

► This RA has been substantially rewritten; for clarity, no change marks are presented – please read RA in its entirety ◀

RA 2120 - Pilots' Instrument Rating Scheme

Rationale

Pilots are sometimes required to fly Aircraft with insufficient visual references, or in non-Segregated Airspace where Visual Flight Rules may be inappropriate or disallowed. Failure to safely fly their Aircraft with insufficient visual references, or failure to comply with Instrument Flight Rules (IFR) for coordinating with other Aircraft and Controllers in non-Segregated Airspace, increases the Risk to Life posed to Aircraft occupants and third parties on the ground. The pilots' Instrument Rating (IR) Scheme requires Aviation Duty Holders (ADH) and Accountable Managers (Military Flying) (AM(MF)) to adopt suitable measures to ensure pilots have appropriate qualifications, recent experience, knowledge, and skill to operate safely in these circumstances .

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Instrument Rating Requirements

2120(1) All pilots who fly UK Military Aircraft **shall** hold a valid IR for their Air System type(s) in accordance with (iaw) paragraphs 1 to 3 below.

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Instrument Rating Requirements

1. **Crewed Aircraft.** Pilots of crewed Aircraft **should** hold an IR if operating an Aircraft:
 - a. In Instrument Meteorological Conditions (IMC) or;
 - b. With insufficient visual references or;
 - c. Under IFR.
2. **Certified Uncrewed Air Systems (UAS).** Pilots of Certified UAS **should** hold an IR if operating an Aircraft:
 - a. In IMC or;
 - b. With insufficient visual references provided by a sensor Certified for flight by visual references alone or;
 - c. Under IFR.
3. **Specific S2 UAS.** Unless operating iaw the layered Safety approach¹ or with due regard², pilots of Specific S2 UAS **should** hold an IR if operating an Aircraft:
 - a. Beyond Visual Line of Sight (BVLOS) in non-Segregated Airspace with insufficient visual references provided by a sensor Certified for flight by visual references alone or;
 - b. Under IFR.
4. **IR Training Design.** ADH / AM(MF) **should** define in orders the criteria for award of an IR for their Air System type(s). An IR **should** assure pilot Competence in relation to:
 - a. Safe Aircraft handling when Instrument Flying (IF) (such as in IMC or when BVLOS), and;
 - b. Knowledge, skills, and experience for safe flight under IFR² in classes of airspace iaw the Air System Safety Case (ASSC)³, Military Permit To Fly (MPTF) and / or Release To Service (RTS).

¹ Refer to RA 2320 – Flight Procedures: Role Specific S2 and Certified Remotely Piloted Air Systems.

² Refer to RA 2307 – Rules of the Air.

³ Refer to RA 1205 – Air System Safety Cases.

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5. **Training Prior to IR Award.** In derogation to this Regulation (to cater for training), ADH / AM(MF) **should** define in orders any circumstances under which a pilot with appropriate IF supervision may fly in IMC / IFR without a valid IR, including minimum Competence requirements. The following circumstances **should** be considered:
 - a. IF towards award of an IR or revalidation of a lapsed IR, when crewed with another pilot who holds a valid IR.
 - b. Provision for an IF Competence check to demonstrate Competence in IF where the requirements for initial award or revalidation of an IR are not met. An IF Competence check **should not** confer the same privileges as an IR, nor be used for continuous IMC operations or flight under IFR. IF Competence checks **should** be documented in pilots' flying training records.
 - c. Pilots flying without sufficient visual references as part of a recognized flying training course who hold an appropriate IF Competence check.
6. **IR Award.** An IR **should** be awarded to a pilot by an Instrument Rating Examiner (IRE) or Instrument Rating Instructor (IRI) after they have satisfactorily completed an Instrument Rating Test (IRT) . If stipulated in ADH / AM(MF) orders, decisions on the award of an IF Competence check may be delegated to :
 - a. Type-specific Qualified Aircrew Instructors (Qualified AI), who hold an IR; or,
 - b. IRI or IRE.
7. A civil IR / Type Rating Examiner can be accepted as equivalent to a military IR / IRE / IRI on the same type / mark. ADH / AM(MF) **should** consider whether any differences between the civil and military IR / IRE syllabi require extra training.
8. **Recording the IR Award.** On award of an IR full details **should** be recorded in the pilot's Flying Logbook and their flying training record, including as a minimum:
 - a. Any restrictions (such as No Performance Based Navigation (PBN), types of approach or classes of airspace)⁴;
 - b. Expiry date;
 - c. Air System type and mark;
9. **IR Recognition Across Air System Types or Marks.** ADH / AM(MF) **should** define in orders if award of an IR on an Air System type or mark is valid for another Air System type or mark. This **should** only be permitted for pilots who routinely remain qualified and current on multiple types or marks.
10. **IF Currency.** ADH / AM(MF) **should** define in orders IF currency minima required to maintain validity of an IR. This **should** consider a minimum number of IF hours and Instrument Approaches for that Air System type in a specified period. Where necessary, IF currency minima **should** also include applicability of IF training (including recordable hours) conducted across multiple types, or in a multi-crew environment. ADH / AM(MF) **should** also determine the number of IF simulator hours and / or approaches that may be accredited to IF currency, or an IRT⁵.
11. **IR Restrictions and IF Currency.** ADH / AM(MF) **should** consider the experience of IRT candidates and, if it is felt appropriate, stipulate in orders any restrictions to be applied to an IR, such as:
 - a. An allowance to be added to the procedure minima when calculating Decision Height / Altitude and Minimum Decent Height / Altitude;
 - b. Any additional IF currency requirements;
 - c. Any modifications to IR privileges.
 - d. For multi-pilot Air Systems operated by pilots with different restrictions on their IR, the ADH / AM(MF) **should** stipulate which pilot's IR is controlling.

⁴ An ADH / AM(MF) may remove restrictions later, subject to re-assessment of any IRT requirements that were omitted.

⁵ Refer to RA 2375 – Qualification, Approval and Use of Aircrew Training Devices.

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12. **IF Practice and Simulated IF.** ADH / AM(MF) **should** ensure that all pilots who are required to maintain an IR through IF hours / approaches currency are given opportunities for adequate practice evenly distributed throughout the period of their appointment. IF practice and simulated IF, where during a live flight external visual references are artificially limited, **should** normally be carried out in Air Systems fitted with dual controls and supervised by a Safety pilot iaw RA 2307². Live flying exercises involving unusual attitudes **should** be conducted in Visual Meteorological Conditions (VMC).
13. **IR Expiry.** Subject to maintaining IF currency minima, an IR **should** expire 13 months from the date of the first flight of the IRT. ADH / AM(MF) **should** only grant extensions to the 13 month expiry for essential operational reasons or exceptional circumstances. Where this is the case, any extension **should** be approved personally and in writing by the appropriate ADH or AM(MF).
14. **Cancellation of an Award or Appointment.** A pilot's IR **should** be cancelled by their ADH / AM(MF) or delegated authority, if there is evidence that the pilot is no longer Competent to hold the IR. Similarly, an appointment as an IRI or IRE **should** be cancelled on the recommendation of the ADH / AM(MF) if there is evidence that the IRI or IRE is no longer Competent. If an award or appointment is cancelled the word 'CANCELLED' **should** be written or stamped in red over the appropriate entry in the pilot's hard copy Flying Logbook, or suitably recorded in an electronic version, and recorded in their flying training record.
15. **Appointment as an IRE or IRI.** An IRE / IRI is an AE or AI who is qualified to deliver assessment or training for an IR. Pilots **should** only be appointed as an IRE / IRI if they hold an IR and after an examination approved by an ADH / AM(MF), conducted by a Command IRE (CIRE) or Command IRI (CIRI). Authority to appoint IRE / IRI **should not** be delegated below OF4 level or the Flight Operations Post Holder (FOPH). Experienced IRE and IRI may be appointed as CIRE or CIRI. IRE / IRI **should** hold an IR valid for all types of approach and classes of airspace relevant to the Air System type(s) for which they instruct or examine.

Performance Based Navigation

16. **PBN Training and Currency.** ADH / AM(MF) **should** define in orders suitable training and currency requirements for PBN privileges⁶ appropriate to their Air System type(s).
17. **PBN Privileges.** In order for a pilot to exercise PBN privileges, those privileges **should** be within the Air System's certified navigation specification and iaw the ADH / AM(MF) Approval, and the pilot **should** have successfully completed an IRT containing type specific PBN assessments and either:
- A course of PBN theoretical knowledge and practical flying training which includes at least the elements required by the navigation specifications for which their Air System is certified⁷, or;
 - An assessment of previous PBN training and experience which satisfies the ADH / AM(MF) that Competence acquired is equivalent to that gained through the specified course for the Air System type.
18. **Required Navigation Performance (RNP) Approach (APCH) Restrictions.** For Air Systems approved for RNP APCH, if the IRT does not include an RNP APCH exercise, the PBN privileges for the pilot are restricted and the Flying Logbook entry **should** state 'No RNP APCH' (eg Voyager IR / No RNP APCH).

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19. **Practical Training Environment.** Practical flying training for an IR may be conducted during a live sortie in IMC or under simulated IF conditions, or using an appropriately qualified and approved Flight Simulator Training Device⁵ (FSTD).
20. **IR Privileges.** An unrestricted IR qualifies a pilot to operate as General Air Traffic or Operational Air Traffic in all classes of airspace.

⁶ Refer to UK Civil Aviation Authority (CAA) Publication (CAP) 2138 - Performance Based Navigation Endorsement: IR Holders.

⁷ Refer to UK CAA Part-FCL, Annex I.

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21. **IR Recognition Across Air System Types or Marks.** In determining applicability of an IR from one type or mark of Air System to one or more other types, ADH / AM(MF) will need to consider such factors as types of approach, approved classes of airspace, asymmetric characteristics, instrument / cockpit layouts, performance, handling, and Air System complexity.
22. **Classes of Airspace.** Notwithstanding general privileges conferred by a pilot's IR, limitations will apply in those classes of airspace for which the Air System is not equipped - unless the appropriate Air Traffic Control (ATC) authority has given clearance and it is permitted by the Air System RTS or MPTF.
23. **Command IRE / IRI.** Command IRE / IRI are appointed by ADH / AM(MF) to signify higher levels of experience and Competence and:
- Provide support to less experienced IRE / IRI;
 - Provide guidance and Assurance to the ADH / AM(MF) in design and management of the IR scheme;
 - May support several Air System types;
 - Conduct IRE / IRI tests.
24. **Unrated Pilots.** All pilots who do not hold a valid IR for that Air System type are unrated, whether or not they have completed an IF Competence check. An unrated pilot who inadvertently enters IMC will minimize time spent in IMC to that necessary to regain VMC.
25. Civil and Service FSTD Instructors will hold an IR on type⁸ in order to be nominated as IRE / IRI and will maintain that rating in the FSTD. Those nominated will only be approved by CIRE / CIRI after being observed briefing, conducting, and debriefing a simulator IRT. Alternatively, they may combine their IRT with their IRET by planning, briefing, flying, debriefing and assessing their own test in an FSTD, in the presence of a CIRE / CIRI. Their Qualification will be valid for 13 months from the date of the test.

Regulation 2120(2)

Instrument Rating Test

- 2120(2) All pilots **shall** demonstrate their ability to fly a UK Military registered Aircraft accurately and safely without visual references and iaw airspace requirements before being issued an IR.

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Instrument Rating Test

26. The IRT **should** be a live flight, or one conducted in an FSTD⁵, in addition to a ground examination as promulgated by ADH / AM(MF), relevant to Air System type. Flight tests and ground examinations for the award of an IR **should** only be conducted by an appointed CIRE / CIRI / IRE / IRI. Flight tests and ground examinations leading towards the award of an IF Competency check **should** only be conducted by a type-specific Qualified AI with an IR, or an appointed CIRE / CIRI / IRE / IRI.
27. For those Specific S2 UAS, where the in-flight meteorological conditions have no effect on the flying technique used, a current Certificate of Qualification on Type (CQT) can replace the IRT live flight, however, a suitable ground examination **should** be conducted prior to the award of an IR. Subsequent IR renewals **should** consist of a ground examination and be contingent on a current CQT.
28. **IRT Report.** On completion of flight and ground tests, an IRT Report **should** be completed and filed in the pilot's flying training record.
29. **IRT Tolerances and Assessment.** Pilots **should** be assessed with reference to the Flight Test Tolerances (reproduced in Table 1) in the UK Civil Regulations⁹, and **should** demonstrate the following abilities:

⁸ Where a type has different marks with different flight instrumentation, ie analogue versus glass cockpit, then the IR will be on the type and mark on which the IRE qualification will be held.

⁹ Refer to Appendix 7 of UK Regulation 1178/2011 Annex I PART-FCL.

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- a. Operate the Aircraft within its limitations;
- b. Complete all manoeuvres smoothly and accurately;
- c. Exercise good judgment and airmanship;
- d. Apply aeronautical knowledge;
- e. Maintain control of the Aircraft at all times in such a manner that the successful outcome of a procedure or manoeuvre is never seriously in doubt.

Table 1. Flight Test Tolerances.

Height	
Generally	± 100 feet
Starting a go-around at decision Height / Altitude ¹⁰	+ 50 / - 0 feet
Minimum descent Height / Missed Approach Point / Altitude	+ 50 / - 0 feet
Tracking	
On radio aids	± 5°
For angular deviations	Half scale deflection, azimuth and glidepath (eg Localiser Performance with Vertical Guidance (LPV), Instrument Landing System (ILS), Microwave Landing System (MLS))
2D (Lateral Navigation (LNAV)) and 3D (LNAV / Vertical Navigation (VNAV)) 'linear' lateral deviations	Cross-Track error / deviation will normally be limited to ± half the RNP value associated with the procedure. Brief deviations from this standard up to a maximum of the RNP value are allowable.
3D linear vertical deviations (eg RNP APCH (LNAV / VNAV) using Barometric Vertical Navigation (BAROVNAV))	Not more than – 75 feet below the vertical profile at any time, and not more than + 75 feet above the vertical profile at or below 1000 feet above Aerodrome level.
Heading	
All engines operating	± 5°
With simulated engine failure	± 10°
Speed	
All engines operating	± 5 knots
With simulated engine failure	+ 10 knots / – 5 knots,

Note:

Amended Table 1 tolerances may be stipulated in orders by the ADH / AM(MF) to make allowance for experience and the handling qualities, instrumentation and performance of the Air System type. Test candidates **should** be expected to strive to fly within the stipulated tolerances, however, at the discretion of the examiner, excursions due, for example to turbulent conditions, will not necessarily

¹⁰ A go-around will start with the decision to do so, therefore, it is acceptable for a pilot to briefly descend below their decision Height or Altitude during the go-around procedure.

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result in a test failure as long as errors are recognised promptly and smooth corrections made.

30. **IRE / IRI Test.** Except for Specific S2 UAS pilots who are not required to conduct a live flight iaw paragraph 27, candidates for the IRE / IRI test **should** plan, brief, fly, debrief and assess their own test flight in the presence of a CIRE / CIRI. ADH / AM(MF) **should** stipulate in orders how Specific S2 UAS IRE / IRI candidates' tests are conducted.

31. **Accuracy in Atypical Situations.** The test tolerances applied during simulated emergencies, flight on standby instruments or for operational exercises **should** be stipulated in ADH / AM(MF) orders.

32. **Management of Automatic Systems.** The IRT **should** assess use of automatic Systems to manage crew resource management throughout a sortie. Use of autopilot functions **should** be encouraged. Where pilots may need to fly the Aircraft in a reversionary mode, however, this **should** also be assessed. Additionally, for Aircraft with an automatic take-off or landing capability, pilots **should** be assessed on their ability to monitor the system for out-of-limit conditions and to safely fly a missed approach procedure in each of the available manual or reversionary methods of control.

33. **Airborne Assessment of Skill.** The IRT schedules for individual Air System types **should** be promulgated in ADH / AM(MF) orders. They **should** be designed to ensure that the pilot has the necessary skills to fly a particular type in all those classes of airspace for which it is equipped, unless restrictions are placed on operations of the Air System by ADH / AM(MF) or the individual by commanders or FOPHs, who may then limit the test accordingly. In these circumstances, the limitations **should** be clearly laid out in the Flying Logbook and the IRT Report.

34. **Conduct of the Test.** Simulated emergencies **should** be realistic. The flight test **should** be conducted on not more than two sorties, and the rating will be valid for 13 months after the date of the first sortie¹¹.

35. **Crew Co-ordination.** If the Aircraft for the IRT is normally flown with the aid of a crew member, then the candidate **should** be assisted with such information and assistance as would normally be made available to them by the crew. If additional cockpit / Command Unit crew are specified in the RTS, they **should** be appropriately qualified¹² to support the pilot during the IRT.

36. **Ground Examination.** Oral or written ground examinations **should** be conducted by an IRE / IRI within 7 days of the flight test on a particular Air System type. Relevant questions **should** be selected according to the Air System type and role from the learning objectives in UK CAA Regulation 1178-2011, Annex I PART-FCL, Subpart G, Section 1, FCL.615 IR, and other documents as defined by the ADH / AM(MF).

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Instrument Rating Test

37. The central advisory body regarding IF standards and techniques is Examining Wing of the Central Flying School (CFS). Where authorized, CFS agents may provide advice within their ADH / AM(MF) orders on IF matters.

¹¹ For Specific S2 UAS pilots who are not required to conduct a live IRT flight iaw paragraph 37, their IRT will expire 13 months after the date of their ground examination.

¹² Refer to RA 2101 – Aircrew Qualifications; RA 2102 – Aircrew Competence in Role; and RA 2340 – Supernumerary Crew, Supernumerary Support Crew and Passengers.