

## RA 2330 - Low Flying

### Rationale

Flight at low level has ► *historically been a factor in 46% of fatal accidents and 83% of mid-air collisions*<sup>1</sup>. ◀ *It reduces the margin for error in aircraft operations and can cause unnecessary annoyance to the public. It is therefore essential that those engaged in the conduct and supervision of low flying ensure the highest standards of flying discipline, pre-flight preparation and briefing are maintained.*

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#### 2330(1): Low Flying

### Regulation 2330(1)

#### Low Flying

2330(1) ► **Low-flying shall be specifically authorized and conducted in accordance with the procedures contained in the UK Military Low Flying Handbook (UKLFHB).** ◀

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#### Low Flying

1. ► **Aviation Duty Holders and Accountable Managers (Military Flying) (AM(MF)) Orders should detail the specific authorization, supervision and any work-up requirements for all Low Flying activity.** ◀

#### Authorization

2. ► **The authorization should include brief details of the route or area of operation.**

a. **Fixed Wing.** For all flying below 2000 ft Above Ground Level/Above Mean Sea Level (AGL/AMSL) the Minimum Separation Distance (MSD) **should** be stated.

b. **Rotary Wing.** For all flying below 2000 ft AGL/AMSL, minimum AGL/AMSL **should** be stated. At or below 250 ft AGL/AMSL the Minimum Separation Distance (MSD), or Minimum Separation Criteria (MSC) and AGL, **should** be stated. ◀

#### Minimum Separation ► Considerations ◀

3. ► **For general flight safety and** ◀ to avoid unnecessary annoyance to the public, low flying **should** be conducted at the highest separation criteria, such as MSD or MSC when used in conjunction with AGL, consistent with any operational or training requirement, and **should** normally be not less than 250 ft for fixed-wing aircraft, and 100 ft for rotary-wing aircraft, or the separation criteria, laid down in Aviation Duty Holders and ► **AM(MF)** ◀ Orders.

4. **Separation Criteria/Minimum Heights outside UK Airspace.** For low flying outside UK Airspace, ► ◀ minima **should** be no less stringent than any regulations promulgated by the national or local authorities concerned.

5. **Low Flying over Congested Areas and Public Assemblies.** Aircraft flying over congested areas of cities, towns and settlements **should** be flown at an altitude sufficient, in the event of a power unit failure to permit a safe emergency landing outside the congested area. ► **Except when complying with RA2335, those cities, towns and settlements detailed in Section 1** ◀ of the UKLFHB, the transit altitude **should** never be less than 2000 ft AGL (1000 ft AGL in the case of rotary-wing aircraft and light propeller driven aircraft). When transiting the Thames Valley Avoidance Area under controlled airspace the limits from UKLFHB apply. If, because of weather, or any other cause, sufficient height cannot be maintained, the congested area **should** be

<sup>1</sup> ► **MAA analysis of UK Military fatal accident data from 1985 to 2012.** ◀

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avoided unless doing so would endanger the aircraft. Flying over any place where large numbers of persons are assembled or a public assembly is taking place is prohibited below 1000 ft AGL except when:

- a. **▶ Additionally approved ◀** by MOD (CAS-AS LF).
- b. In connection with a Flying Display and authorized under RA2335.
- c. It is necessary to do so while carrying out arrival or departure **▶ ◀**.

**Speed Limitations**

6. **Speed Limitations.** **▶ By exemption from the Air Navigation Order (ANO) ◀** the maximum cruise speed within the UKLFS is 450 kts. For specific tactical flying activities (for example, target runs, intercept or similar training) the following speed dispensation is permitted:

- a. **Operating Height at or below 150 ft MSD.** Maximum speed for short-term tactical activity is 500 kts
- b. **Operating height above 150 ft MSD.** Maximum speed for short-term tactical activity is 550 kts.

7. **Use of Reheat.** The use of reheat within the UK Low Flying System (UKLFS) is prohibited except for essential training requirements, aircraft emergencies or authorized displays.

**Avoidance Criteria**

8. **▶ All military aircraft should squawk the mode 3/A/C conspicuity code appropriate to aircraft type when conducting training flights within the UK Low Flying System. ◀**

9. **Prohibited and Restricted Areas.** Without the prior permission of MOD (CAS-AS LF) aircraft within the UKLFS **should not** enter UK Prohibited and Restricted Areas as defined in **▶ Manual of Military Air Traffic Management (MMATM) Ch 4 ◀** including:

- a. National Prohibited and Restricted Areas.
- b. Military Prohibited and Restricted Areas.
- c. Provost Marshal Prohibited and Restricted Areas.

10. **Danger Areas.** Aircraft within the UKLFS **should not** enter permanent Danger Areas or scheduled Danger Areas during published operating hours without permission of the controlling authority.

11. **Transit Areas.** Fixed-wing aircraft **should not** overfly Transit Areas below 2000 ft AGL. Heavy rotary-wing aircraft (>5700 kg) **should not** overfly Transit Areas below 1000 ft AGL. All other aircraft **should not** overfly Transit Areas below 500 ft AGL in rural areas, and 1000 ft AGL in congested areas. Transit Areas are defined as congested areas for the purposes of conducting a flypast under RA2335.

12. **Avoidance Areas.** Fixed-wing aircraft should not enter Avoidance Areas without the prior approval of MOD CAS-AS LF. Rotary-wing and light aircraft may enter Avoidance Areas but, without the prior approval of CAS-AS LF, should remain above 500 ft AGL in rural areas and 1000 ft AGL in congested areas.

13. **Air Traffic Zones.** Aircraft within the UKLFS **should not** enter Air Traffic Zones including Aerodrome Traffic Zone (ATZ) and Military Aerodrome Traffic Zone (MATZ) without prior permission of the controlling authority.

14. **Glider and Micro-light Sites.** **▶ During published hours of operation, ◀** Aircraft within the UKLFS **should** avoid permanent glider sites by the following margins:

- a. Permanent Glider Sites. 2000 ft AGL and 2 nm radius.
- b. Permanent Micro-light Sites. 2000 ft AGL and 1 nm radius.

15. **Environmental, Industrial, Medical and Nature Sites.** Aircraft within the UKLFS **should** avoid environmental, industrial, medical **▶ and nature sites ◀** listed

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within the UK Military Low Flying Handbook by 2000 ft AGL and 0.25 nm laterally unless otherwise specified.

16. **Free-fall Parachute Areas.** Aircraft within the UKLFS **should** avoid major free-fall parachute areas listed within the UK Military Low Flying Handbook by 2000 ft AGL and 1 nm laterally.

17. **Small Arms Ranges.** Aircraft within the UKLFS **should** avoid small arms ranges listed within the UK Military Low Flying Handbook by 500 ft AGL unless otherwise specified.

18. **Temporary Airspace Reservations.** Aircraft within the UKLFS **should not** enter temporary airspace reservations promulgated by NOTAM within the specified dimensions.

19. **Royal and Selected Helicopter Flights.** Aircraft within the UKLFS **should** comply with the flight restrictions associated with Royal and Selected Helicopter Flights. See ► **MMATM Ch 15** ◀ for further detail.

20. **Low Flying near Ships and Oil/Gas Installations at Sea.** Except where authorized by Aviation Duty Holders ► **or AM(MF)**, ◀ or when operationally necessary, aircraft **should** avoid ships and fixed or mobile oil/gas installations at sea by the following margins:

a. **Aircraft Carriers and Ships Known to be Operating Fixed-Wing Aircraft.** 5 nm laterally or above 3000 ft AMSL.

b. **Other Warships:**

(1) **Fixed-wing Aircraft.** 2 nm laterally or above 2000 ft AMSL. No ship is to be over flown deliberately more than twice.

(2) **Rotary-wing Aircraft.** By a margin sufficient to avoid interference with other rotary-wing aircraft or ships operations.

c. **Fixed or Mobile Gas Installations.** 1.5 nm laterally or above 2000 ft AMSL.

d. **Other Shipping.** By a margin sufficient to obviate disturbance and disruption of operations, but not less than 250 ft MSD.

**Weather Limitations**

21. **UK Airspace.** Low flying in UK Airspace **should** not to be carried out in weather conditions lower than the minima detailed below unless MOD (CAS-AS LF) has given specific dispensation.

*Table 1. Weather Limitations.*

Weather Limitations		
Fixed-wing Aircraft Speed greater than 140 kts	Fixed Wing Aircraft Speeds at or below 140 kts	Rotary-wing Aircraft
Flight Visibility of 5 km, 1500 m horizontal and 500 ft vertical separation from cloud	Flight Visibility of 1500 m, clear of cloud and in sight of the surface.	► <b>Flight Visibility of 1500 m</b> ◀, clear of cloud and in sight of the surface.

**Note:**

► **In accordance with RA2307 Table 1, Helicopters should only be permitted to operate in less than 1500 m flight visibility, if manoeuvred at a speed that will give adequate opportunity to observe other traffic or any obstacles in time to avoid collision.** ◀

22. **Outside UK Airspace.** Weather limitations for low flying outside UK Airspace **should** be laid down by Aviation Duty Holders and ► **AM(MF)**. ◀ Such minima **should** be no less stringent than any regulations promulgated by the national or local

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authorities concerned.

### ► Low Flying at Night ◀

23. ► Aviation Duty Holders and AM(MF) **should** specify in Orders additional criteria to be applied for Low Flying at Night. Where appropriate, criteria **should** include, but is not be limited to, the following:

- a. Mitigation for unmarked obstacles;
- b. Additional minima to be applied to terrain and obstacle separation criteria;
- c. Equipment serviceability and minimum equipment requirements;
- d. Supervision, authorization and currency;
- e. Minimum safe operating light levels (millilux) / environmental conditions pertinent to night vision systems used;
- f. Aircraft de-confliction in time and space;
- g. Aircraft lighting. ◀

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### Low Flying

24. UK Military Aircraft may low fly inside the UKLFS and abroad. Low flying is defined as follows:

- a. Fixed-wing aircraft, including Tucano but excluding light propeller-driven aircraft, are considered to be low flying when operating at less than 2000 ft AGL/AMSL, except when directed by ATC, or during departure or arrival at an airfield, or during an emergency, or when making a precautionary or forced landing.
- b. Light propeller driven aircraft ► (not Tucano) ◀ and helicopters are considered to be low flying when operating at less than 500 ft MSD except when directed by ATC, or during departure or arrival at an airfield, or helicopter landing site, or during an emergency, or when making a precautionary or forced landing.

### Authorization

25. Unless written authorization to the contrary has been obtained from Aviation Duty Holders and ► AM(MF), ◀ low flying must be conducted only within the confines of the UKLFS and along routes and in areas abroad which have been formally approved by the appropriate national/local authority for use by UK Military Aircraft.

26. Subject to MOD (CAS-AS LF) approval and allocation of airspace, Aviation Duty Holders may authorize low flying exercises in the UK or overseas subject to the following provisions:

- a. Aircraft must be routed so as not to cause unnecessary annoyance to the public, commensurate with meeting operational and training requirements.
- b. Aircraft may not to be routed within:
  - (1) Danger areas without the permission of the controlling authority;
  - (2) Any area subject to low-flying avoidance criteria as ► detailed in Avoidance Criteria (above) ◀ or promulgated by NOTAM.

27. Sponsors of all exercises within the UK Flight Information Region (UK FIR) will notify MOD (CAS-AS LF) of the numbers and types of participating aircraft, together with details of proposed routes, targets, planned sortie rate and operating times, no later than 30 days in advance of the start of the exercise. Procedures and information required are contained in the UK Military Low Flying Handbook Annex A, 'Use of the UK Low Flying System – A Planning Guide for Exercise Sponsors'.

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**Minimum Separation Requirements**

29. **Fixed Wing Aircraft.** The following restrictions apply:

a. Designated tactical training areas, Aviation Duty Holders ►and AM(MF)◄ may authorize Operational Low Flying (OLF) or Operational Low Flying Training (OLFT) at less than 250 ft MSD but not less than 100 ft MSD. Within the UKLFS, all such flying is to be pre-notified in accordance with the procedures detailed in the UKLFHB.

b. ►◄

c. In the sea areas of the UKLFS, outside 3 nm from the coastline, Aviation Duty Holders and ►AM(MF)◄ may authorize low flying below 250 ft MSD for specialised operational training ►or trials.◄

30. **Rotary-Wing Aircraft.** ►Notwithstanding the criteria stated in the Minimum Separation Conditions above,◄ Rotary-wing aircraft operating in Visual Meteorological Conditions (VMC) below 500 ft above the surface may operate in accordance with MSD, or to minimum height and separation criteria (AGL plus MSC) as laid down by Aviation Duty Holders and ►AM(MF).◄

**Avoidance Criteria**

31. ►Low Flying Near Warships. Some warships, such as the RN Type 45, present a hazard through High Intensity Radio Transmission Area (HIRTA) and must be afforded avoidance according to aircraft susceptibility and HIRTA classifications.◄

32. **Flying near Russian Ships.** In addition to the provisions above Aircraft Commanders should be aware of Article IV of the Bi-lateral UK/Russia Agreement on the Prevention of Incidents at Sea, which states:

*“Commanders of aircraft of the Parties shall use the greatest caution and prudence in approaching aircraft and ships of the other Party, in particular ships engaged in the launching or landing of aircraft, and, in the interests of mutual safety, shall not permit simulated attacks by the simulated use of weapons against aircraft or ships of the other Party, or dropping objects near them in such a manner as to be hazardous to ships or constitute a hazard to navigation. Such actions shall also not be taken by aircraft of each Party against non-military ships of the other Party.”*

And

*“Aircraft of the Parties flying in darkness or under instrument conditions shall, wherever feasible, display navigation lights.”*

33. **Operations in support of HM Coastguard or Fishery Protection Tasks.** Fixed and rotary-wing aircraft briefed for sorties in co-operation with HM Coastguard or for fishery protection tasks may be authorized to approach ships and fishing vessels not closer than 100 metres at a minimum height of 200 ft AMSL. Approaches will be made across the ship's quarter and on a diverging heading.

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