

# Flight Information Service Officer Manual

**CAP 797**



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**Safety and Airspace Regulation Group**



**CAP 797**

# **Flight Information Service Officer Manual**

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**March 2022**

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## Revision History

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The table below is provided as a reference to highlight when major changes were made to the content of CAP 797. It does not cover editorial changes. As necessary, an update will be added to the table at each amendment.

### Fourth Edition Amendment 1

Section	Subject	Source
Section 1 Chapter 3	Incorporate SI 01/2021 – Flight Priorities	CAA
Section 1 Chapter 3	Incorporate SI 04/2021 – Changes to Maritime & Coastguard Agency Related Nomenclature and Procedures	CAA
Section 1 Chapter 4	Incorporate SI 01/2022 – Radio and Transponder Mandatory Zones Incorporate SI 04/2021 – Changes to Maritime & Coastguard Agency Related Nomenclature and Procedures	CAA
Section 1 Chapter 4	Incorporate SI 08/2020 – Change to VMC minima	DfT
Section 2 Chapter 8	Incorporate SI 02/2021 – Movement Area Surface Condition Reporting	ICAO
Section 2 Chapter 8	Incorporate SI 03/2021 – Use of ATS Surveillance Systems in Aerodrome Flight Information Service	CAA
Section 2 Chapter 10	Incorporate SI 02/2021 – Movement Area Surface Condition Reporting	ICAO
Section 5 Chapter 15	Incorporate SI 04/2021 – Changes to Maritime & Coastguard Agency Related Nomenclature and Procedures	CAA
Section 6 Chapter 16	Incorporate SI 04/2021 – Changes to Maritime & Coastguard Agency Related Nomenclature and Procedures	CAA
Section 9 Chapter 22	Incorporate SI 04/2021 – Changes to Maritime & Coastguard Agency Related Nomenclature and Procedures	CAA
Appendix F	Incorporate SI 03/2021 – Use of ATS Surveillance Systems in Aerodrome Flight Information Service	CAA



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# Foreword

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## Background

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The FISO Manual (CAP 797) is based upon national and non-legislative regulatory material, such as ICAO Standards and Recommended Practices (SARPs) and Procedures for Air Navigation Services (PANS). It is published in order to provide UK ANS providers (ANSPs) with:

- a) guidance and clarification on the means of achieving compliance with UK regulatory requirements and ICAO SARPs and PANS; and
- b) details of any additional national requirements, including appropriate supporting administrative procedures.

Two strands of UK aviation related legislation now exist. That made under the Air Navigation Order (and including the Rules of the Air Regulations), and that made under The UK Basic Regulation (Reg (EU) 2018/1139 as retained (and amended in UK domestic law) under the European Union (Withdrawal) Act 2018) and its Implementing Rules.

Some EU aviation law was accompanied by Acceptable Means of Compliance (AMC) and Guidance Material (GM) published by EASA. The CAA has adopted the version of AMC and GM that was in force on 31 December 2020, as its policy with regard to compliance with the relevant UK law from 1 January.

In publishing the FISO Manual, the CAA satisfies the obligations placed upon it by the Transport Act 2000<sup>1</sup>, Chapter 1 Article 2 'CAA's general duty', which in paragraph 2(a) requires the CAA to exercise its functions under the Act in the manner it thinks best calculated, to further the interests of operators and owners of aircraft, owners and managers of aerodromes, persons travelling in aircraft and persons with rights in property carried in them. The only interests to be considered under subsection (2)(a) are interests regarding the range, availability, continuity, cost and quality of air traffic services.

Publication of the FISO Manual additionally satisfies the requirements set out by the Civil Aviation Authority (Chicago Convention) Directions 2007<sup>2</sup> to ensure that it acts consistently with the obligations placed on the UK under the Chicago Convention. The CAA is obliged to consider whether it is necessary to amend United Kingdom aviation legislation to ensure appropriate implementation of an ICAO provision.

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<sup>1</sup> <http://www.legislation.gov.uk/ukpga/2000/38/contents> or <http://www.legislation.gov.uk/ukpga/2000/38/data.pdf>

<sup>2</sup> [https://webarchive.nationalarchives.gov.uk/20100422174722/http://www.caa.co.uk/docs/286/CAA\(ChicagoConvention\)Directions2007\(asamended\).pdf](https://webarchive.nationalarchives.gov.uk/20100422174722/http://www.caa.co.uk/docs/286/CAA(ChicagoConvention)Directions2007(asamended).pdf)

Where (a) the CAA considers it inappropriate to transpose an ICAO provision into domestic legislation and (b) the CAA has discretionary power to enforce the requirements of such a provision through a certificate, licence, or other means of approval, the Civil Aviation Authority (Chicago Convention) Directions 2007 obliges the CAA to develop and publish such requirements as are necessary to implement the ICAO provision and shall ensure that it is able to verify adherence to those requirements.

The FISO Manual is subject to periodic revision to take account of changes to source regulatory material, feedback from industry, and recognised best practice. The FISO Manual provides applicable guidance and clarification relating to – and is to be read in conjunction with - the regulatory material referenced below. ***Non-inclusion of source regulatory material within this CAP does not preclude the end user from either the need to be aware of, or the need to comply with, the requirements contained within the source regulatory materials unless otherwise exempted from those requirements.***

It is the policy of the UK government that, unless a Difference from an ICAO Standard has been established, compliance with the relevant international (i.e. ICAO and applicable equivalents such as the International Telecommunications Union) provisions is required to the extent mandated in law. Moreover, unless an ‘Alternative Means of Compliance’ (AltMoC) (related to a CAA ‘Acceptable Means of Compliance’ (AMC)) has been approved for use, then compliance with the relevant AMC is required to the extent mandated in the law as retained (and amended in UK domestic law) under the European Union (Withdrawal) Act 2018. Finally, compliance with other national requirements that are not addressed by international requirements or retained EU regulations is also required.

### **Regulatory References:**

CAP 797 is published to assist ATS providers’ and airspace users’ understanding of, and compliance with the requirements laid down in:

#### **ICAO:**

Annex 2, Annex 10 Volume II, Annex 10 Volume V, Annex 11, Annex 14 Volume I, Doc 4444 PANS-ATM, Doc 7030 EUR Supplement and Circular 211-AN/128.

#### **UK:**

UK Reg (EU) No 923/2012 ‘Standardised European Rules of the Air (SERA), UK Reg (EU) No 139/2014 ‘Aerodrome Regulation’, UK Reg (EU) 2017/373 ‘Air Traffic Management (ATM)/Air Navigation Services (ANS) Implementing Rule (IR) and EUROCONTROL’s Manual of Aerodrome FIS.

ANO 2016 (as amended), CAP 168 Licensing of Aerodromes, CAP 413 Radiotelephony Manual, CAP 774 UK FIS (see also CAP 1434) and CAP 1430 the UK ATM Vocabulary.

## Introduction

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This document contains procedures, instructions, guidance and information, which are intended to form the basis of the services provided by flight information service officers (FISOs) within the UK. It is published for use by FISOs and may also be of general interest to others associated with civil aviation. This document will be supplemented by local instructions.

Terms and abbreviations used in this document are defined within CAP 1430 the UK Air Traffic Management Vocabulary.

The units of measurement used in the UK are listed within AIP GEN 2.1-1. Conversion tables to assist ATS personnel to convert specific units of measurement are listed within AIP GEN 2.6.

Where appropriate, this document references EU Regulations, as retained (and amended in UK domestic law) under the European Union (Withdrawal) Act 2018, as source material. References to the 'Cover Regulation' are cited as either UK Reg (EU) No. XXX/YYYY followed by the appropriate Article, or UK Reg (EU) YYYY/XXX; where 'X' is the number of the Regulation and 'YYYY' is the year of publication. References to the Standardised European Rules of the Air (SERA) contained within the Annex to UK Reg (EU) No. 923/2012 are cited as 'SERA.XXXX', where 'X' refers to the number of the provision.

## Flight Information Service Units

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Flight Information Service (FIS) units comprise:

- a) Aerodrome FIS (AFIS) units; and
- b) Area FIS units.

Where the term 'FIS unit' is used in this manual, it applies to all FIS units, whether at an aerodrome or an area centre.

## Flight Information Service Officer

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A FISO at an aerodrome is referred to as an Aerodrome FISO (AFISO).

Where the term FISO is used in this manual, it applies to all FISOs, whether at an aerodrome or an area centre.

## FISO Manual – Status

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Operational FISOs are expected to have a detailed knowledge of Sections 1, and 5, together with the same degree of knowledge of sections 2, 3 and 6 as appropriate to their licence. Sections 4, 7, 8, 9 and 10 are of lesser importance or are for reference. AFISOs whose routine duties do not include those items detailed in Section 2 Chapter 10 are not expected to have in-depth knowledge of this content.

## Interpretation of Words

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To avoid any misunderstanding within this document, certain words or terms are to be interpreted as having specific meanings as follows:

<b>is to, are to, shall, must</b>	Means that compliance with the instruction or regulatory requirement is necessary.
<b>should</b>	In the case of AMC to UK (EU) requirements, the word 'should' indicate that compliance is required, unless complying with an approved AltMoC. Otherwise, it means that it is strongly advisable that an instruction is carried out and is applied where the more positive 'shall' is unreasonable but nevertheless a pilot/ FISO would have to have good reason for not doing so.
<b>may</b>	Means that an instruction is permissive, optional or alternative, e.g. 'a FISO may seek assistance ....' but would not if they did not need it.
<b>will</b>	Is used for informative or descriptive writing, e.g. 'pilots will file...' is not an instruction to the FISO

Where reference is made to an Area Control Centre (ACC) it shall be the centre within whose Flight Information Region (FIR) the aerodrome is situated. Where guidance on an air traffic matter is required, it may be obtained from the watch supervisor at the ACC.

## CAP 797 Amendments

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### Amendments

Amendments to CAP 797 will be published as required.

Underlining is used to indicate new or revised text. Prior to the effective date of an amendment, the full version of CAP 797 will be available on the CAA website ([www.caa.co.uk](http://www.caa.co.uk)). This document will contain a summary of changes and an updated List of Effective Pages. From the effective date of the amendment, the superseded version of CAP 797 will be removed from the website.

The effective date of an instruction is stated at the foot of the page. Publication of a new edition means that all pages will have the same date; however, new instructions are effective on the amendment publication date.

## Supplementary Instructions

Supplementary Instructions to CAP 797 are issued for the following reasons:

- a. to introduce an entirely new subject or a radical change to existing instructions;
- b. to re-emphasise an existing instruction.

Supplementary Instructions will be incorporated into the main body of the document in a suitable and timely manner.

## Enquiries

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All enquiries concerning the text should be addressed to:

The Editor – CAP 797

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## Section 1 FISO Procedures

### Chapter 1

# Service provision by FISOs

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## Introduction

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- 1.1 Air traffic services within the UK are provided in accordance with domestic legislation; e.g. the Air Navigation Order and Rules of the Air Regulations. Generally, these are in line with the Standards and Recommended Practices (SARPs) of the International Civil Aviation Organisation (ICAO).
- 1.2 This document contains procedures, instructions, guidance and information for flight information service officers (FISOs) providing FIS. These are intended to form the basis of the services provided by FISOs within the UK and to cater for both routine and many emergency situations. However, nothing in this manual prevents FISOs from using their own discretion and initiative in response to unusual circumstances, which may not be covered by the procedures herein.

## Language Requirement

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- 1.3 In accordance with ICAO requirements the English language shall be used for all operational communications at FIS units within the United Kingdom (UK) (SERA.14015(a)).
- 1.4 Operational communication between UK and non-UK air traffic service units (ATSUs) shall, on the part of the UK air navigation service provider (ANSP), be conducted in the English language.
- 1.5 ANSPs may designate, within their unit, operational areas in which all communications (operational and non-operational) shall be in the English language.
- 1.6 RTF phraseology is listed within the 'Radiotelephony Manual' CAP 413.

## RTF Privileges

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- 1.7 Implied within the privileges of a FISO licence issued by the UK CAA is that, subject to that licence remaining valid for use, FISOs are permitted to operate an aeronautical station in the provision of an ATS, subject to the conditions of the wireless telegraphy licence granted to the ATS provider, in accordance with the Wireless Telegraphy Act 2006.

## Air Traffic Services

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- 1.8 An air traffic service (ATS) is a generic term meaning variously (UK Reg (EU) No 923/2012 Article 2(32):
- a) Air Traffic Control (ATC) Service;
  - b) Air Traffic Advisory Service;
  - c) FIS;
  - d) Alerting Service.

## Objectives of the Air Traffic Services

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- 1.9 The objectives of the ATS shall be to (SERA.7001):
- 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.

**Note 1.** 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.7001 GM1).

**Note 2.** ATS personnel are not solely responsible for the prevention of collisions. Pilots and vehicles drivers must also fulfil their own responsibilities in accordance with the Rules of the Air.

**Note 3.** Compliance with the procedures contained within this manual and within UK Flight Information Services (CAP 774) and supplemented by local instructions are considered to meet the above objectives.

## Flight Information Service

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- 1.10 A flight information service (FIS) (defined in ICAO Annex 11 and transposed into law through UK Reg (EU) No 923/2012) is a service provided for the purpose of giving advice and information useful for the safe and efficient conduct of flight and shall include the provision of pertinent:
- a) SIGMET and AIRMET information;
  - b) information concerning pre-eruption volcanic activity, volcanic eruptions and volcanic ash clouds;
  - c) information concerning the release into the atmosphere of radioactive materials or toxic chemicals;
  - d) information on changes in the availability of radio navigation services;
  - e) 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;
  - f) information on unmanned free balloons;
  - g) information on space weather phenomena that have an impact on high frequency radio communications, communications via satellite, GNSS-based navigation and surveillance systems, and/or pose a radiation risk to aircraft occupants at flight levels;
- and of any other information likely to affect safety (SERA.9005(a)).
- 1.11 FIS provided to flights shall include, in addition to that outlined in 1.10, the provision of information concerning:
- a) weather conditions reported or forecast at departure, destination and alternate aerodromes;
  - b) collision hazards to aircraft operating in airspace classes C, D, E, F and G;
  - c) 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 (SERA.9005(b)).
- 1.12 FIS provided to VFR flights shall include, in addition to that outlined in 1.10, 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 (SERA.9005(c)).
- 1.13 Within the UK, the requirements for FIS are met through the provision of:
- a) AFIS; and

- b) A suite of services detailed in CAP 774 ([www.caa.co.uk/CAP774](http://www.caa.co.uk/CAP774)), known collectively as the UK Flight Information Services, which comprises:
- i. Basic Service;
  - ii. Traffic Service;
  - iii. Deconfliction Service;
  - iv. Procedural service.

**Note.** FISOs are not licensed to provide a Traffic Service, a Deconfliction Service, or a Procedural Service.

## Alerting Service

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- 1.14 An alerting service is provided to notify appropriate organisations regarding aircraft in need of search and rescue aid and assist such organisations as required. Within the UK, an alerting service shall be provided in association with AFIS and all UK FIS.

## Responsibility

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- 1.15 FISOs may issue advice and shall issue information to aircraft in their area of responsibility, useful for the safe and efficient conduct of flights.
- 1.16 FISOs are not permitted to issue instructions, except for those circumstances in paragraph 1.17, or when relaying a clearance from an air traffic control unit (ATCU). Pilots therefore are wholly responsible for collision avoidance in conformity with the Rules of the Air.
- 1.17 In granting or refusing permission under Rule 12 of the Rules of the Air Regulations 2015, AFISOs are permitted to pass instructions to aircraft on the movement area as follows:
- a) departing aircraft about to move or moving on the apron and manoeuvring area up to and including the holding point of the runway to be used for departure;
  - b) departing aircraft required to utilise the runway for the purposes of taxiing, who will not subsequently vacate the runway prior to departure;
  - c) arriving aircraft moving on the manoeuvring area and apron, following the completion of the landing roll (see note);
  - d) all other taxiing aircraft intending to move or moving on the apron and manoeuvring area, including the crossing of runways;
  - e) to helicopters engaged in air taxiing for departure, up to and including the holding point of the runway to be used for departure or up to and including

such other location on the aerodrome from which the helicopter will depart;  
and

- f) to helicopters engaging in air taxiing on completion of landing or that have reached the hover prior to air taxiing.

Elsewhere on the ground and at all times in the air, information shall be passed.

**Note.** AFISOs are to note that, under Rule 10(3) of Rules of the Air Regulations 2015, “a flying machine<sup>3</sup> must move clear of the landing area as soon as it is possible to do so after landing”. As such, in complying with Rule 10(3), pilots may seek to vacate the landing area at a different point than that anticipated by the AFISO. AFISOs are to facilitate the pilots’ intentions and shall intervene only in order to prevent collisions between aircraft, and between aircraft and obstructions on the manoeuvring area.

AFISOs should be cognisant of varying aircraft landing performance and closely monitor the landing roll of aircraft, in particular when there is potential for conflict between aircraft and/or vehicles on the manoeuvring area. AFISOs are to facilitate the pilots’ intentions and shall intervene only in order to prevent collisions between aircraft, and between aircraft and obstructions on the manoeuvring area.

Where an Aerodrome Manual is maintained<sup>4</sup>, in order to ensure the safe integration of all aviation activities undertaken at the aerodrome, the Aerodrome operator may specify a taxi-route(s) for a particular runway-in-use.

- 1.18 In granting or refusing permission under Rule 13 of the Rules of the Air Regulations 2015, AFISOs are permitted to pass instructions to vehicles and personnel operating on the movement area.
- 1.19 In providing advice to aircraft, FISOs should carefully consider whether such advice could be misconstrued as an instruction and should phrase that advice accordingly. The provision of advice by a FISO should be limited to those occasions where they consider that it is essential for the safe conduct of flight; for example, the provision of advice on local joining procedures to arriving aircraft approaching the traffic circuit.
- 1.20 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.

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<sup>3</sup> ANO 2016 Schedule 1 defines a ‘flying machine’ as “an aeroplane, a powered lift tilt rotor aircraft, a SLMG, a helicopter or a gyroplane”.

<sup>4</sup> UK (EU) Reg No 139/2014 ADR.OR.E.005, ANO 2016 Article 212(8) and Schedule 12 Article 18 refer.

No such person shall engage in any kind of problematic use of substances (SERA.2020).

**Note.** For the purposes of SERA.2020 and in accordance with UK Reg (EU) No 923/2012 Article 2(116), FISOs are considered to be 'safety-sensitive personnel'.

## Coordination between the Aircraft Operator and Air Traffic Services

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- 1.21 Regulations require that ATSUs, in carrying out their objectives, shall have due regard for the requirements of the aircraft operators consequent on their obligations as specified in the UK Air Operations<sup>5</sup> Regulation, 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 (SERA.7005(a)).

**Note.** The expression 'due regard' is meant to indicate that the ATSU, in their coordination with the aircraft operators, should take into account the obligations of the operators specified in the UK Air Operations Regulation, and provide them with the information they require to operate in accordance with those rules (SERA.7005(a) GM1).

- 1.22 When so requested by an aircraft operator, messages (including position reports) received by ATSUs 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 (SERA.7005(b)).

## Tactical co-ordination with other ATSUs

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- 1.23 FISOs are not permitted to enter into tactical co-ordination with other ATSUs regarding aircraft receiving a service, due to the limitations of the FISO Licence.

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<sup>5</sup> UK Reg (EU) No 965/2012

## Chapter 2

# Altimeter setting procedures

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## Units of pressure

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- 2.1 Hectopascals (hPa) are the notified units for the measurements of pressure for flying within UK airspace. Pilots are normally expected to carry out their own conversion from hectopascals to inches of mercury if this is necessary and FISOs will only provide pressure settings in inches of mercury when specifically requested by an individual aircraft. A conversion table can be found in Appendix B.

## Pressure setting

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- 2.2 A correctly calibrated pressure altimeter when set to:
- a) QNH altimeter setting – will indicate altitude;
  - b) QFE altimeter setting – will indicate height above the reference datum.
- 2.3 Both of these settings are rounded down to the nearest whole hectopascal before being passed to the pilot. However, they are given to the nearest tenth of a hectopascal if requested.

## System of flight levels

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- 2.4 Flight Levels are measured with reference to the standard pressure setting of 1013.2 hPa. In the UK, consecutive Flight Levels above the transition level are separated by pressure intervals corresponding to 500 ft; at and above FL200, by pressure intervals corresponding to 1 000 ft (except in an active Temporary Reserved Area (TRA) where 500 ft pressure intervals are applied up to FL245).

## Regional Pressure Setting

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- 2.5 The Regional Pressure Setting is a forecast of the lowest QNH value within an Altimeter Setting Region (ASR). The values which are made available hourly for the period Hour (H) + 1 to (H) + 2 are given in whole hectopascals.
- 2.6 AFIS Units are to have available the Regional Pressure Setting for the ASR in which they are situated and appropriate adjacent regions. Area FIS Units are to have available Regional Pressure Settings for their area of coverage and appropriate adjacent regions. These values are to be passed to pilots when requested or at the discretion of the FISO. However, a pressure setting shall not be volunteered if a FISO is uncertain that it is appropriate to the flight.

- 2.7 Airspace below Terminal Control Areas (TMAs) and Control Areas (CTAs) listed in the UK Aeronautical Information Publication (AIP) at ENR 1-7-2 does not form part of the ASR Regional Pressure Setting system. Instead, the QNH of an adjacent aerodrome should be used for aircraft at or below the Transition Altitude.

## Transition

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### Transition Altitude

- 2.8 Transition Altitude is the altitude at or below which the vertical position of an aircraft is normally controlled by reference to altitude (or height when QFE is used). Unless otherwise notified the Transition Altitude for civil aerodromes is 3,000 ft.

### Transition Level

- 2.9 Transition level is the lowest Flight Level available for use above the transition altitude and shall be located at least a nominal 1000 ft above the transition altitude to permit the transition altitude and the transition level to be used concurrently in cruising flight, with vertical separation ensured. Except where an alternative means of calculating the transition level is detailed within local instructions, the transition level may be determined from the table in Appendix B as follows:
- a) Within controlled airspace by the controlling authority, where it will normally be based on the QNH of the major aerodrome;
  - b) Outside controlled airspace by the Aerodrome Operator, where it will be based on the aerodrome QNH.

### Transition layer

- 2.10 Transition layer is the airspace between the Transition Altitude and the Transition Level.

## Expression of vertical position of aircraft

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- 2.11 A pilot normally assesses the vertical position of their aircraft above obstacles by using an accurately set altimeter. It is imperative, therefore, that FISOs always issue the correct pressure setting and that they check the readback from the pilot.
- 2.12 When transmitting altimeter pressure settings that are lower than 1,000 hPa, FISOs are to specify clearly the unit of measurement and pay particular attention to the readback.



- 2.13 The vertical position of the aircraft shall 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 (SERA.8015(eb)(1)).
- 2.14 The table below shows the altimeter subscale settings, the terms in which vertical position is reported and the occasions on which they are used to report to FIS units (SERA.8015(eb)(1), (3), (4) and (5)).

Subscale setting	Expressed in terms	When used to report vertical position to FIS units
1013.25 hPa	FLIGHT LEVEL	<ol style="list-style-type: none"> <li>At, or above, the transition level.</li> <li>Climbing through the transition layer.</li> <li>Above 3,000 ft amsl and not in the vicinity of an aerodrome.</li> </ol>
QNH	ALTITUDE	<ol style="list-style-type: none"> <li>At, or below, the transition altitude, i.e. in the vicinity of an aerodrome or beneath specified TMAs and CTAs listed in ENR 1-7-2.</li> <li>Descending through the transition layer.</li> <li>During final approach.</li> </ol>
QFE	HEIGHT	During final approach, as local procedures require or when requested by the pilot.
REGIONAL PRESSURE SETTING	ALTITUDE	At, or below, 3,000 ft amsl when outside controlled airspace and not in the vicinity of an aerodrome.

**Note.** When an aircraft is climbing from an altitude to a Flight Level, vertical position will be reported in terms of Flight Level, unless intermediate altitude reports have been specifically requested by the FIS Unit. Similarly when a pilot is descending from a Flight Level to an altitude, the pilot will change to the aerodrome QNH unless further Flight Level vacating reports have been requested by the FIS Unit, in which case the QNH will be set following the final Flight Level vacating report.

- 2.15 Where flight crews advise that they are descending from a flight level to an altitude, FISOs shall ensure that flight crew are provided with the transition level in due time prior to reaching it during descent (SERA.8015(eb)(2)). This may be

accomplished by voice communications, ATIS broadcast or data link (GM1 SERA.8015(eb)(2)<sup>6</sup>.

## Procedures at Aerodromes

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- 2.16 Aerodrome elevation is the elevation of the highest point on the landing area. It is the elevation upon which the height for visual manoeuvring (circling) is based. In addition, a threshold elevation is published for each runway.
- 2.17 The pressure settings associated with aerodrome and threshold elevation are expressed as QFE aerodrome and QFE threshold respectively. QFE threshold for an instrument runway is used when the threshold elevation is 7 feet or more below aerodrome elevation.

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<sup>6</sup> UK (EU) Reg No 2016/1185 amending UK (EU) Reg No 923/2012 incorrectly references this GM as GM1 SERA.8015(f)(2); the correct reference is incorporated in the CAP 797 text.

## Chapter 3

## Flight Priorities

## Table of flight priorities

3.1 Normally requests shall be dealt with in the order in which they are received and issued according to the traffic situation. However, certain flights are given priority over others and the following table shows their categorisation.

Category	Type of Flight
A	Aircraft in emergency (e.g. engine fault, fuel shortage, seriously ill passenger). Aircraft which have declared a 'Police Emergency'. Ambulance/ <u>medical</u> / <u>search and rescue (SAR)</u> aircraft when the safety of life is involved ( <u>see note</u> ).
B	Flights operating for <u>SAR</u> or other humanitarian reasons. Police flights under normal operational priority. Post-accident flight checks. Other flights, including Open Skies Flights, authorised by the CAA.
C	Royal Flights and Flights carrying visiting Heads of State which have been notified by NOTAM/Temporary Supplement.
D	Flights notified by the CAA carrying Heads of Government or very senior government ministers.
E	Flight check aircraft engaged on, or in transit to, time or weather critical calibration flights. <u>SAR</u> and <u>HEMS</u> flight positioning for the purpose of conducting their duties. Other flights authorised by the CAA.
<b>NORMAL FLIGHTS</b>	
i.	Flights which have filed a flight plan in the normal way and conform with normal routing procedures.
ii.	Initial instrument flight tests conducted by the CAA Flight Examining Unit (RTF callsign "EXAM").
Z	Training, Non-standard and other flights.

**Note.** Ambulance aircraft carry one or more patients or casualties, whereas medical aircraft carry harvested organs, biological material, medical equipment and/or medical personnel. Search and Rescue aircraft may operate as an ambulance or medical aircraft.

## Minimum Fuel and Fuel Shortage

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- 3.2 A pilot's declaration of "MINIMUM FUEL" indicates that an aircraft's fuel supply has reached a state where the flight is committed to land at a specific aerodrome (with not less than final reserve fuel) and no additional delay can be accepted (UK Reg (EU) No 923/2012 Article 2(94a)).

**Note.** Final reserve fuel typically provides an additional period of flight of 30 minutes for turbine powered aeroplanes, 45 minutes for piston powered aeroplanes and 20 to 30 minutes for light helicopters (UK Reg (EU) No 965/2012 'Air OPS').

- 3.3 There is no requirement to provide priority to pilots of aircraft that have declared "MINIMUM FUEL" or that have indicated that they are becoming short of fuel.
- 3.4 Whilst the meaning of the term "MINIMUM FUEL" has been standardised internationally, the RTF phraseology is not universally used by every aircraft operator and pilot.
- 3.5 Pilots declaring a fuel related emergency should use the following RTF phraseology "MAYDAY, MAYDAY, MAYDAY" or "MAYDAY, MAYDAY, MAYDAY FUEL" and shall be afforded flight priority category A (ICAO Annex 6).

## Unusual Aerial Activity (UAA)

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- 3.6 Unusual Aerial Activity (UAA) is a generic term which, in its ATS context, includes the following:
- A concentration of aircraft that is significantly greater than normal;
  - Activities that may require the issue of a Permission or an Exemption from the ANO or Rules of the Air Regulations;
  - Air Shows, Displays, Air Races or other competitions; and
  - Activities which require the establishment of a temporary ATSU.
- 3.7 FISOs may become involved in arrangements for UAAs, which can take place in any class of airspace. Approval and clearance for a UAA within controlled airspace rests with the relevant airspace controlling authority. However, many UAAs, whether in or outside controlled airspace, involve the AR in co-ordination with the sponsor and other participants and require notification of the event to the aviation community.
- 3.8 Early warning of all UAAs is essential if co-ordination and notification is to be completed in good time by AR. Notice requirements and the responsibilities of sponsors of UAAs are described in the UK AIP and Aeronautical Information Circulars (AICs). AR notifies affected ATS units of airspace reservations or temporary procedures, which have been agreed with participating agencies by

means of NOTAM and Airspace Co-ordination Notices. This initial dissemination may be supplemented by, or transferred to, Temporary Operating Instructions or other locally produced briefing material.

- 3.9 AR is responsible for the allocation of General Air Traffic (GAT) flight priorities and Non-Deviating Status (NDS) in addition to co-ordinating Temporary class D Controlled Airspace (CAS-T) requirements, Very Very Important Person (VVIP)/special/calibration flights, air-to-air refuelling, military deployments and exercises.

## Police flights

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- 3.10 A Police flight is defined as a flight by an aircraft operating under a Police Air Operator's Certificate, the purpose of which is to facilitate police operations, where immediate and rapid transportation is essential, which includes the following:

- a) Responding to a 'Police Emergency'. The pilot of a police aircraft is likely to declare a 'Police Emergency' in situations where an immediate response is required when life is at immediate risk or a serious crime or major incident is in progress;
- b) Supporting ground personnel in often sensitive and serious operations; and
- c) Non-standard and other flights.

- 3.11 The flight categories relevant to Police flying operations are:

- a) Flight Category A: authorised for use by aircraft which have declared a 'Police Emergency';
- b) Flight Category B: normal operational priority. The operation will not wish to draw attention to itself. The pilot will be expecting the FISO to ask their intentions in the event that the flight would cause a delay to other traffic; and
- c) Flight Category Z: authorised for training, test and other flights involving police aircraft.

- 3.12 The callsign for a Police flight consists of three elements:

- The radiotelephony callsign 'POLICE'. The ICAO three-letter telephony designator is 'UKP'.
- A two-digit individual aircraft identifier. Exceptionally, sequential three-digit identifiers will be allocated to units operating two or more aircraft. These will consist of a two-digit individual aircraft identifier-based root followed by single digits to reflect the number of aircraft in a regional operation.

- When on an operational flight, the two or three-digit identifier is to be suffixed with the Flight Category letter, either 'A' or 'B' as appropriate, to highlight to the ATS provider the priority status requested by the pilot, e.g. 'POLICE 01A'. Flight Category 'Z' is not utilised as a callsign suffix.

## Helicopter Emergency Medical Services (HEMS)

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- 3.13 HEMS flights operate to incidents where an immediate response is required for the safety of life, e.g. road traffic accidents, and includes transporting patients to hospital.
- 3.14 The flight categories relevant to HEMS operations are:
- a) Flight Category A: applies to all HEMS flights on emergency operational tasks;
  - b) Flight Category E: is authorised for use by an aircraft positioning for the purpose of conducting HEMS duties, e.g. returning to its base after delivering a casualty to hospital. It is afforded priority over normal flights;
  - c) Flight Category Z: authorised for training, test and other flights involving HEMS aircraft.
- 3.15 The callsign for a HEMS flight consists of three elements:
- The radiotelephony callsign 'HELIMED'. The ICAO three-letter telephony designator is 'HLE'.
  - A two-digit individual aircraft identifier allocated to each HEMS aircraft by the .
  - When on a flight that is afforded priority, the two-digit identifier is to be suffixed with the Flight Category letter, either 'A' or 'E' as appropriate, to highlight to the ATS provider the priority status requested by the pilot, e.g. 'HELIMED 01A'. Flight Category 'Z' is not utilised as a callsign suffix.
- On routine operational tasks, training or other flights, no suffix letter will be appended, e.g. 'HELIMED 01'.

## Search and Rescue

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- 3.16 SAR flights operate to and from incidents where a response is required for the safety of life, which might be time critical and may also involve the transportation of casualties to hospital. In addition, SAR helicopters may, on occasions, be required to undertake HEMS activities and will continue to use the "Rescue" callsign whilst undertaking these tasks.
- 3.17 The flight categories relevant to SAR operations are:
- a) Flight Category A: applies to SAR flights when the safety of life is involved;

- b) Flight Category B: applies to SAR or humanitarian flights when priority is required;
- c) Flight Category E: is authorised for use by SAR aircraft positioning for the purpose of conducting SAR or HEMS duties, e.g. returning to its base after delivering a patient/casualty.
- d) Flight Category Z: authorised for training and testing flights in SAR aircraft.

3.18 The call sign for SAR flights consists of the following elements:

- The radiotelephony call sign “Rescue”. The ICAO three-letter telephony designator is SRG.
- An individual flight number allocated to each SAR flight by the ARCC; and,
- When on a flight that is afforded priority, the flight number is to be suffixed with the Flight Category letter, either ‘A’, ‘B’ or ‘E’ as appropriate, to highlight to the ATS provider the priority status requested by the pilot e.g. “Rescue 23A”. Flight category ‘Z’ is not utilised as a call sign suffix.

3.19 The call sign of SAR aircraft engaged in training and testing will be the aircraft’s registration or the base allocated call sign, prefixed with “Coastguard”.

3.20 FISOs should be aware that “Coastguard” call signs can be re-tasked by the Joint Rescue Coordination Centre (JRCC) and may adopt a “Rescue” call sign. ATS units in communication with the aircraft at the time of the re-tasking should inform the ATS unit, where one exists, at the departure aerodrome of the change in callsign.

## **Mareva Injunctions**

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3.21 A Mareva injunction (variously known also as a freezing order, Mareva order or Mareva regime) is a court order which prevents a defendant from removing assets from the UK and, thus, from the jurisdiction of the court. FIS providers and their personnel may be notified of Mareva injunctions imposed on specific aircraft. Although an injunction is most likely to be served at the aerodrome where the aircraft is located, it is possible that an injunction could also be notified to a FIS unit in relation to an aircraft in flight.

3.22 Mareva injunctions relating to aircraft are likely to specify the aircraft registration rather than a particular callsign. Upon receipt of such a Mareva injunction, FIS providers should establish whether they are in communication with the aircraft in question.

3.23 Where an aircraft subject to a Mareva injunction is being provided with a FIS, FISOs should inform the pilot:

*“You are subject to a Court Order prohibiting your aircraft from leaving the United Kingdom, what are your intentions?”*

This procedure is to be applied irrespective of whether the aircraft is conducting an internal UK or an international flight.

- 3.24 FISOs must not take any actions that would be detrimental to flight safety; consequently, FIS should continue to be provided as normal, even in the event that the pilot continues their flight. It should be noted that Mareva injunctions are relevant to international flight and that aircraft subject to such an injunction could be flying legitimately on an internal flight with no intention of leaving the UK territorial boundaries.
- 3.25 FIS providers should promulgate, as considered necessary, local procedures dealing with the circumstances of a Mareva injunction being served. In developing such local procedures, FIS providers should also consider taking legal advice as required in order to ensure that the procedures are consistent with legal obligations in relation to the injunction.



## Chapter 4

# Flight Rules

## Division of airspace

- 4.1 UK airspace is divided into two Flight Information Regions (FIRs). Within each region the airspace below FL245 is known as the Lower FIR and that at and above as the Upper Flight Information Region (UIR).

## Classification of airspace

- 4.2 The classification of the airspace within a FIR determines the flight rules which apply. These are summarised below (SERA.6001).

Class	Flight rules
A	IFR only
B	IFR and VFR (currently not established in the UK FIRs)
C	IFR and VFR
D	IFR and VFR
E	IFR and VFR
F	IFR and VFR (currently not established in the UK FIRs)
G	IFR and VFR

## Aerodrome Traffic Zone (ATZ)

- 4.3 ATZs adopt the classification of airspace within which they are situated. Therefore aircraft flying within the ATZ are subject to the Rules of the Air, the specific conditions of the airspace, and the level of ATS provided at the particular aerodrome. At aerodromes where an AFIS or Air/Ground Communication Service (AGCS) is provided, pilots shall obtain information from the unit to enable the flight to be conducted safely within the zone and maintain a listening watch. Non-radio aircraft must comply with any conditions prescribed by the unit prior to the commencement of the flight.
- 4.4 The commander of an aircraft flying within the ATZ of an aerodrome shall:
- 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 their position and height to the air traffic control unit, the FIS unit or the AGCS at the aerodrome (as the case may be) on entering the zone and immediately prior to leaving it.

## Visual Flight Rules (VFR)

4.5 The pilot of an aircraft is responsible for determining whether or not the meteorological conditions permit flight in accordance with the VFR. The criteria for determining Visual Meteorological Conditions are summarised in the tables below (SERA.5001 Table S5-1).

By day	Distance from cloud		Flight visibility
	Horizontal	Vertical	
<b>At and above FL 100</b>			
Class B, C, D, E, F and G airspace	1 500 m	1 000 ft	8 km
<b>Below FL100 and above 3 000 ft AMSL, or above 1 000 ft above terrain, whichever is the higher</b>			
Class B, C, D, E, F and G airspace	1 500m	1 000 ft	5 km
<b>At and below 3 000 ft AMSL, or 1 000 ft above terrain, whichever is the higher</b>			
Class B, C, D and E airspace	1 500m	1 000 ft	5 km
Class <u>F</u> and <u>G</u> airspace	Clear of cloud and with the surface in sight		5 km
<b>Alternatively, by day only, at and below 3 000 ft AMSL or 1 000 ft above terrain, whichever is the higher, flying at 140 kts IAS or less to give adequate opportunity to observe other traffic or any obstacles in time to avoid collision</b>			
<b>Aircraft other than helicopters</b>			
<u>Class D airspace</u>	Clear of cloud and with the surface in sight		5 km
<u>Class G airspace</u>	Clear of cloud and with the surface in sight		1 500 m
<b>For helicopters</b>			
<u>Class D airspace</u>	Clear of cloud and with the surface in sight		1 500 m
<u>Class G airspace</u>	Clear of cloud and with the surface in sight		1 500 m

By night	Distance from cloud		Flight visibility
	Horizontal	Vertical	
<b>At and above FL100</b>			
Class B, C, D, E, F and G airspace	1 500 m	1 000 ft	8 km
<b>Below FL100 and above 3 000 ft AMSL, or above 1 000 ft above terrain, whichever is the higher</b>			
Class B, C, D, E, F and G airspace	1 500 m	1 000 ft	5 km
<b>At and below 3 000 ft AMSL, or 1 000 ft above terrain, whichever is the higher</b>			
Class B, C, D, E airspace	1 500 m	1 000 ft	5 km
	The pilot shall maintain continuous sight of the surface		
Class F and G airspace	Clear of cloud, the pilot shall maintain continuous sight of the surface		5 km

**Note 1.** The VMC criteria stated in the table above for flight by day in class D, F and G airspace at or below 3 000 ft AMSL or 1000 ft above terrain, whichever is higher, reflect changes from SERA.5001 Table S5-1, as enabled through the Aviation Safety (Amendment) Regulations 2021.

**Note 2.** For VFR flight at night, the VMC criteria specified in the table above shall apply except that the ceiling shall not be less than 1 500 ft (SERA.5005(c)(3)(i)).

**Note 3.** Except where Note 4 applies, for fixed-wing and helicopter flights wishing to operate under VFR to or from an aerodrome, or enter the aerodrome traffic zone, or aerodrome traffic circuit in Class D airspace the ground visibility at the aerodrome shall be used.

**Note 4.** The UK CAA has issued exemptions within the Official Record Series (ORS) 4 – Miscellaneous, which permit the operator and commander of a helicopter registered in the UK and conducting Police, HEMS or Search and Rescue (SAR) flights, including SAR training flights operating in accordance with a Letter of Agreement with the ATS provider, to operate with cloud ceiling, visibility and distance from cloud lower than those specified above, to the extent necessary to achieve the purpose of the flight and in circumstances that render such departure necessary in the interests of safety.

**Note 5.** The UK CAA has issued exemptions within the ORS4 – Miscellaneous that exempts the operator and pilot in command of a helicopter conducting pipeline,

powerline or rail track inspection flights in support of the maintenance of the national infrastructure from complying with SERA.5005(b) subject to specific conditions.

## Instrument Flight Rules (IFR)

4.6 A pilot must fly according to the IFR:

- if the airspace has been notified as class A;
- if the meteorological conditions preclude VFR flight.

4.7 The IFR require a pilot to observe the minimum height rule and additional rules according to the type of airspace. These are summarised below.

- Within controlled airspace (classes A to E):
  - a) File a flight plan and obtain a clearance before proceeding with the flight;
  - b) Conduct the flight in accordance with clearances and instructions from ATC;
  - c) Maintain a listening watch on the appropriate radio frequencies; and
  - d) Report the position of the aircraft according to published procedures.

4.8 Outside controlled airspace:

Comply with the semi-circular rule (SERA.5025(a)) when in level flight above 3,000ft AMSL. The altimeter is set to 1013.2mb and the cruising level is selected according to the magnetic track unless the aircraft is holding according to published procedures or is otherwise instructed by ATC.

Semi-circular rule – flights at levels below FL195:

Magnetic track	Cruising level
From 000° to 179°	FL030, 050, 070, 090, etc. up to FL190
From 180° to 359°	FL040, 060, 080, 100, etc. up to FL180

## Speed limit

### Airspace Speed Limit (SERA.6001)

4.9 Aircraft flying below FL100 are required to observe, with exceptions, a speed limit of 250 kts IAS. Such a limit is an essential component of the 'see and avoid' principle and is in addition to speed limits which may be notified for specific procedures.

4.10 The 250 kts IAS speed limit does not apply to:

- a) flights in class A and B airspace;

- b) IFR flights in class C airspace;
- c) exempted VFR flights in class C airspace when authorised by an ATCU;
- d) exempted flights in class D airspace when authorised by an ATCU;
- e) test flights in accordance with specified conditions;
- f) aircraft taking part in flying displays when authorised by the CAA;
- g) aircraft subject to a written permission granted by the CAA;
- h) State aircraft such as military aircraft.

**Note.** Aircraft type and aircraft operator combinations exempt from the class D airspace speed restriction on departure are published in the UK AIP according to the aerodrome to which they apply.

- 4.11 In class E, F and G airspace, conflicting traffic may not be known to ATS providers and so it is necessary for all flights to make use of the 'see and avoid' principle. The speed limitation of 250 kt for VFR flights in airspace classes C, D, E, F and G and for IFR flights in airspace classes D, E, F and G is intended to facilitate visual acquisition of flights which are not separated (GM1 SERA.6001(b)). As such, with the exception of those flights described in 4.10 (e) to (h) above, the 250 kt IAS speed limit will not be relaxed in class E, F and G airspace.

### Procedure Speed Limits

- 4.12 A speed limitation may be published within specific Instrument Approach Procedures (IAPs) in order to assist the pilot in obstacle avoidance. FISOs are not permitted to issue advice which could be misconstrued as a relaxation of any such speed limitation.

### Filing of flight plans

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- 4.13 Flight plans fall into two categories:
- a) Full flight plans: the information required on Form CA48/RAF2919.
  - b) Abbreviated flight plans: the limited information required to obtain a clearance for a portion of flight, e.g. flying in a control zone, crossing an airway etc. filed either on the Radiotelephone (RTF) or by telephone prior to take-off.
- 4.14 The local FIS Unit may assist in compiling flight plans and checking them. However, the ultimate responsibility for filing an accurate flight plan rests with the pilot or aircraft operator.

- 4.15 The destination aerodrome will be advised of the flight only if the flight plan information covers the whole route of the flight and if they have the capability to receive Air Movement Messages over the Aeronautical Fixed Telecommunications Network (AFTN).
- 4.16 An airborne flight plan may be filed provided that the pilot leaves sufficient time for the clearance to be issued before the aircraft reaches the boundary of controlled airspace (normally 10 minutes).
- 4.17 A pilot may file a flight plan for any flight.
- 4.18 A pilot is required to file a flight plan for (SERA.4001(b)):
- a) any flight or portion thereof to be provided with an air traffic control service;
  - b) any IFR flight within advisory airspace;
  - c) any flight within or into areas, or along routes designated by the Authority, to facilitate the provision of flight information, alerting and search and rescue services;
  - d) any flight within or into areas or along routes designated by the Authority, to facilitate coordination with appropriate military units or with air traffic service units in adjacent states in order to avoid the possible need for interception for the purposes of identification prescribed by the States concerned;
  - e) Any flight across international boundaries;  
**Note.** For the purposes of SERA.4001(b)(5) 'Submission of a flight plan' in the UK, the international borders for flight planning purposes are the international FIR boundaries.
  - f) Any flight planned to be operated at night, if leaving the vicinity of an aerodrome.
- 4.19 A pilot is advised to file a flight plan:
- a) if their flight involves flying over the sea more than 10 miles from the UK coast or flying over sparsely populated areas where Search and Rescue (SAR) operations would be difficult; or
  - b) if they intend to fly into an area in which SAR operations are in progress. The flight plan should include the expected times of entering and leaving the area and the details must also be passed to the parent ACC. The ACC is to notify the Aeronautical Rescue Co-ordination Centre (ARCC) concerned.

- 4.20 A pilot who has filed a flight plan to a destination without an ATSU and/or not connected to the AFTN shall comply with the following procedure:
- a) Nominate a responsible person at their destination and inform them of the planned ETA. If the aircraft fails to arrive within 30 minutes of the ETA the responsible person will notify the parent ATSU. That ATSU will then initiate Alerting action; or
  - b) If no responsible person can be found, the pilot will contact the parent ATSU and request that they act in the same capacity. The pilot is then required to inform the parent ATSU of their arrival within 30 minutes of the notified ETA, otherwise Alerting action will automatically be initiated.

### **Availability of supplementary flight plan information**

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- 4.21 Where the operator or departure handling agency of an aircraft at the aerodrome from which it departs closes before ETA at destination plus one hour, they will advise the FIS Unit at the departure aerodrome of the number of persons on board. If there is no FIS Unit, the aerodrome operator or departure handling agency will file with the parent ACC the name and address of a person who has access to flight departure records.
- 4.22 If the FIS Unit at the departure aerodrome closes before ETA at destination plus one hour, the AFISO shall forward the details contained in field 19 of the flight plan form to the parent ACC ensuring that any change to the endurance or number of persons on board is included.

### **Booking-out**

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- 4.23 Pilots who do not file a flight plan either full or abbreviated, are required to inform the AFIS Unit at the aerodrome of their departure. This is referred to as booking-out. The AFIS Unit is to record the departure. No further action is required.

### **Infringement of legislation**

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- 4.24 When notification of a flight is received, which if completed as planned, would involve a breach of regulations, the attention of the pilot should be drawn to the probable infringement. The warning should be recorded in the watch log.

### **Weather minima**

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- 4.25 A FISO is not responsible for ensuring that pilots observe their weather minima and shall not initiate action in this respect or query the right of a pilot to attempt a landing or take-off.

## Non-standard flights and exemptions

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- 4.26 All requests from operators for exemption from the legislation for particular flights shall be referred to the appropriate ACC.

## Failure of navigation lights

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- 4.27 The ANO requires that an aircraft shall not depart from an aerodrome at night if there is a failure of any light which the ANO requires to be displayed and the light cannot be immediately repaired or replaced. If the aircraft is in flight, the aircraft shall land as soon as it can safely do so, unless authorised by the appropriate air traffic control unit to continue its flight.
- 4.28 FISOs shall notify pilots if they become aware that the aircraft has experienced failure of any navigation or anti-collision light. FISOs shall not issue authority for pilots to continue flight when they experience failure of any navigation light required by the Air Navigation Order, as this may only be issued in certain circumstances by an air traffic control unit. In such circumstances the FISO should contact the parent ACC.

## Operations of aircraft with unserviceable equipment

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- 4.29 Notwithstanding paragraphs [4.27](#) and [4.28](#), decisions regarding the serviceability of an aircraft for flight are the sole responsibility of the pilot in command.

## Action when captive balloons break free

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- 4.30 When a FIS Unit receives information that a captive balloon has broken free, the appropriate ACC shall be telephoned without delay stating:
- The type of balloon and whether carrying any person;
  - Position of balloon site;
  - Direction and speed of drift;
  - Last observed height;
  - Length of cable attached to balloon; and
  - The balloon operator's name and telephone number.

## Radio Mandatory Zones (RMZ)

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- 4.31 A RMZ is airspace of defined dimensions wherein the carriage and operation of suitable/appropriate radio equipment is mandatory ([SERA.6005\(a\)](#) refers). RMZ airspace is to be operated in accordance with the regulations pertaining to the background airspace classification.



- 4.32 Flights operating in airspace designated as an RMZ by the CAA, shall establish two-way communication before entering the RMZ and maintain a continuous air-ground voice communication watch, as necessary, on the appropriate communication channel, unless in compliance with alternative provisions prescribed for that particular airspace by the ANSP. If unable to establish two-way radio communication with the designated ANSP the pilot is to remain outside the RMZ.
- 4.33 Two-way communication is considered to have been achieved once the pilot has provided at least the following information on the appropriate communications channel:
- Callsign;
  - Type of aircraft;
  - Position;
  - Level;
  - Flight rules; and,
  - Intentions of the flight.
- and has received acknowledgement from ATS.
- 4.34 Where aircraft are based at aerodromes or operating sites located within a RMZ and radio communications are not possible either prior to getting airborne, or at all, pilots of such flights are directed to:
- a) seek to agree letters of agreement with the ANSP describing alternative provisions for compliance; and,
  - b) establish two-way radio communications (where appropriate) at the earliest opportunity after take-off.
- 4.35 The pilot of an aircraft that wishes to operate in an RMZ without the necessary radio equipment must operate in accordance with conditions promulgated for the specific RMZ or in accordance with agreed tactical arrangements with the ANSP. If a pilot is unable to make such tactical arrangements they are to remain outside the RMZ, unless in an emergency.

## Transponder Mandatory Zones (TMZ)

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- 4.36 A TMZ is airspace of defined dimensions within which aircraft are required to carry and operate a Mode S SSR transponder, unless in compliance with alternative provisions prescribed for that particular airspace by the ANSP (SERA.6005(b) refers).

- 4.37 A TMZ is established for overriding safety reasons where the airspace classification would not normally require the carriage of a transponder but where a change to a more restrictive classification of controlled airspace is not warranted. A TMZ creates a 'recognised air traffic environment' within which ATS, where provided, are more able to provide enhanced levels of safety to aircraft and can enable the operation of airborne and ground-based safety nets.
- 4.38 The pilot of an aircraft that is unable to comply with the notified requirements for entry into a TMZ may be granted access to the TMZ, subject to specific approval by the ANSP. Such approval is subject to the conditions prevailing at the time of the request which include but is not limited to: the types and density of air traffic operating or planned to operate within the TMZ, and the actual or forecast meteorological conditions.
- 4.39 Within a TMZ, standard ATS procedures and separation/deconfliction minima, appropriate to the airspace classification are to be applied. The existence of a TMZ does not confer or suggest any particular airspace classification.

## Sailplane Operations

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- 4.40 UK Reg (EU) No 923/2012 Article 2(117) states that the term 'sailplane' ('glider' is often used as an alternative term for a 'conventional' sailplane) can refer to conventional or powered sailplanes, hang gliders, paragliders and other comparable craft. Sailplanes are supported in flight by the dynamic reaction of the air against its fixed lifting surfaces and do not depend on an engine for free flight. There are 3 main types of lift used by sailplanes:
- (1) thermal lift caused by a column of rising air.
  - (2) ridge (orographic) lift caused by rising air on the windward side of a slope or ridge; and,
  - (3) wave lift caused by oscillations to the lee side of high ground resulting from the disturbance in the horizontal air flow caused by the high ground.
- 4.41 Typically, sailplane flying involves periods of straight-line flight, followed by periods of gaining height. It is likely that most requests for an ATS will come from radio equipped, conventional sailplanes using thermals for cross-country flying. Sailplanes utilising thermal or ridge lift will make deviations of up to 30° or 2 NM around a straight-line route in order to maximise the chances of finding lift and avoiding sink. 'Thermalling' sailplanes will, typically, circle in a thermal over an area around ½ NM wide. Depending on the meteorological conditions, sailplanes can experience rapid changes in the vertical plane.
- 4.42 Flights by paragliders and hang gliders will, except when ridge soaring, fly with the prevailing wind and flights of over four hours and in excess of 100 NM are regularly flown. 'Conventional' sailplanes have better performance and frequently plan long cross-country flights in excess of 300 NM and fly at speeds

between 60 and 130 kts. The advent of performance-based navigation (PBN) is having a major impact on all aspects of the aviation industry.

- 4.43 RTF phraseology and an explanation of terms relating to the operation of sailplanes is detailed in CAP 413.

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## Chapter 5

# Airborne Collision Avoidance System (ACAS)

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## Introduction

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- 5.1 Airborne Collision Avoidance Systems (ACAS) are an aircraft system based on 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.
- 5.2 From December 2015, the carriage of ACAS II Traffic Alert and Collision Avoidance System (TCAS) II, software version 7.1 was mandated within UK airspace for all civil aeroplanes with a maximum take-off mass (MTOM) exceeding 5 700 kg or with a maximum approved seating configuration of more than 19 passengers. Aircraft outwith these criteria but which are equipped with ACAS II on a voluntary basis must be equipped with version 7.1. Certain military aircraft may also be TCAS II equipped. Civil registered historical and ex-military turbine-engine aircraft are exempted from this requirement.
- 5.3 Aircraft operators experiencing ACAS equipment failure may request permission to operate in UK airspace for up to 10 days in accordance with current TCAS II Minimum Equipment List provisions. Due to the safety benefits arising from TCAS operations and the collaborative way in which it arrives at collision avoidance solutions, any aeroplane with an unserviceable transponder as well as an unserviceable TCAS will not be permitted in UK airspace for which mandatory carriage of a transponder is required.
- 5.4 The carriage and use of TCAS II acts only as a safety net, and does not in any way alter the respective responsibilities of pilots and air traffic service staff for the safe operation of aircraft

## TCAS II warnings

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- 5.5 TCAS II encounters may take place within all classifications of airspace. TCAS II equipment reacts to the transponders of other aircraft to determine whether or not there is a potential risk of collision. The warning, based on the time to an assumed collision, enables the pilot to identify the conflicting traffic and, if necessary, take avoiding action.

Warnings for aircraft equipped with TCAS II are given in two steps:

1. Typically 40 seconds before the assumed collision\*
  - Traffic Advisory (TA) warning.

- Pilots are advised not to take avoiding action on the basis of TA information alone but may ask for traffic information.
  - Pilot looks for conflicting aircraft visually.
  - Does NOT manoeuvre.
2. Typically 25 seconds before the assumed collision\*
- Resolution Advisory (RA) warning.
  - Pilot receives advice to climb, descend or maintain their existing flight profile.
  - Rate of climb or descent may also be given.
  - Pilots are expected to respond immediately but have been instructed to restrict manoeuvres to the minimum necessary to resolve the confliction, advise the FIS unit as soon as is practical thereafter and return to their original flight path as soon as it is safe to do so (SERA.11014(b)).

\* The times quoted vary with altitude and these examples relate to an aircraft between 5 000 ft and 10 000 ft AMSL. The times will increase or decrease, above or below that level respectively.

- 5.6 If a conflicting aircraft is not reporting altitude, a Traffic Advisory (TA) may be given, but not a Resolution Advisory (RA).
- 5.7 RAs will be presented only if the conflicting aircraft is transponding on Mode C or Mode S. Where both aircraft in an encounter are fitted with TCAS II, the transponders will communicate with each other to agree complementary RAs. If the conflicting aircraft is not transponding, no warnings are given.
- 5.8 TCAS II is programmed to take account of the host aircraft's performance characteristics and level when issuing RAs.

## ACAS phraseology

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- 5.9 Specific ICAO ACAS phraseology has been adopted. The phraseology is clear, simple, concise and to the maximum extent devoid of ambiguity and potential to cause operational confusion.
1. When a flight crew responds to a RA:
    - Pilot: (C/S) TCAS RA
    - FISO: (C/S) ROGER
  2. After the RA response is completed:
    - Pilot: (C/S) CLEAR OF CONFLICT RETURNING TO (previous level)
    - FISO: (C/S) ROGER

or

- Pilot: (C/S) CLEAR OF CONFLICT (previous level) RESUMED
- FISO: (C/S) ROGER

## Reporting

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- 5.10 In accordance with UK Reg (EU) No 376/2014, all ACAS RAs are required to be reported. If there is good reason to believe that the appropriate details of the occurrence have already been, or will be, reported under the MOR scheme by someone else (e.g. UK airline or pilot), there is no need to file a duplicate report.
- 5.11 The filing of the report does not absolve the FISO from additionally reporting an AIRPROX or other report about the same incident, according to the circumstances.

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## Chapter 6

# Diversion Procedures

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## Introduction

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- 6.1 Aircraft may divert from their planned destination to another aerodrome on the initiative of the pilot or as requested by the appropriate authority on the ground.
- 6.2 Diversions will normally be made for the following reasons:
- a) When the weather at the planned destination is reported to be below the minima prescribed by an aircraft operator for their aircraft;
  - b) When obstructions on the landing area, which constitute a hazard to aircraft landing, cannot be cleared within a reasonable period;
  - c) The failure of airborne equipment;
  - d) The failure of essential ground aids to landing in circumstances which would require their use;
  - e) Unacceptable delay due to congestion of air traffic; or
  - f) The closure of the aerodrome of destination.
- 6.3 The aerodrome operator is responsible for decisions regarding the availability of the aerodrome.

## Diversions initiated by the pilot

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- 6.4 The pilot of an aircraft is primarily responsible for its safety; therefore the pilot will normally decide whether they can or cannot effect a safe landing at a given aerodrome. The pilot will normally be aware of weather conditions at their planned destination and alternate aerodromes, thus whenever the pilot considers a diversion to be necessary, they will make their intention known.
- 6.5 When specifically requested by the pilot that their company or a nominated addressee be advised of their diversion, the FISO is to pass this message to the ATSU at either:
- a) the original destination; or
  - b) the aerodrome nearest to the original destination.
- 6.6 An ATSU receiving such a message is to pass it to the addressee.

## **Diversions requested by FIS units**

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- 6.7 When, for traffic reasons, a FISO considers it advisable to request a pilot to divert they shall consult the aircraft operator where appropriate. The request to divert shall be passed to the pilot together with reasons for the diversion.
- 6.8 In cases of emergency it may be necessary for an aircraft to be diverted without prior consultation with the aircraft operator. In this event, the FISO shall pass the message to the pilot expressed as a request and inform the aircraft operator where appropriate as soon as possible. When the operator of the aircraft is not known, the pilot is to be asked to nominate an addressee.
- 6.9 On receipt of the diversion message the pilot will acknowledge and comply with the request or give their reason for non-compliance. If the pilot decides against diversion, permission to attempt a landing shall not be refused unless the aerodrome has been closed by the Aerodrome Operator.

## **Diversion of military aircraft**

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- 6.10 All information concerning the diversion of military aircraft is to be passed to the RAF Distress and Diversion (D&D) Cell.

## Chapter 7

# Royal Flights

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## Introduction

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- 7.1 A Royal Flight within UK airspace is defined as the movement of an aircraft specifically tasked to carry one or more members of The Royal Family afforded such status by the Director of Royal Travel, The Royal Household.
- 7.2 Flights within UK airspace by members of other Royal Families, other reigning sovereigns, Prime Ministers and Heads of State of Commonwealth and foreign countries, may also be afforded Royal Flight status by the CAA.

## Procedures for Royal flights in fixed-wing aircraft

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### Establishment of temporary (class D) controlled airspace (CAS-T)

- 7.3 Royal Flights in fixed-wing aircraft will, whenever possible, be planned to take place within the national ATS route structure. Standard ATC procedures shall be applied to Royal flights when operating in permanent class A, C and D airspace. In all other instances, the airspace around the route will be designated CAS-T.
- 7.4 CAS-T will be notified as class D airspace; applicable access criteria and separation standards apply.
- 7.5 CAS-T of appropriate height/width bands, and levels, will be established to encompass any portion of the track and flight level of the Royal aircraft, which lies outside of permanent class A, C and D airspace. Temporary control zones and control areas will be established around all aerodromes used for the departure or arrival of a Royal Flight.
- 7.6 Regardless of the prevailing meteorological conditions, aircraft shall only fly within CAS-T when an ATC clearance has been obtained from the controlling authority.

### Procedure at AFIS Units on notification of a Royal Flight

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- 7.7 AFIS units being notified of an intended Royal Flight movement shall contact the appropriate CAA SARG regional office so that procedures for handling of the aircraft can be agreed.

## Promulgation of Royal Flight Information

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- 7.8 Dissemination of information concerning a Royal Flight is made via a Notification Message on a Royal Flight Collective, giving full flight details. Information on the establishment of CAS-T, including vertical limits, is promulgated by NOTAM.

## Royal Flight callsigns

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- 7.9 The flight plan identification and the radiotelephony designators for flights flown in aircraft of No. 32 (The Royal) Squadron, the Queen's Helicopter Flight (TQHF) or in civilian chartered aircraft are contained in the UK AIP ENR 1.1 section 4.4.4.

## Royal Flights in helicopters

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- 7.10 CAS-T is not normally established for Royal Flights in helicopters. Normal ATC procedures apply to a Royal helicopter within, or wishing to join, controlled airspace. For Royal helicopter flights outside controlled airspace, a Royal Low Level Corridor (RLLC) will be promulgated by NOTAM, details of which are contained in the UK AIP ENR 1.1.
- 7.11 SSR code 0037 has been allocated for the exclusive use of helicopters engaged on Royal Flights. This code will be displayed from take-off to landing, whether or not an ATS surveillance service is being provided; consequently, this code is to be treated as unvalidated and unverified.

## Diversions

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- 7.12 The operational control of Royal aircraft of No. 32 (The Royal) Squadron is vested in the RAF. The pilot, however, retains authority to deviate from flight plan if they think it necessary. The operational control of civilian chartered aircraft being used for a Royal Flight remains with the company and diversions will be arranged in accordance with normal civil practices.

## Incidents involving Royal Flights

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- 7.13 When an ATSU receives information that a Royal Flight has been involved in an incident giving rise to public comment, the FISO is to pass the details immediately to the parent ACC.

## Section 2 Aerodrome Flight Information Service

### Chapter 8

# Flight Information Service at Aerodromes

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## Introduction

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- 8.1 AFIS is the term used to describe the provision of advice and information useful for the safe and efficient conduct of aerodrome traffic, including assisting pilots in the prevention of collisions.
- 8.2 An AFIS unit provides AFIS to traffic operating within, and in the vicinity of the Aerodrome Traffic Zone (ATZ). Additionally, an AFISO may provide a Basic Service to other aircraft upon request.
- 8.3 Due to the limits of their licence, AFISOs shall not enter into agreements with pilots on a short-term tactical basis when providing a basic service.
- 8.4 Further details about the provision of a Basic Service can be found in CAP 774 UK Flight Information Services manual ([www.caa.co.uk/CAP774](http://www.caa.co.uk/CAP774)).
- 8.5 AFISOs shall maintain a continuous watch by visual observation on all flight operations on and in the vicinity of an aerodrome as well as vehicles and personnel on the manoeuvring area. Visual observation shall be achieved through direct out-of-the-window observation, or through indirect observation utilising a visual surveillance system which is specifically approved for the purpose by the CAA.
- 8.6 AFISOs, in common with all air traffic services, provide an alerting service.
- 8.7 Detailed procedures for AFISOs at aerodromes shall be contained in the unit local instructions.

## Liaison between Aerodrome FIS units and other ATSU's

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### Introduction

- 8.8 Where necessary, Aerodrome FIS units should develop letters of agreement with appropriate ATSU's for the handling of arriving and departing aircraft. The procedures in paragraphs 8.9 to 8.14 below may be used as a template for the inter-unit liaison detailed within such a letter of agreement.

### Arriving traffic

- 8.9 For arriving traffic the following information should be exchanged:
- Estimated time of arrival (ETA) updated as necessary;

- Traffic known to the AFISO which the arriving aircraft should be aware of before transfer of communication; and
  - Aerodrome QNH.
- 8.10 Transfer of communications shall be achieved in sufficient time to allow the AFISO to provide information on other aircraft operating in the vicinity of the aerodrome.
- 8.11 Should the aircraft fail to establish communications with the AFIS unit within five minutes after the latest received ETA, the AFIS unit shall inform the ATSU from whom the ETA was received and take appropriate action as required.

### Departing traffic

- 8.12 For departing traffic the following information should be exchanged:
- Estimated time of departure (ETD) updated as necessary;
  - When necessary, runway-in-use;
  - When requested, actual time of departure (ATD); and
  - ATC clearance including transponder code when required, as well as traffic information about traffic known to the ATC unit that the departing aircraft will need to be informed of before departure.
- 8.13 The AFISO shall read back the ATC clearance received.
- 8.14 The AFISO shall relay to a pilot the ATC clearance provided, transponder code, and traffic information in exactly the form it was received and ensure a correct readback is received.

### Traffic information

- 8.15 Whilst generic traffic information provided to a pilot may be useful to indicate how busy the aerodrome environment is, as the pilot gets closer to the aerodrome and is required to integrate with other traffic, specific traffic information is needed in order to achieve a safe, orderly and expeditious flow of air traffic and to assist pilots in preventing collisions.
- 8.16 Traffic information shall be described so as to be easily identified by the pilot.
- 8.17 A pilot receiving a Basic Service, and not operating in the vicinity of an aerodrome, should not expect any form of traffic information from an AFISO, as there is no such obligation placed on the AFISO under a Basic Service and the pilot remains responsible for collision avoidance at all times. However, where an AFISO has information that indicates that there is aerial activity in a particular location that may affect a flight, in so far as it is practical, they should provide traffic information in general terms to assist with the pilot's situational awareness.

This will not normally be updated by the AFISO unless the situation has changed markedly, or the pilot requests an update. However, when a pilot report indicates, or an AFISO considers, that a definite risk of collision exists, a warning shall be issued to the pilot (SERA.9005(b)(2) and GM1 SERA.9005(b)(2)). Traffic information in general terms could include warnings of aerial activity in a particular location, e.g.

- *“Intense gliding activity over Smallville”;*
- *“multiple aircraft known to be operating 15 miles north of Smallville”;*
- *“PA28 estimating CPT at 25, altitude 2 000 feet”;*
- *“fast jet reported routing from Smallville to Midtown below altitude 500 feet”;*
- *“helicopter conducting power line inspection 5 miles north of Borton below altitude 500 feet”*

- 8.18 Traffic information to traffic operating in the vicinity of an aerodrome, and specifically within the ATZ and to flights conducting Instrument Approach Procedures (IAP) shall be issued in a timely manner when, in the judgement of the AFISO, such information is necessary in the interests of safety, or when requested by the aircraft. When a pilot report indicates, or an AFISO considers, that there may be a collision risk, specific traffic information shall be passed to each pilot concerned.
- 8.19 In addition to the information listed in paragraph 8.99, before entering the traffic circuit an aircraft should be informed of the current traffic circuits and other traffic when necessary.
- 8.20 AFISOs shall ensure that traffic information is passed if an aircraft executing a go-around may catch up a preceding aircraft.
- 8.21 Procedures and guidance relating to the use of ATS surveillance systems by AFISOs are contained in Appendix F.

## **Wake turbulence and jet blast hazards**

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- 8.22 In radiotelephony, the term ‘wake turbulence’ is used to describe the effect of the rotating air masses generated behind the wing tips of aircraft, in preference to the term ‘wake vortex’ which describes the nature of the air masses.
- 8.23 All aircraft, including helicopters, generate vortices as a consequence of producing lift. The heavier the aircraft and the more slowly it is flying, the stronger the vortex and there is some evidence that, per kilogram of gross mass, the wake turbulence generated by a helicopter is more intense than that of a fixed-wing aircraft. Vortices are most hazardous to aircraft with a small wingspan during the take-off, initial climb, final approach and landing phases of flight.

8.24 At low altitudes, vortices generally persist for as long as 80-seconds but in very light or calm wind conditions they are especially persistent and can last for up to two and a half minutes. Once formed, vortices continue to descend until they decay or reach the ground. Decay is usually sudden and occurs more quickly in windy conditions. Crosswinds can carry a vortex away from the flight path of the aircraft. For each nautical mile behind an aircraft, the vortex the aircraft generates will typically have descended between 100 and 200 ft.

8.25 The responsibility for wake turbulence avoidance rests entirely with the pilot in command. AFISOs shall, to the extent practicable, provide a warning of the expected occurrence of hazards caused by turbulent wake to:

- a) arriving flights making an approach to the same runway as an immediately preceding aircraft of a 'higher' wake turbulence category; and,
- b) departing flights taking-off from the same runway as an immediately preceding aircraft of a 'higher' wake turbulence category.

**Note.** For the purposes of issuing a warning of wake turbulence, helicopters air-taxiing across runways shall be considered to be a departure from that runway.

Such information will be provided by the warning 'CAUTION WAKE TURBULENCE' and should, whenever practicable, include relevant information on the aircraft concerned.

**Note.** Occurrence of wake turbulence hazards cannot be accurately predicted and AFIS units cannot assume responsibility for the issuance of information on such hazards at all times, nor for its accuracy.

8.26 Caution should be exercised when a helicopter or fixed-wing aircraft of a lower weight turbulence category is landing on a runway immediately after a helicopter of higher weight turbulence category has taken off from that runway's threshold.

8.27 Wake turbulence categorisation information is provided at Appendix C. This information is provided solely as reference material and places no responsibility on an AFISO for the issuance of advice. Aircraft are divided into several groups, with aircraft in the SUPER category producing the greatest wake turbulence, aircraft in the HEAVY category producing greater wake turbulence than aircraft in the MEDIUM category, and aircraft in the MEDIUM category producing greater wake turbulence than those in the LIGHT category.

## Jet blast, helicopter downwash turbulence and propeller slipstream

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8.28 When issuing instructions to aircraft on the manoeuvring area and providing information on the aerodrome, AFISOs must take into account the hazards



caused by jet blast, helicopter downwash turbulence and propeller slipstream. Even at ground, idle large aircraft can produce localized wind velocities of sufficient strength to cause damage to other aircraft, vehicles and personnel operating within the affected area. Particular care should be taken when intersecting runways are being used.

**Note.** Research has demonstrated that the affected area behind a large aircraft with engines at ground idle extends up to 600 metres.

- 8.29 When hovering or air taxiing, a helicopter directs a forceful blast of air downwards which then rolls out in all directions. This downwash and associated turbulence can drift a substantial distance downwind and may affect an adjacent runway or taxiway. To minimise the effects of this turbulence AFISOs should:
- a) instruct helicopters where possible to ground taxi rather than air taxi when operating in areas where aircraft are parked or holding; and
  - b) not air-taxi helicopters close to taxiways or runways where light aircraft operations (including light helicopter operations) are in progress. If air taxiing is imperative, helicopters must be routed to:
    - i. avoid over-flying parked aircraft, vehicles or loose ground equipment; and
    - ii. follow standard taxi routes where helicopters and fixed wing aircraft share common areas on a movement area.
- 8.30 When a helicopter is air taxiing or in a stationary hover, AFISOs should avoid taxiing light aircraft or helicopters within a minimum area comprising three times the rotor diameter of that helicopter. AFISOs should consider this to be a minimum distance which will need to be increased for larger helicopters.

## Windshear

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### Introduction

- 8.31 Windshear is a sustained change in the wind velocity along the aircraft flight path, which occurs significantly faster than the aircraft can accelerate or decelerate.
- 8.32 Windshear can occur at any level, but it is low-level windshear, occurring from the surface to a height of approximately 1 500 ft which can cause problems of sufficient magnitude to affect the control of aircraft in departure or final approach phases of flight.

### Conditions conducive to windshear

- 8.33 AFISOs should be alert to the possibility of the existence of windshear in the following circumstances:

- a) The presence of frontal/squall/thunderstorm activity in the vicinity of the aerodrome;
- b) The presence of low-level inversions where the surface wind will be significantly different from that at only a few hundred feet above the ground; and
- c) Local terrain or buildings considered in relation to wind speed and direction; such large obstructions can cause windshear as well as the more usual turbulence and gusts.

### AFISO action

- 8.34 Whenever a pilot reports windshear conditions to an AFISO, the information shall be relayed to subsequent inbound and outbound aircraft until confirmation is received that the condition no longer exists. Furthermore, details of the windshear conditions shall be entered in the watch log.
- 8.35 Reports from pilots should contain the following information:
- a) A warning of the presence of windshear;
  - b) The height or height band where the shear was encountered;
  - c) The time at which it was encountered; and
  - d) Details of the effect of the windshear on the aircraft, e.g. speed gain or loss, vertical speed tendency, change in drift.

### Essential information on aerodrome conditions

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- 8.36 Essential information on aerodrome conditions is information necessary to safety in the operation of aircraft which pertains to the movement area or any facilities usually associated therewith. For example, construction work on a taxiway not connected to the runway-in-use would not be essential information to any aircraft except one that might be taxied in the vicinity of the construction work. As another example, if all traffic must be confined to runways, that fact should be considered as essential aerodrome information to any aircraft not familiar with the aerodrome.
- 8.37 Essential information on aerodrome conditions shall include information relating to the following:
- a) Construction or maintenance work on, or immediately adjacent to the movement area;
  - b) Rough or broken surfaces on a runway, a taxiway or an apron, whether marked or not;
  - c) Water, snow, slush, ice or frost on a runway, a taxiway or an apron;

- d) anti-icing or de-icing liquid chemicals or other contaminant on a runway, a taxiway or an apron;
- e) Snow banks or drifts adjacent to a runway, a taxiway or an apron;
- f) Other temporary hazards, including:
  - aircraft parked close to runways or taxiways;
  - aircraft engaged in ground running of engines;
  - formations of birds or individual large birds that are reported or observed on or above the manoeuvring area, or in the immediate vicinity of the aerodrome and the extent of any bird dispersal action being carried out.
- g) Failure or irregular operation of part or all of the aerodrome lighting system. Defects must be passed to pilots in the form that they have been reported to the FISO. FISOs should not make assumptions that a particular defect renders an associated aid unserviceable or not available. The pilot is responsible for deciding their course of action;
- h) Failure or irregular functioning of approach aids; and;
- i) Any other pertinent information.

**Note.** Up-to-date information on the conditions on aprons may not always be available to the AFIS unit. The responsibility of the AFIS unit in relation to aprons is, with respect to the provisions of paragraphs 8.36 and 8.37, limited to the transmission to aircraft of the information which is provided to it by the authority responsible for the aprons.

8.38 Essential information on aerodrome conditions shall be given to every aircraft, except when it is known that the aircraft already has received all or part of the information from other sources. The information shall be given in sufficient time for the aircraft to make proper use of it, and the hazards shall be identified as distinctly as possible.

**Note.** 'Other sources' include NOTAM, ATIS broadcasts, and the display of suitable signals.

8.39 The CAA has given guidance to operators and pilots as to the percentage increase to be added to landing/take-off distance on grass aerodromes in wet conditions (see CAP 793 'Safe Operating Practices at Unlicensed Aerodromes' for further information). In the landing case, a higher figure is added when the surface is 'wet' as opposed to 'damp'. AFISOs should appreciate the significance of these conditions and are to warn pilots of arriving aircraft when 'wet' surface conditions are known to exist.

- 8.40 When a not previously notified condition pertaining to the safe use by aircraft of the manoeuvring area is reported to or observed by the AFIS unit, the appropriate aerodrome authority shall be informed and operations on that part of the manoeuvring area terminated until otherwise advised by the appropriate aerodrome authority.

## Ground vehicles and personnel

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- 8.41 At AFIS aerodromes all vehicles employed on the manoeuvring area shall be capable of maintaining two-way radio communication with the AFIS unit, except when the vehicle is only occasionally used on the manoeuvring area and is:
- a) accompanied by a vehicle with the required communications capability; or
  - b) employed in accordance with a pre-arranged plan established with the AFIS unit.
- 8.42 A vehicle or person shall not go or move on the manoeuvring area of an aerodrome without the permission of the person in charge of the aerodrome, and during the notified hours of watch, the AFIS unit. At all times, vehicles and persons on the manoeuvring area of the aerodrome shall comply with instructions issued to them by the AFISO.
- 8.43 The movement of persons or vehicles including towed aircraft on the manoeuvring area shall be subject to approval by the AFIS unit. Persons, including drivers of all vehicles, shall be required to obtain approval from the AFIS unit before entry to the manoeuvring area. Notwithstanding such an approval, entry to a runway or runway strip or change in the operation authorised shall be subject to a further specific authorisation by the AFIS unit.
- 8.44 All vehicles and persons shall give way to aircraft which are landing, taxiing or taking off, except that emergency vehicles proceeding to the assistance of an aircraft in distress shall be afforded priority over all other surface movement traffic. In the latter case, all movement of surface traffic should, to the extent practicable, be halted until it is determined that the progress of the emergency vehicles will not be impeded.
- 8.45 When an aircraft is landing or taking off, vehicles shall not be permitted to hold closer to the runway-in-use than:
- a) at a taxiway/runway intersection - at a runway holding position; and
  - b) at a location other than a taxiway/runway intersection - at a distance equal to the separation distance of the runway holding position.

## Work on the manoeuvring area

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- 8.46 When repair or installation work, authorised by the Aerodrome Operator, is to take place on the manoeuvring area, a representative of the working party must be briefed by the AFIS Unit or the Aerodrome Operations team about subjects relating to the proposed work, for example:
- Methods of access to working area;
  - The area in which vehicles may operate;
  - The runway-in-use and the effects of any changes;
  - Methods of obtaining permission to cross the runway-in-use; and
  - Signals or methods of indicating that vehicles and personnel must leave the manoeuvring area.
- 8.47 The representative of the working party should possess an authorisation to work on the aerodrome issued by the Aerodrome Operator. This is to be countersigned by the duty AFISO subsequent to the briefing and a copy retained or a record entered in the Watch Log.

## Crossing runways

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- 8.48 If the instructions given to surface traffic involve crossing a runway-in-use, approval to cross shall be withheld until no conflict exists.
- 8.49 When an approval to cross a runway-in-use is issued, a 'report vacated' instruction shall be included. The report shall be made when the entire aircraft is beyond the relevant runway holding position. However, this instruction may be omitted when the AFISO has continuous sight of the aircraft or vehicle crossing.

## Uncertainty of position on the manoeuvring area

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- 8.50 Except as provided for in paragraph [8.51](#), a pilot in doubt as to the position of the aircraft with respect to the manoeuvring area shall immediately:
- a) stop the aircraft; and
  - b) simultaneously notify the AFIS unit of the circumstances (including last known position).
- 8.51 In those situations where a pilot is in doubt as to the position of the aircraft with respect to the manoeuvring area, but recognises that the aircraft is on a runway, the pilot shall immediately:
- a) notify the AFIS unit of the circumstances (including the last known position); and

- b) if able to locate a nearby suitable taxiway, vacate the runway as expeditiously as possible, and then stop the aircraft.

8.52 A vehicle driver in doubt as to the position of the vehicle with respect to the manoeuvring area shall immediately:

- a) notify the AFIS unit of the circumstances (including the last known position); and
- b) simultaneously, unless otherwise instructed by the AFIS unit, vacate the landing area, taxiway, or other part of the manoeuvring area, to a safe distance as expeditiously as possible, and then stop the vehicle.

8.53 In the event an AFISO becomes aware of an aircraft or vehicle that is lost or uncertain of its position on the manoeuvring area, appropriate information shall be provided immediately to other pilots affected and assistance provided to the aircraft or vehicle concerned to determine its position.

## **Runway incursion or obstruction**

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8.54 In the event the AFISO becomes aware of a runway incursion or the imminent occurrence thereof, or the existence of any obstruction on or in close proximity to the runway likely to impair the safety of an aircraft taking off or landing, appropriate action shall be taken to inform the aircraft of the runway incursion or obstruction and its location in relation to the runway.

8.55 Pilots and AFISOs shall report any occurrence involving an obstruction on the runway or a runway incursion in accordance with the MOR scheme.

## Visual signals

8.56 Lights and pyrotechnic signals used to pass information to aircraft in the air and to control aircraft and vehicles on the ground are to comply with those described in SERA.3301 and Appendix 1 to SERA. When communication by a system of visual signals is deemed to be adequate, or in the case of radio communication failure, the signals given hereunder shall have the meaning indicated therein:

Characteristic and colour of light beam or pyrotechnic	From an aerodrome		From an aircraft in flight to an aerodrome
	to an aircraft in flight	to an aircraft or vehicle on the aerodrome	
Continuous red light	Give way to other aircraft and continue circling	Stop	
Red pyrotechnic light or red flare	Do not land, wait for permission		Immediate assistance required
Red flashes	Do not land, aerodrome not available for landing	Move clear of landing area	
Green flashes	Return to aerodrome, wait for permission to land	To and aircraft: You may move on the manoeuvring area and apron. To an vehicle: You may move on the manoeuvring area.	
Continuous green light	You may land	You may take off	
Continuous green light, or green flashes, or green pyrotechnic light			By night: may I land? By day: may I land in a direction different from that indicated by the landing T?
White flashes	Land at this aerodrome after receiving continuous green light and then, after receiving green flashes, proceed to the apron	Return to starting point on the aerodrome	I am compelled to land
White pyrotechnic lights, or switching on and off the navigation lights, or switching on and off the landing light			I am compelled to land

## Aerodrome signals and markings

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8.57 Signals and markings used at aerodromes are contained in Appendix 1 to SERA.

### Selection of runway

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8.58 The term 'runway-in-use' shall be used to indicate the runway or runways that, at a particular time, are considered by the AFIS unit to be the most suitable for use by the types of aircraft expected to land or take off at the aerodrome.

**Note.** Separate or multiple runways may be designated for arriving aircraft and departing aircraft.

8.59 Normally an aircraft will land and take off into wind unless safety, the runway configuration, meteorological conditions and or air traffic conditions determine that a different direction is preferable. In selecting the runway however, the unit providing AFIS shall take into consideration, besides surface wind speed and direction, other relevant factors such the aerodrome traffic circuits, the length of runways and the approach and landing aids available.

8.60 A runway for take-off or landing, appropriate to the operation, may be nominated for noise abatement purposes, the objective being to utilise whenever possible those runways that permit aeroplanes to avoid noise-sensitive areas during the initial departure and final approach phases of flight. Runways should not be selected for noise abatement purposes:

- a) if the runway surface conditions are adversely affected;
- b) when wind shear has been reported or forecast or when thunderstorms are expected to affect the approach or departure; and
- c) when the crosswind component, including gusts, exceeds 15 kts, or the tailwind component, including gusts, exceeds 5 kts (see Appendix A);

8.61 A pilot-in-command can refuse a runway-in-use suggested by an AFISO. In such circumstances, AFISOs shall provide detailed information on other local traffic that is utilising the runway-in-use to assist the pilot in ensuring that safe spacing is maintained when using an alternative runway.



## Runway changes

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- 8.62 Should a change of runway be necessary, AFISOs shall inform the following:
- Aircraft receiving a service;
  - Aerodrome Fire Service;
  - Contractors working on the aerodrome who will be affected by the change; and
  - Other agencies according to local instructions.

## Closure or restricted operation of aerodromes

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### Responsibilities of the aerodrome operator

- 8.63 The Aerodrome Operator is responsible for decisions regarding the operational status of the aerodrome including the apron and manoeuvring area in respect of:
- a) routine operational limitations, e.g. runway maintenance;
  - b) unforeseen hazards to aircraft operations, e.g. deteriorating surface conditions, obstructions etc. Specifically, the Aerodrome Operator will make decisions regarding:
    - i. the closure or re-opening of the aerodrome;
    - ii. the withdrawal or return to use of runways, taxiways and associated lighting aids;
    - iii. the revision of declared distances;
    - iv. any marking required in connection with the above; and
    - v. initiating NOTAM action to promulgate changes in serviceability.

### Responsibilities of the AFIS Unit

- 8.64 The Aerodrome Operator shall be informed immediately it becomes apparent from reports or observations that there is a hazard to the movement of aircraft on the apron or manoeuvring area.
- 8.65 When the obstruction is obviously outside the cleared and graded area but on or in the vicinity of the apron or manoeuvring area, the pilot will be advised of the position and nature of the obstruction. It is the responsibility of the pilot to decide whether or not to continue operations.
- 8.66 When the Aerodrome Operator has decided the operational status of the apron or manoeuvring area, they will inform the AFIS Unit.

## Use of runway holding positions

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8.67 Aircraft shall not hold closer to a runway-in-use than at a runway holding position.

**Note.** Runway holding position locations in relation to runways are specified in CAP 168 Licensing of Aerodromes ([www.caa.co.uk/CAP168](http://www.caa.co.uk/CAP168)).

8.68 Aircraft shall not line up and hold on the approach end of a runway whenever another aircraft is affecting a landing, until the landing aircraft has passed the point of intended holding.

## Order of priority for arriving and departing aircraft

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8.69 An aircraft landing or in the final stages of an approach to land shall normally have priority over an aircraft intending to depart from the same or an intersecting runway.

8.70 When a helicopter lands or departs from a location in the vicinity of a runway-in-use, especially if its track to or from the landing site requires crossing over a runway-in-use, AFISOs shall ensure that sufficient information is passed to all pilots concerned to enable them to arrange their flight safely. Pilots at all times remain responsible for decisions regarding the safety of their flight.

8.71 There may be occasions when an AFISO, having informed a pilot to land at their discretion, decides that a subsequent request to use the runway is of a higher priority, e.g. a request by rescue and fire-fighting services for an emergency crossing of the runway to attend an incident. The AFISO shall first inform the pilot of the details and obtain an acknowledgement that the runway is now occupied before allocating it to any other agency. A pilot shall, after assessing the information provided by the AFISO, decide if the approach can be safely continued pending further information from the AFISO that the runway is available, or if this is not possible, informing the AFISO that they are going around.

## Information related to departing aircraft

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### Start-up time procedures

8.72 At AFIS units where start-up procedures are employed, or when pilots request a start-up clearance, AFISOs shall provide start-up instructions.

8.73 When so requested by the pilot prior to engine start, an expected take-off time should be given.

8.74 Start-up time procedures should be implemented where necessary to avoid congestion and excessive delays on the manoeuvring area or when warranted by air traffic flow management (ATFM) regulations. Start-up time procedures

should be contained in local instructions and should specify the criteria and conditions for determining when and how start-up times shall be calculated and issued to departing flights.

- 8.75 When an aircraft is subject to ATFM regulations, it should be advised to start-up in accordance with its allocated Approved Departure Time.

## Taxi instructions

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- 8.76 Before moving on the apron and manoeuvring area, the commander of the aircraft is required to obtain the permission of the person in charge of the aerodrome or from the AFISO during the notified time of being on watch.
- 8.77 On receiving information that an aircraft is about to taxi, the AFIS unit shall determine where the aircraft concerned is parked.
- 8.78 Prior to taxiing for take-off, aircraft shall be advised of the following elements of information, with the exception of such elements which it is known the aircraft has already received:
- a) relevant information on local traffic and aerodrome conditions shall be provided, as well as taxi instructions to the holding point of the runway-in-use;
  - b) the runway to be used;
  - c) the QNH altimeter setting and, either on a regular basis in accordance with local arrangements or if so requested by the aircraft, the QFE altimeter setting; and
  - d) the air temperature in the case of turbine-engine aircraft.
- 8.79 The importance of issuing clear and concise instructions to taxiing aircraft cannot be over-emphasised. The visibility from an aircraft flight deck is limited and, when taxiing, the pilot is dependent to a large degree upon the AFISO to assist them in determining the correct taxi route to be followed. Essential aerodrome information is to be passed to the pilot to assist them in preventing collisions with parked aircraft and obstructions on or near the manoeuvring area.
- 8.80 In the interests of safety, use of the runway-in-use for taxiing purposes is to be kept to a minimum.
- 8.81 In addition to providing instructions about the route to be followed, all taxi instructions are to contain a specific limit, which should be a location on the manoeuvring area or apron.
- 8.82 Care must be exercised when issuing instructions for an aircraft to taxi to the holding point of the runway-in-use, for the aircraft is then permitted to cross all runways which intersect the taxi route designated in the instructions, whether

active or not. Therefore, when a taxi instruction contains a taxi limit beyond a runway, it is to contain an explicit approval to cross that runway. If such an approval cannot be given the specified route must exclude that runway and any route beyond it. When the AFISO considers it appropriate, the phrase 'hold short' may be used to emphasise that the aircraft is not authorised to cross an intermediate runway, e.g. "taxi to holding point Delta 2, hold short of runway 25".

- 8.83 The phrase 'follow the...' is useful when issuing taxi instructions. However, AFISOs are warned that this phrase could lead to an aircraft inadvertently following another past a holding position or on to the active runway. AFISOs are therefore to use caution when issuing taxi instructions containing the phrase 'follow the...', especially in the area of a runway-in-use or runway holding positions.
- 8.84 AFISOs may use the phrase 'Hold Position' for aircraft taxiing on the manoeuvring area and for departing aircraft up to and including the holding point of the runway-in-use.
- 8.85 AFISOs must be alert to the potential for visual mis-identification of aircraft on the aerodrome.

## Take-off

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- 8.86 AFISOs shall provide relevant information on local traffic and aerodrome conditions to assist pilots to decide when to take off. Such information shall be updated at AFISO discretion or when requested by the pilot.
- 8.87 When an ATC clearance is required prior to take-off, the AFISO shall not issue 'take off at your discretion' until the ATC clearance has been transmitted to and read back correctly by the aircraft concerned. The ATC clearance shall be forwarded to the aircraft with the least possible delay after receipt of a request or prior to such request if practicable.
- 8.88 Prior to take-off aircraft shall be advised of:
- a) the surface wind direction and speed, including significant variations. An AFISO will pass the two-minute average wind where available; however, where this is not available the word 'instant' is to be inserted to indicate that the wind being reported is not the two minute average. Significant variations include:
    - i. a change in mean direction of 60 degrees or more, the mean speed before or after the change being 10 kts or more, but a change of 30 degrees when 20 kts or more;
    - ii. a change in mean speed of 10 kts or more; or

- iii. a change in gust speed of 10 kts or more, the mean speed before or after the change being 15 kts or more;
- b) changes in altimeter setting;
- c) changes in the air temperature for turbine engine aircraft;
- d) significant meteorological conditions in the take-off and climb-out area, except when it is known that the information has already been received by the aircraft; and
- e) current traffic circuits and other traffic when necessary. When a pilot report indicates, or an AFISO considers, that there may be a collision risk, specific traffic information shall be passed to each pilot concerned.

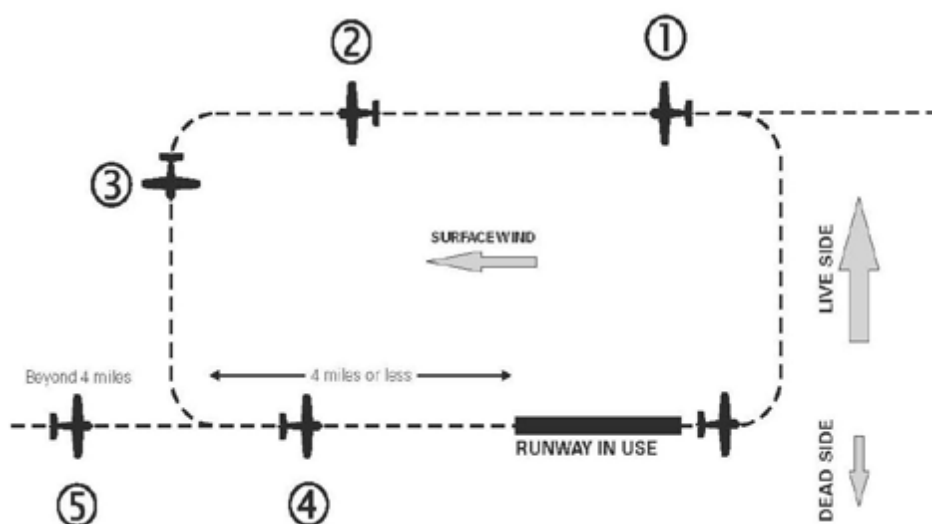
**Note.** Significant meteorological conditions in this context include the occurrence or expected occurrence of cumulonimbus or thunderstorm, moderate or severe turbulence, windshear, hail, moderate or severe icing, severe squall line, volcanic ash, freezing precipitation, severe mountain waves, sandstorm, dust storm, blowing snow, tornado or waterspout in the take-off and climb-out area.

- 8.89 In order to expedite departing traffic, an AFISO may request a departing pilot to report lined up, when a previously landed aircraft or traffic crossing the runway has yet to complete a backtrack and/or vacate the runway. In such situations, the departing pilot shall be informed of the landed, backtracking, or crossing traffic, as well as other relevant circuit traffic, so that they can decide whether they consider it safe to line up. AFISOs should also consider providing information about the aircraft lining up to any other traffic using the runway that may be concerned by its presence.
- 8.90 Pilots shall inform AFIS units of their intentions, e.g. 'holding', 'lining up', 'taking off'. 'Lining up' denotes the act of entering the runway for departure, whereas 'lined up' indicates that an aircraft is in position on the runway, aligned with the take-off direction.
- 8.91 Pilots should not take off if there are other aircraft on the runway.
- 8.92 Where a pilot reports lined up, before a preceding landing aircraft or traffic crossing the runway has vacated, they shall be informed 'runway occupied'. The 'take off at your discretion' information shall be transmitted when the traffic situation permits.
- 8.93 Only one departing aircraft should be holding on the runway awaiting a landed aircraft, or traffic crossing the runway, to vacate.
- 8.94 When an AFISO has informed an approaching pilot 'land at your discretion', they shall instruct pilots who subsequently report ready for departure from the same

runway to hold position at a suitable holding point. 'Take off at your discretion' information will be transmitted when the traffic situation permits.

- 8.95 Except where specified in local instructions, in order to reduce the potential for misunderstanding, the RTF message relating to take-off shall include the designator of the departure runway.
- 8.96 FISOs shall ensure that traffic information is passed if a departing aircraft may catch up a preceding aircraft.
- 8.97 When necessary or desirable, e.g. due to reduced visibility conditions, a departing aircraft may be requested to report airborne.

## Designated positions in the traffic circuit



**Figure 1** Designated Positions in the Traffic Circuit

Position 1: Aircraft reports on 'downwind' leg when abeam upwind end of the runway.

Position 2: Aircraft reports 'late downwind' if it is on the downwind leg, has been unable to report 'Downwind' and has passed the downwind end of the runway.

Position 3: Aircraft reports 'base' leg (if required).

Position 4: Aircraft reports 'final'.

Position 5: Aircraft reports 'long final' (between 8 and 4 miles) when aircraft is on a straight-in approach.

**Note.** For light aircraft operations, circuit dimensions may be reduced, but the relative RTF reporting points are maintained.

## Arriving aircraft

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- 8.98 Except where specified in local instructions, in order to reduce the potential for misunderstanding, the RTF messages relating to touch and go, low approach and landing shall include the designator of the landing runway.
- 8.99 Prior to entering the traffic circuit, commencing an IAP or commencing its approach to land, a pilot shall be provided with the following elements of information, with the exception of such elements which it is known the aircraft has already received:
- a) the runway-in-use;
  - b) the QNH altimeter setting and, either on a regular basis in accordance with local arrangements or if so requested by the aircraft, the QFE altimeter setting;
  - c) current runway surface conditions, in case of precipitants and other temporary hazards;
  - d) changes in the operational status of visual and non-visual aids essential for approach and landing; and
  - e) other relevant information.
- 8.100 In applying the provisions in paragraph [8.99](#), it should be recognised that information published by NOTAM or disseminated by other means may not have been received by the aircraft prior to departure or during en-route flight.
- 8.101 To facilitate the integration of arriving aircraft with existing circuit traffic, in addition to the provision of traffic information, AFISOs may provide advice on the published aerodrome joining procedures and/or a suggested course of action to the traffic situation.
- 8.102 At the commencement of final approach, which includes a report of reaching the Final Approach Fix (FAF) the following information shall be transmitted to aircraft:
- a) The mean surface wind direction and speed, including significant variations as described in paragraph 8.88 (a). An AFISO will pass the two-minute average wind where available; however, where this is not available, the word 'instant' is to be inserted to indicate that the wind being reported is not the two-minute average;
  - b) Changes in altimeter setting; and
  - c) The latest information, if any, on wind shear and/or turbulence in the final approach area.
- 8.103 During final approach, the following information shall be transmitted without delay:

- a) The sudden occurrence of hazards (e.g. unauthorised traffic on the runway);
- b) Significant variations in the current surface wind, expressed in terms of minimum and maximum values;
- c) Significant changes in runway surface conditions; and
- d) Changes in the operational status of visual or non-visual aids;

Pilots shall not land if there are other aircraft on the runway. AFISOs shall provide relevant information on local traffic and aerodrome conditions to assist the pilot in deciding whether to land or go-around. Such information shall be updated at the discretion of the AFISO or when requested by the pilot.

- 8.104 A landing aircraft shall not be informed 'land at your discretion' until the runway is unobstructed.
- 8.105 Except where specified in local instructions, in order to reduce the potential for misunderstanding, the RTF messages relating to touch and go, low approach and landing shall include the designator of the landing runway.
- 8.106 Where a pilot indicates their intention to execute a low approach, they shall not be informed 'low approach at your discretion' until the runway is unobstructed.
- 8.107 When necessary or desirable, e.g. due to reduced visibility conditions, a landing or a taxiing aircraft may be requested to report when a runway has been vacated. The report shall be made when the entire aircraft is beyond the relevant runway holding position.

## ATZ transit traffic

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- 8.108 To facilitate the operation of traffic within and in the vicinity of the ATZ, AFISOs may request transiting aircraft to report at specific, geographically recognisable points and may provide advice on routing through the ATZ.

## Formation procedures

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- 8.109 Formations are to be considered as a single unit for communication purposes. All ATS messages shall be addressed to the formation leader. The formation leader is responsible for the safety of the formation; the formation elements are responsible for their own separation within the formation.
- 8.110 In making initial contact with the ATS unit, formation leaders should clearly state the number of aircraft in the formation; FISOs are to ensure that this information is obtained prior to establishing an ATS.
- 8.111 Individual elements of a formation may be informed that they may land at their discretion, before the preceding element has reached the runway. The formation



elements are responsible for their own separation on final but shall not land whilst the runway is occupied unless they have an exemption against the requirement.

- 8.112 Procedures relating to the operation of aircraft formations at AFISO aerodromes should be determined by local assessment and promulgated in local instructions.

### **Availability of aerodrome services outside published hours**

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- 8.113 To cover the possibility of an aircraft which departs within 15 minutes of normal aerodrome closing time having to return, the aerodrome authority should normally retain sufficient services and equipment for 15 minutes after ATD. If the aerodrome authority informs the FISO of a change in the extent of services or equipment which will be available during this period, the pilot should be informed accordingly.

### **Abnormal aircraft configuration and condition**

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- 8.114 Whenever an abnormal configuration or condition of an aircraft, including conditions such as landing gear not extended or only partly extended, or unusual smoke emissions from any part of the aircraft, is observed by or reported to the AFIS unit, the aircraft concerned shall be advised without delay.
- 8.115 When requested by the flight crew of a departing aircraft suspecting damage to the aircraft, the departure runway used shall be withdrawn from use and inspected without delay. The flight crew shall be advised in the most expeditious manner as to whether any aircraft debris or bird or animal remains have been found or not.

### **Release of racing pigeons**

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- 8.116 In agreement with the Royal Racing Pigeon Association, it has been agreed that a proposed liberation of racing pigeons within 13 km of a licensed aerodrome should be notified to the Aerodrome Operator or air traffic service provider at least fourteen days prior to the date of release. In addition, the FIS unit should be notified by telephone at least 30 minutes before release time, in order to confirm, where practicable, the number of birds due to be liberated and the intended destination and direction of flight. If necessary, the FIS unit may request a delay of up to 30 minutes (or longer in exceptional circumstances) for traffic purposes.

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## Chapter 9

# Aerodrome Lighting Aids

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## Lighting systems in use at UK aerodromes

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- 9.1 The requirements for aeronautical ground lighting (AGL) at 'national aerodromes' are detailed in CAP 168 Licensing of Aerodromes. The AGL requirements for aerodromes certificated in accordance with UK Reg (EU) No 139/2014 ('EASA aerodromes') are set out in Certification Specifications (CS) and Guidance Material (GM) for Aerodromes (ADR) Design (DSN). The particular AGL system in use at an aerodrome is notified in the UK AIP (AD) section.

## Operation of lighting systems and intensity controls

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- 9.2 Operating instructions for individual lighting systems and the intensity setting to be used in different weather conditions, by day and night, shall be detailed in local instructions.
- 9.3 Guidance on typical luminous intensity settings can be found in chapter 6 of CAP 168. These settings may be varied at the AFISO's discretion or at the request of a pilot, provided that other aircraft will not be adversely affected. There is currently no equivalent GM for 'certificated aerodromes' within the UK (EU) regulatory framework.
- 9.4 When the reported visibility consists of two values, the lower of the two values shall be used when determining whether or not to illuminate aerodrome lighting.

## Periods of display

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- 9.5 Aerodrome lighting shall be displayed from 15 minutes before any ETA and until 15 minutes after any ATD as follows:
- By day: High intensity systems, where installed on the runway to be used, whenever the visibility is less than 5 km and/or the cloud base is less than 700 ft;
- By night: Irrespective of weather conditions.
- 9.6 Local instructions for the display of aerodrome lighting before any ETA and after any ATD shall be based on local assessment, which shall take into account, but not be limited to, the technical specifications of the lighting system in use, including the time taken for the lighting to reach the required brilliancy and the availability of the lighting in the event of a departing aircraft making an emergency return to the aerodrome.

- 9.7 Obstruction lighting, hazard beacons and aerodrome light beacons shall be displayed at night during the published hours of watch. Hazard beacons shall also be displayed by day whenever the visibility is less than 3 500 m.

When the actual time of departure of an aircraft is such that lighting will be displayed after aerodrome closing time, the pilot concerned should be warned that the aerodrome will close at the normal published time, which should be stated, and advised that lighting only will be displayed after their departure for the time determined by local assessment and promulgated in local instructions. The availability of other aerodrome services, e.g. the Aerodrome Fire Service, approach aids, etc. during this period should also be clearly stated.

- 9.8 In addition to the display periods shown above, lighting may be displayed at any other time if it is requested by the parent ACC, required by local instructions or considered necessary by the AFISO.

## Chapter 10

# Aerodrome and Lighting Inspections

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## Aerodrome inspections

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- 10.1 The Aerodrome Operator is responsible for all aerodrome inspections. However, arrangements may be made at some aerodromes for these duties to be delegated to the AFIS unit.
- 10.2 Aerodrome surface and lighting inspections are carried out to ensure that:
- AFISOs become aware of any unserviceabilities or obstructions that may affect the use of the aerodrome, and are able to supply pilots with accurate essential aerodrome information;
  - where appropriate such information may be promulgated by other means, e.g. NOTAM; and
  - unserviceabilities or obstructions that are observed may receive attention.
- 10.3 At least two regular surface inspections shall be made daily. An inspection should be made before flying commences and, if night flying is to take place, an inspection should be made before night flying commences.
- 10.4 Additional surface inspections should be made:
- at cessation of work on the manoeuvring area;
  - when a runway not previously inspected is brought into use;
  - following an aircraft accident;
  - following an abandoned take-off by a turbine-engine aircraft due to engine malfunction, or by any aircraft due to burst tyres;
  - during snow and ice conditions as frequently as weather conditions warrant; and
  - when considered necessary by the AFIS unit, the Aerodrome Operator, or as detailed in local instructions.
- 10.5 At aerodromes with more than one runway, the inspection should cover the runway- in-use and those likely to be used prior to the next regular inspection, together with their associated prepared strips, clearways, stopways and appropriate taxiways.
- 10.6 At grass aerodromes, the inspection should cover the movement area and those likely to be used prior to the next regular inspection, together with any permanent

or de-lineated taxiways. Where a grass area exists for landing light aircraft, this area should be included in the inspection.

- 10.7 The person carrying out the inspection is not normally required to proceed outside the aerodrome boundary. The inspection should be carried out from a vehicle driven slowly over the area to be inspected, halting as necessary when individual items require closer inspection. The individual should report their findings in accordance with local orders.
- 10.8 In the following paragraphs reference to temporary obstructions is made. These should be regarded as anything which is considered would impede the normal movement of aircraft or infringe current aerodrome obstruction criteria.
- 10.9 The inspection should be made to ascertain whether or not:
- a) the runways, stopways, clearways, taxiways and holding areas are free from obstructions, collections of loose stones, etc;
  - b) temporary obstructions that exist on, or adjacent to, the runways or taxiways are properly marked or lighted;
  - c) bad ground (particularly on non-runway aerodromes) is adequately marked;
  - d) runway indicator boards, traffic signs, boundary markers, etc., are serviceable and in position; and
  - e) flocks of birds, or large single birds, are on the manoeuvring area or in the vicinity of the aerodrome.
- 10.10 A note should be taken of the exact position of any obstruction or unserviceability observed and entered in the watch log. Any of the above conditions that are encountered should be reported to the aerodrome authority whose responsibility it is to deal with them.
- 10.11 The AFISO should issue a warning when pilots may not be aware of conditions which may lead to a braking efficiency reduction.
- 10.12 A deterioration of wheel braking action may occur as a result of thawing snow, slush or ice, or due to heavy rainfall beyond the capacity of the drainage system, or obstruction of the system.
- 10.13 As far as possible the checks for abnormal conditions should be carried out and in addition a check should be made to ensure that:
- a) badly rutted or frozen ground is adequately marked; and
  - b) runways and taxiways are de-lineated if covered with snow or ice and a note taken of the extent of sweeping or sanding carried out.

## Runway surface condition reporting

- 10.14 The Aerodrome Operator is responsible for assessing aerodrome surface conditions and disseminating such information. However, special arrangements may be made at some aerodromes for the assessment and dissemination of aerodrome surface conditions to be delegated to the ATS unit.
- 10.15 Aeroplane performance can be considered to be impacted whenever the coverage of any water-based contaminants on any runway third exceeds 25 per cent. The ICAO global reporting format (GRF) standardises the assessment and reporting procedures to ensure that runway surface conditions impacted by any remaining contamination are communicated to aeroplane operators in a manner consistent with the effect on aeroplane performance. There are 5 fundamental elements of the methodology for the reporting and assessment of runway surface conditions; these are:
- a) Runway Condition Report (RCR): Used by pilots to inform their aircraft performance calculations and to provide them with situational awareness. The data contained within the RCR originates from the elements below;
  - b) Runway Condition Assessment Matrix (RCAM): The matrix is used by the aerodrome operator's personnel conducting runway surface assessments to determine the appropriate Runway Condition Codes (RWYCC) for each third of the runway, and for pilots to decode the RWYCC into meaningful performance information (see Table 4);
  - c) Runway Condition Code (RWYCC): The RWYCC is determined through the assessment of the following aspects:
    - (i) Percentage of coverage of contamination in each runway third;
    - (ii) Type of contaminant, selected from the lists of Runway Surface Conditions and Runway Surface Condition Descriptors;
    - (iii) Depth of the contamination; and
    - (iv) Surface air temperature.
  - d) Runway Surface Conditions; and,
  - e) Runway Surface Condition Descriptors.

**Note 1.** GRF is applicable to paved runways alone. For surface condition reporting of grass runways, see paragraph 10.22 below.

**Note 2.** In terms of information provided to pilots via RTF, only the runway condition code, runway surface conditions (using the reporting terms in Table 1), and runway surface condition descriptors (used in conjunction with a contaminated runway (see Table 2)) are of interest.

- 10.16 Reporting, in compliance with the runway condition report, shall commence when a significant change in runway surface conditions occurs due to water, snow, slush, ice or frost. Reporting of the runway surface condition should continue to reflect significant changes until the runway is no longer contaminated; i.e. when the RCR indicates that the runway is either 'WET' or 'DRY'.
- 10.17 The report on runway surface conditions provided by the aerodrome operator will specify the lower runway designator number (i.e. runway 09 rather than runway 27) to describe the runway surface; it will not take into account the runway-in-use. However, information on the runway surface condition provided on ATIS or RTF shall be given for each third of the runway in the order of the direction of take-off or landing.
- 10.18 Information on the runway surface condition shall include the aerodrome location, the date and time of assessment and the runway-in-use designator followed as applicable by the elements below. Associated phraseology is contained within CAP 413.
- RWYCC for each runway third;
  - type of contaminant;
  - depth of contaminant;
  - percentage coverage of contaminant;
  - available width and length; and,
  - other related information.
- 10.19 When the presence or otherwise of contaminants on the surface of the runway is brought to the attention of the AFISO, this information, together with any other related information, shall be transmitted to each aircraft concerned (or, where appropriate, broadcast on the ATIS), in plain language either:
- a) individually; or,
  - b) via the use of an all-stations broadcast, obtaining acknowledgement from each of the aircraft concerned.

It is important to consider the sequence in which the information should be transmitted using the reporting terms (Table 1), runway surface condition descriptors (Table 2), other related information (Table 3) and runway condition codes (RWYCC) (Table 4) below:



**Table 1**

Reporting Term	Runway Surface Conditions
<u>DRY</u>	<u>The runway surface is considered dry if it is free of visible moisture and not contaminated within the area intended to be used.</u>
WET	<u>The runway surface is covered by any visible dampness or water up to and including 3 mm depth within the intended area of use.</u> <b>Note.</b> <u>If the surface shows a change of colour due to moisture, the runway will be reported as wet.</u>
<u>SLIPPERY WET</u>	<u>A wet runway where the surface friction characteristics of a significant portion of the runway have been determined to be degraded.</u>
<u>CONTAMINATED</u>	<u>A runway is contaminated when a significant portion of the runway surface area (whether in isolated areas or not) within the length and width being used is covered by one or more of the substances listed in the runway surface condition descriptors.</u> <u>The term 'CONTAMINATED' is not to be used in RTF phraseology, the runway surface condition descriptors in table 2 are to be used.</u>

**Table 2**

<u>Runway Surface Condition Descriptors</u>	
<u>COMPACTED SNOW</u>	<u>Snow that has been compacted into a solid mass such that aircraft tyres, at operating pressure and loadings, will run on the surface without significant further compaction or rutting of the surface.</u>
<u>DRY SNOW</u>	<u>Snow from which a snowball cannot readily be made.</u>
<u>FROST</u>	<u>Frost consists of ice crystals formed from airborne moisture on a surface whose temperature is below freezing. Frost differs from ice in that the frost crystals grow independently and therefore have a more granular texture.</u> <b>Note 1.</b> <u>Below freezing refers to air temperatures equal to or colder than the freezing point of water (0°C).</u> <b>Note 2.</b> <u>Under certain conditions frost can cause the surface to become very slippery and it is then reported appropriately as reduced braking action.</u>
<u>ICE</u>	<u>Water that has frozen or compacted snow that has transitioned into ice, in cold and dry conditions.</u>
<u>SLUSH</u>	<u>Snow that is so water-saturated that water will drain from it when a handful is picked up or will splatter if stepped on forcefully.</u>
<u>STANDING WATER</u>	<u>Water of depth greater than 3 mm.</u>
<u>WET ICE</u>	<u>Ice with water on top of it or ice that is melting.</u>

	<u><b>Note.</b> Freezing precipitation can lead to runway conditions associated with wet ice from an aeroplane performance point of view. Wet ice can cause the surface to become very slippery. It is then reported appropriately as reduced braking action in line with procedures in the CAP 168 / PANS-Aerodromes (ICAO Doc 9981).</u>
<u>WET SNOW</u>	<u>Snow that contains enough water content to be able to make a well-compacted, solid snowball, but water will not be squeezed out.</u>

**Note 1.** In providing information on runway surface conditions, many of the terms described in Table 2 may be used in combination as follows: DRY SNOW ON TOP OF COMPACTED SNOW, DRY SNOW ON TOP OF ICE, WATER ON TOP OF COMPACTED SNOW, WET SNOW ON TOP OF COMPACTED SNOW and WET SNOW ON TOP OF ICE.

**Note 2.** Descriptions of surface contamination will include, where applicable, the depth of deposit.

**Table 3**

<u>Other related information</u>
<p><u>For example, provide details of any:</u></p> <ul style="list-style-type: none"> <li>• <u>runway de-icing activity that has taken place, such as chemical treatment or sanding;</u></li> <li>• <u>provide details of any snowbanks on the runway giving the distance left/right from the runway centreline;</u></li> <li>• <u>frozen ruts and ridges.</u></li> </ul>

10.20 When reported, the presence or otherwise of contaminants on the surface of a runway will be assessed over the most significant portion of the runway, i.e. the area most likely to be used by aircraft taking off and landing. The assessed area may be different on runways with a displaced threshold or other unusual configuration, e.g. starter extension. The Aerodrome Operator is responsible for determining the exact dimensions and location of the area that is assessed.

## **Pilot reports**

10.21 Pilot reports of braking action are to be passed to the Aerodrome Operator as soon as practicable. Such reports enable the Aerodrome Operator to consider reassessing the RWYCC in accordance with the RCAM below:

**Table 4**

<b><u>Runway Condition Assessment Matrix (RCAM)</u></b>			
<b><u>Assessment criteria</u></b>		<b><u>Downgrade assessment criteria</u></b>	
<b><u>Runway Condition code</u></b>	<b><u>Runway surface description</u></b>	<b><u>Aeroplane deceleration or direction control observation</u></b>	<b><u>Pilot report of runway braking action</u></b>
6	<ul style="list-style-type: none"> <li><u>DRY</u></li> </ul>	---	---
5	<ul style="list-style-type: none"> <li><u>FROST</u></li> <li><u>WET (The runway surface is covered by any visible dampness or water up to and including 3 mm depth)</u></li> </ul> <p><b><u>Up to and including 3 mm depth:</u></b></p> <ul style="list-style-type: none"> <li><u>SLUSH</u></li> <li><u>DRY SNOW</u></li> <li><u>WET SNOW</u></li> </ul>	<p><u>Braking deceleration is normal for the wheel braking effort applied and direction control is normal</u></p>	<u>GOOD</u>
4	<p><b><u>-15°C and colder outside air temperature:</u></b></p> <ul style="list-style-type: none"> <li><u>COMPACTED SNOW</u></li> </ul>	<p><u>Braking deceleration OR</u> <u>directional control is between Good and Medium</u></p>	<u>GOOD to MEDIUM</u>
3	<ul style="list-style-type: none"> <li><u>WET ("slippery wet" runway)</u></li> <li><u>DRY SNOW or WET SNOW (any depth) ON TOP OF COMPACTED SNOW</u></li> </ul> <p><b><u>More than 3 mm depth:</u></b></p> <ul style="list-style-type: none"> <li><u>DRY SNOW</u></li> <li><u>WET SNOW</u></li> </ul> <p><b><u>Warmer than -15°C outside air temperature(see note 1):</u></b></p> <ul style="list-style-type: none"> <li><u>COMPACTED SNOW</u></li> </ul>	<p><u>Braking deceleration is noticeably reduced for the wheel braking effort applied</u></p> <p><u>OR</u></p> <p><u>directional control is noticeably reduced.</u></p>	<u>MEDIUM</u>
2	<p><b><u>More than 3 mm depth of water or slush:</u></b></p> <ul style="list-style-type: none"> <li><u>STANDING WATER</u></li> </ul>	<p><u>Braking deceleration</u></p> <p><u>OR</u></p>	<u>MEDIUM to POOR</u>

<b>Runway Condition Assessment Matrix (RCAM)</b>			
<b>Assessment criteria</b>		<b>Downgrade assessment criteria</b>	
<b>Runway Condition code</b>	<b>Runway surface description</b>	<b>Aeroplane deceleration or direction control observation</b>	<b>Pilot report of runway braking action</b>
	<ul style="list-style-type: none"> <li><u>SLUSH</u></li> </ul>	<u>Directional control is between medium and poor.</u>	
1	<u>ICE (see note 2)</u>	<u>Braking deceleration is significantly reduced for the wheel braking effort applied</u> <u>OR</u> <u>Directional control is significantly reduced.</u>	<u>POOR</u>
0	<ul style="list-style-type: none"> <li><u>WET ICE (see note 2)</u></li> <li><u>WATER ON TOP OF COMPACTED SNOW (see note 2)</u></li> <li><u>DRY SNOW or WET SNOW ON TOP OF ICE (see note 2)</u></li> </ul>	<u>Braking deceleration is minimal to non-existent for the wheel braking effort applied</u> <u>OR</u> <u>directional control is uncertain.</u>	<u>LESS THAN POOR</u>

**Note 1.** Runway surface temperature should preferably be used where available.

**Note 2.** The aerodrome operator may assign a higher RWYCC (but no higher than RWYCC 3) for each third of the runway, provided the specified procedure is followed.

### **Grass surfaces**

10.22 In reporting the surface condition of a grass runway, the report relates to the whole of the surface, and not to individual thirds. When the surface condition of a grass runway or grass taxiway is assessed as being WET or CONTAMINATED, then its condition, together with any other related information, is to be reported on the RTF to each aircraft concerned and, where appropriate, on the ATIS, in plain language, using the descriptions contained in Tables 1, 2 and 3 above. A RWYCC is not to be passed.

### **Unofficial observations**

10.23 Pilots of aircraft may report, or observations from the visual room may indicate, that the amount of water present or runway surface condition is different from that being reported. Under no circumstances is an AFISO to pass pilot's

information which suggests that the runway surface condition is better than the official report. However, when a pilot's report or an observation from the visual room indicates a worse runway surface condition, this information is to be passed. Pilot reports are to be passed to the Aerodrome Operator as soon as practicable.

- 10.24 Unofficial observations from the visual room or pilot reports will be prefixed by the words "UNOFFICIAL OBSERVATION". In this case, the runway surface conditions will be advised using a single term for the entire runway in the following form:

"UNOFFICIAL OBSERVATION FROM THE TOWER (*or* FROM A PILOT'S REPORT). THE RUNWAY SURFACE CONDITION APPEARS TO BE WET [*or* DAMP, *or* STANDING WATER], FOR EACH THIRD OF THE RUNWAY."

### Measurement of runway surface contamination

- 10.25 It is CAA policy that Continuous Friction Measuring Equipment (CFME) should not be used on runways contaminated with wet snow, slush or water, and FISOs must not pass runway co-efficient of friction measurements to pilots in such conditions. The reason for this is that readings obtained from CFME equipment such as 'Griptester' and 'Mu-meter', unless used only on compacted snow and ice, are considered unreliable and in some cases may indicate a surface condition that is better than the actual condition. UK runways contaminated with compacted snow and ice are not normally made available for use, with Aerodrome Operators applying a 'back to blacktop' policy.
- 10.26 Further details of the UK Snow Plan and procedures for dealing with winter contamination of aerodrome surfaces can be found in UK Reg (EU) No 139/2014 ADR.OPS.B.035 Operations in winter conditions, CAP 168 Appendix [3D](#), and UK AIP (AD) section.

### Aerodrome lighting inspections

- 10.27 The aerodrome lighting should be inspected before night flying commences. The inspection, which includes only those lights which can easily be seen from the aerodrome, should cover the following:
- The serviceability of runway, taxiway and obstruction lighting, traffic lights, beacons and, in some cases, portions of the approach lighting;
  - A check that lighting is not obscured by long grass or other obstructions; and

- c) Visual approach path indicators are accurately set up and serviceable.

## **Reporting unserviceabilities**

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- 10.28 Unserviceabilities or obstructions observed during aerodrome surface and lighting inspections should be recorded and action taken in accordance with local instructions.

## **Post-accident checks**

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- 10.29 Immediately after an accident in the landing phase where the lighting installation is in use, it shall be ground checked and the result of such a check recorded. Action should then be taken in accordance with local instructions. If the circumstances of the accident are such that a post-accident flight check is to be made, no adjustment or re-lamping should be carried out in the event of any unserviceability until the flight check has been completed.

## Chapter 11

# Aerodrome Rescue and Fire Fighting Service

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## Introduction

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- 11.1 AFIS Units should co-operate with the Aerodrome Fire Service and Aerodrome Operator in the pre-planning of preferential routes through the manoeuvring area. AFISOs are to ensure that they are familiar with these routes.

## Aerodrome categories

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- 11.2 The Rescue and Fire Fighting Service (RFFS) category of a licensed/certificated aerodrome is assessed according to the length of the longest aircraft normally using the aerodrome and its width. The RFFS aerodrome categories at licensed aerodromes are tabulated in Section 6 Chapter 19 of this CAP. The categories at 'EASA aerodromes' are detailed in AMC2 ADR.OPS.B.010(a)(2) to UK Reg (EU) No 139/2014.

## Reduced rescue and fire category

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- 11.3 Changes to the availability of the RFFS at an aerodrome will be notified by the Aerodrome Operator to the appropriate AFIS unit to enable the necessary information to be provided to arriving and departing aircraft. AFIS Unit responsibilities are limited to the dissemination of information to flight crew, as provided by the Aerodrome Operator.
- 11.4 AFIS units shall ensure that unplanned reductions in the RFFS category are notified to flight crew via RTF. On receipt of such information, flight crew will decide whether to continue their flight or to divert. FISOs should normally expect the aircraft to divert if the available RFFS category does not meet that required for the aircraft type as described in CAP 168 or AMC2 ADR.OPS.B.010(a)(2) to UK Reg (EU) No 139/2014.
- 11.5 Exceptions to the above could be expected for emergency landings, and for occasions when, in the pilot's opinion, a diversion or hold may introduce a more significant hazard. AFISOs shall continue to provide a normal service in response to flight crew intentions.

## Practice exercises and drills

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- 11.6 The necessity for rapid and co-ordinated action in the event of an aircraft accident requires the closest co-operation between the AFIS Unit and the RFFS, and the frequent rehearsal of procedures. Details of procedures will be found in Aerodrome Emergency Orders.

- 11.7 AFIS Units, in consultation with the RFFS, are to assist in providing practice emergencies which are to be held frequently and made as realistic as possible.

### **Exercises on the manoeuvring area**

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- 11.8 The RFFS will obtain approval from the AFISO before testing vehicles or carrying out exercises on the manoeuvring area.
- 11.9 Arrangements shall be made in co-operation with the RFFS senior officer for AFIS Units to provide instruction to RFFS personnel concerning light and visual signals used on an aerodrome.

### **Other duties of the RFFS**

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- 11.10 At certain aerodromes the RFFS may undertake other extraneous duties. These duties will not interfere with the prime function of the RFFS.
- 11.11 The RFFS is frequently called upon for 'Special Services'. These include attendance at accidents to personnel, pumping out flooded premises, clearance of fuel spillage etc. If any of these is considered to be an emergency and occurs within the radius of action of the RFFS, attendance will be made immediately. AFIS Units will be informed and advised of any effects on the RFFS aerodrome category.



## Chapter 12

# Instrument Approach Procedures

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## Introduction

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- 12.1 In providing ATS to aircraft conducting instrument approach procedures (IAP), AFISOs are to avoid the use of words or phrases that could, inadvertently, lead a pilot to believe that they were in receipt of an approach control service. AFISOs shall advise pilots of aircraft conducting IAPs that they are in receipt of a Basic Service.
- 12.2 Specific instructions on the conduct of IAPs shall be detailed in unit procedures and should, as a minimum, address:
- Any approval mechanism, where necessary for commercial air transport operators to be authorised to conduct IAPs.
  - Arrangements to mitigate the effect of slippages/delays in aircraft conducting IAPs.
  - Arrangements to mitigate the risk of airborne conflict between aircraft conducting the IAP and other aerodrome traffic.
  - Fallback procedures following equipment failure, for example, the loss of global navigation satellite system (GNSS) Signal in Space integrity.
- 12.3 Pilots shall be requested to report at each stage of the IAP i.e. initial approach fix, final approach fix.

## Required Navigation Performance IAP

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- 12.4 The advent of performance-based navigation (PBN) is having a major impact on all aspects of the aviation industry. IAP that stipulate a required navigation performance (RNP) are seen as a means of establishing an IAP where a notified instrument runway and/or approach control is not available.<sup>7</sup> RNP is a family of navigation specifications under PBN which permit the operation of aircraft along a precise flight path with a high level of accuracy and the ability to determine aircraft position with both accuracy and integrity.
- 12.5 Phraseology associated with RNP IAPs is detailed in CAP 413.

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<sup>7</sup> Approaches using lateral guidance only (i.e. two-dimensional) are notified as LNAV to an MDA(H). Lateral and vertical guidance (i.e. three-dimensional) LNAV/VNAV and IAPs designed with localiser performance (LPV) terminate at a DA(H).

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## Section 3 Flight Information Service at Area Control Centres

### Chapter 13

## Flight Information Service at Area Control Centres

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- 13.1 FISOs at ACCs provide a Basic Service in accordance with CAP 774 UK Flight Information Services to aircraft from dedicated positions and on discrete frequencies. This service is provided by London/Scottish Information within airspace and during periods that are notified in the UK AIP, for the purpose of supplying advice and information useful for the safe and efficient conduct of flight.
- 13.2 Further details about provision of a Basic Service can be found in CAP 774 UK Flight Information Services manual ([www.caa.co.uk/CAP774](http://www.caa.co.uk/CAP774)).
- 13.3 Detailed procedures for FISOs at ACCs shall be contained in the unit MATS Part 2.
- 13.4 Some of the guidance in this chapter also applies to other FISOs but, for simplicity, the text will refer only to those performing the London/Scottish Information role.
- 13.5 The service includes information regarding weather (including SIGMETS), changes of serviceability of facilities, conditions at aerodromes and any other information pertinent to safety.
- 13.6 FISOs provide a link between aircraft and other ATSU's and may also provide the following services:
- a) Pass ETAs to destination aerodromes in special circumstances, such as diversions, or at particular locations where traffic conditions demand it; and
  - b) Accept airborne flight plans and pass the information to the appropriate authority.
- 13.7 FISOs at ACCs, in common with all air traffic services, provide an Alerting Service.

### Limiting factors

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- 13.8 Area FISOs shall issue information and may issue advice, subject to the following limitations:
- Civil and military aircraft may fly on random tracks with consequent multiplicity of reporting points;
  - Communication with the appropriate ACC is not mandatory;

- Absence of accurate navigation and associated position fixing may cause unreliable position reporting and estimates;
- The size of the sectors makes it difficult for FISOs to be aware of the many geographic locations used and their proximity to each other;
- Even when flight plan information is known to the FISO they frequently have no indication as to whether such aircraft are adhering to planned routes, altitudes and timings; and
- RTF coverage may not be available in all parts of the unit's airspace.

### 13.9 FISOs cannot:

- a) exercise positive control over aircraft;
- b) issue clearances to alter course, climb or descend unless relaying a clearance and/ or instruction on behalf of an air traffic control unit and a correct readback is received; and
- c) give positive advice on the avoidance of collision.

## Co-ordination and liaison

### 13.10 Flights crossing FIR boundaries are to be co-ordinated as shown in the table below:

Aircraft position	Co-ordinated action
Flights within the UK: a) Aircraft has passed an estimate for the boundary.	Details passed to the appropriate ATSU in the adjacent FIR (if workload and communications permit).
b) Aircraft reports at the boundary or details had not been passed.	Advise aircraft to contact the appropriate ATSU in the adjacent FIR.
Flights leaving the UK:	Details passed to appropriate ATSU, unless otherwise instructed in MATS Part 2.

The passing of information between FISOs conducting the London/Scottish Information task does not imply any SAR obligation. However, if at any stage of a flight the pilot has made their intentions clear and subsequently does not arrive or report when expected, the FISO should continue to attempt to re-establish communication while at the same time commencing overdue action.

## Aircraft joining or crossing Controlled Airspace

- 13.11 When a pilot requests permission from a FISO at an ACC to join or cross Controlled Airspace, either in their own or an adjacent FIR, the FISO shall either:
- obtain the clearance from the appropriate ATSU and pass it to the pilot; or
  - inform the pilot that they should change frequency in time to make the request direct to the appropriate ATSU.
- 13.12 A FISO cannot provide an ATS to an aircraft inside CAS; the aircraft should be transferred to the appropriate ATSU's frequency before the aircraft enters CAS.

## Flight information display

- 13.13 Flight Information Displays (FIDs) are used at the London, and Scottish Area Control Centres to assist in the reduction and prevention of airspace infringements by aircraft, and as an additional resource tool for carrying out the FISO task at these units. The use of FIDs is subject to CAA approval and local derived procedures.

## Conspicuity codes

- 13.14 In addition to those listed below, the UK SSR Operating Procedures contained in UK AIP ENR 1.6 provides a complete set of Mode A codes, including those used at specific units or locations.

Code	Use	Notes
0024	Radar flight evaluation or calibration	Only be used for the duration of the radar evaluation or calibration. The code shall not be used whilst transiting to/ from the trial.
0033	Para dropping	Unless a discrete code has already been assigned, pilots will select conspicuity code 0033 five minutes before the drop commences until the parachutists are estimated to be on the ground.
1177	London AC (Swanwick) FIS	Aircraft in receipt of a Basic Service from London Information. Shall only be selected with ATS direction.
2000	IFR conspicuity code	When operating within United Kingdom airspace in accordance with IFR and have not received a specific instruction from ATS concerning the setting of the transponder.
7000	VFR conspicuity code	When operating within United Kingdom airspace in accordance with VFR and have not received a specific

Code	Use	Notes
		instruction from ATS concerning the setting of the transponder.
7001	Military fixed wing low level conspicuity and climb-out	Used by military fixed-wing aircraft operating in the UK Low Flying System. When an ATS is required on climb-out from the Low Flying System, the aircraft will retain the code until an ATC unit passes alternative instructions.
7002	Danger areas general	May be selected at pilot's discretion.
7003	Red Arrows display/transit	May be selected at pilot's discretion.
7004	Aerobatics and display	Unless a discrete code has already been assigned, pilots of transponder equipped aircraft will select conspicuity code 7004, together with Mode C pressure-altitude reporting mode of the transponder, five minutes before commencement of their aerobatic manoeuvres until they cease and resume normal operations.
7005	High energy manoeuvres	Unless a discrete code has already been assigned, outside controlled airspace below FL195 and outwith the UK low-flying system, pilots of military fast-jet aircraft will select Mode A code 7005 prior to engaging in sustained high-energy manoeuvres.
7006	Autonomous operations within TRA and TRA (G)	For use by military aircraft conducting autonomous operations within a TRA or TRA(G). May be selected at pilot's discretion.
7010	Operating in an aerodrome traffic pattern	For use by aircraft operating in an aerodrome traffic pattern, when instructed to do so by an ATS Unit or local operating instructions. Shall only be selected with ATC direction or in accordance with local aerodrome procedures.
7401	Scottish FIS	Aircraft in receipt of a Basic Service from Scottish Information. Shall only be selected with ATS direction.

## Frequency monitoring codes

- 13.15 In order to both prevent and mitigate the consequences of airspace infringements, pilots operating close to the peripheries of certain controlled airspace and monitoring the relevant frequency (but not requiring an air traffic service) should select a local SSR conspicuity code and the Mode C pressure

altitude mode (if available) as specified to indicate they are monitoring the promulgated ATC frequency.

- 13.16 This will allow the appropriate air traffic control unit to attempt to establish contact with an aircraft which is displaying such a code and which is considered to be infringing, or is likely to infringe, controlled airspace in order to resolve an actual or potential infringement quickly and efficiently. Selection of such codes does not imply the provision of any form of air traffic service and the use of such codes does not prevent a pilot from requesting an air traffic service at any time should they subsequently decide they require one.

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## Section 4 Aeronautical Telecommunication Services

### Chapter 14

# Aeronautical Telecommunication Services

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## The Aeronautical Mobile Service

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- 14.1 The aeronautical mobile service exists between aeronautical stations and aircraft stations, or between aircraft stations (UK Reg (EU) No 923/2012 Article 2(14)) and provides the radiotelephony facilities necessary for the provision of air traffic services.

### FIS requirements for air to ground communication

- 14.2 Air to ground communication facilities shall enable, to the practicable extent, direct, rapid, continuous and static-free two-way communications to take place between an Area FIS unit and appropriately equipped aircraft flying anywhere within the FIR. These facilities include coverage over the greater part of the UK FIR above 3 000 ft, although some limited cover may be possible below this altitude (AIP GEN 3.4-4).
- 14.3 Air to ground communication facilities shall enable, to the practicable extent, direct, rapid, continuous and static-free two-way communications to take place between an AFIS unit and appropriately equipped aircraft and should be available for use within 10 nm and 3 000 ft of the aerodrome concerned (AIP GEN 3.4-5).

## Communication Procedures

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- 14.4 Radiotelephony (RTF) provides the means by which pilots and ground personnel communicate with each other. Used properly, the information and instructions transmitted are of vital importance in assisting in the safe and expeditious operation of aircraft. However, the use of non-standard procedures and phraseology can cause misunderstanding.
- 14.5 Incidents and accidents have occurred in which a contributing factor has been the misunderstanding caused by the use of non-standard phraseology. The importance of using correct and precise standard phraseology cannot be over-emphasised.
- 14.6 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 (SERA.14001).
- 14.7 The Radiotelephony Manual (CAP 413) ([www.caa.co.uk/CAP413](http://www.caa.co.uk/CAP413)) is the authoritative reference for all users of RTF and provides a compendium of clear, concise, standardised phraseology and associated guidance for RTF

communication in UK airspace. It includes examples of communication between pilots, ATS personnel and other ground personnel. Notwithstanding the caveat in paragraph 14.6, all users of RTF in the UK are expected to comply with the phraseology contained within CAP 413.

## Distracting Conversations

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- 14.8 Non-operational and other conversations have the potential to distract ATS personnel from their primary task of providing a safe service. Examples include telephone conversations with external agencies and discussions between other ATS personnel conducted on the telephone, intercom or, in some cases, face to face, following an unplanned traffic situation.
- 14.9 Non-operational conversations must not be permitted to interfere with the operational duties of ATS personnel. Procedures at units should ensure that non-urgent telephone calls from external agencies can be accommodated without prejudicing the FISO's primary task.
- 14.10 Discussions regarding unplanned traffic situations, which may include incidents and alleged breaches of procedure, are not to be conducted from operational positions. If appropriate, only brief details of the occurrence should be exchanged between the personnel involved. If there is a need to discuss the matter further, this should be deferred to a time when all the personnel affected are relieved from their operational duties.

## Landline Telephone

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- 14.11 It is correct procedure for ATS personnel to announce their identity on all telephone and intercom calls; with incoming calls it is the opening remark and with outgoing calls the reply to the recipient's announcement of identity.
- 14.12 The identity to be used is that of the function relative to the telephone extension being used.

## Readback of clearances, instructions and safety related information

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- 14.13 FISOs must ensure that they obtain a readback in full from the pilot/driver of the ATS messages listed below (SERA.8015)(e)(1) refers). Similarly, FISOs shall readback the ATS messages listed below when contained in telephone and intercom coordination messages.

Taxi/towing instructions

\*Level instructions

\*Heading instructions

\*Speed instructions

\*Airways or route clearances

Runway-in-use

Instructions to cross, or hold short of any active runway

SSR operating instructions

Altimeter settings (including units when value is below 1000 hPa)

Communication channel/frequency changes

Type of air traffic service

Transition levels

**Note 1.** \* denotes messages issued on behalf of an ATC unit.

**Note 2.** If the level of an aircraft is reported in relation to standard pressure 1013.2 hPa, the words 'FLIGHT LEVEL' precede the level figures. If the level of the aircraft is reported in relation to QNH/QFE, the figures are followed by the word 'FEET'.

- 14.14 The FISO shall listen to the readback 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 readback (SERA.8015(e)(3)).

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## Section 5 Alerting Service

### Chapter 15

# Alerting Service

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## Introduction

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15.1 An alerting service is provided to notify appropriate organisations regarding aircraft in need of SAR aid and assist such organisations as required.

15.2 Alerting service shall be provided by the air traffic services units:

a) for all aircraft provided with an air traffic control service;

**Note.** For the purposes of SERA.10001(a)(1), the United Kingdom provides an alerting service to all aircraft receiving an ATS.

b) in so far as practicable, to all other aircraft having filed a flight plan or otherwise known to the air traffic service unit; and

c) to any aircraft known or believed to be the subject of unlawful interference (SERA.10001).

## Operations Normal

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15.3 Pilot transmissions containing the RTF phraseology “operations normal” may be associated with aerial activities where the flight receiving an ATS, is required to operate within the area of responsibility of a single ATSU for prolonged periods. Such transmissions may occur following a period of RT inactivity of 30 minutes between the ATSU and the pilot receiving the ATS. The pilot’s declaration of “operations normal” is used to inform the ATSU that their flight is progressing according to plan. (SERA.10001(b) & (c))

15.4 Within Europe the use of the operations normal procedure is applicable to all sectors of flights over mountainous or sparsely populated areas, including seas areas (ICAO Doc 7030). However, the use of this procedure in other scenarios is permitted in accordance with local instructions.

15.5 FISOs who do not receive an “operations normal” report when expected should attempt to contact the pilot using the following phrase:

“(Callsign) CONFIRM OPERATIONS NORMAL?”

15.6 Following the pilot’s failure to respond to three successive attempts to confirm operations normal, FISOs should initiate overdue action.

- 15.7 If a 'Rescue' call sign fails to respond to three successive attempts to confirm operations normal, FISOs are to contact the JRCC and request that they attempt to establish communication with the 'Rescue' call sign and confirm 'operations normal'. The JRCC should be in constant communication with 'Rescue' call signs using HF or satellite communication equipment and FISOs shall initiate overdue action when the JRCC is unable to obtain an 'operations normal' report from the aircraft.

## Overdue Action

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- 15.8 Overdue action is not related solely to the filing of a flight plan. If at any stage of a flight the pilot has made their intentions clear and subsequently does not arrive or report when expected, the FISO should continue to attempt to re-establish communication while at the same time commencing overdue action.
- 15.9 The responsibility for initiating overdue action normally rests with the ATSU that was last in communication with the aircraft in need of search and rescue aid or that receives the news from an outside source.
- 15.10 Overdue action should not be considered in isolation and the emergency actions described in other chapters should be applied if they are appropriate.
- 15.11 ACCs shall serve as the central point for collecting all information relevant to a state of emergency of an aircraft operating within the FIR and for forwarding such information to the appropriate rescue co-ordination centre.
- 15.12 Overdue action described in this chapter must be commenced not later than the times shown in the table at paragraph 15.15. The decision to take overdue action before these times is left to the discretion of the FISO but where there is any doubt the ACC Watch Supervisor should be consulted.

## Action by FIS units

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- 15.13 FIS units, when aware that an aircraft is in need of SAR aid, shall immediately:
- a) set in motion the local rescue services and emergency organisations, as described in Section 6, Chapter 16; and/or
  - b) notify by telephone the Watch Supervisor at the parent ACC. The contents of the telephone message are shown in paragraph 15.22.
- 15.14 Whenever the urgency of the situation so requires, the responsible FIS unit shall first alert and take other necessary steps to set in motion all appropriate local rescue and emergency organisations which can give the immediate assistance required.

## Phases of emergency

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- 15.15 The table below shows the phases into which emergencies fall. The decision to declare a phase earlier than described must be left to the discretion of the FISO.

Type of aircraft emergency							
Radio failure	Overdue	Operating efficiency impaired	Forced landing (aircraft accident)	Exceptions	Phase	Duration	Action taken
<p>No communication within a period of 30 minutes after the time it should have been received.</p> <p><b>OR</b></p> <p>From the time an unsuccessful attempt to establish communication was first made.</p>	<p>Fails to arrive within 30 minutes of the ETA last notified to, or estimated by FIS whichever is the later.</p> <p><b>OR</b></p> <p>Has commenced an approach and fails to land within 5 minutes of the estimated landing time.</p>	-	-	No doubt exists as to the safety of the aircraft and its occupants.	UNCERTAINTY (INCERFA)	Maximum of 30 minutes.	<p><u>JRCC</u> and ACC collect and evaluate reports.</p> <p>Other <u>JRCC</u> or <u>MRCC</u> may be informed of the situation.</p>
<p>Attempts to establish communication during the UNCERTAINTY phase have failed.</p>	<p>Enquiries to relevant sources during the UNCERTAINTY phase have failed to reveal any news.</p> <p><b>OR</b></p> <p>Fails to land within 5 minutes of the estimated time of landing and communication cannot be re-established.</p>	But not to the extent that a forced landing is likely.		Evidence exists that would allay apprehension as to the safety of the aircraft.	ALERT* (ALERTFA)	Maximum of one hour.	<p><u>JRCC</u> alerts the SAR services for immediate action.</p>
<p>Further attempts to establish communication during the ALERT phase have failed.</p>	<p>More widespread enquiries during the ALERT phase have failed to reveal any news.</p> <p><b>OR</b></p> <p>The fuel on board is considered to be exhausted or insufficient to enable the aircraft to reach safety.</p>	To the extent that a forced landing is likely.	Known to have force landed or crashed.	Where there is a reasonable certainty that the aircraft and its occupants are not threatened by grave imminent danger and do not require immediate assistance.	DISTRESS (DETRESFA)	<p>Until the aircraft is found and the survivors rescued.</p> <p><b>OR</b></p> <p>It is clear that there is no longer any chance of so doing.</p>	<p><u>JRCC</u> puts the SAR plan into operation and directs it for the duration of this phase.</p>

\* An ALERT phase will be initiated when an aircraft is known or believed to be the subject of unlawful interference.



## Joint Rescue Co-ordination Centre

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- 15.16 The Joint Rescue Coordination Centre (JRCC) is responsible for promoting efficient organisation of search and rescue service and for coordinating the conduct of search and rescue operations within a search and rescue region. The JRCC is located in Fareham, Hampshire.
- 15.17 The ACC shall notify aircraft emergencies which require search and rescue aid to the JRCC. Other ACCs, which may be involved, shall also be informed. Details of the telephone message appear in paragraph 15.22.
- 15.18 The JRCC controller is responsible for initiating search and rescue action. To assist them in this task, the Watch Supervisor at the ACC may include a recommendation for search and rescue action in the telephone message.
- 15.19 Messages shall not be delayed because of lack of information. If a message is incomplete a further message is to be sent when the information is available.
- 15.20 Further messages are to be sent:
- a) if any useful additional or significant information is received, e.g. information relating to any dangerous goods carried by the aircraft; and
  - b) when the emergency situation no longer exists.
- 15.21 The SAR organisation is described in UK AIP GEN 3.6.

## Telephone message

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- 15.22 The alerting message by telephone shall comprise the following information:

The phase of emergency – uncertainty, alert or distress		
Aircraft identification	Item 7}	from the transmitted flight plan
SSR mode and code allocated		
Flight rules	Item 8}	
Type of aircraft	Item 9}	
Equipment	Item 10}	
Aerodrome and time of departure	Item 13}	from the transmitted flight plan
Speed, level and route	Item 15}	
Destination/ETA/Alternative	Item 17}	
FIR boundary estimate	Item 18}	
Other information	Item 18}	
Supplementary Information	Item 19}	from the filed flight plan retained at the departure aerodrome
Pilot's name		
Operator (if not included above)		
Unit which made the last contact, time and RTF frequency Last reported position and method of determination Aircraft colour and markings		
Dangerous goods carried as cargo		
Action taken by reporting unit		
Other pertinent information (To include recommendation for SAR action if appropriate)		

## Section 6 Emergencies, communication failure and contingencies

### Chapter 16

# Aircraft Emergencies

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## Introduction

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16.1 The circumstances of each aircraft emergency can vary to such an extent that detailed instructions cannot be given for every situation. The procedures outlined herein are intended as a general guide, and FISO's must use their own judgement when handling a particular emergency.

16.2 However, in accordance with SERA:

- a) In the case of an aircraft known or believed to be in a state of an emergency, including being subject to unlawful interference, ATS units shall give the aircraft maximum consideration, assistance and priority over other aircraft as may be necessitated by the circumstances (SERA.11001(c)). Any subsequent response from the ATS unit shall be based on the intentions of the pilot, the overall air traffic situation and the real-time dynamics of the contingency (SERA.11001(d)).
- b) 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 (e) below, be informed of the nature of the emergency as soon as practicable (SERA.10005(a)).

**Note.** If an aircraft is subject 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 (SERA.11005(ab)).

- c) 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 (SERA.11005(b)).
- d) 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 and exchange necessary information with the aircraft operator or its designated representative (SERA.11005(c)).

- e) When an air traffic service 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 (SERA.10005(b)).

## **FISO responsibilities**

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- 16.3 FISOs should always be alert to the possibility of an aircraft emergency. Speed may be necessary in certain circumstances but calm co-ordinated actions are essential in all situations.
- 16.4 As much assistance as possible should be given to an aircraft which is considered to be in an emergency situation. An emergency situation may require alerting action to be taken immediately or it may develop to that point later.
- 16.5 If a report concerning an aircraft emergency or accident is made from an outside source the FISO should, in addition to taking the appropriate emergency action, obtain the name, address and telephone number of the person making the report.
- 16.6 When an emergency is declared by an aircraft, the FIS unit should take appropriate and relevant action as follows:
  - a) Unless clearly stated by the flight crew or otherwise known, take all necessary steps to ascertain aircraft identification and type, the type of emergency, the intentions of the flight crew as well as the position and level of the aircraft;
  - b) Decide upon the most appropriate type of assistance which can be rendered;
  - c) Enlist the aid of any other ATS units or other services which may be able to provide assistance to the aircraft;
  - d) Provide the flight crew with any information requested as well as any additional relevant information, such as details on suitable aerodromes and weather information;
  - e) Obtain from the operator or the flight crew such of the following information as may be relevant: number of persons on board, amount of fuel remaining, possible presence of hazardous materials and the nature thereof; and
  - f) Notify the appropriate ATS units and authorities as specified in local instructions.

- 16.7 FIS units are responsible for alerting the rescue and fire-fighting services whenever:
- an aircraft accident has occurred on or in the vicinity of the aerodrome; or
  - information is received that the safety of an aircraft which is or will come under the jurisdiction of the AFIS unit may have or has been impaired; or
  - requested by the flight crew; or
  - when otherwise deemed necessary or desirable.
- 16.8 Procedures concerning the alerting of the rescue and fire-fighting services shall be contained in local instructions. Such instructions shall specify the type of information to be provided to the rescue and fire-fighting services, including type of aircraft and type of emergency and, when available, number of persons on board and any dangerous goods carried on the aircraft.

## Recognising an emergency situation

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- 16.9 A FISO may suspect that an aircraft is in an emergency situation or has suffered unlawful interference when:
- radio contact is not established at the time it is expected to be established;
  - radio contact is lost;
  - a pilot makes a report about the malfunctioning of their aircraft or the unusual behaviour of persons on board;
  - the erratic behaviour of an aircraft is observed;
  - it is overdue at an aerodrome; or
  - the pilot reports that the aircraft is short of fuel.
- 16.10 If the FISO is in radio contact with the aircraft they should ask the pilot whether they wish to declare an emergency and, if not specified by the pilot, the class of emergency being declared.
- 16.11 More positive indications that an aircraft is in an emergency are described in the following paragraphs.

## Distress and urgency messages

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- 16.12 There are two classes of emergency message:

**Distress:**

A condition of being threatened by serious and/or imminent danger and of requiring immediate assistance (SERA.14095(a)(1)(i)).

**Urgency:**

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 (SERA.14095(a)(1)(ii)).

16.13 The message will contain as many as possible of the following items:

MAYDAY, MAYDAY, MAYDAY (for distress messages)

or

PAN PAN, PAN PAN, PAN PAN (for urgency messages)

and

- Name of the station addressed (time and circumstances permitting);
- Identification of the aircraft;
- Nature of the emergency;
- Intention of the person in command;
- Present position, level and heading;
- Qualification of the pilot e.g. Student, Instrument Meteorological Conditions (IMC) or full instrument rating (urgency messages); and
- As much other information as time permits.

## **Indications by visual signal from aircraft**

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16.14 Notification of distress by visual signal will be by one or more of the following methods:

- a) The signal 'SOS' with signalling apparatus;
- b) A succession of pyrotechnical lights fired at short intervals, each showing a single red light; and/or
- c) A parachute flare showing a red light.

16.15 For an aircraft in difficulties which compel it to land without requiring assistance, notification of urgency by visual signal will be as follows:

- a) Switching the landing light on and off repeatedly;
- b) Switching the navigation lights on and off repeatedly; or
- c) A succession of white pyrotechnical lights.

## Use of communication facilities

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- 16.16 FIS units shall, as necessary, use all available communication facilities to endeavour to establish and maintain communication with an aircraft in a state of emergency, and to request news of the aircraft.

## Plotting aircraft in a state of emergency

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- 16.17 When a state of emergency is considered to exist, the flight of the aircraft involved should be plotted on a chart in order to determine the probable future position of the aircraft and its maximum range of action from its last known position.

## Information to aircraft operating in the vicinity of an aircraft in a state of emergency

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- 16.18 When it has been established by a FIS 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 paragraph 16.19, be informed of the nature of the emergency as soon as practicable.
- 16.19 When an FIS unit knows or believes that an aircraft is being subjected to unlawful interference, no reference shall be made in FIS 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.
- 16.20 Changes of radio frequency should be avoided if possible and should normally be made only when or if an improved service can be provided to the aircraft concerned. When appropriate, other aircraft operating in the vicinity of the aircraft in emergency should be advised of the circumstances.

**Note.** Requests to the flight crew for the information contained in paragraph 16.6(e) will be made only if the information is not available from the operator or from other sources and will be limited to essential information.

## Strayed Aircraft

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- 16.21 As soon as a FISO becomes aware of a strayed aircraft, they shall take all necessary steps to assist the aircraft and to safeguard its flight (SERA.11010(a)).
- 16.22 If the aircraft's position is not known, the FISO shall (SERA.11010(a)(1)):
- a) attempt to establish two-way communication with the aircraft, unless such communication already exists;
  - b) use all available means to determine its position;

- c) inform other ATS 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;
- d) request appropriate assistance from the Distress and Diversion (D&D) Cell, other ATS units and other aircraft in establishing communication with the strayed aircraft;

**Note.** Where communication already exists and a pilot reports that they are lost or uncertain of their position, FISOs should not hesitate to suggest that the pilot changes frequency to 121.5 MHz and contacts the D&D Cell.

- e) Consider terrain and obstructions within a wide area around the estimated position of the aircraft if the aircraft is flying at a low level and warn the pilot of potential hazards within that area.
- f) Notify the Civil Watch Supervisor at the parent ACC in the event that unlawful interference is suspected (SERA.11005 & SERA.11010(c)).

16.23 When the position of a strayed aircraft has been established the FISO shall (SERA.11010 (a)(3)):

- a) 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
- b) provide, as necessary, other ATS units and appropriate military units with relevant information concerning the strayed aircraft and any advice given to that aircraft.

## Distress and Diversion Cell

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16.24 The RAF D&D cell at Swanwick can provide assistance to civil aircraft in an emergency on 121.5 MHz, in addition to the service it provides for military aircraft on 243.0 MHz. The D&D cell has access to NATS radars, with a facility to detect emergency SSR squawks automatically and can provide an ATC surveillance service to an emergency aircraft in transit to its diversion aerodrome.

16.25 The D&D cell can provide an instant VHF auto-triangulation fixing service on 121.5 MHz. In the London FIR, this service is expected to be available to aircraft operating over land to the east of Wales and south of Manchester at and above 3 000 ft amsl and at and above 2 000 ft amsl within 40 nm of Heathrow. In the Scottish FIR, this service is expected to be available at and above 8 500 ft amsl, reducing to 2 000 – 5 000 ft amsl over the sea, lowland areas and around the Scottish TMA. Outside these parameters, the service can be unreliable.



- 16.26 D&D's low-level radio coverage (below 3 000 ft amsl) is poor and so an early transfer of communication to the diversion aerodrome may be sought by the D&D controller. In certain circumstances, e.g. a UHF-only equipped aircraft diverting to a VHF-only equipped aerodrome ATSU, it may be impossible to transfer RTF communications with the aircraft to its destination aerodrome. In these circumstances the aircraft may initially need to be kept high and/or very early information from the AFISO passed to the pilot via the D&D controllers, so that all details are passed before loss of RTF occurs.
- 16.27 D&D controllers have a detailed knowledge of minor aerodrome availability within their area as well as a comprehensive database that enables rapid communication with aerodromes, aircraft operators, ATSUs, and SAR organisations including Police Air Support Units and the regional emergency services. The D&D cell can assist a pilot of an aircraft in an emergency and the civil ATSU to select the most suitable diversion aerodrome. The D&D cell also provides facilities for practising emergency procedures to both civil and military pilots.
- 16.28 With exception to the following circumstances, ATS units should not transmit on 121.5 MHz or 243.0 MHz without the authorisation of the D&D cell:
- (1) A pilot in distress calls a specific ATS unit that is local to the pilot concerned; or
  - (2) It is apparent that the D&D cell is not responding to an emergency transmission.

## Reports from outside sources

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- 16.29 If a report concerning an aircraft emergency or accident is made from an outside source the FISO should, in addition to taking the appropriate emergency action, obtain the name, address and telephone number of the person making the report.

## Unlawful interference and aircraft bomb threat

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- 16.30 FISOs shall be prepared to recognise any indication of the occurrence of unlawful interference with an aircraft.
- 16.31 Whenever unlawful interference with an aircraft is known or suspected, or a bomb threat warning has been received, FISOs shall promptly provide assistance as far as practicable and inform the associated ACC. The ACC Watch Supervisor will initiate action to assess the threat and to determine a response.
- 16.32 Bomb warnings are usually anonymous and are communicated by either telephone or in writing and normally identify a specific aircraft in flight. The following additional procedures shall apply if a threat is received indicating that a

bomb or other explosive device has been placed on board a known aircraft. The FIS unit receiving the threat information shall:

- a) if in direct communication with the aircraft, advise the flight crew without delay of the threat and the circumstances surrounding the threat; or,
- b) if not in direct communication with the aircraft, advise the flight crew by the most expeditious means through other ATS units or other channels.

- 16.33 The FIS unit in communication with the aircraft shall ascertain the intentions of the flight crew and report those intentions to other ATS units which may be concerned with the flight.
- 16.34 The aircraft shall 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.
- 16.35 When the captain of an aircraft becomes aware of a bomb threat and has sufficient concern, they will declare an emergency using the RTF phraseology “MAYDAY, MAYDAY, MAYDAY” and will describe the nature of the emergency as “Bomb on-board”. The captain will likely request a landing at the nearest suitable aerodrome.
- 16.36 An aircraft on the ground should be instructed 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. Other aircraft, vehicles and personnel should be kept at a safe distance from the threatened aircraft until it has been confirmed by the RFFS senior officer that it is safe to proceed.
- 16.37 FIS units shall not provide any suggestions concerning action to be taken by the flight crew in relation to an explosive device.
- 16.38 An aircraft known or believed to be the subject of unlawful interference or which for other reasons needs isolation from normal aerodrome activities shall be provided with a route 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 shall be instructed to proceed to a position within the area or areas selected by prior agreement with the aerodrome authority.

## **Ballistic recovery systems**

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- 16.39 Ballistic recovery systems, which take the form of a parachute, are fitted to some general aviation aircraft for use in situations where a pilot considers continued safe flight is no longer possible. Such situations could include engine failure and loss of control.

- 16.40 They are typically activated by use of a handle which deploys a solid fuel rocket out of a hatch covering the compartment where the parachute is stored. Where the system has been activated but has not deployed, the possibility exists that the rocket may still be live.
- 16.41 Deployment of the parachute assists a controlled descent rate, and in many situations the pilot should be able to maintain radio contact subject to the level at which the parachute is deployed and VHF coverage. The aircraft will generally drift with the wind and the pilot will have no further control over the path of the aircraft. It should be noted therefore, that deployment of the parachute does not guarantee survivability of an in-flight incident.
- 16.42 If time permits, a pilot deploying such a recovery system should notify this as part of additional information within the normal emergency message, using the RT phraseology:
- “BALLISTIC RECOVERY SYSTEM DEPLOYED”
- 16.43 FISOs should treat such pilot reports with the same priority as those pertaining to engine failures and forced landings. Furthermore, they should ensure that RFFS are provided with this information, as not only may it aid in identification of the aircraft but will reassure them that if the chute has deployed, the system should present no further hazard.
- 16.44 Where it is known that a recovery system has been activated but has failed to operate, FISOs should also provide this information to RFFS, which should be alert for the possibility of a live rocket on board the aircraft.

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## Chapter 17

# Communications Failure

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## Air to ground communications failure

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- 17.1 Radio failure procedures should not be considered in isolation, and emergency action shall be applied if appropriate. For example, if an aircraft fails to make an expected report, overdue action may have to be taken.
- 17.2 As soon as it is known that two-way communication has failed, action shall be taken to ascertain whether the aircraft is able to receive transmissions from the FIS unit by requesting it to transmit, if possible, a specified signal in order to indicate acknowledgement.
- 17.3 After attempts to establish or re-establish communication have failed, FISOs should carry out the following procedures:
- a) ask other aircraft to attempt to contact the radio failure aircraft;
  - b) transmit weather and other relevant information, prefixing the transmission with the phrase 'transmitting blind';
  - c) ask a nearby surveillance equipped unit (if available) for assistance.
- 17.4 If the aircraft fails to indicate that it is able to receive and acknowledge transmissions, it is assumed that the aircraft will:
- a) if in visual meteorological conditions:
    - i. continue to fly in visual meteorological conditions;
    - ii. land at the nearest suitable aerodrome; and
    - iii. report its arrival by the most expeditious means to the appropriate ATS unit.
- or,
- b) if in instrument meteorological conditions or when conditions are such that it does not appear likely that the pilot will complete the flight in accordance with a) above:
    - i. proceed according to the current flight plan route to the appropriate designated navigation aid or fix serving the destination aerodrome and, when required to ensure compliance with ii), hold over this aid or fix until commencement of descent;

- ii. commence descent from the navigation aid or fix specified in i) at, or as close as possible to the estimated time of arrival resulting from the current flight plan;
- iii. complete a normal instrument approach procedure as specified for the designated navigation aid or fix; and
- iv. land, if possible, within 30 minutes after the estimated time of arrival specified in ii) or the last acknowledged expected approach time, whichever is later.

17.5 As soon as it is known that two-way communication has failed, appropriate information describing the action taken by the FIS unit shall be transmitted blind for the attention of the aircraft concerned.

17.6 Pertinent information shall be given to other aircraft in the vicinity of the presumed position of the aircraft experiencing the failure.

## Chapter 18

# Contingencies

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## Introduction

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- 18.1 The various circumstances surrounding each contingency situation preclude the establishment of exact detailed procedures to be followed. The procedures outlined below are intended as a general guide to FISO personnel.

## Radio-communications contingencies

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- 18.2 Contingencies related to communications, i.e. circumstances preventing a FISO from communicating with aircraft in the area of responsibility, may be caused by either a failure of ground radio equipment, a failure of airborne equipment, or by the frequency being inadvertently blocked by an aircraft transmitter. The duration of such events may be for prolonged periods and appropriate action to ensure that the safety of aircraft is not affected should therefore be taken immediately.

## Unauthorised use of AFIS Frequency

- 18.3 Instances of false and deceptive transmissions on FIS frequencies which may impair the safety of aircraft can occasionally occur. In the event of such occurrences, the FIS unit concerned should:
- a) correct any false or deceptive information which has been transmitted;
  - b) inform all aircraft on the affected frequency that false and deceptive information is being transmitted;
  - c) request all aircraft on the affected frequency to verify information before taking any action;
  - d) if practical, request aircraft to change to another frequency; and
  - e) if possible, inform all aircraft affected when the false and deceptive information is no longer being transmitted.

## Malicious use of lasers against aircraft and FIS facilities

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- 18.4 The targeting of aircraft and FIS installations by lasers poses a threat to aircraft safety and security through the physiological impact upon pilots and FISOs. This can include distraction, glare, temporary flash blindness, afterimage and possibly eye injury. Current expert opinion is that it is extremely unlikely, except over very short distances, that laser light poses a significant threat of permanent or long-term personal injury. At critical stages of flight, however, distractions caused to aircrew or FISOs by lasers may threaten aircraft safety.

- 18.5 Whilst the majority of incidents appear to be the result of opportunists, the number of reported events is increasing significantly, and reports of aircraft being subjected to illumination from multiple co-ordinated lasers have been received.
- 18.6 UK police forces treat all reports of laser attacks upon aircraft and FIS facilities very seriously and will respond to any reported activity. FIS Units are encouraged to establish procedures with their local police authority to facilitate the rapid reporting of all such incidents, and the passing of all information that may assist in the apprehension of those responsible. Such guidance should be published in the unit local instructions.

### **Malicious use of lasers against aircraft**

- 18.7 Where local arrangements have not been established, FISOs should take the following actions whenever a report of a laser attack upon an aircraft is received:
- a) Acknowledge the report from the pilot;
    - i. Seek as much information regarding the incident as possible from the pilot, including:
      - ii. the time of the attack;
      - iii. altitude and position at the time of the attack;
      - iv. description of the laser light, i.e. colour, whether continuous or pulsing, etc.;
      - v. any avoiding action taken;
      - vi. any impact upon vision/concentration.
    - vii. Anticipate the need for the pilot to adopt manoeuvres/operational techniques to minimise the impact on the aircraft;
    - viii. Dial 999, and pass all relevant information to the local police;
    - ix. Advise other aircraft in the vicinity that laser activity has been reported;
    - x. Record the details in the watch log and submit an MOR through the [Aviation Reporting Portal](#) in accordance with the MOR scheme.



## Malicious use of lasers against FIS units

- 18.8 FIS Units should provide guidance to their staff in the event of being subjected to malicious illumination by lasers. Measures should include:
- a) Look away from the laser beam if possible. Do not attempt to find the light source by staring at the laser;
  - b) Shield eyes and consider the feasibility of lowering/raising 'sun blinds' to reduce the effects of the laser;
  - c) Advise aircraft in contact that a laser is illuminating you;
  - d) Avoid rubbing the eyes to reduce the potential for corneal abrasion;
  - e) Consider the feasibility of increasing ambient light levels to minimise any further illumination effects;
  - f) Consider handing over the position to a colleague in a position not exposed to the laser;
  - g) Where local arrangements have not been established, inform a Supervisor who in turn can: decide on restricting traffic in/out of the aerodrome, inform the aerodrome operator, dial 999 and pass all relevant information to the local police;
  - h) Ensure the event is recorded in the watch log and reported for further investigation by submitting an MOR through the [Aviation Reporting Portal](#) in accordance with the MOR scheme.

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## Chapter 19

# Aerodrome Emergency Services

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## Introduction

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- 19.1 The responsibility for alerting the aerodrome emergency services normally rests with the AFISO.
- 19.2 No specific instructions can be made for an aircraft which suffers an accident during the transfer of communication from one unit to another, but as soon as either unit becomes aware of the occurrence it must be agreed immediately which unit is to alert the emergency services.

## Aerodrome Operator

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- 19.3 The aerodrome operator is responsible for:
- a) the preparation of detailed aerodrome emergency orders applicable to a particular aerodrome and making them available to all personnel concerned in aircraft emergencies;
  - b) determining the radius of action of the aerodrome fire service, which may include an area adjacent to and outside the boundary (the size of attendance within this radius will as far as is possible be pre-determined and detailed in local instructions);
  - c) advising the AFISO and aircraft operators whenever the fire and rescue services are depleted for any reason. Such messages will normally be given in a form which is suitable for immediate relay to aircraft.

## Action by AFISO

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- 19.4 When the AFISO becomes aware that an aircraft is in need of rescue aid within the radius of action, they should immediately alert the emergency services and, in accordance with the aerodrome emergency orders, give them the fullest available information.
- 19.5 If the rescue services are depleted for any reason the AFISO at the aerodrome should:
- a) transmit to the aircraft the message received from the aerodrome authority. An example of the phraseology is shown in CAP 413;
  - b) inform the ACC Watch Supervisor;
  - c) inform any other agency or unit as appropriate.

- 19.6 The RFFS category of a licensed/certificated<sup>8</sup> aerodrome is determined according to Table 1, based on the length of the longest aeroplane normally using the aerodrome and its fuselage width. If, after selecting the category appropriate to the longest aeroplane's overall length, that aeroplane's fuselage width is greater than the maximum width in Table 1, column 3, for that category, then the category for that aeroplane should actually be one category higher (AMC2 ADR.OPS.B.010(a)(2)(a)(1) and (2)). For example, an aeroplane with a fuselage length of 47.5 metres, and a fuselage width of 5.1 metres, would be Category 8).

Aerodrome Category	Aircraft overall length	Maximum fuselage width
Special	up to but not including 9 m	2 m
1	up to but not including 9 m	2 m
2	9 m up to but not including 12 m	2 m
3	12 m up to but not including 18 m	3 m
4	18 m up to but not including 24 m	4 m
5	24 m up to but not including 28 m	4 m
6	28 m up to but not including 39 m	5 m
7	39 m up to but not including 49 m	5 m
8	49 m up to but not including 61 m	7 m
9	61 m up to but not including 76 m	7 m
10	76 m up to but not including 90 m	8 m

**Table 1: Aerodrome Category for rescue and fire fighting (CAP 168 Table 8.1)**

**Note.** AMC2 ADR.OPS.B.010(a)(2) to UK Reg (EU) No 139/2014 does not specify a 'Special' category; other than this, the aerodrome RFFS categories defined in CAP 168 Table 8.1 and AMC2 ADR.OPS.B.010(a)(2) to UK Reg (EU) No 139/2014 are the same.

- 19.7 At all licensed and certificated aerodromes, the level of rescue and firefighting protection provided is appropriate to the aerodrome category determined using the principles in 19.6 above. Exceptionally, where the number of movements (landing or take-off) of the aeroplanes performing passenger transportation in the highest category, normally using the aerodrome, is less than 700 in the busiest consecutive three months, the level of protection provided in accordance with 19.6 above may be reduced by no more than one category below the determined one (AMC2 ADR.OPS.B.010(a)(2)(a)(3)).
- 19.8 Whenever possible AFISOs should anticipate the need for aerodrome fire service vehicles to cross runways and should issue information in advance of

<sup>8</sup> A 'Licensed Aerodrome' is one issued a national licence in accordance with CAP 168. A 'Certificated Aerodrome' is one issued with a certificate issued in accordance with UK Reg (EU) No 139/2014.

requirements. Other traffic may be requested to hold position or diverted to avoid conflict with appliances.

- 19.9 If it is known that an aircraft which has crashed or is about to crash has radioactive material on board, or is carrying any dangerous goods, including agricultural chemicals in a crop-spraying aircraft, the rescue services shall be informed.
- 19.10 In the event of an aircraft on the ground reporting that it may be on fire or when an aircraft on the ground is advised of signs of fire, the surface wind shall be passed to the aircraft with the acknowledgement of the pilot's report or together with the transmitted observation.
- 19.11 The aerodrome fire service will be responsible for final determination of the size of the attendance which will depend upon whether the accident is within or outside the aerodrome boundary. Normally a full attendance is made to all incidents within the boundary.

## Categories of emergency

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- 19.12 The following terms are used in relation to alerting emergency services.

### Aircraft Accident/Aircraft Accident Imminent

- 19.13 Aircraft accidents which have occurred or are inevitable on, or in the vicinity of, the aerodrome.

### Aircraft Ground Incident

- 19.14 Where an aircraft on the ground is known to have an emergency situation, other than an accident, requiring the attendance of emergency services.

### Full Emergency

- 19.15 When it is known that an aircraft in the air is, or is suspected to be, in such difficulties that there is a danger of an accident.

### Local Standby

- 19.16 When it is known that an aircraft has, or is suspected to have, developed some defect but the trouble would not normally involve any serious difficulty in effecting a safe landing. Also used at some units when an aircraft has to be searched following a bomb warning or requires inspecting on the ground by the aerodrome fire service.

### Weather Standby

- 19.17 When weather conditions are such as to render a landing difficult or difficult to observe, e.g. strong crosswind, poor visibility, ice or snow on the runway

## Unlawful Acts

19.18 Action to be taken in the case of any unlawful act will be contained in the aerodrome's Contingency Plan, which will be drawn up in conjunction with the local Police.

## Other Duties

19.19 The emergency arrangements are generally focused on an aircraft accident or incident. However, the plans may include other incidents that occur such as domestic fires, road traffic crashes and hazardous materials. Emergency Orders should include the action to be taken by aerodrome-based responders and, where appropriate, external emergency services, in the event of such calls being received. The classification 'Domestic' is given to any incident:

- a) on the aerodrome not included in the categories above;
- b) outside the aerodrome boundary (other than aircraft accidents) which is liable to constitute a danger to flying or aerodrome property;
- c) which the Aerodrome Rescue and Fire Fighting Service might attend where the response is according to an agreement with the local fire brigade;
- d) which is in response to calls from the public or police on humanitarian grounds.

## Removal of crashed aircraft

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19.20 Removal of crashed aircraft is the responsibility of the aerodrome authority and the aircraft owner or operator. In the case of a reportable accident the permission of the Air Accidents Investigation Branch (AAIB) is required before removal action can be commenced.

## Emergency removal

19.21 If it is apparent that continued obstruction of a runway by a crashed aircraft might further endanger life, e.g. other arriving aircraft having insufficient fuel for diversion, the AFISO should ensure that the emergency situation is fully understood by the aerodrome authority. Under normal circumstances, the AAIB may be contacted at any time without undue delay. Exceptionally, in case of communication difficulties, the aerodrome authority may wish to take action in accordance with Rule 7(2)(a)(iv) of the Civil Aviation (Investigation of Air Accidents and Incidents) Regulations 1996 which provides that an aircraft may be removed or interfered with so far as may be necessary for the purpose of preventing any danger or obstruction to the public or to air navigation.

## Section 7 Administration

### Chapter 20

# Administration

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## Opening watch

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20.1 In addition to local requirements, before opening watch a FISO should carry out the following actions as appropriate:

- a) Obtain a met briefing;
- b) Read latest orders, including relevant NOTAMS;
- c) Test the telephone lines;
- d) Switch on the RTF and test it;
- e) Check voice communications recording facilities where these are available;
- f) Take appropriate action on unserviceabilities;
- g) Sign and enter up log book;

and additionally for an AFISO:

- a) Conduct an airfield inspection where the ATS unit retains the task;
- b) Check the serviceability of radio aids;
- c) Select the runway-in-use and check the signals square and indicator boards;
- d) Check the aerodrome fire service complement and test the crash alarms;
- e) Check serviceability of Aldis lamp;
- f) Check availability of signal pistol and cartridges.

20.2 The RTF communication channel should be guarded throughout the published hours of watch.

## Handing over watch

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20.3 The procedure for handing over watch shall be in accordance with local unit instructions and shall, as a minimum, include the following:

- a) Explain the traffic situation to the person taking over watch in the fullest detail;

- b) Inform the person taking over of the serviceability states of the aerodrome and facilities.

## Closing watch

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- 20.4 Before closing watch, the FISO shall inform all those concerned of their intention.

## Accuracy of clocks

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- 20.5 The FISO is responsible for ensuring that clocks are accurate in the visual room and for carrying out time checks.

## Communications facilities

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- 20.6 All communications systems, including emergency communications systems, shall be tested to confirm their serviceability as part of the opening of watch procedure.

## Watch log

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- 20.7 A watch log should be maintained at each unit. All entries should be made in ink in chronological order, using UTC.
- 20.8 Entries should be sufficiently detailed to enable an authorised person to have a complete understanding of all action during any watch period. All entries should be made in a precise, legible manner, in keeping with the status of the document.
- 20.9 When completed the log book is to be retained for a period of twelve months. If a separate movements log is kept it should be retained for one month and then disposed of in accordance with local instructions.
- 20.10 A record of the following items, as appropriate, should be kept in the watch log or other document:
- a) Time of opening, handing over and closing watch;
  - b) Incidents, accidents;
  - c) Changes in serviceability of the aerodrome;
  - d) Lighting serviceability;
  - e) Aircraft movements; and
  - f) Other entries as required by local procedures and detailed in unit local instructions.



## Data display

### Introduction

20.11 A data display must be maintained in accordance with local instructions. Where it is convenient to use a strip display, it is recommended that the system described below is used.

Estimate	Actual	Level	Type	ATC clearance			Domestic
			CALLSIGN				
			Speed	Dept. airfield	Route	Dest. airfield	
ETA/ETD		Level reported Level requested (IFR only)	Cruising TAS				Runway-in-use Altimeter etc.

Examples of different uses of this basic strip are shown below.

#### Example 1: Departing VFR

1130	1134		C172				21
			GBAOS				Q
			170	EGBK	VFR	EGBS	
ETA		No level as VFR					Runway-in-use QNH/QFE

#### Example 2: Arriving VFR or IFR

1415	1420		PA 28R				24
			GAVLU				Q WX
			130	EGLK	EGTF		
ETA	ATA	Level reported					Runway-in-use QNH/QFE Weather passed

**Example 3: Transiting ATZ**

1442 45	1448 51	3000	PA 28 GAVLH 100 EGLK EGBJ	V Q
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ETA/ATA      ETD/ATD      Level reported      Overflight symbol  
 Position could be overhead of known landmarks      QNH/QFE

**Example 4: Departing IFR (includes an airways clearance)**

0900	0915	70	PA 28 GAVLU 120 EGLM MID A1 A1E LFAT	7 nm NW MID –LFT A1 AE1 FL 70 5305 132.05 ✓	25 Q
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ETA      ATA      Level requested in flight plan      Route requested in flight plan      Runway QNH

The clearance in this example would be passed as:

London Control clears GAVLU to join controlled airspace seven nautical miles north west of Midhurst to Le Touquet via Alpha one Alpha one east at flight level seven zero. Squawk 5305. Contact frequency 132.05.

**Symbols**

Aircraft given time check	T
Altimeter setting passed	Q
Climb	↑
This information has been passed and acknowledged	✓
Overhead	QFG
Leaving Symbol	
Joining Symbol	
Current weather	WX
Overflight	V

## Local instructions

- 20.12 Local instructions amplify and interpret at local level the instructions and information contained in the FISO manual. This local information is also used in the conduct of validation examinations.
- 20.13 A sample index is shown below which indicates the subject headings to be found. Although not exhaustive, this list would cover the requirements of most units. At some units, the Emergency section will be incorporated in the Aerodrome Emergency Orders.

General operating procedures	
Altimeter setting procedures	Transition altitude
	Transition levels
Aerodrome operations	IAPs
	Non-radio aircraft
	Gliding
	Parachute dropping
	Helicopters
	Balloons
	Flying training
Meteorological information	Reports and forecasts
	Local observations
	Local distribution
Flight plans	AFTN arrangements (including requirements to send messages e.g. DEP, ARR etc.)
Traffic data display admin	Logs and records
	Checks, maintenance
	Extension of hours
	Management instructions

Aerodrome	
Aerodrome operations	Description of airfield
	Daily checks
	Circuit procedures
	Dual runway operations
Surface operations	Procedures
	Restriction on manoeuvring areas
	Aircraft parking, taxiing and holding
	Movement of vehicles
	Surface inspections
	Reporting unserviceabilities
	Work authorisation permits
Bird scaring	Dispersal
	Reporting
Lighting:	Aerodrome and obstruction lighting
	Operation and inspection
	Emergency/standby
	Visual approach path indicators
	Post-accident checks
Telecommunications	Equipment checks and maintenance
	Radiotelephony
	Telephones

Emergency	
Aerodrome Fire Service	Services available
Emergency Action	Responsibility
	Crash away from airfield
Reporting action	
Search and Rescue	Procedures
	Coastguard
	Police

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## Section 8 Aeronautical Information Service

### Chapter 21

## Aeronautical Information Service

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- 21.1 The function of the Aeronautical Information Service (AIS) is to:
- a) receive, collate or assemble, edit, format, publish, store and distribute aeronautical data and aeronautical information concerning the entire territory of a State as well as those areas over the high seas in which the State is responsible for the provision of air traffic services.
  - b) ensure that aeronautical data and aeronautical information are available for:
    - personnel involved in flight operations, including flight crews, flight planning, and flight simulators;
    - ATS providers responsible for flight information service; and,
    - the services responsible for pre-flight information.
  - c) provide aeronautical data and aeronautical information as aeronautical information products.
- 21.2 The area of responsibility of the UK AIS and information on Foreign AIS Products are published in UK AIP GEN 3.1 at paragraph 2.1 and 2.2 respectively.
- 21.3 The regulation of UK AIS is described in CAP 779 Regulation of Aeronautical Information Management Services.

### Aeronautical information products

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- 21.4 'Aeronautical Information Product' is the collective term for aeronautical information that a State is required to provide and which consists of:
- Aeronautical Information Publication (AIP), including Amendments and Supplements;
  - Aeronautical Information Circulars (AIC);
  - Aeronautical charts;
  - NOTAM; and,
  - Digital data sets.
- 21.5 All UK aeronautical information products are made available via the UK AIS website [www.ais.org.uk](http://www.ais.org.uk). NOTAM are available on the AIS website in the form of Pre-flight Information Bulletins (PIB).

- 21.6 Additional information on the UK aeronautical information products delivered by UK AIS including availability of paper and electronic format, numbering systems, promulgation schedule, NOTAM Types, NOTAM Series and submission process can be found in the UK AIP section GEN 3.1 Aeronautical Information Services.
- 21.7 Additional information on UK Aeronautical Charts made available by UK AIS can be found in the UK AIP section GEN 3.2 Aeronautical Charts.

## **Amending aeronautical information products**

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- 21.8 AIP Amendments, AIP Supplements, AICs and Permanent NOTAM can be submitted by Authorised Sources via Aurora Data Originators Portal ([www.aurora.nats.co.uk](http://www.aurora.nats.co.uk)).
- 21.9 NOTAM proposals should be submitted by AFS (EUECYIYP). In the event of being unable to submit NOTAM proposals via this method, then the AIS Generic Email [eg\\_notamprop@ead.eurocontrol.int](mailto:eg_notamprop@ead.eurocontrol.int) may be used. Comprehensive UK AIS NOTAM Guidance Material for NOTAM Sponsors can be found on the AIS website.

### **AIP amendments**

- 21.10 AIRAC AIP amendments are distributed by AIS at least 42-days in advance of the AIRAC effective dates with the objective of reaching users at least 28-days in advance of the effective date. These amendments will be published every 28-days and in accordance with the AIRAC schedule available on the AIS website and UK AIP GEN 3.1 section 4 AIRAC System.

### **AIP Supplements and AICs**

- 21.11 Temporary changes to the AIP (AIP Supplements) and Aeronautical Information Circulars (AIC) are normally published every 28 days in accordance with a separate publication schedule ('AIC and SUP Schedule') available on the AIS website.

### **NOTAM**

- 21.12 Changes of a temporary nature and of short duration, or operationally significant permanent changes or temporary changes of long duration made at short notice, are published via NOTAM. Additional 'Trigger NOTAM' are also provided for specific changes to the AIP published as an AIP amendment or a Supplement.

## **Authorised sources of aeronautical information**

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- 21.13 The UK AIP is the product of an amalgamation of aeronautical information and data derived from various parties which are submitted to the AIS provider (AISP) for publication.



- 21.14 The parties (Authorised Sources), and aeronautical information for which they are responsible for, are shown in CAP 1054, Annex A.
- 21.15 The Authorised Source is the person (role) nominated to represent the organisation that is ultimately accountable for aeronautical information published by the organisation in the Aeronautical Information Products.
- 21.16 The Authorised Source can nominate individuals (“AIP Sponsors”), who are responsible for submitting changes to aeronautical information products within a clearly defined scope of authorised changes.
- 21.17 All parties are required to have formal arrangements with the AIS provider for the provision of aeronautical data/information.
- 21.18 More information on Authorised Sources of Aeronautical Information and Formal Arrangements can be found in CAP 1054.

## **AIS contact details**

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- 21.19 Contact details and service hours for principal UK AIS sections are detailed in Appendix D and also available in the UK AIP GEN 3.1 paragraph 1.3.
- 21.20 The AIS information line is a voice recorded message system, designed to supplement the information available on the AIS website. It is not designed to replace the need to obtain a full pre-flight briefing. The message provides information on specific NOTAM and will include Restricted Areas (Temporary), airspace upgrades and Emergency Restrictions of Flying.

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## Section 9 Occurrence Reporting

### Chapter 22

# Occurrence Reporting

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## Introduction

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- 22.1 UK Reg (EU) No 376/2014 Article 4 requires the Secretary of State to adopt a list classifying the type of occurrences that require reporting action. This list is detailed within UK Reg (EU) 2015/1018.
- 22.2 FISOs should be familiar with the list of reportable occurrences detailed in UK Reg (EU) 2015/1018. The ANO and CAA website also contain guidance on what is a reportable occurrence but, ultimately, the individual licence holder involved will have to use their own judgement.

## Explanation of terms

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### Occurrence

- 22.3 Any safety related event which endangers or which, if not corrected or addressed, could endanger an aircraft, its occupants or any other person and includes in particular an accident or serious incident (UK Reg (EU) No 376/2014 Article 2(7)).

### Accident

- 22.4 An occurrence associated with the operation of an aircraft which, in the case of a manned aircraft, takes place between the time any person boards the aircraft with the intention of flight until such time as all such persons have disembarked, or in the case of an unmanned aircraft, takes place between the time the aircraft is ready to move with the purpose of flight until such time it comes to rest at the end of the flight and the primary propulsion system is shut down, in which:
- a) a person is fatally or seriously injured as a result of:
    - i. being in the aircraft; or,
    - ii. direct contact with any part of the aircraft, including parts which have become detached from the aircraft; or,
    - iii. direct exposure to jet blast;
- except when the injuries are from natural causes, self-inflicted, or inflicted by other persons, or when the injuries are to stowaways hiding outside the areas normally available to the passengers and crew: or,

- b) the aircraft sustains damage or structural failure which adversely affects the structural strength, performance or flight characteristics of the aircraft, and would normally require major repair or replacement of the affected component, except for engine failure or damage, when the damage is limited to a single engine, (including its cowlings or accessories), to propellers, wing tips, antennas, probes, vanes, tires, brakes, wheels, fairings, panels, landing gear doors, windscreens, the aircraft skin (such as small dents or puncture holes) or minor damages to main rotor blades, tail rotor blades, landing gear, and those resulting from hail or bird strike, (including holes in the radome); or
- c) the aircraft is missing or is completely inaccessible (UK Reg (EU) No 996/2010 Article 2(1)).

22.5 An aircraft accident in the vicinity of an aerodrome should in addition to local procedures be notified by phone to the ACC Watch Supervisor and reported through the MOR scheme.

### **Serious Incident**

22.6 An incident involving circumstances indicating that there was a high probability of an accident and is associated with the operation of an aircraft, which in the case of a manned aircraft, takes place between the time any person boards the aircraft with the intention of flight until such time as all such persons have disembarked, or in the case of an unmanned aircraft, takes place between the time the aircraft is ready to move with the purpose of flight until such time it comes to rest at the end of the flight and the primary propulsion system is shut down (UK Reg (EU) No 996/2010 Article 2(16))<sup>9</sup>.

### **Incident**

22.7 An occurrence, other than an accident, associated with the operation of an aircraft which affects or could affect the safety of operation (UK Reg (EU) No 996/2010 Article 2(7))

### **AIRPROX**

22.8 An AIRPROX is a situation in which, in the opinion of a pilot or a FISO, the distance between aircraft as well as their relative positions and speeds have been such that the safety of the aircraft involved was or may have been compromised.

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<sup>9</sup> The annex to UK (EU) Reg No 996/2010 lists typical examples of incidents that are likely to be serious incidents.

## Reporting Procedures

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- 22.9 A holder of a FISO licence shall report any occurrence within 72 hours of becoming aware of the occurrence, unless exceptional circumstances prevent this (UK Reg (EU) No 376/2014 Article 4(7)). In addition, a FISO who has knowledge of the occurrence of an accident or serious incident shall notify, without delay, the AAIB (UK Reg (EU) No 996/2010 Article 9(1) through the AAIB 24-hour reporting line.
- 22.10 A Mandatory Occurrence Report (MOR) shall be submitted through the [Aviation Reporting Portal](#) in accordance with the MOR scheme; a copy of the report is automatically sent to SDD.
- 22.11 To enable other reports to be completed without delay, licence holders should, if possible, inform operators and other ATS units involved at the time.
- 22.12 Occurrence Reports are treated confidentially to maintain full and free reporting from the aviation community and to protect the identity of the individual in accordance with legislation.
- 22.13 If a FISO considers that the incident being reported under the MOR scheme alleges a breach of air navigation legislation (ABANL) they are advised to seek the views of local unit management. ABANL are reported on form CA 939 and a link to this form is available on the CAA website under 'Aviation Industry Related Issues' via the 'Make a report' link.
- 22.14 If after consultation it is decided that CA 939 action is appropriate, a completed form CA 939 should be sent to the CAA's Investigation and Enforcement Team (IET) accompanied by a copy of the MOR submitted through the [Aviation Reporting Portal](#); the MOR should indicate that CA939 action has been taken.
- 22.15 If a reporter encounters a situation where a mandatory report is not appropriate but has an allegation about an individual or organisation that may affect safety, then a Whistleblower report may be filed. Details of the whistleblowing process can be found on the CAA website via the 'Make a report' page.

## Airprox Reporting

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- 22.16 AIRPROX reports are processed and handled by the UK AIRPROX Board (UKAB). ATSI review all AIRPROX reports and may carry out a full investigation in accordance with the MOR scheme. During the ATSI review, the extent to which ATS were involved in the AIRPROX is assessed and, on completion of any investigation, an appropriate report is forwarded to UKAB.
- 22.17 A pilot may file an AIRPROX report on the RTF or, after landing, by telephone or in person. If the pilot wishes to file the report by RTF the FISO should, whenever possible, accept the relevant details, particularly when the flight is bound for a

foreign destination. If, due to the FISO's workload this cannot be done, the pilot is to be requested to file the details after landing.

- 22.18 The pilot's report by RTF should commence with the term "AIRPROX Report". If the pilot omits the prefix, the FISO shall ask them if it is their intention to file an AIRPROX report. The complete message will comprise:
- a) The words "AIRPROX Report";
  - b) Position at time of incident;
  - c) Time of incident;
  - d) Altitude/Flight Level (climbing, descending or level flight);
  - e) Heading;
  - f) Brief details of incident including first sighting and miss distance; and
  - g) Weather conditions.
- 22.19 If the pilot states that they intend to file an AIRPROX report after landing they are to be reminded that, to avoid any delay in its progression, the details are required as soon as possible after landing.
- 22.20 Following a pilot's declaration that they will file an AIRPROX, FISOs shall complete and submit their own MOR via the [Aviation Reporting Portal](#); this should ensure that any action, such as recovery of RTF or surveillance data can be initiated at the earliest opportunity. SDD will then forward the report to the UKAB.
- 22.21 When filing an AIRPROX report, FISOs should include clear reference to the occurrence's status as an AIRPROX and include as much information as possible.
- 22.22 FISOs must not offer opinions as to cause or responsibility, either to pilots at the time or to operators or pilots subsequently. Pilots may be told that the incident will be investigated.
- 22.23 The identity of the reported aircraft is to be established as soon as possible by any practical means.
- 22.24 Pilots of aircraft involved in an AIRPROX initiated by a FISO should be informed by the FISO as soon as possible that an AIRPROX is being submitted.
- 22.25 Any completed AIRPROX reports that are initiated by pilots and received at a FIS Unit are to be sent without delay to the UKAB.

## Birdstrikes

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22.26 Pilots are required to report all birdstrikes in UK airspace whether or not damage is caused (ANO 2016 Section 3 Part 5 Article 15). A FISO receiving a report should obtain as much information as possible and complete a birdstrike report. This bird-strike report can be made via the [Aviation Reporting Portal](#). Reporting can also be made via the Online Bird-Strike Reporting System on the CAA website. In accordance with UK Reg (EU) No 376/2014 it is also a requirement that the ATSU file a MOR.

## Maritime pollution

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22.27 Pilots sighting substantial patches of oil or possible harmful substances have been asked to make reports to the ATS unit from whom they are receiving an ATS. Reports on RTF will be prefixed 'Oil Pollution Report', or '... Pollution Report' if a harmful substance other than oil is suspected.

22.28 A FISO receiving a report should obtain as much information as possible to complete a report in the format shown below:

- a) Date and time pollution observed and identity of aircraft reporting.
- b) Position and extent of pollution.
- c) Tide, wind speed and direction.
- d) Weather conditions and sea state.
- e) Characteristics of pollution.
- f) Name and nationality, or description, including any distinctive markings, of any vessel seen discharging oil or other harmful substances; also, assessment of course and speed of vessel and whether any pollution observed ahead of the discharging ship and the estimated length of pollution in its' wake.
- g) The identity of any other vessels in the immediate vicinity.
- h) Whether or not photographs have been taken.

22.29 Any FIS Unit receiving such reports should pass them without delay to an ACC, who will in turn pass the report to the [Maritime Rescue Coordination Centre \(MRCC\)](#) or the [JRCC](#).

22.30 Similar procedures should be followed if a pilot makes such a report by telephone after landing.

## **Matter allegedly dropped by aircraft**

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- 22.31 A complaint alleging that matter has fallen from an aircraft is to be treated as an incident involving safety. All reasonable efforts are to be made as soon as possible to identify any aircraft that might have been responsible. The aid of the Watch Manager at the ACC may be enlisted. It should be remembered that military aircraft, often beyond civil control or means of identification, may have been responsible. Controllers must not express opinions as to the likely source of the falling matter to the person reporting the incident.

## **Recording and retention of data for investigative purposes**

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- 22.32 All relevant flight data including paper and/or electronic flight progress strips shall be retained for a period of at least 30 days. Where relevant, radio-telecommunications and co-ordination data shall be recorded and retained for at least the same period of time.

## **Search action**

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- 22.33 The duty FISO is to institute search action if the identity of an aircraft which has been involved in an incident or has apparently infringed legislation is not known.
- 22.34 Data such as arrival and departure times are to be examined and every means consistent with safety used in an attempt to identify the aircraft.



## Section 10 Meteorological Services

### Chapter 23

# Meteorological Services

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## Meteorological Requirements at AFIS units

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- 23.1 The required level of meteorological service provided by AFIS units is determined by:
- Whether Official Meteorological Reports, in the form of a meteorological aerodrome report (METAR), are produced in accordance with CAP 746 and routinely disseminated beyond the aerodrome, using processes that adhere to ICAO standards;
  - Whether the aerodrome has instrument approach procedures;
  - Where applicable, by local agreement with the aerodrome and operators.
- 23.2 For aerodromes which routinely disseminate Official Meteorological Reports beyond the aerodrome using processes that adhere to ICAO standards, and where air navigation service providers (ANSPs) are certificated by the CAA in accordance with the ATM/ANS Common Requirements Regulation (UK Reg (EU) 2017/373), the requirements specified in CAP 746 Meteorological Observations at Aerodromes shall apply, i.e. observations shall:
- Be produced by accredited and competent observers, and
  - The instrumentation used at the aerodrome shall comply with the requirements for meteorological equipment specified in CAP 746.
- 23.3 For aerodromes where air navigation service providers (ANSPs) are certificated by the CAA in accordance with the ATM/ANS Common Requirements Regulation (UK Reg (EU) 2017/373) and which do not routinely disseminate Official Meteorological Reports beyond the aerodrome, observations do not have to be produced by accredited observers but shall:
- Be made by those with a basic competency in assessing Met conditions and reading Met instrumentation, and
  - The instrumentation used at the aerodrome shall comply with the requirements for meteorological equipment as specified in CAP 746. Noting that less stringent requirements are required at aerodromes that are without published or airport owned instrument approach procedures.
  - Observations made at aerodromes without accredited observers (non-MET certificated ATS personnel) are not regarded as official reports. If transmitted to aircraft or disseminated beyond the aerodrome, the

message must be prefixed by: “Unofficial observation from (name of aerodrome) at (time) UTC gives (observation)”.

- 23.4 Where the requirements of CAP 746 are not mandatory they should be used as guidance on best practice in devising local instructions.
- 23.5 For full details refer to CAP 746 Requirements for Meteorological Observations at Aerodromes.

## Briefing of FISOs

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- 23.6 Prior to taking-over watch, FISOs shall obtain full information regarding the weather to be expected during the period of their watch.
- 23.7 Where appropriate, information should include but is not limited to, Met Office regulated forecast products such as F214/215, AIRMETS, SIGMETS and local TAFs.

## Explanation of Terms

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- 23.8 The use of the term ‘cloud base’ in meteorological reports and aerodrome forecasts means the height of the base of any cloud above aerodrome elevation.
- 23.9 The Meteorological Authority for civil aviation in the United Kingdom is the Civil Aviation Authority, Aviation House, Beehive Ringroad, Crawley, RH6 0YR.

## Aircraft Observations and Reports

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- 23.10 Special Aircraft Observations shall be made and reported by all aircraft to ATS units as Special Air Reports whenever the following conditions are encountered or observed (SERA.12001):
- a) Moderate icing (MOD ICE) or severe icing (SEV ICE);
  - b) Moderate turbulence (MOD TURB) or severe turbulence (SEV TURB);
  - c) Severe mountain wave (SEV MTW);
  - d) Thunderstorms with or without hail (that are obscured, embedded, widespread or in squall lines) (TSGR or TS);
  - e) Volcanic ash cloud (VA CLD or VA).
  - f) pre-eruption volcanic activity or volcanic eruption.
- 23.11 Special and non-routine Air-Reports will be compiled by flightcrews using forms based on the model AIRREP SPECIAL form contained at Appendix E (SERA.12005(c)). The detailed instructions, including the format of messages and the phraseologies provided in Appendix 5 (to SERA) will be used by flight crews when transmitting air-reports and shall be used by ATS units when

re-transmitting such reports (SERA.12005(c)(1). These air-reports shall be transmitted by ATS units, as soon as practicable in accordance with SERA.12020(a) to:

- a) Other aircraft concerned and shall cover the portion of the route up to one hour's flying time ahead of the aircraft;

**Note.** Information from an aircraft in flight may be passed to other aircraft when there is evidence of conditions being worse than officially reported or forecast, and a FISO considers that it may be useful to them. Whenever this is done, the FISO shall state that the information originated from an aircraft in flight and the time at which the observation was made.

- b) The Met Office at Exeter or Aberdeen (as appropriate) without delay, who will decide whether the conditions warrant the issue of a SIGMET; and
- c) Other ATS units concerned.

**Note.** 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 (GM1 SERA.12020(a)(3))

- 23.12 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 (UK Reg (EU) No 923/2012 SERA.12020(b)).

## Meteorological Observations and Reports

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- 23.13 For aerodromes where air navigation service providers (ANSPs) are certificated by the CAA in accordance with the ATM/ANS Common Requirements Regulation (UK Reg (EU) 2017/373) but which do not routinely disseminate Official Meteorological Reports beyond the aerodrome, meteorological reports will be determined by local agreement with the aerodrome operator. This may require the AFIS unit to only provide Met information on request.
- 23.14 When FISOs receive requests for meteorological information from pilots they must ensure that the information supplied conforms to the request, e.g. a forecast should not be given in place of a report.
- 23.15 The time of observation shall be in UTC and reports shall include, as a minimum, the items in Table 1 overleaf:

Item	
Surface Wind	Direction in degrees True and speed in knots, usually averaged over 10 minutes. In addition, if appropriate to the same 10-minute period: <ol style="list-style-type: none"> <li>Extremes in direction when the variation is 60 degrees or more but less than 180 degrees and the mean speed exceeds 3 knots;</li> <li>Maximum wind speed when it exceeds the mean by 10 knots or more.</li> </ol>
QNH	Rounded down to the nearest whole Hectopascal (e.g. 1014.9 becomes 1014).
QFE	Rounded down to the nearest whole Hectopascal. At aerodromes where more than one elevation is notified (e.g. threshold elevation for an instrument runway) the QFE is supplied to the nearest tenth of a Hectopascal. The unit will convert as appropriate and round down the resultant to the nearest whole Hectopascal.
Air Temperature and Dew Point	In degrees Celsius (Centigrade).

**Table 1. Minimum Content for Aerodrome Meteorological Reports**

23.16 The instrumentation used to measure the items in Table 1 shall comply with the requirements specified in CAP 746.

23.17 Further items as detailed in Table 2 can be provided in the report as necessary:

Item	
Surface Visibility	Prevailing Visibility: in increments of 50 metres when the visibility is less than 800 metres; in increments of 100 metres when it is 800 metres or more but less than 5 km; in kilometre steps, when the visibility is 5 km or more but less than 10 km; and it shall be given as 10 km when the visibility is 10 km or more. Visibility values are rounded down to the nearest lower step. RVR shall be included when measured. Where the visibility in any direction is less than the prevailing visibility and less than 1500 metres or less than 50% of the prevailing visibility, the lowest visibility observed will also be reported in the increments described above.
Weather	At the time of observation, e.g. drizzle, fog, heavy rain etc.
Cloud	The following layers showing the amounts in terms of few, scattered, broken, or overcast along with bases in feet, but limited to cloud bases which are not more than 5000 feet above aerodrome elevation: <ol style="list-style-type: none"> <li>The lowest individual layer whatever the amount;</li> <li>The next highest of at least 3 oktas (SCT, BKN or OVC);</li> <li>The next highest of at least 5 oktas (BKN or OVC).</li> </ol> Towering cumulus and cumulonimbus will always be specified, whatever the amount and height, whilst retaining base height order (from lowest to highest). When cloud base is not discernible due to fog, snow, etc., 'sky obscured' is reported.
CAVOK	This term replaces the entries for visibility, weather and cloud when the following conditions apply simultaneously: <ol style="list-style-type: none"> <li>Visibility 10 km or more;</li> <li>No significant weather at or in the vicinity of the aerodrome;</li> <li>No cloud below a level 5000 feet above aerodrome elevation or minimum sector altitude (whichever is the greater) and no cumulonimbus (CB) or towering cumulus cloud (TCU) at any level.</li> </ol>

**Table 2. Additional Content for Aerodrome Meteorological Reports**

- 23.18 Where Met instrumentation is used to measure the items in Table 2 the equipment shall comply with the requirements specified in CAP 746.

## **Special Aerodrome Meteorological Reports**

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- 23.19 Specific improvements and deteriorations of any of the items in a routine report are supplied in a special report. They are issued between routine reports and contain only those items which are affected. The requirement for special reports shall be determined by the Aerodrome Operator and detailed in local instructions.
- 23.20 At FIS units which only provide Met information on request special reports may not be necessary, although sudden or unexpected deteriorations should still be reported when, in the interests of safety, a FISO considers it advisable to warn aircraft immediately.
- 23.21 Where applicable the change criteria for making a special report is as defined in CAP 746.

## **Reports to aircraft for take-off and landing**

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- 23.22 In reports to aircraft for take-off and landing, surface wind direction is to be expressed in degrees Magnetic; and, where averaging is appropriate, the period shall be 2 minutes. In addition, the extremes in direction and speed (gust and lull) during the past 10 minutes shall be provided.
- 23.23 A facility to provide instantaneous surface wind details should be available to support pilots who request it, particularly at aerodromes primarily supporting the operations of aircraft whose maximum total weight authorised is 5,700 kg or less.

## **Contingency Arrangements**

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- 23.24 For aerodromes which routinely disseminate Official Meteorological Reports beyond the aerodrome, and where air navigation service providers (ANSPs) are certificated by the CAA in accordance with the ATM/ANS Common Requirements Regulation (UK Reg (EU) 2017/373), contingency and other mitigation measures shall be identified in case of such events as observer incapacitation as defined in CAP 746.
- 23.25 At all aerodromes where air navigation service providers (ANSPs) are certificated by the CAA in accordance with the ATM/ANS Common Requirements Regulation (UK Reg (EU) 2017/373), contingency and other mitigation measures shall be identified in case of equipment failure as defined in CAP 746.

## **Recording of Information**

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- 23.26 For aerodromes which routinely disseminate Official Meteorological Reports beyond the aerodrome, and where air navigation service providers (ANSPs) are

certificated by the CAA in accordance with the ATM/ANS Common Requirements Regulation (UK Reg (EU) 2017/373), the requirements for Records and Archives are as stated in CAP 746 Meteorological Observations at Aerodromes.

- 23.27 At other aerodromes, records should be kept as required by local procedures.
- 23.28 At all aerodromes a full non-routine observation shall be recorded at the time of an aircraft accident on or in the vicinity of the aerodrome. This is to ensure that complete details of the weather at the time of the incident will be available to an official inquiry.

**APPENDIX A****Tailwind and crosswind component**

These tables provide guidance on the calculation of tailwind and crosswind components and should be used when determining 'out of wind runway' operations.

Wind speed (knots)	Tailwind component (knots)								
	Difference between wind direction and QFU (degrees)								
	100°	110°	120°	130°	140°	150°	160°	170°	180°
5	1	2	3	4	4	5	5	5	5
10	2	4	6	7	8	9	10	10	10
15	3	6	8	10	12	13	15	15	15
20	4	7	11	13	16	18	19	20	20
25	5	9	13	17	20	22	24	25	25
30	6	11	16	20	24	26	29	30	30

**NOTES:**

1. Tailwind component, where necessary has been rounded up.
2. Values in excess of 5 knots have been shaded.

Wind speed (knots)	Crosswind component (knots)								
	Difference between wind direction and QFU (degrees)								
	10°	20°	30°	40°	50°	60°	70°	80°	90°
5	1	2	3	4	4	5	5	5	5
10	2	4	6	7	8	9	10	10	10
15	3	6	8	10	12	13	15	15	15
20	4	7	11	13	16	18	19	20	20
25	5	9	13	17	20	22	24	25	25
30	6	11	16	20	23	26	29	30	30
35	7	12	18	23	27	31	33	35	35
40	7	14	21	26	31	35	38	40	40
45	8	16	23	29	35	39	43	45	45
50	9	18	26	33	39	44	47	50	50
55	10	19	28	36	43	48	52	55	55
60	11	21	31	39	46	52	59	60	60
65	12	23	33	42	50	57	62	65	65
70	13	24	36	46	54	61	66	69	70
75	14	26	38	49	58	65	71	74	75
80	14	28	41	52	62	70	76	79	80
85	15	30	43	55	66	74	80	84	85
90	16	31	46	58	69	78	85	89	90

## NOTES:

1. Crosswind component, where necessary has been rounded up.
2. Values in excess of 15 knots have been shaded.



## APPENDIX B Pressure

### Determining Transition Level

Aerodrome QNH (hectopascals)	Transition Altitude (feet)							
	3,000		4,000		5,000		6,000	
	Flight Level	Minimum IFR cruising level	Flight Level	Minimum IFR cruising level	Flight Level	Minimum IFR cruising level	Flight Level	Minimum IFR cruising level
1060 1050	30	30	40	40	50	50	60	60
1049 1032	35	40	45	50	55	60	65	70
1031 1014	40	40	50	50	60	60	70	70
1013 995	45	50	55	60	65	70	75	80
994 977	50	50	60	60	70	70	80	80
976 959	55	60	65	70	75	80	85	90
958 940	60	60	70	70	80	80	90	90

**Note:** The calculation of the transition level is based upon:

- a. Standard Pressure Setting (1013.25 hPa) – ICAO Doc 7488 Manual of the Standard Atmosphere and EASA Certification Specification – Definitions.
- b. Assumed value of 27.3 ft per hPa derived from a linear correction which is applied to corrected barometric altitudes and confirmed as being utilised in aircraft and ATS systems.

## QNE values

During conditions of exceptionally low atmospheric pressure it is not possible to set QFE or QNH on some aircraft altimeters. In these circumstances an aerodrome or runway QNE can be requested. The QNE is the reading in feet on an altimeter with the sub-scale set to 1013.2 hPa when the aircraft is at aerodrome or touchdown elevation.

QFE Aerodrome / Threshold (hPa)	0	1	2	3	4	5	6	7	8	9
970	1202	1174	1146	1117	1089	1061	1033	1005	977	948
960	1486	1458	1429	1401	1372	1344	1315	1287	1259	1230
950	1773	1744	1715	1687	1658	1629	1601	1572	1543	1515
940	2062	2033	2004	1975	1946	1917	1888	1859	1830	1802
930	2353	2324	2295	2265	2236	2207	2178	2149	2120	2091
920	2647	2618	2588	2559	2529	2500	2470	2441	2412	2382
910	2944	2914	2884	2855	2825	2795	2766	2736	2706	2677
900	3243	3213	3183	3153	3123	3093	3066	3033	3003	2974

Adjust for decimal fractions

	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
Subtract (feet)	3	6	9	12	15	17	20	23	26

Example: Given QFE 943.8 hPa, to calculate QNE:

- enter first column at the figure 940 and follow this line to column headed 3. Read off result at point of intersection, in this case 1975 ft;
- refer to lower table if original QFE contains a fractional figure, 0.8 in this example, and apply the difference as shown - i.e. subtract 23 ft. QNE = 1975 - 23 = 1952 ft.

<b>Table for converting hectopascals to inches of mercury (Hg)</b>										
<b>940.0 – 959 hPa</b>										
<b>Tenths hPa</b>	<b>.0</b>	<b>.1</b>	<b>.2</b>	<b>.3</b>	<b>.4</b>	<b>.5</b>	<b>.6</b>	<b>.7</b>	<b>.8</b>	<b>.9</b>
<b>Hectopascals</b>	<b>Inches Hg</b>									
940	27.75	27.76	27.76	27.76	27.77	27.77	27.77	27.77	27.78	27.78
941	27.78	27.79	27.79	27.79	27.79	27.80	27.80	27.80	27.81	27.81
942	27.81	27.82	27.82	27.82	27.82	27.83	27.83	27.83	27.84	27.84
943	27.84	27.84	27.85	27.85	27.85	27.86	27.86	27.86	27.87	27.87
944	27.87	27.87	27.88	27.88	27.88	27.89	27.89	27.89	27.89	27.90
945	27.90	27.90	27.91	27.91	27.91	27.92	27.92	27.92	27.92	27.93
946	27.93	27.93	27.94	27.94	27.94	27.95	27.95	27.95	27.95	27.96
947	27.96	27.96	27.97	27.97	27.97	27.97	27.98	27.98	27.98	27.99
948	27.99	27.99	28.00	28.00	28.00	28.00	28.01	28.01	28.01	28.02
949	28.02	28.02	28.02	28.03	28.03	28.03	28.04	28.04	28.04	28.05
950	28.05	28.05	28.05	28.06	28.06	28.06	28.07	28.07	28.07	28.08
951	28.08	28.08	28.08	28.09	28.09	28.09	28.10	28.10	28.10	28.10
952	28.11	28.11	28.11	28.12	28.12	28.12	28.13	28.13	28.13	28.13
953	28.14	28.14	28.14	28.15	28.15	28.15	28.15	28.16	28.16	28.16
954	28.17	28.17	28.17	28.18	28.18	28.18	28.18	28.19	28.19	28.19
955	28.20	28.20	28.20	28.21	28.21	28.21	28.21	28.22	28.22	28.22
956	28.23	28.23	28.23	28.23	28.24	28.24	28.24	28.25	28.25	28.25
957	28.26	28.26	28.26	28.26	28.27	28.27	28.27	28.28	28.28	28.28
958	28.28	28.29	28.29	28.29	28.30	28.30	28.30	28.31	28.31	28.31
959	28.31	28.32	28.32	28.32	28.33	28.33	28.33	28.33	28.34	28.34

<b>Table for converting hectopascals to inches of mercury (Hg)</b>										
<b>960.0 – 979 hPa</b>										
<b>Tenths hPa</b>	<b>.0</b>	<b>.1</b>	<b>.2</b>	<b>.3</b>	<b>.4</b>	<b>.5</b>	<b>.6</b>	<b>.7</b>	<b>.8</b>	<b>.9</b>
<b>Hectopascals</b>	<b>Inches Hg</b>									
960	28.34	28.35	28.35	28.35	28.36	28.36	28.36	28.36	28.37	28.37
961	28.37	28.38	28.38	28.38	28.39	28.39	28.39	28.39	28.40	28.40
962	28.40	28.41	28.41	28.41	28.41	28.42	28.42	28.42	28.43	28.43
963	28.43	28.44	28.44	28.44	28.44	28.45	28.45	28.45	28.46	28.46
964	28.46	28.46	28.47	28.47	28.47	28.48	28.48	28.48	28.49	28.49
965	28.49	28.49	28.50	28.50	28.50	28.51	28.51	28.51	28.52	28.52
966	28.52	28.52	28.53	28.53	28.53	28.54	28.54	28.54	28.54	28.55
967	28.55	28.55	28.56	28.56	28.56	28.57	28.57	28.57	28.57	28.58
968	28.58	28.58	28.59	28.59	28.59	28.59	28.60	28.60	28.60	28.61
969	28.61	28.61	28.62	28.62	28.62	28.62	28.63	28.63	28.63	28.64
970	28.64	28.64	28.65	28.65	28.65	28.65	28.66	28.66	28.66	28.67
971	28.67	28.67	28.67	28.68	28.68	28.68	28.69	28.69	28.69	28.70
972	28.70	28.70	28.70	28.71	28.71	28.71	28.72	28.72	28.72	28.72
973	28.73	28.73	28.73	28.74	28.74	28.74	28.75	28.75	28.75	28.75
974	28.76	28.76	28.76	28.77	28.77	28.77	28.77	28.78	28.78	28.78
975	28.79	28.79	28.79	28.80	28.80	28.80	28.80	28.81	28.81	28.81
976	28.82	28.82	28.82	28.83	28.83	28.83	28.83	28.84	28.84	28.84
977	28.85	28.85	28.85	28.85	28.86	28.86	28.86	28.87	28.87	28.87
978	28.88	28.88	28.88	28.88	28.89	28.89	28.89	28.90	28.90	28.90
979	28.90	28.91	28.91	28.91	28.92	28.92	28.92	28.93	28.93	28.93

<b>Table for converting hectopascals to inches of mercury (Hg)</b>										
<b>980.0 – 999 hPa</b>										
<b>Tenths hPa</b>	<b>.0</b>	<b>.1</b>	<b>.2</b>	<b>.3</b>	<b>.4</b>	<b>.5</b>	<b>.6</b>	<b>.7</b>	<b>.8</b>	<b>.9</b>
<b>Hectopascals</b>	<b>Inches Hg</b>									
980	28.93	28.94	28.94	28.94	28.95	28.95	28.95	28.96	28.96	28.96
981	28.96	28.97	28.97	28.97	28.98	28.98	28.98	28.98	28.99	28.99
982	28.99	29.00	29.00	29.00	29.01	29.01	29.01	29.01	29.02	29.02
983	29.02	29.03	29.03	29.03	29.03	29.04	29.04	29.04	29.05	29.05
984	29.05	29.06	29.06	29.06	29.06	29.07	29.07	29.07	29.08	29.08
985	29.08	29.09	29.09	29.09	29.09	29.10	29.10	29.10	29.11	29.11
986	29.11	29.11	29.12	29.12	29.12	29.13	29.13	29.13	29.14	29.14
987	29.14	29.14	29.15	29.15	29.15	29.16	29.16	29.16	29.16	29.17
988	29.17	29.17	29.18	29.18	29.18	29.19	29.19	29.19	29.19	29.20
989	29.20	29.20	29.21	29.21	29.21	29.21	29.22	29.22	29.22	29.23
990	29.23	29.23	29.24	29.24	29.24	29.24	29.25	29.25	29.25	29.26
991	29.26	29.26	29.27	29.27	29.27	29.27	29.28	29.28	29.28	29.29
992	29.29	29.29	29.29	29.30	29.30	29.30	29.31	29.31	29.31	29.32
993	29.32	29.32	29.32	29.33	29.33	29.33	29.34	29.34	29.34	29.34
994	29.35	29.35	29.35	29.36	29.36	29.36	29.37	29.37	29.37	29.37
995	29.38	29.38	29.38	29.39	29.39	29.39	29.40	29.40	29.40	29.40
996	29.41	29.41	29.41	29.42	29.42	29.42	29.42	29.43	29.43	29.43
997	29.44	29.44	29.44	29.45	29.45	29.45	29.45	29.46	29.46	29.46
998	29.47	29.47	29.47	29.47	29.48	29.48	29.48	29.49	29.49	29.49
999	29.50	29.50	29.50	29.50	29.51	29.51	29.51	29.52	29.52	29.52

<b>Table for converting hectopascals to inches of mercury (Hg)</b>										
<b>1000.0 – 1019 hPa</b>										
<b>Tenths hPa</b>	<b>.0</b>	<b>.1</b>	<b>.2</b>	<b>.3</b>	<b>.4</b>	<b>.5</b>	<b>.6</b>	<b>.7</b>	<b>.8</b>	<b>.9</b>
<b>Hectopascals</b>	<b>Inches Hg</b>									
1000	29.53	29.53	29.53	29.53	29.54	29.54	29.54	29.55	29.55	29.55
1001	29.55	29.56	29.56	29.56	29.57	29.57	29.57	29.58	29.58	29.58
1002	29.58	29.59	29.59	29.59	29.60	29.60	29.60	29.60	29.61	29.61
1003	29.61	29.62	29.62	29.62	29.63	29.63	29.63	29.63	29.64	29.64
1004	29.64	29.65	29.65	29.65	29.65	29.66	29.66	29.66	29.67	29.67
1005	29.67	29.68	29.68	29.68	29.68	29.69	29.69	29.69	29.70	29.70
1006	29.70	29.71	29.71	29.71	29.71	29.72	29.72	29.72	29.73	29.73
1007	29.73	29.73	29.74	29.74	29.74	29.75	29.75	29.75	29.76	29.76
1008	29.76	29.76	29.77	29.77	29.77	29.78	29.78	29.78	29.78	29.79
1009	29.79	29.79	29.80	29.80	29.80	29.81	29.81	29.81	29.81	29.82
1010	29.82	29.82	29.83	29.83	29.83	29.84	29.84	29.84	29.84	29.85
1011	29.85	29.85	29.86	29.86	29.86	29.86	29.87	29.87	29.87	29.88
1012	29.88	29.88	29.89	29.89	29.89	29.89	29.90	29.90	29.90	29.91
1013	29.91	29.91	29.91	29.92	29.92	29.92	29.93	29.93	29.93	29.94
1014	29.94	29.94	29.94	29.95	29.95	29.95	29.96	29.96	29.96	29.96
1015	29.97	29.97	29.97	29.98	29.98	29.98	29.99	29.99	29.99	29.99
1016	30.00	30.00	30.00	30.01	30.01	30.01	30.02	30.02	30.02	30.02
1017	30.03	30.03	30.03	30.04	30.04	30.04	30.04	30.05	30.05	30.05
1018	30.06	30.06	30.06	30.07	30.07	30.07	30.07	30.08	30.08	30.08
1019	30.09	30.09	30.09	30.09	30.10	30.10	30.10	30.11	30.11	30.11

**Table for converting hectopascals to inches of mercury (Hg)**

<b>1020. – 1039 hPa</b>										
<b>Tenths hPa</b>	<b>.0</b>	<b>.1</b>	<b>.2</b>	<b>.3</b>	<b>.4</b>	<b>.5</b>	<b>.6</b>	<b>.7</b>	<b>.8</b>	<b>.9</b>
<b>Hectopascals</b>	<b>Inches Hg</b>									
1020	30.12	30.12	30.12	30.12	30.13	30.13	30.13	30.14	30.14	30.14
1021	30.15	30.15	30.15	30.15	30.16	30.16	30.16	30.17	30.17	30.17
1022	30.17	30.18	30.18	30.18	30.19	30.19	30.19	30.20	30.20	30.20
1023	30.20	30.21	30.21	30.21	30.22	30.22	30.22	30.22	30.23	30.23
1024	30.23	30.24	30.24	30.24	30.25	30.25	30.25	30.25	30.26	30.26
1025	30.26	30.27	30.27	30.27	30.28	30.28	30.28	30.28	30.29	30.29
1026	30.29	30.30	30.30	30.30	30.30	30.31	30.31	30.31	30.32	30.32
1027	30.32	30.33	30.33	30.33	30.33	30.34	30.34	30.34	30.35	30.35
1028	30.35	30.35	30.36	30.36	30.36	30.37	30.37	30.37	30.38	30.38
1029	30.38	30.38	30.39	30.39	30.39	30.40	30.40	30.40	30.40	30.41
1030	30.41	30.41	30.42	30.42	30.42	30.43	30.43	30.43	30.43	30.44
1031	30.44	30.44	30.45	30.45	30.45	30.46	30.46	30.46	30.46	30.47
1032	30.47	30.47	30.48	30.48	30.48	30.48	30.49	30.49	30.49	30.50
1033	30.50	30.50	30.51	30.51	30.51	30.51	30.52	30.52	30.52	30.53
1034	30.53	30.53	30.53	30.54	30.54	30.54	30.55	30.55	30.55	30.56
1035	30.56	30.56	30.56	30.57	30.57	30.57	30.58	30.58	30.58	30.59
1036	30.59	30.59	30.59	30.60	30.60	30.60	30.61	30.61	30.61	30.61
1037	30.62	30.62	30.62	30.63	30.63	30.63	30.64	30.64	30.64	30.64
1038	30.65	30.65	30.65	30.66	30.66	30.66	30.66	30.67	30.67	30.67
1039	30.68	30.68	30.68	30.69	30.69	30.69	30.69	30.70	30.70	30.70

<b>Table for converting hectopascals to inches of mercury (Hg)</b>										
<b>1020. – 1039 hPa</b>										
<b>Tenths hPa</b>	<b>.0</b>	<b>.1</b>	<b>.2</b>	<b>.3</b>	<b>.4</b>	<b>.5</b>	<b>.6</b>	<b>.7</b>	<b>.8</b>	<b>.9</b>
<b>Hectopascals</b>	<b>Inches Hg</b>									
1040	30.71	30.71	30.71	30.72	30.72	30.72	30.72	30.73	30.14	30.14
1041	30.74	30.74	30.74	30.74	30.75	30.75	30.75	30.76	30.17	30.17
1042	30.77	30.77	30.77	30.77	30.78	30.78	30.78	30.79	30.20	30.20
1043	30.79	30.80	30.80	30.80	30.81	30.81	30.81	30.82	30.23	30.23
1044	30.82	30.83	30.83	30.83	30.84	30.84	30.84	30.84	30.26	30.26
1045	30.85	30.86	30.86	30.86	30.87	30.87	30.87	30.87	30.88	30.88
1046	30.88	30.89	30.89	30.89	30.90	30.90	30.90	30.90	30.91	30.91
1047	30.91	30.92	30.92	30.92	30.92	30.93	30.93	30.93	30.94	30.94
1048	30.94	30.95	30.95	30.95	30.95	30.96	30.96	30.96	30.97	30.97
1049	30.97	30.97	30.98	30.98	30.98	30.99	30.99	30.99	31.00	31.00

NOTE: Uses density of mercury at 0 C of 13595.1 kg m<sup>-3</sup> and acceleration of gravity 9.80665 m s<sup>-2</sup>.

Then 1 hPa = 0.02953 in. Hg

Values are rounded down to the nearest 0.01 in. Hg



## APPENDIX C

# Wake turbulence categorisation

## Categories

1. Unless an alternative scheme for wake turbulence categorisation is approved and contained in local instructions (for example, the UK wake turbulence categories detailed within AIC Pink 'Wake Turbulence'), the wake turbulence categories in use at AFIS aerodromes in the UK are those detailed in ICAO Doc 4444 PANS-ATM. Aircraft are divided into 4 categories according to their maximum certificated take-off mass (MCTOM) in KG as described below.

Wake turbulence category	Aircraft MCTOM (kg)
SUPER (J)	≥136 000
HEAVY (H)	≥136 000
MEDIUM (M)	>7 000 and <136 000
LIGHT (L)	≤7 000 (see exceptions)

2. The SUPER category is only assigned to specific aircraft types by the competent authority. Types assigned to the SUPER category by the CAA are the Airbus A380-800, Antonov AN-124 Ruslan and Antonov AN-225 Mriya.
3. The wake turbulence category of an aircraft should be entered on the flight progress strip and indicated on flight plans (item 9) as: 'J', 'H', 'M' or 'L' as appropriate.

## Exceptions

4. Certain aircraft, in particular helicopters, have wake turbulence generation and resistance characteristics which differ from those which would be expected based upon their MCTOM, and this affects their categorisation. There is some evidence that, per kilogram of gross mass, the wake turbulence generated by a helicopter is more intense than that of a fixed-wing aircraft. Consequently, in the UK, all helicopters with a MCTOM of 7 000 kg are classified as MEDIUM (using the ICAO wake turbulence category) for the purposes of issuing a warning of wake turbulence.

## Wake turbulence procedures

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5. In providing a warning of wake turbulence (CAP 797 Section 2 Chapter 8 refers), AFISOs should be aware of the wake turbulence categories in the table above and the aircraft types commonly experienced at their ATS unit and their wake turbulence categories.
  
6. ICAO publish an online document (ICAO Doc 8643 Aircraft Type Designators) which provides a consolidated list of the world's aircraft types, is searchable by manufacturer, aircraft model and type designator and includes the aircraft's wake turbulence category (referred to therein as WTC). ICAO Doc 8643 can be found at:

<https://www.icao.int/publications/DOC8643/Pages/Search.aspx>

## APPENDIX D

# Directory

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### Air Accidents Investigation Branch (AAIB)

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Farnborough House  
Berkshire Copse Road  
Aldershot  
Hants  
GU11 2HH

**Email:** enquiries@aaib.gov.uk  
**Tel:** 01252 512 299 (report an accident/serious incident)  
**Tel:** 01252 510 300 (general enquiries)  
**Fax:** 01252 376 999

### Aeronautical Information Service (AIS)

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UK NOTAM Office (NOF/INO)

**Tel:** (H24) 01489 612488 / 01489 612489

**Tel:** 07769 672014 (Available under contingency conditions)

Email (NOTAM Proposals)

**Email:** eg\_notamprop@ead.eurocontrol.int (H24)

Fax (AIS/NOTAM)

**Fax:** 01489-612490 (H24)

AIS Information Line UK

**Tel:** (H24) 08085-354802

**Tel:** (H24) +44 1489-887515 (International)

UK AIS Publications Section  
(AIP/SUP/AIC/etc.)

**Tel:** (Mon to Fri 0800-1600) 01489 887462

UK Charting Section

**Tel:** (Mon to Fri 0800-1600) 01489-887463

Foreign AIP Library – Enquiries and self-briefing visits. (Visits subject to prior arrangement)

**Tel:** (Mon to Fri 0900-1600) 01489-887462

### Civil Aviation Authority (CAA)

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#### SARG

Aviation House  
Beehive Ringroad, Crawley  
West Sussex RH6 0YR

#### CAA

Westferry  
11 Westferry Circus, Canary Wharf,  
London, E14 4HD

**Tel:** 0330 022 1500 (main switchboard)

**Airspace, ATM and Aerodrome (AAA)** Email: [ats.enquiries@caa.co.uk](mailto:ats.enquiries@caa.co.uk)

**AAA – Airspace & ATM Policy** Email: [ats.enquiries@caa.co.uk](mailto:ats.enquiries@caa.co.uk)  
FISO Manual Policy

**AAA - Airspace Regulation (AR)** Email: [arops@caa.co.uk](mailto:arops@caa.co.uk)  
Tel: 01293 983 880  
Answerphone service outside office hours

**AAA(ATM) - ATS Investigations** Email: [atsiadmin@caa.co.uk](mailto:atsiadmin@caa.co.uk)

**AAA(ATM) - Southern Region** Email: [atssouthern.regional.office@caa.co.uk](mailto:atssouthern.regional.office@caa.co.uk)  
Aviation House

**AAA(ATM) - Northern Region** Email: [atsnorthern.regional.office@caa.co.uk](mailto:atsnorthern.regional.office@caa.co.uk)  
First Floor, Kings Park House  
Laurelhill Business Park  
Stirling  
FK7 9JQ

### **Shared Services Centre (SSC)**

**SSC – ATS Licensing** Email: [ATS.licensing@caa.co.uk](mailto:ATS.licensing@caa.co.uk)

**SSC - Safety Data Department** Email: [SDD@caa.co.uk](mailto:SDD@caa.co.uk)

### **CAA Investigation and Enforcement Team**

Westferry and Aviation House  
Tel: 0207 453 6186  
Answerphone service outside office hours  
Fax: 0207 453 6175  
Email: [iet@caa.co.uk](mailto:iet@caa.co.uk)

### **CAA Press Office**

Westferry  
Tel: 0333 103 6000 (office hours)  
Tel: 07789 745 636 (out of hours)  
Email: [content@caa.co.uk](mailto:content@caa.co.uk)

## DfT Transport Security Division

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### Coordination and Operational Response Division – Threats Office

Great Minster House  
33 Horseferry Road  
London  
SW1P 4DR

**Tel:** (Office hours: Monday – Friday 0900 – 1730) 0207 944 2870 / 2871 / 2872

**Tel:** (Outside office hours) 0207 944 5999  
If call is connected with a ‘BOMB threat’ or other security issue, ask for the “Threats Office Duty Officer”.

**Email:** TICB@dft.gsi.gov.uk

**Fax:** 0207 944 2873

## Military

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D & D Cell	<b>Tel:</b> 01489 612 406
Swanwick (Mil) Ops Assistant West	<b>Tel:</b> 01489 612 447
Swanwick (Mil) West Supervisor	<b>Tel:</b> 01489 612 417
Swanwick (Mil) Ops Assistant North and East	<b>Tel:</b> 01489 612 977
Swanwick (Mil) East Supervisor	<b>Tel:</b> 01489 612 408
Swanwick (Mil) North Supervisor	<b>Tel:</b> 01489 612 493
Swanwick (Mil) RAC	<b>Tel:</b> 01489 612 172

## NATS

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### London Terminal Control (Swanwick) and London Area Control (Swanwick)

Sopwith Way	Switchboard	<b>Tel:</b> 01489 572 288
Swanwick	TC Fax	<b>Fax:</b> 01489 612 558
Southampton	TC Watch Supervisor	<b>Tel:</b> 023 8040 1100
Hants	AC Fax	<b>Fax:</b> 01489 612 421
SO31 7AY	AC Watch Supervisor	<b>Tel:</b> 01489 612 440 or 612 420
	FIS	<b>Tel:</b> 01489 611 970
	Flight Plan Processing Section	<b>Tel:</b> 01489 612 423 or 612 424 or 612 425
	Western Radar	<b>Tel:</b> 01489 445 560

### Scottish AC (Prestwick) and Shanwick OAC (Prestwick)

Prestwick Centre	Switchboard	<b>Tel:</b> 01292 479 800
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## APPENDIX E

# Model AIRREP SPECIAL Form

Item	Parameter	Transmit in Telephony	
-	Message - type designator	<b>[AIREP] SPECIAL</b>	
1	Aircraft identification		
2	Position: POSITION (latitude and longitude) OVER (significant point) ABEAM (significant point) (significant point) (bearing) (distance)		
3	Time		
4	Level: FLIGHT LEVEL (number) or (number) FEET CLIMBING TO FLIGHT LEVEL (number) or (number) FEET DESCENDING TO FLIGHT LEVEL (number) or (number) FEET		
5	Phenomenon encountered or observed prompting a special air-report:		Tick as appropriate
		TURBULENCE MODERATE	
		TURBULENCE SEVERE	
		ICING MODERATE	
		ICING SEVERE	
		MOUNTAINWAVE SEVERE	
		THUNDERSTORMS	
		THUNDERSTORMS WITH HAIL	
		DUSTSTORM or SANDSTORM HEAVY	
		VOLCANIC ASH CLOUD	
PRE-ERUPTION VOLCANIC ACTIVITY or VOLCANIC ERUPTION			

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## APPENDIX F

# Use of ATS Surveillance Systems in AFIS

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## Introduction

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- 1.1 Recent developments in ATS surveillance technologies, particularly automatic dependent surveillance – broadcast (ADS-B), mean that it is becoming increasingly economically viable to support the provision of FIS in class G airspace with information from an ATS surveillance system.
- 1.2 The CAA has been working with our industry and regulatory partners across Europe to develop procedures and specifications relating to ATS surveillance systems whose purpose is solely to support the provision of FIS. As such, the system does not require the level of integrity of more traditional ATS surveillance systems that are used by air traffic controllers to establish and maintain separation minima between aircraft.
- 1.3 In an aerodrome FIS (AFIS) context, the ATS surveillance system may take electronic conspicuity data from a number of sources (e.g. SSR and ADS-B) and present that information to the AFISO through a flight information display (FID). This is known as cooperative surveillance but it requires all elements in the surveillance chain to be interoperable. Where cooperative surveillance alone is used, aircraft without operating and/or interoperable SSR transponders or ADS-B transmitters will not be detected. As a result, the AFISO will not be aware of their presence and thus not be able to warn other pilots of their proximity.
- 1.4 The purpose of the FID is to improve the situational awareness of AFISOs and to assist them in providing information that is useful for the safe and efficient conduct of flights. In implementing and utilising a FID, AFIS units shall take steps to ensure that pilots are aware that they are not in receipt of an ATS surveillance service.
- 1.5 The information presented on the FID shall not be used as a substitute for pilot position reports, or to replace the read-back of those ATS messages specified in the Radiotelephony Manual (CAP 413) paragraph 2.70. The information presented on the FID may be used as an aid to confirm pilot position reports.
- 1.6 The use of an ATS surveillance system in the provision of AFIS does not relieve the pilot-in-command of an aircraft of any responsibilities.

## General

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- 1.7 The introduction of the use of an ATS surveillance system represents a change to the functional system that is to be notified to the CAA in accordance with

ATM/ANS.OR.A.045(a)(1) using the ATM change notification form SRG 1430, and is subject to prior approval by the CAA. The ATS provider shall undertake a safety assessment in accordance with ATS.OR.205 Safety Assessment and Assurance of Changes to the Functional System.

## Functions of ATS surveillance systems in AFIS

1.8 ATS surveillance systems may be utilised to perform different functions – basic functions and enhanced functions – in supporting the provision of AFIS and, by inference, a Basic Service<sup>10</sup>. The performance of basic functions or enhanced functions is dependent upon, inter alia, the performance specification of the ATS surveillance system in-use and the licence privileges granted to the FISO.

### Basic functions of ATS surveillance systems in AFIS

1.9 In the absence of a 'conventional' ATS surveillance system<sup>11</sup> and when approved by the CAA, the FID may be used to support the provision of AFIS in performing the following functions:

- a) flight path monitoring of aircraft on final approach;
- b) flight path monitoring of other aircraft in the vicinity of the aerodrome;
- c) providing navigation assistance to VFR flights; and,
- d) enhancing the provision of traffic information.

### Enhanced functions of ATS surveillance systems in AFIS

1.10 ICAO Doc 4444 PANS-ATM<sup>12</sup> describes the functions of ATS surveillance systems in the flight information service and, in relation to AFIS, the CAA considers these to be 'enhanced functions'.

1.11 At present, the technical specification developed by the CAA for the FID supports only the use of ATS surveillance systems to provide basic functions. The performance of enhanced functions is dependent upon wider developments including, inter alia: more widespread use of ADS-B technology, adoption of CAA proposals on FISO training, qualification and licensing etc and would be considered to be an ATS surveillance service. The CAA will develop requirements relating to the enhanced functions as operational requirements mature and are

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<sup>10</sup> 'UK Flight Information Services' (CAP 774) Chapter 2 refers.

<sup>11</sup> A 'conventional' ATS surveillance system is one which utilises information from primary or secondary surveillance radar and is approved by the CAA for the provision of an air traffic control service, in accordance with ATS Safety Requirements (CAP 670). Subject to CAA approval, a 'conventional' ATS surveillance system may also be used to support the basic and enhanced functions of an ATS surveillance system in the provision of AFIS.

<sup>12</sup> ICAO Doc 4444 PANS-ATM Section 8.11

identified by industry. For reference, ATS operational procedures that will be utilised in relation to the enhanced functions of an ATS surveillance system in the provision of AFIS will be sourced from ICAO Doc 4444 PANS-ATM Section 8, and as described in the Manual of Air Traffic Services (MATS) Part 1 (CAP 493) Section 1 Chapter 6.

1.12 AFIS units wishing to enquire about or gain further guidance on the enhanced functions should contact AAA FISO Manual Policy, or their appropriate CAA SARG regional office.

## **Operations with a FID**

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### **Basic Functions**

1.13 In relation to the basic functions described in paragraph 1.9:

a) **Flight path monitoring of aircraft on final approach.**

(1) 'Flight path monitoring' means that information from an ATS surveillance system may be used to:

- confirm that an aircraft that reported as being on final is approaching the correct runway;
- monitor the progress of a flight conducting a notified instrument approach procedure (IAP) at the aerodrome;

(2) For example:

GOLF-CHARLIE-DELTA, CONFIRM FINAL RUNWAY 27

GOLF-CHARLIE-DELTA, CAUTION, CHECK LEVEL

b) **Flight path monitoring of other aircraft in the vicinity of the aerodrome.**

(1) 'Flight path monitoring of other aircraft in the vicinity of the aerodrome' means that information from an ATS surveillance system may be used to:

- monitor the progress of a flight conducting a notified instrument approach procedure (IAP) at the aerodrome;
- assist in confirming the reported position of aircraft joining and established within the aerodrome traffic circuit;
- determine whether aircraft operating in the vicinity of the aerodrome and not in receipt of an ATS from that unit pose a collision hazard to aerodrome traffic;

- determine whether aerodrome traffic, or aircraft in receipt of an ATS from the unit, are proximate to adjacent airspace structures and at risk of infringing airspace;
- assist in visually acquiring aircraft operating within the aerodrome traffic circuit; and,
- assist in confirming the position of aircraft in a state of DISTRESS or URGENCY.

(2) For example:

GOLF-CHARLIE-DELTA, CAUTION, TRAFFIC BELIEVED TO BE YOU APPROACHING THE GREENFIELD CTR, CONFIRM INTENTIONS

GOLF-CHARLIE-DELTA, CONFIRM YOUR [POSITION] / [LEVEL] / [ROUTING]

GOLF-CHARLIE-DELTA, CONFIRM DOWNWIND RUNWAY 27

GOLF-CHARLIE-DELTA, CONFIRM EMERGENCY

**c) Providing navigation assistance to VFR flights.**

(1) 'Providing navigation assistance to VFR flights' means that information from an ATS surveillance system may be used to advise the pilot:

- of their estimated position in relation to a known geographic feature (for example, a town or the aerodrome);
- if they are proximate to adjacent airspace structures and at risk of infringing airspace;
- if they appear to be approaching an area with a markedly different minimum sector altitude (MSA) and are reported or are observed to be operating below that MSA.

(3) For example:

GOLF-CHARLIE-DELTA, TRAFFIC BELIEVED TO BE YOU INDICATING 3 MILES NORTH OF CHICHESTER

GOLF-CHARLIE-DELTA, CONFIRM YOUR [POSITION] / [LEVEL] / [ROUTING]

GOLF-CHARLIE-DELTA, CAUTION, TRAFFIC BELIEVED TO BE YOU APPROACHING THE GREENFIELD CTR, CONFIRM INTENTIONS

GOLF-CHARLIE-DELTA, CAUTION, TRAFFIC BELIEVED TO BE YOU APPROACHING AN AREA OF RISING TERRAIN.

d) **Enhancing the provision of traffic information.**

(1) 'Enhancing the provision of traffic information' means that information from an ATS surveillance system may be used to supplement that received from pilot reports and the AFISOs' visual observations (Section 2 Chapter 1 Paragraph 8.17 refers) to:

- broadcast a warning, in general terms, to aerodrome traffic about unknown aircraft that are observed to be approaching the aerodrome traffic circuit including the area in which IAPs are being conducted;
- provide a warning, in general terms, to departing or arriving flights about aerial activity that is observed to be operating in the vicinity of the intended route of the departing or arriving flight; and,
- provide a warning to a pilot when an AFISO considers that a definite risk of collision exists.

**Note.** Where cooperative surveillance data alone is utilised, aircraft not transmitting electronic conspicuity data will not be detected and displayed on the FID; paragraph 1.3 above refers.

(2) For example:

ALL STATIONS, WALDEN INFORMATION, TRAFFIC BELIEVED TO BE 2 MILES EAST OF WALDEN, TRACKING WEST

GOLF-CHARLIE-DELTA, TRAFFIC BELIEVED TO BE OPERATING 10 MILES NORTH OF WALDEN

GOLF-CHARLIE-DELTA, MULTIPLE AIRCRAFT BELIEVED TO BE OPERATING OVER SMALLVILLE

(3) Level information derived from the FID should not routinely be included in traffic information. However, when an AFISO considers that a definite risk of collision exists, pilot reports or pressure-altitude-derived level information from the FID should be included where available. For example:

GOLF-CHARLIE-DELTA, TRAFFIC BELIEVED TO BE YOU HAS TRAFFIC CONVERGING FROM NORTH INDICATING 3 TOUSAND FEET

Only pressure-altitude-derived level information (not geometric level information) shall be used in providing such traffic information, and consideration must be given to how the ATS surveillance system processes and displays level information that is based on barometric pressure. See also paragraphs 1.15(b) and (c) below.

1.14 In performing the basic functions described in paragraph 1.9, AFISOs shall not use the information displayed on the FID to:

- a) establish the identification of an aircraft; and
- b) validate the SSR Mode 3A code or Mode S and ADS-B aircraft identification, or verify pressure-altitude-derived level information.

Pilots requiring such a service should be advised to contact an appropriate ATS unit that provides ATS surveillance services.

1.15 In performing the basic functions described in paragraph 1.9, when an AFISO observes that:

- (a) the aircraft identification transmitted by a SSR Mode S or ADS-B equipped aircraft appears to differ from that expected from the aircraft, they should ask the pilot to confirm the aircraft identification. If, following confirmation by the pilot that the correct aircraft identification has been set on the SSR Mode S or ADS-B identification feature, the discrepancy continues to exist, the FISO shall inform the pilot but take no further action.
- (b) the pressure-altitude-derived level information transmitted by a SSR Mode C, SSR Mode S or ADS-B equipped aircraft in flight and displayed to the AFISO is either not present, or is displayed as zero(es), they should ask the pilot to confirm that they have selected the altitude reporting feature. If, following confirmation by the pilot that they have selected the pressure-altitude reporting feature, the discrepancy continues to exist, the FISO shall inform the pilot but take no further action.
- (c) the pressure-altitude-derived level information transmitted by a SSR Mode C, SSR Mode S or ADS-B equipped aircraft in flight and displayed to the AFISO is  $\pm$  300 ft or more from the level reported by the pilot, they should advise the pilot of the appropriate altimeter pressure setting.

## **Requirements for use of the FID**

1.16 AFIS units seeking CAA approval (paragraph 1.7 above refers) to utilise an ATS surveillance system to support the provision of AFIS must:

- a) Comply with UK Reg (EU) 2017/373 Annex IV ATS.OR.205 'Safety assessment and assurance of changes to the functional system';
- b) Specify within unit local instructions, inter alia:
  - (1) the functions for which information from the ATS surveillance system will be used;
  - (2) the defined lateral and vertical area of coverage within which information from the ATS surveillance system will be utilised;

**Note.** The defined lateral and vertical area of coverage shall not exceed the designated operational coverage (DOC).

(3) procedures for the functions for which information from the ATS surveillance system will be used, and for:

- failure of ATS surveillance system or systems; and
- failure of airborne electronic conspicuity, including SSR transponder failure in accordance with the provisions of Section 13 of SERA.

(4) procedures for operating and configuring the FID including:

- daily check of equipment serviceability;
- the standardisation of map and overlay settings;
- the standardisation of equipment settings.

(5) system limitations including, inter alia:

- the presentation of position plots on the FID with no integrity;
- the sources of electronic conspicuity data utilised to provide the position indications displayed on the FID; i.e. ADS-B, SSR etc;
- detectability; for example, out of line-of-sight, lack of multi-lateration (MLAT) system triangulation and dependency of the system on the use of electronic conspicuity data transmitted from the aircraft;
- potential effects on mobile broadband communication links from outstations, which may be subject to external interference;

(6) procedures for reporting:

- any fault in the equipment;
- any incident requiring investigation;
- any occurrence where corrupt ADS-B data is displayed;
- any circumstances which make it difficult or impractical to utilise the FID in the provision of FIS.

c) Ensure that the FID and supporting ATS surveillance system meet the performance specification standards required for the use of either the basic or enhanced functions, as appropriate, as defined within Air Traffic Service Safety Requirements (CAP 670) Part C Section 5 Flight Information Display.

- d) Ensure that, in developing procedures for the use of the FID, the availability and use of the FID will not be detrimental to an AFISOs visual observation of aerodrome traffic.
  
- e) Ensure that the FID is positioned in such a way as to not be distracting or prominent to the AFISO but available for 'at a glance' reference, ensuring that it does not detract from the AFISOs ability to access the other equipment at the working position.