



**Maldives Civil Aviation Authority
Republic of Maldives**

CAAP AMC ATCO.MED

Acceptable Means of Compliance and Guidance Material to MCAR- ATCO.MED

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LIST OF EFFECTIVE PAGES

#	Part	Page	Amendment	Date
	List of Amendments	I	Issue: 1.00	04 Aug 2021
	List of Effective Pages	ii	Issue: 1.00	04 Aug 2021
	Table of Contents	iii-iv	Issue: 1.00	04 Aug 2021
	Introduction	1	Issue: 1.00	04 Aug 2021
Subpart A	General Requirements	2-8	Issue: 1.00	04 Aug 2021
Section 1	General	2-7	Issue: 1.00	04 Aug 2021
Section 2	Requirements for Medical Certificates	8	Issue: 1.00	04 Aug 2021
Subpart B	Specific requirements for class 3 medical certificates	9-39	Issue: 1.00	04 Aug 2021
Section 1	General	9-11	Issue: 1.00	04 Aug 2021
Section 2	Medical Requirements for Class 3 Medical Certificates	12-39	Issue: 1.00	04 Aug 2021
Subpart C	Aero-Medical Examiners (AMEs)	40-42	Issue: 1.00	04 Aug 2021

TABLE OF CONTENTS

LIST OF AMENDMENTS	i
LIST OF EFFECTIVE PAGES.....	ii
TABLE OF CONTENTS	iii
INTRODUCTION	1
SUBPART A GENERAL REQUIREMENTS	2
SECTION 1 GENERAL	2
AMC1 ATCO.MED. A.015 Medical confidentiality.....	2
AMC1 ATCO.MED.A.015 Medical confidentiality.....	2
GM1 ATCO.MED.A.020 Decrease in medical fitness	2
AMC1 ATCO.MED.A.025 Obligations of AeMC and AME	6
GM1 ATCO.MED.A.025 Obligations of AeMC and AME.....	6
SECTION 2 REQUIREMENTS FOR MEDICAL CERTIFICATES	8
AMC1 ATCO.MED.A.035 Application for a medical certificate	8
SUBPART B SPECIFIC REQUIREMENTS FOR CLASS 3 MEDICAL CERTIFICATES	9
SECTION 1 GENERAL	9
AMC1 ATCO.MED.B.001 Limitations to medical certificates.....	9
AMC2 ATCO.MED.B.001 Limitations to medical certificates.....	9
SECTION 2 SPECIFIC REQUIREMENTS FOR CLASS 3 MEDICAL CERTIFICATES	12
AMC1 ATCO.MED.B.010 Cardiovascular system.....	12
GM1 ATCO.MED.B.010 Cardiovascular system	20
GM2 ATCO.MED.B.010 Cardiovascular system	20
GM3 ATCO.MED.B.010 Cardiovascular system	20
GM4 ATCO.MED.B.010 Cardiovascular system	21
GM5 ATCO.MED.B.010 Cardiovascular system	21
AMC1 ATCO.MED.B.015 Respiratory system	21
AMC1 ATCO.MED.B.020 Digestive system.....	23
AMC1 ATCO.MED.B.025 Metabolic and endocrine system	24
AMC1 ATCO.MED.B.030 Haematology.....	24
GM1 ATCO.MED.B.030 Haematology	26
GM2 ATCO.MED.B.030 Haematology	26
GM3 ATCO.MED.B.030 Haematology	26

AMC1 ATCO.MED.B.035	Genitourinary system	26
AMC1 ATCO.MED.B.040	Infectious disease	27
GM1 ATCO.MED.B.040	Infectious disease	28
AMC1 ATCO.MED.B.045	Obstetrics and gynaecology	28
AMC1 ATCO.MED.B.050	Musculoskeletal system	29
AMC1 ATCO.MED.B.055	Psychiatry	29
AMC1 ATCO.MED.B.060	Psychology	30
AMC1 ATCO.MED.B.065	Neurology	30
AMC1 ATCO.MED.B.070	Visual system	31
GM1 ATCO.MED.B.070	Visual system	35
AMC1 ATCO.MED.B.075	Colour vision	36
GM1 ATCO.MED.B.075	Colour vision	36
AMC1 ATCO.MED.B.080	Otorhinolaryngology	36
GM1 ATCO.MED.B.080	Otorhinolaryngology	38
AMC1 ATCO.MED.B.085	Dermatology	38
AMC1 ATCO.MED.B.090	Oncology	38
SUBPART C	AERO-MEDICAL EXAMINERS (AMEs)	40
AMC1 ATCO.MED. C.015	Training courses in aviation medicine	40
AMC2 ATCO.MED.C.015	Training courses in aviation medicine	41
AMC1 ATCO.MED. C.025(b)	Validity of AME certificates	41
GM1 ATCO.MED. C.025(b)	Validity of AME certificates	42

INTRODUCTION

CIVIL AVIATION ADVISORY PUBLICATIONS

CAAP ATCO.MED

Civil Aviation Advisory Publication-ATCO.MED (CAAP ATCO.MED) of 4 August 2021 laying down non-binding Acceptable Means of Compliance (AMC), Guidance Material (GM) adopted by MCAA to illustrate means to establish compliance with MCAR ATCO.MED.

Alternative means of compliance to those adopted by MCAA may be used by an operator to establish compliance with these Regulations. However, when an operator wishes to use an alternative means of compliance to the acceptable means of compliance (AMC) adopted by MCAA to establish compliance with these Regulations, it shall, prior to implementing it, provide MCAA with a full description of the alternative means of compliance. The description shall include any revisions to manuals or procedures that may be relevant, as well as an assessment demonstrating that the MCARs are met. The operator may implement these alternative means of compliance subject to prior approval by MCAA and upon receipt of the notification of the acceptance.



For the Civil Aviation Authority
Hussain Jaleel
Chief Executive

SUBPART A GENERAL REQUIREMENTS

SECTION 1 GENERAL

AMC1 ATCO.MED. A.015 Medical confidentiality

For the purpose of this MCAR the competent authority in the Maldives is the Maldives Civil Aviation Authority:

- (a) for aero-medical centres (AeMCs); and
- (b) for aero-medical examiners (AMEs):

AMC1 ATCO.MED.A.015 Medical confidentiality

To ensure medical confidentiality, all medical reports and records should be securely held with accessibility restricted to personnel authorised by the medical assessor.

GM1 ATCO.MED.A.020 Decrease in medical fitness

MEDICATION — GUIDANCE FOR AIR TRAFFIC CONTROLLERS

- (a) Any medication can cause side effects, some of which may impair the safe exercise of the privileges of the licence. Equally, symptoms of colds, sore throats, diarrhoea and other abdominal upsets may cause little or no problem whilst not exercising the privileges of the licence, but may distract the air traffic controller and degrade their performance whilst on duty. Therefore, one issue with medication and the safe exercise of the privileges of the licence is the underlying condition and, in addition, the symptoms may be compounded by the side effects of the medication prescribed or bought over the counter for treatment. This guidance material provides some help to air traffic controllers in deciding whether expert aero-medical advice by an AME, AeMC or Medical Assessor is needed.
- (b) Before taking any medication and exercising the privileges of the licence, the following three basic questions should be satisfactorily answered:
 - (1) Do I feel fit to control?
 - (2) Do I really need to take medication at all?
 - (3) Have I given this particular medication a personal trial whilst not exercising the privileges of my licence to ensure that it will not have any adverse effects on my ability to exercise the privileges of my licence?
- (c) Confirming the absence of adverse effects may well need expert aero-medical advice.
- (d) The following are some widely used medicines with a description of their compatibility with the safe exercise of the privileges of the licence:

- (1) Antibiotics. Antibiotics may have short-term or delayed side effects which can affect the performance of the air traffic controller. More significantly, however, their use usually indicates that an infection is present and, thus, the effects of this infection may mean that an air traffic controller is not fit to control and should obtain expert aero-medical advice.
- (2) Anti-malaria drugs. The decision on the need for anti-malaria drugs depends on the geographical areas to be visited, and the risk that the air traffic controller has of being exposed to mosquitoes and of developing malaria. An expert medical opinion should be obtained to establish whether anti-malaria drugs are needed and what kind of drugs should be used. Most of the anti-malaria drugs (atovaquone plus proguanil, chloroquine, doxycycline) are compatible with the safe exercise of the privileges of the licence.
However, adverse effects associated with mefloquine include insomnia, strange dreams, mood changes, nausea, diarrhoea and headaches. In addition, mefloquine may cause spatial disorientation and lack of fine coordination and is, therefore, not compatible with the safe exercise of the privileges of the licence.
- (3) Antihistamines. Antihistamines can cause drowsiness. They are widely used in 'cold cures' and in treatment of hay fever, asthma and allergic rashes. They may be in tablet form or a constituent of nose drops or sprays. In many cases, the condition itself may preclude the safe exercise of the privileges of the licence, so that, if treatment is necessary, expert aeromedical advice should be sought so that so-called non-sedative antihistamines, which do not degrade human performance, can be prescribed.
- (4) Cough medicines. Antitussives often contain codeine, dextromethorfan or pseudoephedrine which are not compatible with the safe exercise of the privileges of the licence. However, mucolytic agents (e.g. carbocysteine) are well tolerated and are compatible with the safe exercise of the privileges of the licence.
- (5) Decongestants. Nasal decongestants with no effect on alertness may be compatible with the safe exercise of the privileges of the licence.
- (6) Nasal corticosteroids are commonly used to treat hay fever, and are compatible with the safe exercise of the privileges of the licence.
- (7) (i) Common pain killers and antifebrile drugs. Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) and paracetamol, commonly used to treat pain, fever or headaches, may be compatible with the safe exercise of the privileges of the licence. However, the air traffic controller should give affirmative answers to the three basic questions in paragraph (b) before using the medication and exercising the privileges of the licence.
(ii) Strong analgesics. The more potent analgesics including codeine are opiate derivatives, and may produce a significant decrement in human performance and, therefore, are not compatible with the safe exercise of the privileges of the licence.

- (8) Anti-ulcer medicines. Gastric secretion inhibitors such as H2 antagonists (e.g. ranitidine, cimetidine) or proton pump inhibitors (e.g. omeprazole) may be acceptable after diagnosis of the pathological condition. It is important to seek for the medical diagnosis and not to only treat the dyspeptic symptoms.
- (9) Anti-diarrhoeal drugs. Loperamide is one of the more common anti-diarrhoeal drugs and is usually safe to take whilst exercising the privileges of the licence. However, the diarrhoea itself often makes the air traffic controller unable to exercise the privileges of the licence.
- (10) Hormonal contraceptives and hormone replacement therapy usually have no adverse effects and are compatible with the safe exercise of the privileges of the licence.
- (11) Erectile dysfunction medication. This medication may cause disturbances in colour vision and dizziness. There should be at least six hours between taking sildenafil and exercising the privileges of the licence; and 36 hours between taking vardenafil or tadalafil and exercising the privileges of the licence.
- (12) Smoking cessation. Nicotine replacement therapy may be acceptable. However, other medication affecting the central nervous system (bupropion, varenicline) is not acceptable for air traffic controllers.
- (13) High blood pressure medication. Most anti-hypertensive drugs are compatible with the safe exercise of the privileges of the licence. However, if the level of blood pressure is such that drug therapy is required, the air traffic controller should be monitored for any side effects before exercising the privileges of the licence. Therefore, consultation with the AME, AeMC or Medical Assessor as applicable, is needed.
- (14) Asthma medication. Asthma has to be clinically stable before an air traffic controller can return to exercising the privileges of the licence. The use of respiratory aerosols or powders, such as corticosteroids, beta-2-agonists or chromoglycic acid may be compatible with the safe exercise of the privileges of the licence. However, the use of oral steroids or theophylline derivatives is usually incompatible with the safe exercise of the privileges of the licence. Air traffic controllers using medication for asthma should consult an AME, AeMC, or Medical Assessor, as applicable.
- (15) Tranquillisers, anti-depressants and sedatives. The inability to react, due to the use of this group of medicines, together with the underlying condition for which these medications have been prescribed, will almost certainly mean that the mental state of an air traffic controller is not compatible with the safe exercise of the privileges of the licence. Air traffic controllers using tranquillisers, anti-depressants and sedatives should consult an AME, AeMC, or Medical Assessor, as applicable.

- (16) Sleeping tablets. Sleeping tablets dull the senses, may cause confusion and slow reaction times. The duration of effect may vary from individual to individual and may be unduly prolonged. Air traffic controllers using sleeping tablets should consult an AME, AeMC, or Medical Assessor, as applicable.
 - (17) Melatonin. Melatonin is a hormone that is involved with the regulation of the circadian rhythm. In some countries it is a prescription medicine, whereas in most other countries it is regarded as a 'dietary supplement' and can be bought without any prescription. The results from the efficiency of melatonin in treatment of jet lag or sleep disorders have been contradictory. Air traffic controllers using melatonin should consult an AME, AeMC, or Medical Assessor, as applicable.
 - (18) Coffee and other caffeinated drinks may be acceptable, but excessive coffee drinking may have harmful effects, including disturbance of the heart's rhythm. Other stimulants including caffeine pills, amphetamines, etc. (often known as 'pep' pills) used to maintain wakefulness or suppress appetite can be habit forming. Susceptibility to different stimulants varies from one individual to another, and all may cause dangerous overconfidence. Overdosage causes headaches, dizziness and mental disturbance. These other stimulants should not be used.
 - (19) Anaesthetics. Following local, general, dental and other anaesthetics, a period of time should elapse before returning to exercising the privileges of the licence. The period will vary considerably from individual to individual, but an air traffic controller should not exercise the privileges of the licence for at least 12 hours after a local anaesthetic, and for at least 48 hours after a general, spinal or epidural anaesthetic.
- (e) Many preparations on the market nowadays contain a combination of medicines. It is, therefore, essential that if there is any new medication or dosage, however slight, the effect should be observed by the air traffic controller whilst not exercising the privileges of the licence. It should be noted that medication which would not normally affect air traffic controller performance may do so in individuals who are 'oversensitive' to a particular preparation. Individuals are, therefore, advised not to take any medicines before or whilst exercising the privileges of their licence unless they are completely familiar with their effects on their own bodies. In cases of doubt, air traffic controllers should consult an AME, AeMC, or Medical Assessor, as applicable.
- (f) Other treatments. Alternative or complementary medicine, such as acupuncture, homeopathy, hypnotherapy and several other disciplines, is developing and gaining greater credibility. Such treatments are more acceptable in some States than others. There is a need to ensure that 'other treatments', as well as the underlying condition, are declared and considered by the AME, AeMC, or Medical Assessor, as applicable, for assessing fitness.

AMC1 ATCO.MED.A.025 Obligations of AeMC and AME

- (a) If the aero-medical examination is carried out by two or more AMEs, only one of them should be responsible for coordinating the results of the examination, evaluating the findings with regard to medical fitness and signing the report.
- (b) The applicant should be made aware that the associated medical certificate may be suspended or revoked if the applicant provides incomplete, inaccurate or false statements on their medical history to the AME or AeMC.
- (c) The AME or AeMC should give advice to the applicant on treatment and preventive measures if, during the course of the examination, medical conditions which may endanger the medical fitness of the applicant in the future are found.

GM1 ATCO.MED.A.025 Obligations of AeMC and AME

GUIDELINES FOR THE AEMC AND AME CONDUCTING THE AERO-MEDICAL EXAMINATIONS AND ASSESSMENTS FOR CLASS 3 MEDICAL CERTIFICATES

- (a) Before performing the aero-medical examination, the AeMC or AME should:
 - (1) verify the applicant's identity by checking their identity card, passport, driving licence or other official document containing a photograph of the applicant;
 - (2) obtain details of the applicant's licence from the applicant's licensing authority if they do not have their licence with them;
 - (3) obtain details of the applicant's most recent medical certificate from the applicant's licensing authority if they do not have their certificate with them;
 - (4) in the case of a specific medical examination (SIC) on the existing medical certificate, obtain details of the specific medical condition and any associated instructions from the applicant's licensing authority. This could include, for example, a requirement to undergo a specific examination or test;
 - (5) except for initial applicants, ascertain, from the previous medical certificate, which routine medical test(s) should be conducted, for example electrocardiogram (ECG);
 - (6) provide the applicant with the application form for a medical certificate and the instructions for its completion and ask the applicant to complete the form but not to sign it yet;
 - (7) go through the form with the applicant and give information to help the applicant understand the significance of the entries and ask any questions which might help the applicant to recall important historical medical data; and
 - (8) verify that the form is complete and legible, ask the applicant to sign and date the form and then sign it as well. If the applicant declines to complete the application form fully or declines to sign the declaration consent to the release of medical

information, inform the applicant that it may not be possible to issue a medical certificate regardless of the outcome of the clinical examination.

- (b) Once all the items in (a) have been addressed, the AeMC or AME should:
 - (1) perform the aero-medical examination of the applicant in accordance with the applicable rules;
 - (2) arrange for additional specialist medical examinations, such as otorhinolaryngology or ophthalmology, to be conducted as applicable and obtain the associated report forms or reports;
 - (3) complete the aero-medical examination report form in accordance with the associated instructions for completion; and
 - (4) ensure that all of the report forms are complete, accurate and legible.
- (c) Once all the actions in (b) have been carried out, the AeMC or AME should review the report forms and:
 - (1) if satisfied that the applicant meets the applicable medical requirements as set out in this Part, issue a medical certificate, with limitations if necessary. The applicant should sign the certificate once signed by the AeMC or AME; or
 - (2) if the applicant does not meet the applicable medical requirements or if the fitness of the applicant is in doubt:
 - (i) refer the decision on medical fitness to the licensing authority as indicated in ATCO.MED.B.001; or
 - (ii) deny issuance of a medical certificate, explain the reason(s) for denial to the applicant and inform them of their right of a review according to the procedures of the competent authority.
- (d) The AeMC or AME should send the documents as required by ATCO.MED.A.025(b) to the applicant's licensing authority within five days from the date of the aero-medical examination. If a medical certificate has been denied or the decision has been referred, the documents should be sent to the licensing authority on the same day that the denial or referral decision is reached.

SECTION 2 REQUIREMENTS FOR MEDICAL CERTIFICATES

AMC1 ATCO.MED.A.035 Application for a medical certificate

Except for initial applicants, when applicants do not present the most recent medical certificate to the AeMC or AME prior to the relevant examinations, the AeMC or AME should not issue the medical certificate unless relevant information is received from the licensing authority.

SUBPART B SPECIFIC REQUIREMENTS FOR CLASS 3 MEDICAL CERTIFICATES

SECTION 1 GENERAL

AMC1 ATCO.MED.B.001 Limitations to medical certificates

- (a) An AeMC or AME may refer the decision on fitness of an applicant to the licensing authority in borderline cases or where fitness is in doubt.
- (b) In cases where a fit assessment may only be considered with a limitation, the AeMC, AME or the licensing authority should evaluate the medical condition of the applicant with appropriate personnel from the air navigation service provider and other experts, if necessary.
- (c) Entry of limitations
 - (1) Limitations TML, VDL, VML, VNL, CCL, HAL, RXO may be imposed by an AME or an AeMC.
 - (2) Limitations VXL and VXN should be imposed with advice of the air navigation service provider.
 - (3) Limitations SIC and SSL should only be imposed by the licensing authority.
- (d) Removal of limitations
All limitations should only be removed by the licensing authority.

AMC2 ATCO.MED.B.001 Limitations to medical certificates

LIMITATION CODES

- (a) The following abbreviations for limitations should be used on the medical certificate as applicable:

Code	Limitation
TML	Restriction of the period of validity of the medical certificate
VDL	Wear correction for defective distant vision and carry spare set of spectacles
VXL	Correction for defective distant vision depending on the working environment
VML	Wear correction for defective distant, intermediate and near vision and carry spare set of spectacles
VNL	Have correction available for defective near vision and carry spare set of spectacles

VXN	Correction for defective near vision; correction for defective distant vision depending on the working environment
RXO	Specialist ophthalmological examinations
CCL	Correction by means of contact lenses
HAL	Valid only when hearing aids are worn
SIC	Specific medical examination(s)
SSL	Special restrictions as specified

(b) The abbreviations for the limitation codes should be explained to the holder of a medical certificate as follows:

- (1) TML — Time limitation
 The period of validity of the medical certificate is limited to the duration as shown on the medical certificate. This period of validity commences on the date of the aero-medical examination. Any period of validity remaining on the previous medical certificate is no longer valid. The holder of a medical certificate should present him/herself for reassessment or examination when advised and should follow any medical recommendations.
- (2) VDL — Wear corrective lenses and carry a spare set of spectacles
 Correction for defective distant vision: whilst exercising the privileges of the licence, the holder of a medical certificate should wear spectacles or contact lenses that correct for defective distant vision as examined and approved by the AeMC or AME. Contact lenses may not be worn until cleared to do so by an AeMC or AME. A spare set of spectacles, approved by the AeMC or AME, should be readily available.
- (3) VXL — Correction for defective distant vision depending on the working environment
 Correction for defective distant vision does not have to be worn if the air traffic controller’s visual working environment is in the area of up to 100 cm. Applicants who do not meet the uncorrected distant visual acuity requirement but meet the visual acuity requirement for intermediate and near vision without correction and whose visual working environment is only the intermediate and near vision area (up to 100 cm) may work without corrective lenses.
- (4) VML — Wear multifocal spectacles and carry a spare set of spectacles
 Correction for defective distant, intermediate and near vision: whilst exercising the privileges of the licence, the holder of a medical certificate should wear spectacles that correct for defective distant, intermediate and near vision as examined and approved by the AeMC or AME. Contact lenses or full-frame spectacles, when either correct for near vision only, may not be worn.
- (5) VNL — Have available corrective spectacles and a spare set of spectacles

Correction for defective near vision: whilst exercising the privileges of the licence, the holder of a medical certificate should have readily available spectacles that correct for defective near vision as examined and approved by the AeMC or AME. Contact lenses or full-frame spectacles, when either correct for near vision only, may not be worn.

- (6) VXN — Have available corrective spectacles and a spare set of spectacles; correction for defective distant vision depending on the working environment. Correction for defective distant vision does not have to be worn if the air traffic controller's visual working environment is in the area of up to 100 cm. Applicants who do not meet the uncorrected distant and uncorrected near visual acuity requirements, but meet the visual acuity requirement for intermediate vision without correction and whose visual working environment is only the intermediate and near vision area (up to 100 cm) should have readily available spectacles and a spare set that correct for defective near vision as examined and approved by the AeMC or AME. Contact lenses or full-frame spectacles, when either correct for near vision only, may not be worn.
- (7) CCL — Wear contact lenses that correct for defective vision
Correction for defective distant vision: whilst exercising the privileges of the licence, the holder of a medical certificate should wear contact lenses that correct for defective distant vision, as examined and approved by the AeMC or AME. A spare set of similarly correcting spectacles shall be readily available for immediate use whilst exercising the privileges of the licence.
- (8) RXO — Specialist ophthalmological examination(s)
Specialist ophthalmological examination(s), other than the examinations stipulated in this Part, are required for a significant reason.
- (9) HAL — Hearing aid(s)
Whilst exercising the privileges of the licence, the holder of the medical certificate should use hearing aid(s) that compensate(s) for defective hearing as examined and approved by the AeMC or AME. A spare set of batteries should be available.
- (10) SIC — Specific medical examination(s)
This limitation requires the AeMC or AME to contact the licensing authority before embarking upon renewal or revalidation aero-medical assessment. It is likely to concern a medical history of which the AME should be aware prior to undertaking the aero-medical assessment.
- (11) SSL — Special restrictions as specified
This limitation may be considered when an individually specified limitation, not defined in this paragraph, is appropriate to mitigate an increased level of risk to the safe exercise of the privileges of the licence. The description of the SSL should be entered on the medical certificate or in a separate document to be carried with the medical certificate.

SECTION 2 SPECIFIC REQUIREMENTS FOR CLASS 3 MEDICAL CERTIFICATES

AMC1 ATCO.MED.B.010 Cardiovascular system

- (a) Electrocardiography
- (1) An exercise electrocardiogram (ECG) when required as part of a cardiovascular assessment should be symptom-limited and completed to a minimum of Bruce Stage IV or equivalent.
 - (2) Reporting of resting and exercise ECGs should be carried out by the AME or an appropriate specialist.
- (b) General
- (1) Cardiovascular risk factor assessment
 - (i) Serum/plasma lipid estimation is case finding and significant abnormalities should require investigation and management under the supervision of the AeMC or AME in consultation with the licensing authority if necessary.
 - (ii) An accumulation of risk factors (smoking, family history, lipid abnormalities, hypertension, etc.) should require cardiovascular evaluation by the AeMC or AME in consultation with the licensing authority if necessary.
 - (2) Extended cardiovascular assessment
 - (iii) The extended cardiovascular assessment should be undertaken at an AeMC or by a cardiologist.
 - (iv) The extended cardiovascular assessment should include an exercise ECG or other test that will provide equivalent information.
- (c) Peripheral arterial disease
- Applicants with peripheral arterial disease, before or after surgery, should undergo satisfactory cardiological evaluation including an exercise ECG and 2D echocardiography. Further tests may be required which should show no evidence of myocardial ischaemia or significant coronary artery stenosis. A fit assessment may be considered provided:
- (1) the exercise ECG is satisfactory; and
 - (2) there is no sign of significant coronary artery disease or evidence of significant atheroma elsewhere, and no functional impairment of the end organ supplied.
- (d) Aortic aneurysm

- (1) Applicants with an aneurysm of the infra-renal abdominal aorta may be assessed as fit following a satisfactory cardiological evaluation.
 - (2) Applicants may be assessed as fit after surgery for an aneurysm of the thoracic or abdominal aorta if the blood pressure and cardiovascular evaluation are satisfactory. Regular evaluations by a cardiologist should be carried out.
- (e) Cardiac valvular abnormalities
- (1) Applicants with previously unrecognised cardiac murmurs should require cardiological evaluation. If considered significant, further investigation should include at least 2D Doppler echocardiography.
 - (2) Applicants with minor cardiac valvular abnormalities may be assessed as fit by the licensing authority. Applicants with significant abnormality of any of the heart valves should be assessed as unfit.
 - (3) Aortic valve disease
 - (i) Applicants with bicuspid aortic valve may be assessed as fit if no other cardiac or aortic abnormality is demonstrated. Regular cardiological follow-up, including 2D Doppler echocardiography, may be required.
 - (ii) Applicants with mild aortic stenosis may be assessed as fit. Annual cardiological follow-up may be required and should include 2D Doppler echocardiography.
 - (iii) Applicants with aortic regurgitation may be assessed as fit only if regurgitation is minor and there is no evidence of volume overload. There should be no demonstrable abnormality of the ascending aorta on 2D Doppler echocardiography. Cardiological follow-up including 2D Doppler echocardiography may be required.
 - (4) Mitral valve disease
 - (i) Applicants with rheumatic mitral stenosis may only be assessed as fit in favourable cases after cardiological evaluation including 2D echocardiography.
 - (ii) Applicants with uncomplicated minor regurgitation may be assessed as fit. Regular cardiological follow-up including 2D echocardiography may be required.
 - (iii) Applicants with mitral valve prolapse and mild mitral regurgitation may be assessed as fit.
 - (iv) Applicants with evidence of volume overloading of the left ventricle demonstrated by increased left ventricular end-diastolic diameter should be assessed as unfit.

(f) Valvular surgery

Applicants with cardiac valve replacement/repair should be assessed as unfit. After a satisfactory cardiological evaluation, fit assessment may be considered.

- (1) Asymptomatic applicants may be assessed as fit by the licensing authority six months after valvular surgery subject to:
 - (i) normal valvular and ventricular function as judged by 2D Doppler echocardiography;
 - (ii) satisfactory symptom-limited exercise ECG or equivalent;
 - (iii) demonstrated absence of coronary artery disease unless this has been satisfactorily treated by re-vascularisation;
 - (iv) no cardioactive medication is required;
 - (v) annual cardiological follow-up to include an exercise ECG and 2D Doppler echocardiography. Longer periods may be acceptable once a stable condition has been confirmed by cardiological evaluations.
- (2) Applicants with implanted mechanical valves may be assessed as fit subject to documented exemplary control of their anti-coagulant therapy. Age factors should form part of the risk assessment.

(g) Thromboembolic disorders

Applicants with arterial or venous thrombosis or pulmonary embolism should be assessed as unfit during the first six months of anticoagulation. A fit assessment, with a limitation if necessary, may be considered by the licensing authority after six months of stable anticoagulation. Anticoagulation should be considered stable if, within the last six months, at least five international normalised ratio (INR) values are documented, of which at least four are within the INR target range and the haemorrhagic risk is acceptable. In cases of anticoagulation medication not requiring INR monitoring, a fit assessment may be considered after review by the licensing authority after a period of three months. Applicants with pulmonary embolism should also be evaluated by a cardiologist. Following cessation of anticoagulant therapy, for any indication, applicants should undergo a reassessment by the licensing authority.

(h) Other cardiac disorders

- (1) Applicants with a primary or secondary abnormality of the pericardium, myocardium or endocardium should be assessed as unfit. A fit assessment may be considered following complete resolution and satisfactory cardiological evaluation which may include 2D Doppler echocardiography, exercise ECG, 24-hour ambulatory ECG, and/or myocardial perfusion scan or equivalent test. Coronary angiography may be indicated. Regular cardiological follow-up may be required.

- (2) Applicants with a congenital abnormality of the heart should be assessed as unfit. Applicants following surgical correction or with minor abnormalities that are functionally unimportant may be assessed as fit following cardiological assessment. No cardioactive medication is acceptable. Investigations may include 2D Doppler echocardiography, exercise ECG and 24-hour ambulatory ECG. Regular cardiological follow-up may be required.

(i) Syncope

- (1) Applicants with a history of recurrent episodes of syncope should be assessed as unfit. A fit assessment may be considered after a sufficient period of time without recurrence provided cardiological evaluation is satisfactory.

- (2) A cardiological evaluation should include:

- (i) a satisfactory symptom exercise ECG. If the exercise ECG is abnormal, a myocardial perfusion scan or equivalent test should be required;
- (ii) a 2D Doppler echocardiogram showing neither significant selective chamber enlargement nor structural or functional abnormality of the heart, valves or myocardium;
- (iii) a 24-hour ambulatory ECG recording showing no conduction disturbance, complex or sustained rhythm disturbance or evidence of myocardial ischaemia;
- (iv) a tilt test carried out to a standard protocol showing no evidence of vasomotor instability.

- (3) Neurological review should be required.

(j) Blood pressure

- (1) Anti-hypertensive treatment should be agreed by the licensing authority. Medication may include:

- (i) non-loop diuretic agents;
- (ii) Angiotensin Converting Enzyme (ACE) inhibitors;
- (iii) angiotensin II receptor blocking agents;
- (iv) long-acting slow channel calcium blocking agents;
- (v) certain (generally hydrophilic) beta-blocking agents.

- (2) Following initiation of medication for the control of blood pressure, applicants should be reassessed to verify that the treatment is compatible with the safe exercise of the privileges of the licence.

(k) Coronary artery disease

- (1) Applicants with chest pain of an uncertain cause should undergo a full investigation before a fit assessment may be considered. Applicants with angina pectoris should be assessed as unfit, whether or not it is abolished by medication.
- (2) Applicants with suspected asymptomatic coronary artery disease should undergo a cardiological evaluation including exercise ECG. Further tests (myocardial perfusion scanning, stress echocardiography, coronary angiography or equivalent) may be required, which should show no evidence of myocardial ischaemia or significant coronary artery stenosis.
- (3) After an ischaemic cardiac event, including revascularisation, applicants without symptoms should have reduced any vascular risk factors to an appropriate level. Medication, when used to control cardiac symptoms, is not acceptable. All applicants should be on acceptable secondary prevention treatment.
 - (i) A coronary angiogram obtained around the time of, or during, the ischaemic myocardial event and a complete, detailed clinical report of the ischaemic event and of any operative procedures should be available.
 - (A) there should be no stenosis more than 50 % in any major untreated vessel, in any vein or artery graft or at the site of an angioplasty/stent, except in a vessel subtending a myocardial infarction;
 - (B) the whole coronary vascular tree should be assessed as satisfactory by a cardiologist, and particular attention should be paid to multiple stenoses and/or multiple revascularisations;
 - (C) an untreated stenosis greater than 30 % in the left main or proximal left anterior descending coronary artery should not be acceptable.
 - (ii) At least six months from the ischaemic myocardial event, including revascularisation, the following investigations should be completed:
 - (A) an exercise ECG showing neither evidence of myocardial ischaemia nor rhythm or conduction disturbance;
 - (B) an echocardiogram or equivalent test showing satisfactory left ventricular function with no important abnormality of wall motion (such as dyskinesia or akinesia) and a left ventricular ejection fraction of 50 % or more;
 - (C) in cases of angioplasty/stenting, a myocardial perfusion scan or equivalent test, which should show no evidence of reversible myocardial ischaemia. If there is any doubt about myocardial perfusion, in other cases (infarction or bypass grafting), a perfusion scan should also be required;

(D) further investigations, such as a 24-hour ECG, may be necessary to assess the risk of any significant rhythm disturbance.

- (iii) Follow-up should be conducted annually (or more frequently, if necessary) to ensure that there is no deterioration of the cardiovascular status. It should include a cardiological evaluation, exercise ECG and cardiovascular risk assessment. Additional investigations may be required.
- (iv) After coronary artery vein bypass grafting, a myocardial perfusion scan or equivalent test should be performed on clinical indication, and in all cases within five years from the procedure.
- (v) In all cases, coronary angiography, or an equivalent test, should be considered at any time if symptoms, signs or non-invasive tests indicate myocardial ischaemia.
- (vi) Applicants may be assessed as fit after successful completion of the three-month or subsequent review.

(l) Rhythm and conduction disturbances

(1) Applicants with any significant rhythm or conduction disturbance may be assessed as fit after cardiological evaluation and with appropriate follow-up. Such evaluation should include:

- (i) exercise ECG which should show no significant abnormality of rhythm or conduction, and no evidence of myocardial ischaemia. Withdrawal of cardioactive medication prior to the test should be required;
- (ii) 24-hour ambulatory ECG which should demonstrate no significant rhythm or conduction disturbance;
- (iii) 2D Doppler echocardiogram which should show no significant selective chamber enlargement or significant structural or functional abnormality, and a left ventricular ejection fraction of at least 50 %.

Further evaluation may include:

- (iv) 24-hour ECG recording repeated as necessary;
- (v) electrophysiological study;
- (vi) myocardial perfusion imaging or equivalent test;
- (vii) cardiac magnetic resonance imaging (MRI) or equivalent test; (viii) coronary angiogram or equivalent test.

(2) Applicants with supraventricular or ventricular ectopic complexes on a resting ECG may require no further evaluation, provided the frequency can be shown to be no greater than one per minute, for example on an extended ECG strip.

Applicants with asymptomatic isolated uniform ventricular ectopic complexes may be assessed as fit, but frequent or complex forms require full cardiological evaluation.

- (3) Where anticoagulation is needed for a rhythm disturbance, a fit assessment may be considered if the haemorrhagic risk is acceptable and the anticoagulation is stable. Anticoagulation should be considered stable if, within the last six months, at least five INR values are documented, of which at least four are within the INR target range. In cases of anticoagulation medication not requiring INR monitoring, a fit assessment with an appropriate limitation may be considered after review by the licensing authority after a period of three months.
- (4) Ablation
 - (i) Applicants who have undergone ablation therapy should be assessed as unfit for a minimum period of two months.
 - (ii) A fit assessment may be considered following successful catheter ablation provided an electrophysiological study (EPS) demonstrates satisfactory control has been achieved.
 - (iii) Where EPS is not performed, longer periods of unfitness and cardiological follow-up should be considered.
 - (iv) Follow-up should include a cardiological review.
- (5) Supraventricular arrhythmias

Applicants with significant disturbance of supraventricular rhythm, including sinoatrial dysfunction, whether intermittent or established, should be assessed as unfit. A fit assessment may be considered if cardiological evaluation is satisfactory.

 - (i) For initial applicants with atrial fibrillation/flutter, a fit assessment should be limited to those with a single episode of arrhythmia which is considered to be unlikely to recur.
 - (ii) For revalidation, applicants may be assessed as fit if cardiological evaluation is satisfactory and the stroke risk is sufficiently low. A fit assessment may be considered after a period of stable anticoagulation as prophylaxis, after review by the licensing authority. Anticoagulation should be considered stable if, within the last six months, at least five INR values are documented, of which at least four are within the INR target range. In cases of anticoagulation medication not requiring INR monitoring, a fit assessment may be considered after review by the licensing authority after a period of three months.

- (iii) Applicants with asymptomatic sinus pauses up to 2.5 seconds on a resting ECG may be assessed as fit if exercise ECG, 2D echocardiography and 24-hour ambulatory ECG are satisfactory.
 - (iv) Applicants with symptomatic sino-atrial disease should be assessed as unfit.
- (6) Mobitz type 2 atrio-ventricular block
Applicants with Mobitz type 2 AV block may be assessed as fit after a full cardiological evaluation confirms the absence of distal conducting tissue disease.
- (7) Complete right bundle branch block
Applicants with complete right bundle branch block should require cardiological evaluation on first presentation.
- (8) Complete left bundle branch block
A fit assessment may be considered as follows:
- (i) Initial applicants may be assessed as fit after full cardiological evaluation showing no pathology. Depending on the clinical situation, a period of stability may be required.
 - (ii) Applicants for revalidation or renewal of a medical certificate with a de-novo left bundle branch block may be assessed as fit after cardiological evaluation showing no pathology. A period of stability may be required.
 - (iii) A cardiological evaluation should be required after 12 months in all cases.
- (9) Ventricular pre-excitation
Applicants with pre-excitation may be assessed as fit if they are asymptomatic, and an electrophysiological study, including an adequate drug-induced autonomic stimulation protocol, reveals no inducible re-entry tachycardia and the existence of multiple pathways is excluded. Cardiological follow-up should be required including a 24-hour ambulatory ECG recording showing no tendency to symptomatic or asymptomatic tachy-arrhythmia.
- (10) Pacemaker
Applicants with a subendocardial pacemaker may be assessed as fit three months after insertion provided:
- (i) there is no other disqualifying condition;
 - (ii) bipolar lead systems programmed in bipolar mode without automatic mode change have been used;
 - (iii) that the applicant is not pacemaker dependent;
 - (iv) regular cardiological follow-up should include a symptom-limited exercise ECG that shows no abnormality or evidence of myocardial ischaemia.

- (11) QT prolongation
Applicants with asymptomatic QT-prolongation may be assessed as fit subject to a satisfactory cardiological evaluation.
- (12) Brugada pattern on electrocardiography
Applicants with a Brugada pattern Type 1 should be assessed as unfit. Applicants with Type 2 or Type 3 may be assessed as fit, with limitations as appropriate, subject to satisfactory cardiological evaluation.

GM1 ATCO.MED.B.010 Cardiovascular system

MITRAL VALVE DISEASE

- (a) Minor regurgitation should have evidence of no thickened leaflets or flail chordae and left atrial internal diameter of less than or equal to 4.0 cm.
- (b) The following may indicate severe regurgitation:
 - (1) LV internal diameter (diastole) > 6.0 cm; or
 - (2) LV internal diameter (systole) > 4.1 cm; or
 - (3) Left atrial internal diameter > 4.5 cm.
- (c) Doppler indices, such as width of jet, backwards extension and whether there is flow reversal in the pulmonary veins may be helpful in assessing severity of regurgitation.

GM2 ATCO.MED.B.010 Cardiovascular system

VENTRICULAR PRE-EXCITATION

- (a) Asymptomatic applicants with pre-excitation may be assessed as fit at revalidation with an Operational Multi-pilot Limitation (OML) if they meet the following criteria:
 - (1) no inducible re-entry;
 - (2) refractory period > 300 ms;
 - (3) no induced atrial fibrillation.
- (b) There should be no evidence of multiple accessory pathways.

GM3 ATCO.MED.B.010 Cardiovascular system

COMPLETE LEFT BUNDLE BRANCH BLOCK

Left bundle branch block is more commonly associated with coronary artery disease and, thus, requires more in-depth investigation, which may be invasive.

GM4 ATCO.MED.B.010 Cardiovascular system

PACEMAKER

- (a) Scintigraphy may be helpful in the presence of conduction disturbance/paced complexes in the resting ECG.
- (b) Experience has shown that any failures of pacemakers are most likely to occur in the first three months after being fitted. Therefore, a fit assessment should not be considered before this period has elapsed.
- (c) It is known that certain operational equipment may interfere with the performance of the pacemaker. The type of pacemaker used, therefore, should have been tested to ensure it does not suffer from interference in the operational environment. Supporting data and a performance statement to this effect should be available from the supplier.

GM5 ATCO.MED.B.010 Cardiovascular system

ANTICOAGULATION

Applicants and licence holders taking anticoagulant medication which requires monitoring with INR testing, should measure their INR on a 'near patient' testing system within 12 hours prior to starting a shift pattern and then at least every three days during the shift pattern. The privileges of the licence should only be exercised if the INR is within the target range. The INR result should be recorded and the results should be reviewed at each aero-medical assessment.

AMC1 ATCO.MED.B.015 Respiratory system

- (a) Examination
 - (1) Spirometric examination is required for initial examination. An FEV1/FVC ratio less than 70 % should require evaluation by a specialist in respiratory disease before a fit assessment can be considered.
 - (2) Posterior/anterior chest radiography may be required at initial, revalidation or renewal examinations when indicated on clinical or epidemiological grounds.
- (b) Chronic obstructive airways disease

Applicants with chronic obstructive airways disease should be assessed as unfit. Applicants with only minor impairment of their pulmonary function may be assessed as fit after specialist respiratory evaluation. Applicants with pulmonary emphysema may be assessed as fit following specialist evaluation showing that the condition is stable and not causing significant symptoms.
- (c) Asthma

Applicants with asthma requiring medication or experiencing recurrent attacks of asthma may be assessed as fit if the asthma is considered stable with satisfactory

pulmonary function tests and medication is compatible with the safe execution of the privileges of the licence. Use of low dose systemic steroids may be acceptable.

(d) Inflammatory disease

- (1) For applicants with active inflammatory disease of the respiratory system, a fit assessment may be considered when the condition has resolved without sequelae and no medication is required.
- (2) Applicants with chronic inflammatory diseases may be assessed as fit following specialist evaluation showing mild disease with acceptable pulmonary function test and medication compatible with the safe execution of the privileges of the licence.

(e) Sarcoidosis

- (1) Applicants with active sarcoidosis should be assessed as unfit. Specialist evaluation should be undertaken with respect to the possibility of systemic, particularly cardiac, involvement. A fit assessment may be considered if no medication is required, and the disease is limited to hilar lymphadenopathy and inactive. Use of low dose systemic steroids may be acceptable.
- (2) Applicants with cardiac or neurological sarcoid should be assessed as unfit.

(f) Pneumothorax

Applicants with a spontaneous pneumothorax should be assessed as unfit. A fit assessment may be considered:

- (1) six weeks after the event provided full recovery from a single event has been confirmed in a full respiratory evaluation including a CT scan or equivalent;
- (2) following surgical intervention in the case of a recurrent pneumothorax provided there is satisfactory recovery.

(g) Thoracic surgery

- (1) Applicants requiring thoracic surgery should be assessed as unfit until such time as the effects of the operation are no longer likely to interfere with the safe exercise of the privileges of the licence.
- (2) A fit assessment may be considered after satisfactory recovery and full respiratory evaluation including a CT scan or equivalent. The underlying pathology which necessitated the surgery should be considered in the aero-medical assessment.

(h) Sleep apnoea syndrome/sleep disorder

- (1) Applicants with unsatisfactorily treated sleep apnoea syndrome and suffering from excessive daytime sleepiness should be assessed as unfit.

- (2) A fit assessment may be considered subject to the extent of symptoms, including vigilance, and satisfactory treatment. ATCO operational experience, sleep apnoea syndrome/sleep disorder education and work place considerations are essential components of the aeromedical assessment.

AMC1 ATCO.MED.B.020 Digestive system

- (a) Oesophageal varices
Applicants with oesophageal varices should be assessed as unfit.
- (b) Pancreatitis
 - (1) Applicants with pancreatitis should be assessed as unfit. A fit assessment may be considered if the cause (e.g. gallstone, other obstruction, medication) is removed.
 - (2) Alcohol may be a cause of dyspepsia and pancreatitis. If considered appropriate, a full evaluation of its use or misuse should be undertaken.
- (c) Gallstones
 - (1) Applicants with a single large gallstone may be assessed as fit after evaluation.
 - (2) Applicants with multiple gallstones may be assessed as fit while awaiting treatment provided the symptoms are unlikely to interfere with the safe exercise of the privileges of the licence.
- (d) Inflammatory bowel disease
Applicants with an established diagnosis or history of chronic inflammatory bowel disease may be assessed as fit if the disease is in established stable remission, and only minimal, if any, medication is being taken. Regular follow-up should be required.
- (e) Dyspepsia
Applicants with recurrent dyspepsia requiring medication should be investigated by internal examination including radiologic or endoscopic examination. Laboratory testing should include haemoglobin assessment and faecal examination. Any demonstrated ulceration or significant inflammation requires evidence of recovery before a fit assessment may be considered.
- (f) Digestive tract and abdominal surgery
Applicants who have undergone a surgical operation on the digestive tract or its adnexa, including a total or partial excision or a diversion of any of these organs, should be assessed as unfit. A fit assessment may be considered if recovery is complete, the applicant is asymptomatic and the risk of secondary complication or recurrence is minimal.

AMC1 ATCO.MED.B.025 Metabolic and endocrine system

(a) Metabolic, nutritional or endocrine dysfunction

Applicants with metabolic, nutritional or endocrine dysfunction may be assessed as fit if the condition is asymptomatic, clinically compensated and stable with or without replacement therapy, and regularly reviewed by an appropriate specialist.

(b) Obesity

(1) Applicants with a Body Mass Index > 35 may be assessed as fit only if the excess weight is not likely to interfere with the safe exercise of the privileges of the licence and a satisfactory cardiovascular risk review and evaluation of the possibility of sleep apnoea syndrome has been undertaken.

(2) Functional testing in the working environment may be necessary before a fit assessment may be considered.

(c) Thyroid dysfunction

Applicants with hyperthyroidism or hypothyroidism should attain a stable euthyroid state before a fit assessment may be considered.

(d) Abnormal glucose metabolism

Glycosuria and abnormal blood glucose levels require investigation. A fit assessment may be considered if normal glucose tolerance is demonstrated (low renal threshold) or impaired glucose tolerance without diabetic pathology is fully controlled by diet and regularly reviewed.

(e) Diabetes mellitus

(1) The following medication, alone and in combination, may be acceptable for control of type 2 diabetes:

(i) alpha-glucosidase inhibitors;

(ii) medication that acts on the incretin pathway; (iii) biguanides.

(2) A fit assessment may be considered after evaluation of the operational environment, including means of glucose monitoring/management whilst performing rated duties, and with demonstrated exemplary glycaemic control.

(3) Annual follow-up by a specialist should be required including demonstration of absence of complications, good glycaemic control demonstrated by six-monthly HbA1c measurements, and a normal exercise tolerance test.

AMC1 ATCO.MED.B.030 Haematology

(a) Anaemia

(1) Anaemia demonstrated by a reduced haemoglobin level should require investigation. A fit assessment may be considered in cases where the primary cause has been treated (e.g. iron or B12 deficiency) and the haemoglobin or haematocrit has stabilised at a satisfactory level. The recommended range of the haemoglobin level is 11–17 g/dl.

(2) Anaemia which is unamenable to treatment should be disqualifying.

(b) Haemoglobinopathy

Applicants with a haemoglobinopathy should be assessed as unfit. A fit assessment may be considered where minor thalassaemia, sickle cell disease or other haemoglobinopathy is diagnosed without a history of crises and where full functional capability is demonstrated.

(c) Coagulation disorders

(1) Significant coagulation disorders require investigation. A fit assessment may be considered if there is no history of significant bleeding or clotting episodes and the haematological data indicate that it is safe to do so.

(2) If anticoagulant therapy is prescribed, AMC1 ATCO.MED.B.010(g) should be followed.

(d) Disorders of the lymphatic system

Lymphatic enlargement requires investigation. A fit assessment may be considered in cases of an acute infectious process which is fully recovered, or Hodgkin's lymphoma, or other lymphoid malignancy which has been treated and is in full remission, or that requires minimal or no treatment.

(e) Leukaemia

(1) Applicants with acute leukaemia should be assessed as unfit. Once in established remission, applicants may be assessed as fit.

(2) Applicants with chronic leukaemia should be assessed as unfit. A fit assessment may be considered after remission and a period of demonstrated stability.

(3) Applicants with a history of leukaemia should have no history of central nervous system involvement and no continuing side effects from treatment which are likely to interfere with the safe exercise of the privileges of the licence. Haemoglobin and platelet levels should be satisfactory.

(4) Regular follow-up is required in all cases of leukaemia.

(f) Splenomegaly

Splenomegaly requires investigation. A fit assessment may be considered if the enlargement is minimal, stable and no associated pathology is demonstrated, or if the enlargement is minimal and associated with another acceptable condition.

GM1 ATCO.MED.B.030 Haematology

HODGKIN'S LYMPHOMA

Due to potential side effects of specific chemotherapeutic agents, the precise regime utilised should be taken into account.

GM2 ATCO.MED.B.030 Haematology

CHRONIC LEUKAEMIA

A fit assessment may be considered if the chronic leukaemia has been diagnosed as:

- (a) lymphatic at stages 0, I, and possibly II without anaemia and minimal treatment;
- (b) stable 'hairy cell' leukaemia with normal haemoglobin and platelets.

GM3 ATCO.MED.B.030 Haematology

SPLENOMEGALY

- (a) Splenomegaly should not preclude a fit assessment, but should be assessed on an individual basis.
- (b) Associated pathology of splenomegaly is e.g. treated chronic malaria.
- (c) An acceptable condition associated with splenomegaly is e.g. Hodgkin's lymphoma in remission.

AMC1 ATCO.MED.B.035 Genitourinary system

(a) Abnormal urinalysis

Any abnormal finding on urinalysis requires investigation. This investigation should include proteinuria, haematuria and glycosuria.

(b) Renal disease

- (1) Applicants presenting with any signs of renal disease should be assessed as unfit. A fit assessment may be considered if blood pressure is satisfactory and renal function is acceptable.
- (2) Applicants requiring dialysis should be assessed as unfit.

(c) Urinary calculi

- (1) Applicants with an asymptomatic calculus or a history of renal colic require investigation. A fit assessment may be considered after successful treatment for a calculus and with appropriate follow-up.
 - (2) Residual calculi should be disqualifying unless they are in a location where they are unlikely to move and give rise to symptoms.
- (d) Renal and urological surgery
- (1) Applicants who have undergone a major surgical operation on the genitourinary system or its adnexa involving a total or partial excision or a diversion of any of its organs should be assessed as unfit until recovery is complete, the applicant is asymptomatic and the risk of secondary complications is minimal.
 - (2) Applicants with compensated nephrectomy without hypertension or uraemia may be assessed as fit.
 - (3) Applicants who have undergone renal transplantation may be considered for a fit assessment if it is fully compensated and tolerated with only minimal immunosuppressive therapy after at least 12 months.
 - (4) Applicants who have undergone total cystectomy may be considered for a fit assessment if there is satisfactory urinary function, no infection and no recurrence of primary pathology.

AMC1 ATCO.MED.B.040 Infectious disease

- (a) Infectious disease — General
- In cases of infectious disease, consideration should be given to a history of, or clinical signs indicating, underlying impairment of the immune system.
- (b) Tuberculosis
- (1) Applicants with active tuberculosis should be assessed as unfit. A fit assessment may be considered following completion of therapy.
 - (2) Applicants with quiescent or healed lesions may be assessed as fit. Specialist evaluation should consider the extent of the disease, the treatment required and possible side effects of medication.
- (c) Syphilis
- Applicants with acute syphilis should be assessed as unfit. A fit assessment may be considered in the case of those fully treated and recovered from the primary and secondary stages.
- (d) HIV positivity

- (1) Applicants who are HIV positive may be assessed as fit if a full investigation provides no evidence of HIV associated diseases that might give rise to incapacitating symptoms. Frequent review of the immunological status and neurological evaluation by an appropriate specialist should be carried out. A cardiological review may also be required depending on medication.
- (2) Applicants with an AIDS defining condition should be assessed as unfit except in individual cases for revalidation of a medical certificate after complete recovery and dependent on the review.
- (3) The aero-medical assessment of individual cases under (1) and (2) should be dependent on the absence of symptoms or signs of the disease and the acceptability of serological markers. Treatment should be evaluated by a specialist on an individual basis for its appropriateness and any side effects.

(e) Infectious hepatitis

Applicants with infectious hepatitis should be assessed as unfit. A fit assessment may be considered once the applicant has become asymptomatic after treatment and specialist evaluation. Regular review of the liver function should be carried out.

GM1 ATCO.MED.B.040 Infectious disease

HIV INFECTION

- (a) There is no requirement for routine testing of HIV status, but testing may be carried out on clinical indication.
- (b) If HIV positivity has been confirmed, a process of rigorous aero-medical assessment and follow-up should be introduced to enable individuals to continue working provided their ability to exercise their licenced privileges to the required level of safety is not impaired. The operational environment should be considered in the decision-making.

AMC1 ATCO.MED.B.045 Obstetrics and gynaecology

(a) Gynaecological surgery

Applicants who have undergone a major gynaecological operation should be assessed as unfit until recovery is complete, the applicant is asymptomatic and the risk of secondary complications or recurrence is minimal.

(b) Pregnancy

- (1) A pregnant licence holder may be assessed as fit during the first 34 weeks of gestation provided obstetric evaluation continuously indicates a normal pregnancy.
- (2) The AeMC or AME or the licensing authority should provide written advice to the applicant and the supervising physician regarding potentially significant

complications of pregnancy which may negatively influence the safe exercise of the privileges of the licence.

AMC1 ATCO.MED.B.050 Musculoskeletal system

- (a) Applicants with any significant sequelae from disease, injury or congenital abnormality affecting the bones, joints, muscles or tendons with or without surgery require full evaluation prior to a fit assessment.
- (b) Abnormal physique, including obesity, or muscular weakness may require aero-medical assessment and particular attention should be paid to an aero-medical assessment in the working environment.
- (c) Locomotor dysfunction, amputations, malformations, loss of function and progressive osteoarthritic disorders should be assessed on an individual basis in conjunction with the appropriate operational expert with a knowledge of the complexity of the tasks of the applicant.
- (d) Applicants with inflammatory, infiltrative or degenerative disease of the musculoskeletal system may be assessed as fit provided the condition is in remission and the medication is acceptable.

AMC1 ATCO.MED.B.055 Psychiatry

- (a) Disorders due to alcohol or other substance use
 - (1) A fit assessment may be considered after successful treatment, a period of documented sobriety or freedom from substance use, and review by a psychiatric specialist. The licensing authority, with the advice of the psychiatric specialist, should determine the duration of the period to be observed before a medical certificate can be issued.
 - (2) Depending on the individual case, treatment may include in-patient treatment of some weeks.
 - (3) Continuous follow-up, including blood testing and peer reports, may be required indefinitely.
- (b) Mood disorder

Applicants with an established mood disorder should be assessed as unfit. After full recovery and after full consideration of an individual case, a fit assessment may be considered depending on the characteristics and gravity of the mood disorder. If stability on maintenance psychotropic medication is confirmed, a fit assessment with an appropriate limitation may be considered. If the dosage of the medication is changed, a further period of unfit assessment should be required. Regular specialist supervision should be required.
- (c) Psychotic disorder

Applicants with a history, or the occurrence, of a functional psychotic disorder should be assessed as unfit. A fit assessment may be considered if a cause can be unequivocally identified as one which is transient, has ceased and the risk of recurrence is minimal.

(d) Deliberate self-harm

Applicants who have carried out a single self-destructive action or repeated acts of deliberate self-harm should be assessed as unfit. A fit assessment may be considered after full consideration of an individual case which may require psychiatric or psychological evaluation. Neuropsychological evaluation may also be required.

AMC1 ATCO.MED.B.060 Psychology

- (a) If a psychological evaluation is indicated, it should be carried out by a psychologist taking into account the ATC environment and the associated risks.
- (b) Where there is established evidence that an applicant may have a psychological disorder, the applicant should be referred for psychological opinion and advice.
- (c) Established evidence should be verifiable information from an identifiable source related to the mental fitness or personality of a particular individual. Sources for this information can be accidents or incidents, problems in training or competence assessments, behaviour or knowledge relevant to the safe exercise of the privileges of the licence.
- (d) The psychological evaluation may include a collection of biographical data, the administration of aptitude, as well as personality tests and psychological interview.
- (e) The psychologist should submit a written report to the AME, AeMC or licensing authority as appropriate, detailing his/her opinion and recommendation.

AMC1 ATCO.MED.B.065 Neurology

- (a) Electroencephalography (EEG)
 - (1) EEG should be carried out when indicated by the applicant's history or on clinical grounds.
 - (2) Epileptiform paroxysmal EEG abnormalities and focal slow waves should be disqualifying. A fit assessment may be considered after further evaluation.
- (b) Epilepsy
 - (1) Applicants who have experienced one or more convulsive episodes after the age of five should be assessed as unfit.
 - (2) A fit assessment may be considered if:

- (i) the applicant is seizure free and off medication for a period of at least 10 years;
- (ii) full neurological evaluation shows that a seizure was caused by a specific nonrecurrent cause, such as trauma or toxin.

(3) Applicants who have experienced an episode of benign Rolandic seizure may be assessed as fit provided the seizure has been clearly diagnosed including a properly documented history and typical EEG result and the applicant has been free of symptoms and off treatment for at least 10 years.

(c) Neurological disease

Applicants with any stationary or progressive disease of the nervous system which has caused or is likely to cause a significant disability should be assessed as unfit. A fit assessment may be considered after full neurological evaluation in cases of minor functional losses associated with stationary disease.

(d) Disturbance of consciousness

Applicants with a history of one or more episodes of disturbed consciousness may be assessed as fit if the condition can be satisfactorily explained by a non-recurrent cause. A full neurological evaluation is required.

(e) Head injury

Applicants with a head injury which was severe enough to cause loss of consciousness or is associated with penetrating brain injury should be evaluated by a consultant neurologist. A fit assessment may be considered if there has been a full recovery and the risk of epilepsy is sufficiently low. Behavioural and cognitive aspects should be taken into account.

AMC1 ATCO.MED.B.070 Visual system

(a) Eye examination

- (1) At each aero-medical revalidation examination, the visual fitness should be assessed and the eyes should be examined with regard to possible pathology.
- (2) All abnormal and doubtful cases should be referred to an ophthalmologist. Conditions which indicate ophthalmological examination include but are not limited to a substantial decrease in the uncorrected visual acuity, any decrease in best corrected visual acuity and/or the occurrence of eye disease, eye injury or eye surgery.
- (3) Where ophthalmological examinations are required for any significant reason, this should be imposed as a limitation on the medical certificate.

- (4) The effect of multiple eye conditions should be evaluated by an ophthalmologist with regard to possible cumulative effects. Functional testing in the working environment may be necessary to consider a fit assessment.
- (5) Visual acuity should be tested using Snellen charts, or equivalent, under appropriate illumination. Where clinical evidence suggests that Snellen may not be appropriate, Landolt 'C' may be used.

(b) Comprehensive eye examination

A comprehensive eye examination by an eye specialist is required at the initial examination. All abnormal and doubtful cases should be referred to an ophthalmologist. The examination should include:

- (1) history;
- (2) visual acuities — near, intermediate and distant vision; uncorrected and with best optical correction if needed;
- (3) objective refraction — hyperopic initial applicants with a hyperopia of more than +2 dioptres and under the age of 25 in cycloplegia;
- (4) ocular motility and binocular vision;
- (5) colour vision;
- (6) visual fields;
- (7) tonometry;
- (8) examination of the external eye, anatomy, media (slit lamp) and funduscopy;
- (9) assessment of contrast and glare sensitivity.

(c) Routine eye examination

At each revalidation or renewal examination, the visual fitness should be assessed and the eyes should be examined with regard to possible pathology. All abnormal and doubtful cases should be referred to an ophthalmologist. This routine eye examination should include:

- (1) history;
- (2) visual acuities — near, intermediate and distant vision; uncorrected and with best optical correction if needed;
- (3) morphology by ophthalmoscopy;
- (4) further examination on clinical indication.

(d) Refractive error

- (1) Applicants with a refractive error between +5.0/-6.0 dioptres may be assessed as fit provided optimal correction has been considered and no significant pathology is demonstrated. If the refractive error exceeds +3.0/-3.0 dioptres, a four-yearly follow-up by an eye specialist should be required.
 - (2) Applicants with:
 - (iii) a refractive error exceeding -6 dioptres;
 - (iv) an astigmatic component exceeding 3 dioptres; or
 - (v) anisometropia exceeding 3 dioptres; may be considered for a fit assessment if:
 - (A) no significant pathology can be demonstrated;
 - (B) optimal correction has been considered;
 - (C) visual acuity is at least 6/6 (1.0) in each eye separately with normal visual fields while wearing the optimal spectacle correction;
 - (D) two-yearly follow-up is undertaken by an eye specialist.
 - (3) Applicants with hypermetropia exceeding +5.0 dioptres may be assessed as fit subject to a satisfactory ophthalmological evaluation provided there are adequate fusional reserves, normal intraocular pressures and anterior angles and no significant pathology has been demonstrated. Corrected visual acuity in each eye shall be 6/6 or better.
 - (4) Applicants with a large refractive error shall use contact lenses or high-index spectacle lenses.
- (e) Convergence
- Applicants with convergence outside the normal range may be assessed as fit provided it does not interfere with near vision (30–50 cm) or intermediate vision (100 cm) with or without correction.
- (f) Substandard vision
- (1) Applicants with reduced central vision in one eye may be assessed as fit for a revalidation or renewal of a medical certificate if the binocular visual field is normal and the underlying pathology is acceptable according to ophthalmological evaluation. Testing should include functional testing in the appropriate working environment.
 - (2) Applicants with acquired substandard vision in one eye (monocularly, functional monocular vision including eye muscle imbalance) may be assessed as fit for revalidation or renewal if the ophthalmological examination confirms that:

- (i) the better eye achieves distant visual acuity of 1.0 (6/6), corrected or uncorrected;
- (ii) the better eye achieves intermediate and near visual acuity of 0.7 (6/9), corrected or uncorrected;
- (iii) there is no significant ocular pathology;
- (iv) a functional test in the working environment is satisfactory; and
- (v) in the case of acute loss of vision in one eye, a period of adaptation time has passed from the known point of visual loss, during which the applicant is assessed as unfit.

(3) (3) An applicant with a monocular visual field defect may be assessed as fit if the binocular visual fields are normal.

(g) Keratoconus

Applicants with keratoconus may be considered for a fit assessment if the visual requirements are met with the use of corrective lenses and periodic review is undertaken by an ophthalmologist.

(h) Heterophoria

Applicants with heterophoria (imbalance of the ocular muscles) exceeding when measured with optimal correction, if prescribed:

- (1) at six metres:
2.0 prism dioptres in hyperphoria,
10.0 prism dioptres in esophoria, 8.0 prism dioptres in exophoria and
- (2) at 33 centimetres:
1.0 prism dioptre in hyperphoria, 8.0 prism dioptres in esophoria,
12.0 prism dioptres in exophoria

may be assessed as fit provided that orthoptic evaluation demonstrates that the fusional reserves are sufficient to prevent asthenopia and diplopia. The Netherlands Optical Society (TNO) testing or equivalent should be carried out to demonstrate fusion.

(i) Eye surgery

- (1) After refractive surgery or surgery of the cornea including cross linking, a fit assessment may be considered, provided:
 - (i) satisfactory stability of refraction has been achieved (less than 0.75 dioptres variation diurnally);
 - (ii) examination of the eye shows no post-operative complications;
 - (iii) glare sensitivity is normal;

- (iv) mesopic contrast sensitivity is not impaired;
 - (v) evaluation is undertaken by an ophthalmologist.
- (2) Cataract surgery
Following intraocular lens surgery, including cataract surgery, a fit assessment may be considered once recovery is complete and the visual requirements are met with or without correction. Intraocular lenses should be monofocal and should not impair colour vision.
- (3) Retinal surgery/retinal laser therapy
- (i) After successful retinal surgery, applicants may be assessed as fit once the recovery is complete. Annual ophthalmological follow-up may be necessary. Longer periods may be acceptable after two years on recommendation of the ophthalmologist.
 - (ii) After successful retinal laser therapy, applicants may be assessed as fit provided an ophthalmological evaluation shows stability.
- (4) Glaucoma surgery
A fit assessment may be considered six months after successful glaucoma surgery, or earlier if recovery is complete. Six-monthly ophthalmological examinations to follow up secondary complications caused by the glaucoma may be necessary.
- (5) Extraocular muscle surgery
A fit assessment may be considered not less than six months after surgery and after a satisfactory ophthalmological evaluation.
- (j) Visual correction
Spectacles should permit the licence holder to meet the visual requirements at all distances.

GM1 ATCO.MED.B.070 Visual system

COMPARISON OF DIFFERENT READING CHARTS (APPROXIMATE FIGURES)

- (a) Test Distance: 40cm

Decimal	Nieden	Jäger	Snellen	N	Parinaud
1,0	1	2	1,5	3	2
0,8	2	3	2	4	3
0,7	3	4	2,5		
0,6	4	5	3	5	4
0,5	5	5		6	5

0,4	7	9	4	8	6
0,35	8	10	4,5		8
0,32	9	12	5,5	10	10
0,3	9	12		12	
0,25	9	12		14	
0,2	10	14	7,5	16	14
0,16	11	14	12	20	

(b) Test Distance: 80cm

Decimal	Nieden	Jäger	Snellen	N	Parinaud
1,2	4	5	3	5	4
1,0	5	5		6	5
0,8	7	9	4	8.0	6
0,7	8	10	4,5		8
0,63	9	12	5,5	10	10
0,6	9	12		12	10
0,5	9	12		14	10
0,4	10	14	7,5	16	14
0,32	11	14	12	20	14

AMC1 ATCO.MED.B.075 Colour vision

- (a) Pseudoisochromatic plate testing alone is not sufficient.
- (b) Colour vision should be assessed using means to demonstrate normal trichromacy.

GM1 ATCO.MED.B.075 Colour vision

The means to demonstrate normal trichromacy include:

- (a) anomaloscopy (Nagel or equivalent). This test is considered passed if the colour match is trichromatic and the matching range is four scale units or less; (b) Colour Assessment and Diagnosis (CAD) test.

AMC1 ATCO.MED.B.080 Otorhinolaryngology

- (a) Examination
 - (1) An otorhinolaryngological examination includes:
 - (i) history;

- (ii) clinical examination including otoscopy, rhinoscopy and examination of the mouth and throat;
- (iii) clinical examination of the vestibular system.

- (2) Ear, nose and throat (ENT) specialists involved in the aero-medical assessment of air traffic controllers should have an understanding of the functionality required by air traffic controllers whilst exercising the privileges of their licence(s).
- (3) Where a full aero-medical assessment and functional check are needed, due regard should be paid to the operational environment in which the operational functions are undertaken.

(b) Hearing

- (1) The follow-up of an applicant with hypoacusis should be decided by the licensing authority. If at the next annual test there is no indication of further deterioration, the normal frequency of testing may be resumed.
- (2) An appropriate prosthetic aid may be a special headset with individual earpiece volume controls. Full functional and environmental assessments should be carried out with the chosen prosthetic equipment in use.

(c) Ear conditions

An applicant with a single dry perforation of non-infectious origin and which does not interfere with the normal function of the ear may be considered for a fit assessment.

(d) Vestibular disturbance

The presence of vestibular disturbance and spontaneous or positional nystagmus requires complete vestibular evaluation by a specialist. Significant abnormal caloric or rotational vestibular responses are disqualifying. At revalidation and renewal aero-medical examinations, abnormal vestibular responses should be assessed in their clinical context.

(e) Speech disorder

Applicants with a speech disorder should be assessed with due regard to the operational environment in which the operational functions are undertaken. Applicants with significant disorder of speech or voice should be assessed as unfit.

GM1 ATCO.MED.B.080 Otorhinolaryngology

HEARING

- (a) Speech discrimination test: discriminating speech against other noise including other sources of verbal communication and ambient noise in the working environment, but not against engine noise.
- (b) Functional hearing test: the objective of this test is to evaluate the controller's ability to hear the full range of communications that occur in an operational environment and not just through a headset or speaker.
- (c) Prosthetic aid: the functional hearing test to be carried out with the prosthetic aid in use is to ensure that the individual is able to perform the functions of his/her licence and that the equipment is not adversely affected by interference from headsets or other factors.
- (d) Pure-tone audiometry: testing at frequencies at or above 4 000 Hz will aid the early diagnosis of acoustic neuroma, noise-induced hearing loss (NIH) and other disorders of hearing. Particular attention should be paid in cases where there is a significant difference between thresholds of the left and right ear.

AMC1 ATCO.MED.B.085 Dermatology

- (a) Referral to the licensing authority should be made if doubt exists about the fitness of an applicant with eczema (exogenous and endogenous), severe psoriasis, chronic infections, drug-induced or bullous eruptions or urticaria.
- (b) Systemic effects of radiation or pharmacological treatment for a dermatological condition should be evaluated before a fit assessment may be considered.
- (c) An applicant with a skin condition that causes pain, discomfort, irritation or itching may only be assessed as fit if the condition can be controlled and does not interfere with the safe exercise of the privileges of the licence.
- (d) In cases where a dermatological condition is associated with a systemic illness, full consideration should be given to the underlying illness before a fit assessment may be considered.

AMC1 ATCO.MED.B.090 Oncology

- (a) Applicants who have been diagnosed with a malignant disease may be assessed as fit provided:
 - (1) after primary treatment there is no evidence of residual malignant disease likely to interfere with the safe exercise of the privileges of the licence;

- (2) time appropriate to the type of tumour has elapsed since the end of primary treatment;
 - (3) the risk of incapacitation from a recurrence or metastasis is sufficiently low;
 - (4) there is no evidence of short- or long-term sequelae from treatment. Special attention should be paid to applicants who have received anthracycline chemotherapy;
 - (5) satisfactory oncology follow-up reports are provided to the licensing authority.
- (b) Applicants receiving ongoing chemotherapy or radiation treatment should be assessed as unfit.
 - (c) Applicants with a benign intracerebral tumour may be assessed as fit after satisfactory specialist and neurological evaluation and the condition does not compromise the safe exercise of the privileges of the licence.
 - (d) Applicants with pre-malignant conditions may be assessed as fit if treated or excised as necessary and there is a regular follow-up.

SUBPART C AERO-MEDICAL EXAMINERS (AMEs)

AMC1 ATCO.MED. C.015 Training courses in aviation medicine

BASIC TRAINING COURSE

- (a) Basic training course for AMEs

The basic training course for AMEs should consist of 60 hours of theoretical and practical training, including specific examination techniques.

- (b) The learning objectives to acquire the necessary competences should include theoretical knowledge, risk management and decision-making principles in the following subjects. Demonstrations and practical skills should also be included, where appropriate.

- (1) Introduction to aviation medicine;
- (2) Basic aeronautical knowledge;
- (3) Aviation physiology;
- (4) Cardiovascular system;
- (5) Respiratory system;
- (6) Digestive system;
- (7) Metabolic and endocrine system;
- (8) Haematology;
- (9) Genitourinary system;
- (10) Obstetrics and gynaecology;
- (11) Musculoskeletal system;
- (12) Psychiatry;
- (13) Psychology;
- (14) Neurology;
- (15) Visual system and colour vision;
- (16) Otorhinolaryngology;
- (17) Oncology;
- (18) Incidents and accidents, escape and survival;

- (19) Legislation, rules and regulations;
- (20) Medication and air traffic control.

AMC2 ATCO.MED.C.015 Training courses in aviation medicine

ADVANCED TRAINING COURSE

- (a) The advanced training course for AMEs should consist of another 60 hours of theoretical and practical training, including specific examination techniques.
- (b) The syllabus for the advanced training course should concentrate on the specific air traffic control environment, and demonstrations and practical skills should be included, where appropriate. The course should cover at least the following subjects:
 - (1) Air traffic control working environment;
 - (2) Ophthalmology, including demonstration and practical training;
 - (3) Otorhinolaryngology, including demonstration and practical training;
 - (4) Clinical medicine;
 - (5) Cardiovascular system;
 - (6) Neurology;
 - (7) Psychiatry;
 - (8) Oncology;
 - (9) Metabolic and endocrine systems;
 - (10) Human factors in aviation with a specific focus on the air traffic control environment;
 - (11) Problematic use of substances.
- (c) Practical training at an AeMC should be under the guidance and supervision of the Head of the AeMC.
- (d) After the successful completion of the practical training, a report of demonstrated competence should be issued.

AMC1 ATCO.MED. C.025(b) Validity of AME certificates

REFRESHER TRAINING IN AVIATION MEDICINE

- (a) During the period of authorisation certification, an AME should attend 20 hours of refresher training, including training with regard to the environment of air traffic control.

- (b) A proportionate number of refresher training hours should be provided by, or conducted under the direct supervision of, the competent authority or the medical assessor.
- (c) Attendance at scientific meetings and congresses and air traffic control observation may be credited by the competent authority for a specified number of hours against the training obligations of the AME, provided the medical assessor has assessed it in advance as being relevant for crediting purposes.

GM1 ATCO.MED. C.025(b) Validity of AME certificates

REFRESHER TRAINING IN AVIATION MEDICINE

Scientific meetings or congresses that may be credited by the competent authority:

- (a) European Conference of Aerospace Medicine;
- (b) International Academy of Aviation and Space Medicine annual congresses;
- (c) Aerospace Medical Association annual scientific meetings; and
- (d) Other scientific meetings.