-reports in ground-based automated systems, the elements of such reports shall be transmitted using the data conventions specified below and in the order prescribed.

— ADDRESSEE. Record the station called and, when necessary, relay required.

— MESSAGE TYPE DESIGNATOR. Record “ARS” for a special air-report.

— AIRCRAFT IDENTIFICATION. Record the aircraft identification using the data convention specified for Item 7 of the flight plan, without a space between the operator's designator and the aircraft registration or flight identification, if used.

Section 1

Item 0 — POSITION. Record position in latitude (degrees as 2 numerics or degrees and minutes as 4 numerics, followed, without a space, by N or S) and longitude (degrees as 3 numerics or degrees and minutes as 5 numerics, followed without a space by E or W), or as a significant point identified by a coded designator (2 to 5 characters), or as a significant point followed by magnetic bearing (3 numerics) and distance in nautical miles (3 numerics) from the point. Precede significant point with “ABEAM”, if applicable.

Item 1 — TIME. Record time in hours and minutes UTC (4 numerics).

Item 2 — FLIGHT LEVEL OR ALTITUDE. Record ‘F’ followed by 3 numerics (e.g. “F310”) when a flight level is reported. Record altitude in metres followed by “M” or in feet followed by “FT” when an altitude is reported. Record “ASC” (level) when climbing or “DES” (level) when descending.

Section 2

Item 9 — PHENOMENON PROMPTING A SPECIAL AIR-REPORT. Record the phenomenon reported as follows:

- moderate turbulence as “TURB MOD”,
- severe turbulence as “TURB SEV”,
- moderate icing as “ICE MOD”,
- severe icing as “ICE SEV”,
- severe mountain wave as “MTW SEV”,
- thunderstorm without hail as “TS”,
- thunderstorm with hail as “TSGR”,
- heavy duststorm or sandstorm as “HVY SS”,
- volcanic ash cloud as “VA CLD”,

- pre-eruption volcanic activity or a volcanic eruption as “VA”,
- hail as “GR”,
- cumulonimbus clouds as “CB”.

TIME TRANSMITTED. Record only when Section 3 is transmitted.

4. SPECIFIC PROVISIONS RELATED TO REPORTING WIND SHEAR AND VOLCANIC ASH

4.1. Reporting of wind shear

4.1.1. When reporting aircraft observations of wind shear encountered during the climb-out and approach phases of flight, the aircraft type shall be included.

4.1.2. Where wind shear conditions in the climb-out or approach phases of flight were reported or forecast but not encountered, the pilot-in-command shall advise the appropriate ATS unit as soon as practicable unless the pilot-in-command is aware that the appropriate ATS unit has already been so advised by a preceding aircraft.

4.2. Post-flight reporting of volcanic activity

4.2.1. On arrival of a flight at an aerodrome, the completed report of volcanic activity shall be delivered by the aircraft operator or a flight crew member, without delay, to the aerodrome meteorological office, or if such office is not easily accessible to arriving flight crew members, the completed form shall be dealt with in accordance with local arrangements agreed upon between MET and ATS providers and the aircraft operator.

4.2.2. The completed report of volcanic activity received by an aerodrome meteorological office shall be transmitted without delay to the meteorological watch office responsible for the provision of meteorological watch for the flight information region in which the volcanic activity was observed.

B. SPECIAL AIR-REPORT OF VOLCANIC ACTIVITY FORM (MODEL VAR)

MODEL VAR: to be used for post- flight reporting

VOLCANIC ACTIVITY REPORT

Air- reports are critically important in assessing the hazards which volcanic ash cloud presents to aircraft operations.

OPERATOR:			A/C IDENTIFICATION: (as indicated on flight plan)		
PILOT- IN- COMMAND:					
DEP FROM:	DATE:	TIME: UTC:	ARR AT:	DATE:	TIME: UTC:
ADDRESSEE			AIREP SPECIAL		
Items 1-8 are to be reported immediately to the ATS unit that you are in contact with.					
1) AIRCRAFT IDENTIFICATION			2) POSITION		
3) TIME			4) FLIGHT LEVEL OR ALTITUDE		
5) VOLCANIC ACTIVITY OBSERVED AT (position or bearing, estimated level of ash cloud and distance from aircraft)					
6) AIR TEMPERATURE			7) SPOT WIND		
8) SUPPLEMENTARY INFORMATION			Other _____		
SO ₂ DETECTED	yes <input type="checkbox"/>	no <input type="checkbox"/>			
Ash encountered	yes <input type="checkbox"/>	no <input type="checkbox"/>	(brief description of activity especially vertical and lateral extent of ash cloud and, where possible, horizontal movement, rate of growth, etc.)		
After landing complete items 9-16 then fax form to: (Fax number to be provided by the meteorological authority based on local arrangements between the meteorological authority and the operator concerned.)					
9) DENSITY OF ASH CLOUD	<input type="checkbox"/> (a) Wispy	<input type="checkbox"/> (b) Moderate dense	<input type="checkbox"/> (c) Very dense		
10) COLOUR OF ASH CLOUD	<input type="checkbox"/> (a) White	<input type="checkbox"/> (b) Light grey	<input type="checkbox"/> (c) Dark grey		
	<input type="checkbox"/> (d) black	<input type="checkbox"/> (e) other _____			
11) ERUPTION	<input type="checkbox"/> (a) continuous	<input type="checkbox"/> (b) intermittent	<input type="checkbox"/> (c) not visible		
12) POSITION OF ACTIVITY	<input type="checkbox"/> (a) Summit	<input type="checkbox"/> (b) side	<input type="checkbox"/> (c) Single		
	<input type="checkbox"/> (d) Multiple	<input type="checkbox"/> (e) Not observed			
13) OTHER OBSERVED FEATURES OF ERUPTION	<input type="checkbox"/> (a) Lightning	<input type="checkbox"/> (b) Glow	<input type="checkbox"/> (c) Large rocks		
	<input type="checkbox"/> (d) Ash fallout	<input type="checkbox"/> (e) Mushroom cloud	<input type="checkbox"/> (f) All		
14) EFFECT ON AIRCRAFT	<input type="checkbox"/> (a) Communication	<input type="checkbox"/> (b) Navigation systems	<input type="checkbox"/> (c) Engines		
	<input type="checkbox"/> (d) Pitot static	<input type="checkbox"/> (e) Windscreen	<input type="checkbox"/> (f) Windows		
15) OTHER EFFECTS	<input type="checkbox"/> (a) Turbulence	<input type="checkbox"/> (b) St. Elmo's Fire	<input type="checkbox"/> (c) Other fumes		
16) OTHER INFORMATION (Any information considered useful.)					

GM1 to Appendix 5 (2 — Section 1) DETAILED REPORTING INSTRUCTIONS

POSITION

Example

'4620North07805West', '4620North07800West', '4600North07800West', LN ('LIMA NOVEMBER'), 'MAY', 'HADDY' or 'DUB 180 DEGREES 40 MILES'

GM1 to Appendix 5 (2 — Section 1) DETAILED REPORTING INSTRUCTIONS

FLIGHT LEVEL OR ALTITUDE

Example:

'FLIGHT LEVEL 310'

GM1 to Appendix 5 (2 — Section 3) DETAILED REPORTING INSTRUCTIONS

PHENOMENON PROMPTING A SPECIAL AIR-REPORT – VOLCANIC ASH CLOUD, PRE-ERUPTION VOLCANIC ACTIVITY, OR VOLCANIC ERUPTION

In case of volcanic ash cloud, pre-eruption volcanic activity, or volcanic eruption, in accordance with SERA.12005, a post-flight report should also be made on the special air-report of volcanic activity form (Model VAR).

GM1 to Appendix 5 (3) FORWARDING OF METEOROLOGICAL INFORMATION RECEIVED BY VOICE COMMUNICATIONS

AIRCRAFT IDENTIFICATION

Example:

'New Zealand 103' as 'ANZ103'

GM1 to Appendix 5 (3 — Section 1) FORWARDING OF METEOROLOGICAL INFORMATION RECEIVED BY VOICE COMMUNICATIONS

POSITION

Example:

'4620N07805W', '4620N078W', '46N078W', 'LN', 'MAY', 'HADDY' or 'DUB180040'.

GM1 to Appendix 5 (1.1.4 and 2.1) SPECIAL AIR-REPORTS

EXAMPLES OF SPECIAL AIR REPORTS BY VOICE COMMUNICATION

AS SPOKEN IN RADIOTELEPHONY	AS RECORDED BY THE AIR TRAFFIC SERVICES UNIT AND FORWARDED TO THE METEOROLOGICAL OFFICE CONCERNED
I.- ¹ AIREP SPECIAL CLIPPER WUN ZERO WUN POSITION FIFE ZERO FOWer FIFE NORTH ZERO TOO ZERO WUN FIFE WEST WUN FIFE TREE SIX FLIGHT LEVEL TREE WUN ZERO CLIMBING TO FLIGHT LEVEL TREE FIFE ZERO THUNDERSTORMS WITH HAIL	I.- ARS PAA101 5045N02015W 1536 F310 ASC F350 TSGR
II.- ² SPECIAL NIUGINI TOO SEVen TREE OVER MADANG ZERO AIT FOWer SIX WUN NINer TOUSAND FEET TURBULENCE SEVERE	II.- ARS ANG273 MD 0846 19000FT TURB SEV

¹ A special air-report which is required because of the occurrence of widespread thunderstorms with hail.

² A special air-report which is required because of severe turbulence. The aircraft is on QNH altimeter setting