RA 2135 - Aircrew and Supernumerary Crew Medical Requirements

Rationale

The fitness of Aircrew and Supernumerary Crew to conduct their duties is critical to the safe flight of Aircraft. Significant variation in physical and mental stressors across Air Systems, and differing mitigations for Aircrew incapacitation, necessitate a range of standards, which are defined in AP 1269A[1] and may be augmented in single-Service (sS) orders and other documents. There is increased Risk to crew, Passengers and the public if appropriate levels of fitness and Aviation Medicine[2] (AvMed) training are not achieved. This Regulatory Article (RA) ensures that Aircrew and Supernumerary Crew fitness-to-fly and Medical Employment Standards (MES) are appropriately managed, and that the required AvMed training is completed.

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Regulation 2135(1)

Medical Employment Standard

2135(1) Aviation Duty Holder (ADH) and Accountable Manager (Military Flying) (AM(MF)) **shall** ensure compliance with a suitable MES for all Aircrew and Supernumerary Crew within their Area of Responsibility (AoR).

Acceptable Means of Compliance 2135(1)

Medical Employment Standard

1. ADH / AM(MF) **should** stipulate Supernumerary Crew MES[3].

2. ADH / AM(MF) **should** ensure that Aircrew and Supernumerary Crew MES[4,5] are managed in accordance with (iaw) both AP 1269A[6] and medical advice from their relevant medical authority (see paragraph 8).

3. Where an individual's MES is downgraded or has limitations applied by:

   a. A UK Military Aviation Medical Examiner (MAME), the MAME **should** ensure that any restrictions are communicated to their chain of command / line management.

   b. A civil Aeromedical Examiner (AME) or non-UK MAME, the affected individual **should** ensure that any restrictions are communicated to their chain of command / line management.

4. ADH / AM(MF) **should** accept and manage any Risks involved with operating an Air System associated with a downgrade of, or limitations applied to, an individual's MES.

[1] Air Publication (AP) 1269A – Royal Air Force Manual: Assessment of Medical Fitness. Although published by the RAF, AP 1269A contains medical policy for Aircrew across the Defence Air Environment.
[2] Within this RA all references to Aviation Medicine can be considered to also mean aerospace medicine.
[3] Aircrew MES is stipulated from AP 1269A via the Joint Personnel Administration Number for their assignment.
[4] For Contractor Flying Approved Organization Scheme (CFAOS) Organizations, the required MES may be specified by the RAF Command Flight Medical Officer (CFMO) as a UK military Joint Medical Employment Standard (JMES), a foreign military MES or a civil medical standard.
[5] For CFAOS Organizations, this applies to all Aircrew and Supernumerary Crew flying under an Organization's CFAOS Approval, whether civilian or military (eg the MES for Service personnel flying as part of a combined test team will be as agreed between the RAF CFMO and the AM(MF).
[6] While AP 1269A is the controlling document for Tri-Service aviation medical standards, these standards may be supplemented by sS medical authority advice.

Acceptable Means of Compliance 2135(1)

5. ADH / AM(MF) **should** ensure that all restrictions associated with a downgrade of, or limitations applied to, a MES are observed, and that medical advice is followed.

6. Aircrew and Supernumerary Crew **should**:

a. Maintain the MES stipulated for their role or ensure that any downgrade or limitations are acceptable iaw paragraph 4.

b. Complete an Initial Medical Examination (IME)[7].

c. Complete a Periodic Medical Examination (PME)[7].

d. Remain in date for PME if in a flying appointment.

e. Comply with all medical limitations they have been awarded.

f. Complete electrocardiography (ECG) and enhanced cardiac screening[7].

Guidance Material 2135(1)

Medical Employment Standard

7. A MES for Supernumerary Crew may be more permissive than for Aircrew (for example, where appropriate to platform and role, they may be similar to Passenger standards). ADH / AM(MF) will state the required MES for Supernumerary Crew following medical policy advice. Variation in MES by platform and role is anticipated.

8. Advice sought on medical standards will be from the relevant sS authority:

a. Head of Aviation Medicine (Royal Navy) for Royal Navy.

b. Consultant Advisor in Aviation Medicine for Army.

c. SO1 Aviation Medicine (SO1 Avn Med) for Joint Aviation Command.

d. CFMO[8] for Royal Air Force (RAF) and CFAOS organizations.

9. In the event that the relevant sS authority is unavailable, Assistant Head Aerospace Medicine[9] (AH AM) will be consulted for tri-Service / CFAOS advice.

10. If a civil medical standard (eg Civil Aviation Authority (CAA) / European Union Aviation Safety Agency (EASA) Class 1) is considered appropriate for civilian Aircrew and civilian Supernumerary Crew by the relevant sS medical authority, this standard may be stipulated as an alternative to a military JMES.

11. A MAME is a Medical Officer (MO), a Civilian Medical Practitioner (CMP) or a locum doctor, qualified to assess and determine fitness for Aircrew and Controllers[10,11]. A MAME will complete approved training from RAF CAM Aviation Medicine Training Wing (AMTW) and be endorsed by the appropriate sS medical authority.

12. Aircrew in non-flying appointments can defer their PME iaw AP 1269A Leaflet 4-02.

13. Aircrew medical fitness is assessed at PME. The MAME will sign the MES record in the individual's Flying Logbook or on a suitable certificate. The recorded PME is valid until no later than the last day of the month in which the next PME is due.

14. Defence Contractor Flying Organizations (DCFO) require either a designated MAME or an endorsed AME[12]. Details of available MAMEs are available from CFMO(RAF). Civil AMEs require endorsement by ►AH AM◄ at the RAF CAM, before they can act in lieu of a MAME. Civilian Aircrew and Supernumerary Crew may seek advice from the CFMO(RAF)[8] for access to a MAME.

15. If a MAME does not have access to a primary care record, they will use a Statement of Health (SoH) and ►either a◄ Medical Attendant's Report (MAR) ►or the individual's National Health Service Web Application or a full copy of the individual's General Practice records obtained by a Subject Access Request,◄ in

[7] iaw AP 1269A and for CFAOS organizations, as advised and agreed by CFMO, for criteria and appropriate medical examiners.
[8] CFMO(RAF), RAF Centre of Aerospace Medicine (CAM), RAF Henlow, Bedfordshire, SG16 6DN.
[9] The AH AM, at the RAF CAM, can be contacted at Air-Support-CAM-CO-AHAM.
[10] Aircrew and Controllers who are subject to the MAA Regulatory Publications.
[11] Refer to RA 3203 – Military and MOD Contracted Civilian Controller Medical Requirements.
[12] A Civil AME certified by the CAA / EASA.

Guidance Material 2135(1)

conjunction with a civil Medical Certificate where appropriate, to assess Aircrew and Supernumerary Crew fitness for their role[13].

Regulation 2135(2)

Fitness-to-Fly

2135(2) Aircrew and Supernumerary Crew **shall** be fit-to-fly ►when operating an Air System.◄

Acceptable Means of Compliance 2135(2)

Fitness-to-Fly

16. Aircrew and Supernumerary Crew **should**:

a. Seek medical advice if they have any reason to doubt their fitness-to-fly, even for a relatively minor illness.

b. Contact a MAME prior to returning to flying duties if another medical practitioner (not qualified and endorsed as a MAME) has been consulted.

c. Report any period they are unfit-to-fly to their Duty Holder chain or, for DCFO, the Flight Operations post-holders (FOPH).

17. Supervisors and Authorizing Officers who have reason to doubt the medical fitness of any Aircrew or Supernumerary Crew **should** seek the advice of a MAME.

18. A MAME **should** ensure that the Duty Holder chain is informed of any change in medical fitness affecting the flying status of their Aircrew or Supernumerary Crew.

19. FOPH **should** have a mechanism to be notified of any change in medical fitness affecting the flying status of their Aircrew or Supernumerary Crew.

Guidance Material 2135(2)

Fitness-to-Fly

20. Aircrew and Supernumerary Crew may declare, without medical advice, that they are not fit-to-fly.

21. Strenuous or prolonged physical exercise, breaks from flying, or fatigue, may adversely affect individual ability to withstand the stress of flight, including G tolerance - particularly in the short term. Aircrew, Supernumerary Crew, and their supervisors, will need to consider when such circumstances (whether on or off duty) may necessitate advice from a MAME prior to flight.

Regulation 2135(3)

Pilot Operations - Upper Age Restriction

2135(3) Pilots **shall not** operate an Air System once they reach the age of 65 unless the Air System is fitted with dual controls and is operated with a second pilot. The second pilot **shall** hold the appropriate qualification and MES to act as pilot in command, and be under the age of 65.

Acceptable Means of Compliance 2135(3)

Pilot Operations - Upper Age Restriction

22. ADH and AM(MF) **should** stipulate minimum MES, qualifications and flying currency to be held by the second pilot. The second pilot **should** be capable of recovering from all the manoeuvres, roles, or exercises that the sortie has been authorized for and be Competent to land the Aircraft without assistance from the other pilot.

Guidance Material 2135(3)

Pilot Operations - Upper Age Restriction

23. Nil.

[13] The SoH and MAR may be found in AP 1269A Leaflet 4-02 Annex C and Annex D.

Regulation 2135(4)

Flying After an Accident or In-Flight Medical Incident

2135(4) After being involved in a flying Accident or in-flight medical Incident, Aircrew and Supernumerary Crew **shall not** operate an Air System until they have gained appropriate medical Approval.

Acceptable Means of Compliance 2135(4)

Flying After an Accident or In-Flight Medical Incident

24. A MAME **should** issue medical Approval prior to any return to flying duties for Aircrew or Supernumerary Crew involved in a flying Accident or in-flight medical Incident.

25. ADH and AM(MF) **should** consider the guidance in AP 1269A Leaflet 4-02 Annex I for the management of Aircrew and Supernumerary Crew following an Aircraft Accident or Incident.

Guidance Material 2135(4)

Flying After an Accident or In-Flight Medical Incident

26. AP 1269[14] Section 6 provides detailed information on handling specific types of in-flight medical Incidents[15].

Regulation 2135(5)

Aviation Medicine Training

2135(5) An ADH / AM(MF) **shall** stipulate, and ensure Aircrew and Supernumerary Crew comply with, AvMed training requirements within their AoR.

Acceptable Means of Compliance 2135(5)

Aviation Medicine Training

27. An ADH and AM(MF) **should** determine appropriate initial and refresher AvMed training requirements in conjunction with RAF CAM[16] and / or the sS medical authority.

28. As a minimum, ADH and AM(MF) orders **should**:

a. Set initial and refresher AvMed training requirements within their AoR.

b. Ensure all Aircrew and Supernumerary Crew complete initial AvMed training prior to flying training.

c. Ensure all Aircrew and Supernumerary Crew engaged on flying duties receive refresher AvMed training at intervals not exceeding 5 years.

d. Promulgate procedures to be followed when a dispensation or extension to aviation medicine training requirements is deemed necessary. The relevant medical authority **should** be consulted prior to any dispensation or extension to AvMed training requirements.

Guidance Material 2135(5)

Aviation Medicine Training

29. AvMed training for Supernumerary Crew is required but training design is left up to the ADH or AM(MF) to specify following medical policy advice. As AvMed training addresses various elements including physiological (environmental) and cognitive factors, training for Supernumerary Crew may be similar in some respects to Aircrew on the same platform type, and different in others. Variation in AvMed training by platform and role is anticipated.

30. Further guidance on AvMed training can be found in AAMedP-1.2[17] which contains appropriate syllabi for initial and refresher training by Aircraft type.

[14] Refer to AP 1269 – Medical Management and Administration.
[15] Including inter alia: hypoxia; contamination of oxygen supply; fumes in the cockpit; spatial disorientation; G-Induced Loss of Consciousness (G-LOC).
[16] OC AMW Training Section, RAF CAM, RAF Henlow, Bedfordshire, SG16 6DN. Air-Support-CAM-AMTW-OC.
[17] AAMedP-1.2 is available from the North Atlantic Treaty Organisation (NATO) Standardization Office (NSO) public website.

Regulation 2135(6)

High G Training

2135(6) ADH and AM(MF) **shall** stipulate, and ensure Aircrew and Supernumerary Crew comply with, high G training requirements in their AoR.

Acceptable Means of Compliance 2135(6)

High G Training

31. ADH and AM(MF) **should** determine initial and refresher high G training requirements in conjunction with RAF CAM[16]. Consideration **should** be given to the definitions and stipulations in NATO Standardization Agreement (STANAG) 3827[18].

32. High G training **should** be conducted using a centrifuge appropriate to the Aircraft being flown. Individuals subject to centrifuge exposure **should not** return to flying duties for 6 hours and until free of all residual symptoms[19].

33. As a minimum, ADH and AM(MF) orders **should**:

a. Ensure all Aircrew and Supernumerary Crew whose employment exposes them to high G environments complete high G training.

b. Specify initial and refresher high G training requirements within their AoR.

c. Ensure refresher high G training is completed by Aircrew and Supernumerary Crew returning to high G flying following an absence from a high G environment for 3 years or more.

d. Ensure refresher high G training is completed at intervals not exceeding 5 years.

e. Describe procedures to be followed for individuals who do not complete high G training to the required standard.

f. Give procedures to be followed when a dispensation or extension to high G training requirements is deemed necessary. RAF CAM **should** be consulted prior to any dispensation or extension to high G training requirements.

Guidance Material 2135(6)

High G Training

34. Centrifuge exposure may adversely affect individuals due to the physical strain of high G and sensory disturbance induced by centrifuge manoeuvres.

35. ►◄

Regulation 2135(7)

Temporary Medical Restrictions to Flying Duties

2135(7) Aircrew and Supernumerary Crew **shall** comply with any restrictions following exposure to conditions affecting their fitness-to-fly.

Acceptable Means of Compliance 2135(7)

Temporary Medical Restrictions to Flying Duties

36. Aircrew and Supernumerary Crew **should** consult a MAME prior to:

a. Elective surgery.

b. Corneal refractive surgery for visual correction.

c. ►Eyelid surgery.

d. Cataract surgery.

e. Commencing the use of contact lenses when flying.

[18] STANAG 3827: Minimum Requirements For Physiological Training Of Aircrew in high "G" Environment - AAMedP-1.13 EDITION A. STANAG 3827 and the associated standards in AAMedP-1.13 Ed: A are available from the NSO public website.
[19] If in doubt, refer to Regulation 2135(2): Fitness-to-Fly.

Acceptable Means of Compliance 2135(7)

f. Commencing the application of ophthalmic preparations for longer than four weeks.◄

g. Ophthalmic procedures including Anaesthetics or Glaucoma preparations.

h. Routine immunisation.

i. Hypnotherapy.

j. Acupuncture.

k. Psychological therapy or counselling.

l. ►Botox procedures.

m. Use of medications to aid weight-loss.◄

n. Complementary and alternative medicine.

37. Aircrew and Supernumerary Crew **should** establish with a MAME any flying restrictions caused by inoculations or vaccinations.

38. Aircrew and Supernumerary Crew **should not**:

a. ►Use any non-UK sourced and manufactured tobacco pouches while operating or employed on an Air System unless approved by a MAME.◄

b. Take any prescription medicine, drugs, tablets, remedies, or nicotine replacement therapy before flying unless prescribed or approved by a MAME.

c. Use any over-the-counter (OTC) medicines, drugs, tablets, or remedies within 24 hours of reporting for flying duties unless ►they are listed in AP 1269A - Leaflet 5-19: Annex I[20], or are otherwise◄ approved by a MAME, as the effect on an individual's fitness-to-fly may not be immediately apparent.

d. Use any dietary supplements, homeopathic remedies or alternative medicines unless ►they are listed in AP 1269A - Leaflet 5-19: Annex I[20], or are otherwise◄ approved by a MAME.

e. Fly for 7 days after a general, spinal, or epidural anaesthetic, or for 12 hours after a local or regional (dental) anaesthetic, unless the period is extended in consultation with a MAME.

f. Fly for 12 hours after acupuncture treatment.

g. Fly for 36 hours after donating blood, or as directed by a MAME.

h. Fly for 24 hours after the application of mydriatic eye drops or agents (14 days in the case of atropine).

i. Fly for 7 days after the donation of bone marrow or stem cell harvesting, after which they **should** consult a MAME prior to return to flying duties.

39. Aircrew and Supernumerary Crew **should not** fly:

a. Within 12 hours of using compressed air breathing apparatus for swimming / diving, or within 24 hours if a depth of 10 m has been exceeded (unless 100% oxygen has been breathed throughout the dive after which immediate flying is permissible); or

b. Within 12 hours of experiencing hyperbaric pressures[21]; or

c. Within 24 hours of ►emergency breathing system◄ training unless all the following apply:

(1) Immersion has been less than 20 minutes.

(2) Depth of Immersion did not exceed three metres.

[20] ►Refer to AP 1269A - Leaflet 5-19: Annex I - Tri-Service OTC Treatments Guide.◄

[21] Such as cabin pressure testing. This does not apply to patients or attendants undertaking long treatment for decompression illness, refer to ►Joint Service Publication 286 – Defence Diving Manual.◄

Acceptable Means of Compliance 2135(7)

(3) Cabin pressure altitude will be below 8000 ft.

(4) An interval of 4 hours has elapsed between the end of training and commencing flying.

40. Aircrew and Supernumerary Crew **should not** fly at a cabin Altitude above FL100 within 12 hours of exposure in a low-pressure chamber.

41. Following exposure to any chemical warfare training agents, Aircrew and Supernumerary Crew **should not**:

a. Conduct flying duties until all physical and psychological effects produced by the agent have cleared.

b. Conduct flying duties for a minimum period of 12 hours following exposure to CS gas.

c. Fly in any clothing or equipment that remains contaminated by the training.

42. Aircrew and Supernumerary Crew who have engaged in boxing (including sparring but not including non-contact training) **should not** fly for 48 hours after a bout. Furthermore, they **should** be examined by a MAME before resuming flying duties.

43. ►**Use of Synthetic Devices**[22]. ADH / AM(MF) **should** consider the sensory effect of synthetic devices within their AoR and publish in orders any restrictions to be applied to live flying after the use of these devices, if they consider it appropriate.◄

Guidance Material 2135(7)

Temporary Medical Restrictions to Flying Duties

44. Some techniques used by complementary or alternative medical practitioners are not subject to the same controls as conventional medicine and may not be evidence based. Complementary or alternative medicine cannot be guaranteed to be free from detrimental side-effects.

45. Most inoculations and vaccinations will cause a 12-hour restriction on flying. Where specific AvMed guidance is not provided a MAME will normally be consulted.

46. A wide variety of sporting activities could lead to a Risk of concussion. Where there is any Risk that a head Injury may have been incurred, consultation with a MAME is likely to be necessary.

47. ►The potential for sensory disturbance from the use of synthetic devices varies greatly by device and the individual user. ADH / AM(MF) may wish to apply restrictions to flying duties dependant on the effects experienced with devices in their AoR.◄

[22] ►Synthetic devices include extended reality devices which encompass augmented reality, virtual reality, and mixed reality.◄

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