TECHNICAL STANDARDS – Issue version (2023)

NAMCATS: Part 67

Document: NAMCATS-67/2023

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1. Approval

Edition Number/Version	**Issue version 2020**	**Effective Date**		
	Position	**Name**	**Signature**	**Date**
NCAA Approval	Executive Director	Ms Toska Sem		

2. General

2.1 Section 227 of the Civil Aviation Act, 2016 (Act no. 6 of 2016 – hereinafter "the Act") empowers the Executive Director of Civil Aviation to issue technical standards for civil aviation "on such matters as may be prescribed". Section 227(3) of the Act further empowers the Executive Director of Civil Aviation to incorporate into a technical standard any international aviation standard or any amendment without publishing the text of such standard or any amendment "by mere reference" to the title, number and year of issue of such standard or amendment or to any other particulars by which such standard or amendment is sufficiently identified.

2.2 By way of Government Notice 293/2018 published in Government Gazette 6763 dated 8th November 2018, NAMCARS (amendment 2018) provides for Part 67 – "Medical Requirements". This Part 67 provides for the issue of technical standards as NAMCATS-67. The Executive Director of Civil Aviation has, pursuant to the empowerment mentioned above, issued technical standards relating to NAMCAR Part 67 (Medical Requirements) to be known as NAMCATS-67 as further set out in the SCHEDULE herein.

2.3 NAMCATS-67 comprises the standards, rules, requirements, methods, specifications, characteristics and procedures which are applicable in respect of medical requirements for aviation personnel licence holders.

2.4 To the extent possible, each reference to a technical standard in this document, is a reference to the corresponding regulation in the Namibian Civil Aviation Regulations.

Example: *(1) Technical standard 67.02.1 refers to regulation 67.02.1 in Subpart 02 of Part 67*

(2) Technical standard 67.02.2 refers to either the whole, or more than one specific regulation, of Subpart 02 of Part 67.

2.5 Where there is any perceived disparity of meaning or inconsistency between these technical standards and the regulations, the provisions of the regulations will take precedence.

2.6 Where there is a difference between a standard and procedure prescribed in an ICAO document and the Civil Aviation Technical Standards (CATS), the CATS standard will prevail.

3. Guidance Material

2.1 Guidelines and recommendations in support of any particular technical standard are contained in schedules or appendices to, and/or compliance notes inserted throughout, the technical standards. These guidelines, upon release, are intended to provide recommendations and guidance to illustrate a means, but not necessarily the only means of complying with the regulations and technical standards. They may explain certain regulatory requirements by providing interpretive and explanatory materials. It is expected that service providers will document internal actions in their own operational manuals, to put into effect those, or similarly adequate, practices.

3. Amendments to the Technical Standards

3.1 The NCAA Safety Division Personnel Licensing Department (PEL) has responsibility for the technical content of this technical standard.

3.2 This technical standard is issued, and may only be amended, under the authority of the Executive Director of Civil Aviation.

3.3 Requests for changes to the content of this technical standard must be forwarded to the Executive Director and may come from:

(a) technical areas within NCAA;

(b) aviation industry service providers or operators; or

(c) licensed aviation personnel.

3.4 The need to change the content of this technical standard may arise for any of the following reasons:

(a) to ensure safety;

(b) to ensure standardization;

(c) to respond to changed NCAA regulations or standards;

(d) to respond to changes initiated by ICAO;

(e) to accommodate proposed initiatives or new technologies.

3.5 NCAA may approve trials of new procedures or technologies to develop appropriate standards.

4. International Standards

4.1 Section 227 of the Civil Aviation Act, 2016 empowers the Executive Director of Civil Aviation to issue technical standard for civil aviation. Section 227 of the Civil Aviation Act, 2016 further empowers the Executive Director of Civil Aviation to incorporate into a technical standard any international aviation standard or any amendment without stating the text of such standard or amendment, “by mere reference” to the title, number and year of issue of such standard or

amendment, or to any other particulars by which such standard or amendment is sufficiently identified.

4.2 International standards, recommended practices and procedures, as amended from time to time, (art 37 of the Chicago Convention) will be incorporated into the technical standards contained in this document upon release;

1) ICAO Annex 1 –Personnel Licensing;
2) ICAO Doc 8984 – Manual of Civil Aviation Medicine;
3) ICAO Doc 9654 - Manual on Prevention of Problematic Use of Substances in the Aviation Workplace
4) ICAO Doc 9683 - Human Factors Training Manual.

4.3 Differences from ICAO Standards, Recommended Practices and Procedures are published in the AIP.

These Technical Standards apply with immediate effect.
Further access is available on NCAA website: www.ncaa.com.na/resources
Enquiries: licensing@ncaa.com.na

TOSKA SEM
EXECUTIVE DIRECTOR

SCHEDULE

PART 67 – MEDICAL REQUIREMENTS

(NAMCATS-67)

Contents

67.00.2 FUNCTIONS OF EXECUTIVE DIRECTOR REGARDING MEDICAL EXAMINATIONS

1. Requirements for medical assessors.

The requirements for medical assessor/s designated by the Executive Director to carry out the powers and responsibilities defined in regulation 67.00.2 (2), are as follows:

(a) The medical assessor/s must be appointed within the Authority to carry out the powers and responsibilities, including any additional responsibilities assigned by the Executive Director.

(b) The medical assessor/s must meet the qualifications and experience requirements as defined by the Executive Director and stay abreast of international and national developments within the field of aviation medicine.

(c) The medical assessor/s must have good standing within the aviation industry and with the professional medical/health body/ies within Namibia.

67.00. 3 CLASSES OF MEDICAL CERTIFICATES

The medical requirements and standards to be complied with by an applicant for, or the holder of, a Class 1, 2 or 3 medical certificate are the following –

1. General

1.1 Impairment or sudden or subtle incapacitation

Applicants must be free from any risk factor, disease or disability which renders them either unable, or likely to become suddenly unable, to perform assigned duties or exercise their privileges under an aviation document safely. These may include effects and/or adverse effects from the treatment of any condition and drugs or substances of abuse.

1.2 Medical deficiency

Applicants must be free from any of the following, if it results in a degree of functional incapacity likely to interfere with the safe operation of an aircraft or with the safe performance of their duties or

the exercise of privileges under an aviation document –

1.2.1 Congenital or acquired abnormality;
1.2.2 active, latent, acute or chronic disability, disease or illness;
1.2.3 wound, injury, or outcome of operation;
1.2.4 any effect or side-effect of any prescribed or non-prescribed therapeutic, diagnostic or preventive medication taken;.

2. Class 1 medical certificate

2.1 Physical and mental standards

The applicant may not suffer from any disease or disability which could render that applicant likely to become suddenly unable either to operate an aircraft safely or to perform assigned duties or exercise their privileges under an aviation document safely.

Applicants must have no established medical history or clinical diagnosis of –

2.1.1 Psychiatric and mental

2.1.1.1 Any of the following conditions that are of a severity which renders the applicant incapable of safely exercising the privileges of the licence, or makes it likely that within two years of the assessment the applicant will be unable to safely exercise the privileges of the license is disqualifying unless acceptable and effective treatment has controlled any additional risk of functional disorder or sudden or subtle incapacitation –

2.1.1.1.1 a psychotic disorder, unless the psychosis was of toxic origin and there has been complete recovery;

2.1.1.1.2 alcohol or other psychoactive substance abuse or dependence;

2.1.1.1.3 character or behaviour disorder, severe enough to have resulted in an overt act;

2.1.1.1.4 any other psychiatric disorder;

2.1.1.1.5 an organic mental disorder;

2.1.1.1.6 schizophrenia or a schizotypal or delusional disorder;

2.1.1.1.7 a mood (affective) disorder;

2.1.1.1.8 a neurotic, stress-related or somatoform disorder;

2.1.1.1.9 a behavioural syndrome associated with physiological disturbances or physical factors;

2.1.1.1.10 a disorder of adult personality or behaviour, particularly if manifested by repeated overt acts;

2.1.1.1.11 mental retardation;

2.1.1.1.12 a disorder of psychological development;

2.1.1.1.13 a behavioural or emotional disorder, with onset in childhood or adolescence; or

2.1.1.1.14 a mental disorder not otherwise specified; such as might render the applicant unable to safely exercise the privileges of the licence applied for or held.

2.1.1.2 An applicant who has a history of psychoactive substance abuse or dependence may apply for an exemption to the designated body or institution if the following circumstances exist –

2.1.1.2.1 the applicant has been under medical treatment for psychoactive substance abuse and the medical practitioner concerned, approved by the designated body or institution, certifies that the applicant is free from the effects of psychoactive substance abuse;

2.1.1.2.2 the applicant provides the name of a sponsor who is prepared to certify that the applicant no longer takes a psychoactive substance in any form. Such a sponsor must be a person acceptable to the designated body or institution for this purpose;

2.1.1.2.3 the applicant signs an undertaking not to take any psychoactive substance while holding a valid licence.

2.1.1.3 More details are contained in the Mood Disorder/ Depression Protocol

2.1.2 Neurological

2.1.2.1 Any disease, injury or abnormality of the nervous system, the effects of which, according to medical conclusion, are likely to interfere with the safe exercise of the privileges of the license or cause sudden or subtle incapacitation, is disqualifying unless acceptable and effective treatment has controlled any additional risk of functional disorder or sudden or subtle incapacitation. In particular, the following are not acceptable:

2.1.2.1.1 epilepsy;
2.1.2.1.2 any seizure disorder;
2.1.2.1.3 any disturbance of consciousness without satisfactory medical explanation of the cause;
2.1.2.1.4 migraine;
2.1.2.1.5 incapacitating headaches.

2.1.2.2 The relevant protocols are contained in the Neurological/ Neurosurgical Protocol, Stroke Protocol, Brain Tumours Protocol and Parkinson's Disease Protocol.

2.1.3 Musculoskeletal

Any active disease of the bones, joints, muscles, or tendons, or any significant functional limitation from any previous congenital or acquired disease or injury is disqualifying unless acceptable and effective treatment has controlled any additional risk of functional disorder or sudden or subtle incapacitation. Functional abnormalities affecting the bones, joints, muscles, or tendons, compatible with the safe exercise of the privileges of the license may be assessed as fit. An appropriate demonstration of ability via a skill test may be required.

2.1.4 Gastrointestinal

2.1.4.1 Any disease or abnormality, or result of disease or surgical operation, affecting the digestive tract and its attachments, including the biliary system and hernial orifices, of a severity likely to cause obstruction, significant functional disorder or infection, or sudden or subtle incapacitation, is disqualifying unless there is satisfactory evidence that acceptable and effective treatment has controlled any additional risk of functional disorder or sudden or subtle incapacitation.

2.1.4.2 The relevant protocol is contained in the Colon and Rectal Carcinoma Protocol and Oesophageal Cancer Protocol.

2.1.5 Respiratory

2.1.5.1 Any disease or abnormality, or result of disease or surgical operation, affecting the lungs, mediastinum, pleura, chest wall or respiratory passages of a severity likely to cause infection, functional disorder or sudden or subtle incapacitation at altitude, is disqualifying unless there is satisfactory evidence that acceptable and effective treatment has controlled any additional risk of functional disorder or sudden or subtle incapacitation.

2.1.5.2 The relevant protocols are contained in the Lung Function Assessment, Chronic Obstructive Airways Disease Protocol, Asthma Protocol and Pneumothorax Protocol.

2.1.6 Cardiovascular

2.1.6.1 Any disease or abnormality, or result of disease or surgical operation, which affects the heart or circulatory system and is of a severity likely to cause functional disorder or sudden or subtle incapacitation. Evidence of myocardial infarction, or significant hypertension, is disqualifying unless acceptable and effective treatment has controlled any additional risk of functional disorder or sudden or subtle incapacitation.

2.1.6.2 Disorders of cardiac rhythm requiring a pacemaker is disqualifying unless acceptable and effective treatment has controlled any additional risk of functional disorder or sudden or subtle incapacitation. Applicants with evidence strongly suggestive of coronary artery disease, including the presence of excessive cardiovascular risk factors, must be assessed as unfit unless adequate myocardial perfusion can be demonstrated and reversible risk factors controlled.

2.1.6.3 The relevant protocols are contained in the Hypertension Protocol and Coronary Artery Disease Protocol.

2.1.7 Metabolic, nutritional and endocrine

2.1.7.1 Any metabolic, nutritional or endocrine disorders likely to interfere with the safe exercise of the privileges of the licence, or to cause sudden or subtle incapacitation is disqualifying unless there is satisfactory evidence of acceptable and effective treatment has controlled any additional risk of functional disorder or sudden or subtle incapacitation. Any applicant with a diagnosis of metabolic, nutritional or endocrine disorder must generally be assessed as unfit, but may be considered for special certification by the designated body or institution.

2.1.7.2 The relevant protocols are contained in the Rheumatoid Arthritis Protocol, Diabetes Mellitus Protocol , Addison's Disease Protocol, Sarcoidosis Protocol and Multiple Sclerosis Protocol.

2.1.8 Haematologic and immunologic

2.1.8.1 Any active disease of the lymphatic system or of the blood is disqualifying unless there is satisfactory evidence that acceptable and effective treatment has controlled any additional risk of functional disorder or sudden or subtle incapacitation. Those with chronic diseases of these systems in a state of remission may be assessed as fit, provided appropriate specialist reports permit medical conclusion that the condition is not likely to affect the safe exercise of the privileges of the licence. Applicants with any infectious diseases, the effects of which are likely to impede the safe exercise of the privileges of the licence or cause sudden or subtle incapacitation, must be assessed as unfit until such time as there is satisfactory evidence that effective and acceptable treatment has removed such effects.

2.1.8.2 The relevant protocols are contained in the Sarcoidosis Protocol, Multiple Sclerosis Protocol, Coagulation and Thrombotic Disorders Protocol, Acute Leukaemia Protocol, Warfarin Protocol, HIV/ AIDS Protocol and Bone Marrow Protocol.

2.1.9 Genitourinary

2.1.9.1 Any disease or abnormality, or result of disease or surgical operation, affecting the kidneys, urine, urinary tract, menstrual function or genital organs, to a degree likely to impede the safe exercise of the privileges of the licence, or cause sudden or subtle incapacitation such that the applicant is unable to safely exercise the privileges of the licence is disqualifying unless there is satisfactory

evidence that acceptable and effective treatment has controlled any additional risk of functional disorder or sudden or subtle incapacitation.

2.1.9.2 Pregnancy; Applicants who are pregnant must be assessed as unfit unless obstetrical evaluation and continued medical supervision indicate a low-risk uncomplicated pregnancy. Following confinement or termination of pregnancy, the applicant may not exercise the privileges of her licence until she has undergone re-evaluation in accordance with best medical practice and it has been determined that she is able to safely exercise the privileges of her licence and ratings.

2.1.9.3 The relevant protocol is contained in Seminoma Protocol, Obstetrics and Gynaecological Protocol, Single Kidney Protocol, Breast Cancer Protocol, Testicular Cancer Protocol, Prostate Cancer Protocol, 38 Renal Cancer Protocol and Bladder Cancer Protocol.

2.1.10 Oncology

Every applicant who has been treated for malignant disease must produce satisfactory evidence of an acceptable individual assessment before exercising licence privileges. The relevant protocols are contained in the Brain Tumours Protocol, Colon and Rectal Carcinoma Protocol, Acute Leukaemia Protocol, Seminoma Protocol, Malignant Melanoma Protocol, Oncology Protocol, Oesophageal Cancer Protocol, Breast Cancer Protocol, Testicular Cancer Protocol, Prostate Cancer Protocol, Renal Cancer Protocol and Bladder Cancer Protocol.

2.2 Visual standards

2.2.1 General

2.2.1.1 An applicant may not have –

2.2.1.1.1 any condition or congenital abnormality of either eye or its attachments likely to impede the safe exercise of the privileges of the licence;

2.2.1.1.2 any abnormality of visual fields or significant defect of binocular function;

2.2.1.1.3 any manifest squint, or large errors of eye muscle balance (phoria). The acceptable limits for ocular muscle balance are 12 prism dioptres for exophoria, 6 dioptres for esophoria; and 1.5 dioptre for hyperphoria measured at distance. If corrective lenses are required, phoria must be measured while using the appropriate corrective lenses;

2.2.1.1.4 any anatomical or functional monocularity or substandard vision in one eye at initial issue of a Class 1 medical certificate. However, medical conclusion may permit experienced licence holders who develop monocularity or substandard vision to be granted a medical

certificate with appropriate restrictions following a period sufficient to permit adjustment to this condition.

2.2.1.2 Monocularity means that either an eye is absent, or its vision cannot be corrected to better than 6/24.

2.2.1.3 Substandard vision in one eye means central vision better than 6/24 but worse than 6/9, with normal visual fields.

2.2.1.4 or monocularity, the appropriate minimum restrictions initially are as follows –

2.2.1.4.1 "If flying open cockpit aircraft, protective goggles not restricting visual field must be worn". (This must remain as a permanent restriction);

2.2.1.4.2 "Any accompanying pilot must be made aware of the holder's monocular vision". (This must remain as a permanent restriction);

2.2.1.4.3 "Not valid for flight as pilot-in-command by day or night until a satisfactory flight test has been completed with a flight examiner in each case". (This restriction may be removed at subsequent assessment, according to the results of the flight test, or amended to the endorsement in (d) below);

2.2.1.4.4 "Not valid for flight as pilot-in-command by night until a satisfactory flight test has been completed with a flight examiner". (This restriction may be removed at subsequent assessment, according to the result of the flight test).

2.2.1.5 For substandard vision in one eye (vision between 6/6 and 6/24), the appropriate minimum restrictions are as follows –

2.2.1.5.1 "Any accompanying pilot must be made aware of the holder's substandard vision in one eye". (This must remain as a permanent restriction);

2.2.1.5.2 "Not valid for flight as pilot-in-command by night until a satisfactory flight test has been completed with a flight examiner". (This restriction may be removed at subsequent assessment, according to the results of the flight test).

2.2.1.5.3 Sunglasses worn during the exercise of the privileges of the licence or rating held should be non-polarizing and of a neutral grey tint.

2.2.1.5.4 Applicants who have undergone surgery affecting the refractive status of the eye must be assessed as unfit unless they are free from those sequelae which are likely to interfere with the safe exercise of their licence and rating privileges

2.2.1.5.5 The relevant protocols are contained in the Monocular Protocol and Radial Keratotomy/ PRK/ Lasik Protocol.

2.2.2 Near vision

2.2.2.1 Applicants must be able to read 6/9 (N5) at a distance of 33 centimetres and N14 at a distance of 100 centimetres or have equivalent visual acuity for these distances (6/12, 20/40 at 33 cm; 6/24, 20/80 at 100 cm). An applicant who meets this standard only by use of spectacles may be granted a medical certificate provided this is endorsed with the following limitation:

"Suitable corrective lenses must be readily available".

2.2.2.2 This means that these must be available for immediate use when exercising the privileges of the licence. This limitation may be satisfied by the availability of appropriate bifocal or trifocal spectacles which permit the reading of instruments and a chart or manual held in one hand, without impeding the use of distance vision through the windscreen when wearing the spectacles. Single-vision near correction (full lenses of one power only, appropriate to reading) is not acceptable, since wearing these significantly reduces distance visual acuity.

2.2.2.3 Suitable spare corrective spectacles must be readily available.

2.2.3 Distance vision

2.2.3.1 Applicants must have a distance visual acuity of not worse than 6/6 or its equivalent (20/20, 1.0) in each eye separately, with or without corrective lenses. When this standard can be met only by the use of corrective lenses, an applicant may be granted a medical certificate provided this is endorsed with the following limitation:

"Suitable corrective lenses must be worn for distance vision".

2.2.3.2 An applicant with uncorrected distance visual acuity of 6/24 or its equivalent (20/80, 0.25) or worse in either eye is also subject to the following limitation endorsed on the medical certificate:

"Suitable spare corrective spectacles must be readily available".

2.2.3.3 Applicants whose uncorrected distant visual acuity in either eye is worse than 6/60 must be required to provide a full ophthalmic report prior to initial Medical Assessment and every five years thereafter.

2.2.3.4 The visual acuity, with and without correction, must be recorded at each examination.

2.2.4 Combined distance and near vision correction

Applicants requiring distance vision correction must have a near point of accommodation not greater than 33 centimetres, as measured while wearing the required distance vision corrective lenses. Suitable correction for near vision may be necessary in addition to distance vision correction.

2.2.5 Dioptre limits

A need for corrective lenses for either eye within the range of plus or minus 3 dioptres (spherical equivalent) may be accepted, provided that the distance visual acuity without correction is not worse than 6/60 in each eye separately. Applicants with a large refractive error must use contact lenses or high-index spectacle lenses. Spectacle lenses outside this range are not routinely acceptable, but medical conclusion may permit an applicant to be assessed as fit on production of satisfactory specialist reports. The medical certificate must, where appropriate, be endorsed with the following –

(1) "Contact lenses must be worn"; and

(2) "Spare spectacles must be readily available".

2.2.6 Colour perception standards

2.2.6.1 Applicants must be able to demonstrate ability to perceive readily those colours the perception of which is necessary for the safe exercise of the privileges of an aviation document or the safe performance of duties. The use of tinted lenses to obtain adequate colour perception is not permitted.

2.2.6.2 Applicants must be tested for the ability to correctly identify a series of pseudo-isochromatic plates (tables) in daylight or in artificial light of the same colour temperature such as that provided by Illuminant "C" or "D" as specified by the International Commission on Illumination (ICI).

2.2.6.3 Applicants are deemed to have scored satisfactorily in these tests if they have committed no errors on the test.

2.2.6.4 Applicants who fail to obtain a satisfactory score in such a test may nevertheless be assessed as fit if the applicants are able to readily and correctly identify aviation coloured lights displayed by means of a recognised colour perception lantern, i.e. Farnsworth, Beyenne, Holmes-Wright type A or Spectrolux.

2.2.6.5 The procedure for the performance of a Farnsworth Lantern test must be as detailed in this document (Note: The Farnsworth D15 is not an acceptable test).

2.2.6.6 Applicants who obtain a satisfactory score in any of the tests in (4) above must be deemed to be Grade II colour-safe.

2.2.6.7 Applicants who are deemed to be Grade II colour-safe must repeat steps (2) to (4) as necessary on an annual basis, provided the Executive Director reserves the right to extend such period as necessary.

2.2.6.8 Applicants who fail to obtain a satisfactory score in any of the tests detailed in (4) above may nevertheless be assessed as fit, provided the following criteria are met –

2.2.6.8.1 Applicants must submit a satisfactory report from an ophthalmologist declaring the applicant deuteranomalous (Red/Green colour deficient);

2.2.6.8.2 Applicants with any abnormality of colour perception other than deuteranomaly must be assessed as unfit;

2.2.6.8.3 Guidelines for Ophthalmologists as detailed in this document must be adhered to by the examining ophthalmologist;

2.2.6.8.4 Applicants must undergo a practical flight test with an instructor designated by the Executive Director;

2.2.6.8.5 The procedure for the practical flight test must be as detailed in this document;

2.2.6.8.6 A satisfactory report declaring that the applicant can safely identify all the aviation lights necessary for the safe performance of duties must be submitted;

2.2.6.9 Applicants who submit satisfactory reports related to paragraph (8) above must be deemed to be Grade II colour-safe.

2.2.6.10 Such restriction must appear on the applicant's medical certificate permanently.

2.2.6.11 Applicants who are deemed to be Grade II colour-safe in accordance with paragraph (10) must submit an ophthalmologist report on an annual basis.

2.2.6.12 Any deterioration in any of the visual parameters must result in an applicant being deemed unfit to fly, and being required to repeat point (9) above in its entirety.

2.2.6.13 Stereopsis and NPC testing will be required.

2.2.6.14 Full visual fields will be required.

2.2.6.15 The relevant protocols are contained in the Procedure for Farnsworth Lantern Testing and Practical Flight Testing in Colour Vision Deficiency.

2.3 Ear, nose and throat and hearing standards

2.3.1 Applicants must have no established medical history or clinical diagnosis of the following –

2.3.1.1 any pathological process, acute or chronic, of the internal ear or middle ear cavities;

2.3.1.2 any unhealed (unclosed) perforation of the tympanic membranes, except that an applicant with a single dry perforation may be eligible for a certificate if the defect does not prevent compliance with the hearing standards.

2.3.1.3 any chronic or serious recurrent obstruction of the Eustachian tubes;

2.3.1.4 any serious or recurrent disturbance of the vestibular system;

2.3.1.5 any obstruction to free nasal air entry to both sides;

2.3.1.6 any serious malformation, or serious acute or chronic condition of the buccal cavity or upper respiratory tract; or

2.3.1.7 any speech defect likely to interfere with the safe performance of duties or with the safe exercise of the privileges of the licence.

2.3.2 Applicants must be free from any hearing defect which would interfere with the safe exercise of the privileges of the licence. Routine audiometry is required at each medical examination. Applicants must not have a hearing loss in excess of 35 dB at each frequency between 500 and 2000 Hz, or 50 dB at 3000 Hz in either ear. Applicants failing to comply with this standard in either ear may be assessed fit if the hearing loss for both ears, when averaged at each frequency does not exceed the stated limit, and the applicant achieves 90 per cent or better discrimination when speech audiometry is tested.

2.3.3 An applicant with a hearing loss greater than the above may be declared fit provided that the applicant can demonstrate normal hearing performance against a background noise that reproduces or simulates the masking properties of flight deck noise upon speech and beacon signals. Alternatively, a practical hearing test conducted in flight in the cockpit of an aircraft of the type for which the applicant's licence and ratings are valid may be used.

2.4 Electro-cardiography

2.4.1 Electro-cardiography must form part of the cardiovascular examination for the initial issue of a Class 1 medical certificate, and at recertification at the following intervals: At the first examination after the ages of 25, 30, 32, 34, 36, 38, 40, and annually thereafter.

2.4.2 Exercise electrocardiography may be required based on prior history or findings of cardiovascular examinations.

2.5 Flow Volume Lung Function requirements

2.5.1 Flow-volume lung function testing must form part of the respiratory assessment for the initial issue of a Class I medical certificate under the age of 40 years or where this is deemed necessary based on previous history and/ or clinical indication.

2.5.2 The flow-volume lung function testing must be done again at the first medical examination after the age 40, and again at the first medical examination after the age of 50.

2.5.3 For active smokers*, the requirement for flow-volume lung function testing may be not less than every 24 months (biennially) for licence holders under the age of 40 and not more than every 12 months (annually) after the age of 40.

2.5.4 All licence holders who have a clinical indication for Lung Function Testing will be required to submit a Lung Function Tests at more frequent intervals.

2.5.5 Licence holders may be referred to the relevant protocols.

**Note: Active smoker refers to an individual who engages in the act of intentional inhalation of tobacco smoke from any tobacco product, including but not limited to, manufactured and hand rolled cigarettes, cigars, pipe tobacco, cigarillos and also refers to an individual who engages in the act of intentional inhalation of vapour from an electronic cigarette.*

Active smoking does not refer to passive smoking which is the unintentional inhalation by non-smokers of tobacco smoke introduced into the atmosphere by smokers, or smoking of any other substances such as herbal cigarettes or marijuana.

The consumption of tobacco products by other means, such as chewing, is also excluded from this standard.

2.5.6 Chest radiography should form part of the initial examination. Periodic chest radiography is usually not necessary but may be a necessity in situations where asymptomatic pulmonary disease can be expected.

3 Class 2 medical certificate

3.1 Physical and mental standards

The applicant may not suffer from any disease or disability which could render that applicant likely to become suddenly unable either to operate an aircraft safely or to perform assigned duties safely or to exercise the privileges of an aviation document safely.

Applicants must have no established medical history or clinical diagnosis of –

3.1.1 Psychiatric and mental

3.1.1.1 Any of the following conditions that are of a severity which renders the applicant incapable of safely exercising the privileges of the licence, or makes it likely that within two years of the assessment the applicant will be unable to safely exercise the privileges of the licence, will be disqualifying unless there is satisfactory evidence that acceptable and effective treatment has controlled any additional risk of functional disorder or sudden or subtle incapacitation –

3.1.1.1.1 a psychotic disorder, unless the psychosis was of toxic origin and there has been complete recovery;

3.1.1.1.2 alcohol or other psychoactive substance abuse or dependence;

3.1.1.1.3 character or behaviour disorder, severe enough to have resulted in an overt act;

3.1.1.1.4 any other psychiatric disorder;

3.1.1.1.5 an organic mental disorder;

3.1.1.1.6 schizophrenia or a schizotypal or delusional disorder;

3.1.1.1.7 a mood (affective) disorder;

3.1.1.1.8 a neurotic, stress-related or somatoform disorder;

3.1.1.1.9 a behavioural syndrome associated with physiological disturbances or physical factors;

3.1.1.1.10 a disorder of adult personality or behaviour, particularly if manifested by repeated overt acts;

3.1.1.1.11 mental retardation;

3.1.1.1.12 a disorder of psychological development;

3.1.1.1.13 a behavioural or emotional disorder, with onset in childhood or adolescence; or

3.1.1.1.14 a mental disorder not otherwise specified; such as might render the applicant unable to safely exercise the privileges of the licence applied for or held.

3.1.1.2 An applicant who has a history of psychoactive substance abuse or dependence may apply for an exemption to the designated body or institution if the following circumstances exist –

3.1.1.2.1 the applicant has been under medical treatment for psychoactive substance abuse and the medical practitioner concerned, approved by the designated body or institution, certifies that the applicant is free from the effects of psychoactive substance abuse;

3.1.1.2.2 the applicant provides the name of a sponsor who is prepared to certify that the applicant no longer takes a psychoactive substance in any form. Such a sponsor must be a person acceptable to the designated body or institution for this purpose;

3.1.1.2.3 the applicant signs an undertaking not to take any psychoactive substance while holding a valid licence.

3.1.1.3 More details are contained in the Mood Disorder/ Depression Protocol.

3.1.2 Neurological

3.1.2.1 Any disease, injury or abnormality of the nervous system, the effects of which, according to medical conclusion, are likely to interfere with the safe exercise of the privileges of the licence or cause sudden or subtle incapacitation, is disqualifying unless there is satisfactory evidence that acceptable and effective treatment has controlled any additional risk of functional disorder or sudden or subtle incapacitation. In particular, the following are not acceptable

3.1.2.1.1 epilepsy;

3.1.2.1.2 any seizure disorder;

3.1.2.1.3 any disturbance of consciousness without satisfactory medical explanation of the cause;

3.1.2.1.4 migraine;

3.1.2.1.5 incapacitating headaches.

3.1.2.2 The relevant protocols are contained in the Neurological/ Neurosurgical Protocol, Stroke Protocol, Brain Tumours Protocol and Parkinson's Disease Protocol.

3.1.3 Musculoskeletal

Any active disease of the bones, joints, muscles, or tendons, or any significant functional limitation arising from previous congenital or acquired disease or injury is disqualifying unless there is satisfactory evidence that acceptable and effective treatment has controlled any additional risk of functional disorder or sudden or subtle incapacitation. Functional abnormalities affecting bones, joints, muscles, or tendons, compatible with the safe exercise of the privileges of the licence, may be assessed as fit. An appropriate demonstration of ability via a skill test may be required.

3.1.4 Gastrointestinal

3.1.4.1 Any disease or abnormality or result of disease of surgical operation, affecting the digestive tract and its attachments, including the biliary system and hernial orifices, of a severity likely to cause obstruction, significant functional disorder or infection, or sudden or subtle incapacitation, is disqualifying unless there is satisfactory evidence that acceptable and effective treatment has controlled any additional risk of functional disorder or sudden or subtle incapacitation.

3.1.4.2 The relevant protocol is contained in the Colon and Rectal Carcinoma Protocol and Oesophageal Cancer Protocol.

3.1.5 Respiratory

3.1.5.1 Any disease or abnormality, or result of disease or surgical operation, affecting the lungs, mediastinum, pleura, chest wall or respiratory passages of a severity likely to cause infection, functional disorder or sudden or subtle incapacitation at altitude, is disqualifying unless there is satisfactory evidence that acceptable and effective treatment has controlled any additional risk of functional disorder or sudden or subtle incapacitation.

3.1.5.2 The relevant protocols are contained in the Lung Function Assessment, Chronic Obstructive Airways Disease Protocol, Asthma Protocol and Pneumothorax Protocol.

3.1.6 Cardiovascular

3.1.6.1 Any disease or abnormality, or result of disease or surgical operation, which affects the heart or circulatory system and is of a severity likely to cause functional disorder or sudden or subtle incapacitation. Evidence of myocardial infarction, or significant hypertension, is disqualifying unless there is satisfactory evidence that acceptable and effective treatment has controlled any additional risk of functional disorder or sudden or subtle incapacitation.

3.1.6.2 Disorders of cardiac rhythm requiring a pacemaker is disqualifying unless there is satisfactory evidence that acceptable and effective treatment has controlled any additional risk of functional disorder or sudden or subtle incapacitation. Applicants with evidence strongly suggestive of coronary artery disease, including the presence of cardiovascular risk factors, must be assessed as unfit unless adequate myocardial perfusion can be demonstrated and reversible risk factors controlled.

3.1.6.3 The relevant protocols are contained in the Hypertension Protocol and Coronary Artery Disease Protocol.

3.1.7 Metabolic, nutritional and endocrine

3.1.7.1 Any metabolic, nutritional or endocrine disorders likely to interfere with the safe exercise of the privileges of the licence, or to cause sudden or subtle incapacitation is disqualifying unless there is satisfactory evidence that acceptable and effective treatment has controlled any additional risk of functional disorder or sudden or subtle incapacitation. Any applicant with a diagnosis of a metabolic, nutritional or endocrine disorder will generally be assessed as unfit, but may be considered for special certification by the designated body or institution.

3.1.7.2 The relevant protocols are contained in the Rheumatoid Arthritis Protocol, Diabetes Mellitus Protocol, Addison's Disease Protocol, Sarcoidosis Protocol and Multiple Sclerosis Protocol.

3.1.8 Haematologic and immunologic

3.1.8.1 Any active disease of the lymphatic system or of the blood is disqualifying unless there is satisfactory evidence that acceptable and effective treatment has controlled any additional risk of functional disorder or sudden or subtle incapacitation. Those with chronic diseases of these systems in a state of remission may be assessed as fit, provided appropriate specialist reports permit medical conclusion that the condition is not likely to affect the safe exercise of the

privileges of the licence. Applicants with any infectious diseases, the effects of which are likely to cause functional impairment or sudden or subtle incapacitation, must be assessed as unfit such time as effective and acceptable treatment has removed such effects.

3.1.8.2 The relevant protocols are contained in the Sarcoidosis Protocol, Multiple Sclerosis Protocol, Coagulation and Thrombotic Disorders Protocol, Acute Leukaemia Protocol, Warfarin Protocol, HIV/ AIDS Protocol and Bone Marrow Protocol.

3.1.9 Genitourinary

3.1.9.1 Any disease or abnormality, or result of disease or surgical operation, affecting the kidneys, urine, urinary tract, menstrual function or genital organs, to a degree likely to cause functional impairment or sudden or subtle incapacitation, such that the applicant will be unable to safely exercise the privileges of the licence is disqualifying unless there is satisfactory evidence that acceptable and effective treatment has controlled any additional risk of functional disorder or sudden or subtle incapacitation.

3.1.9.2 Pregnancy; Applicants who are pregnant must be assessed as unfit unless obstetrical evaluation and continued medical supervision indicate a low-risk uncomplicated pregnancy. Following confinement or termination of pregnancy, the applicant may not exercise the privileges of her licence until she has undergone re-evaluation in accordance with best medical practice and it has been determined that she is able to safely exercise the privileges of her licence and ratings.

3.1.9.3 The relevant protocol is contained in Seminoma Protocol, Obstetrics and Gynaecological Protocol, Single Kidney Protocol, Breast Cancer Protocol, Testicular Cancer Protocol, Prostate Cancer Protocol, 38 Renal Cancer Protocol and Bladder Cancer Protocol.

3.1.10 Oncology

Every applicant who has been treated for malignant disease must obtain an individual assessment before exercising licence privileges. The relevant protocols are contained in the Brain Tumours Protocol, Colon and Rectal Carcinoma Protocol, Acute Leukaemia Protocol, Seminoma Protocol, Malignant Melanoma Protocol, Oncology Protocol, Oesophageal Cancer Protocol, Breast Cancer Protocol, Testicular Cancer Protocol, Prostate Cancer Protocol, Renal Cancer Protocol and Bladder Cancer Protocol.

3.2 Visual standards

3.2.1 General

3.2.1.1 An applicant may not have –

3.2.1.1.1 any condition or congenital abnormality of either eye or its attachments likely to impede the safe exercise of the privileges of the licence;

3.2.1.1.2 any abnormality of visual fields or binocular function;

3.2.1.1.3 any manifest squint, or large errors of eye muscle balance (phoria). The acceptable limits for ocular muscle balance are 12 prism dioptres for exophoria, 6 dioptres for esophoria, and 1.5 dioptre for hyperphoria measured at distance. If corrective lenses are required, phoria must be measured while using the appropriate corrective lenses;

3.2.1.1.4 any anatomical or functional monocularity or substandard vision in one eye at the initial issue of a Class 2 medical certificate. However, medical conclusion may permit experienced licence holders who develop monocularity or substandard vision to be granted a medical certificate with appropriate restrictions following a period sufficient to permit adjustment to this condition.

3.2.1.2 Monocularity means that either an eye is absent, or its vision cannot be corrected to better than 6/24.

3.2.1.3 Substandard vision in one eye means central vision better than 6/24 but worse than 6/9, with normal visual fields.

3.2.1.4 For monocularity, the appropriate minimum restrictions initially are as follows –

3.2.1.4.1 If flying open cockpit aircraft, protective goggles not restricting visual field must be worn". (This must remain as a permanent restriction);

3.2.1.4.2 "Any accompanying pilot must be made aware of the holder's monocular vision". (This must remain as a permanent restriction);

3.2.1.4.3 "Not valid for flight as pilot-in-command by day or night until a satisfactory flight test has been completed with a flight examiner in each case". (This restriction may be removed at subsequent assessment, according to the results of the flight test, or amended to the endorsement in (d) below);

3.2.1.4.4 "Not valid for flight as pilot-in-command by night until a satisfactory flight test has been completed with a flight examiner". (This restriction may be removed at subsequent assessment, according to the results of the flight test).

3.2.1.5 For substandard vision in one eye (vision between 6/6 and 6/24), the appropriate minimum restrictions initially are as follows:

3.2.1.5.1 "Any accompanying pilot must be made aware of the holder's substandard vision in one eye". (This must remain as a permanent restriction);

3.2.1.5.2 "Not valid for flight as pilot-in-command by night until a satisfactory flight test has been completed with a flight examiner". (This restriction may be removed at subsequent assessment, according to the results of the flight test.)

3.2.1.6 Sunglasses worn during the exercise of the privileges of the licence or rating held should be non-polarizing and of a neutral grey tint.

3.2.1.7 Applicants who have undergone surgery affecting the refractive status of the eye must be assessed as unfit unless they are free from those sequelae which are likely to interfere with the safe exercise of their licence and rating privileges.

3.2.1.8 The relevant protocols are contained in the Monocular Protocol and Radial Keratotomy/ PRK/ Lasik Protocol.

3.2.2 Near vision

3.2.2.1 Applicants must be able to read 6/9 (N5) at a distance of 33 centimetres and N14 at a distance of 100 centimetres or have equivalent visual acuity for these distances (6/12, 20/40 at 33 cm; 6/24, 20/80 at 100 cm). An applicant who meets this standard only by use of spectacles may be granted a medical certificate provided this is endorsed with the following limitation:

"Suitable corrective lenses must be readily available".

3.2.2.2 This means that these must be available for immediate use when exercising the privileges of the licence. This limitation may be satisfied by the availability of appropriate bifocal or trifocal spectacles which permit the reading of instruments and a chart or manual held in one hand, without impeding the use of distance vision through the windscreen when wearing the spectacles. Single-vision near correction (full lenses of one power only, appropriate to reading) is not acceptable, since wearing these significantly reduces distance visual acuity.

3.2.2.3 Suitable spare corrective spectacles must be readily available.

3.2.3 Distance vision

3.2.3.1 Applicants must have distance visual acuity of not worse than 6/9 or its equivalent (20/30, 0.67) in each eye separately, with or without corrective lenses. When this standard can be met only by the use of corrective lenses, an applicant may be assessed as fit but the medical certificate must bear the following endorsement:

"Suitable corrective lenses (distance vision) must be worn".

3.2.3.2 An applicant with uncorrected distance visual acuity of 6/36 or its equivalent (20/120, 0.12) or worse in either eye must also be subject to the following limitation endorsed on the medical certificate:

"Suitable spare corrective spectacles must be readily available".

3.2.3.3 The visual acuity, with and without correction, must be recorded at each examination.

3.2.4 Combined distance and near vision correction

Applicants requiring distance vision correction must have a near point of accommodation not greater than 33 centimetres, as measured while wearing the required distance vision corrective lenses. Suitable correction for near vision may be necessary in addition to distance vision correction.

3.2.5 Dioptre limits

A need for lenses for either eye within the range of plus or minus 5 dioptres (spherical equivalent) may be accepted, provided that the visual acuity without correction is not worse than 6/60 in each eye separately. Applicants with a large refractive error must use contact lenses or high-index spectacle lenses. Spectacle lenses outside this range are not routinely acceptable, but medical conclusion may permit an applicant to be assessed as fit on production of satisfactory specialist reports. The medical certificate must, where appropriate, be endorsed with the following –

(1) "Contact lenses must be worn"; and

(2) "Spare spectacles must be readily available".

3.2.6 Colour perception standards

3.2.6.1 Applicants must be able to demonstrate ability to perceive readily those colours the perception of which is necessary for the safe performance of duties. The use of tinted lenses to obtain adequate colour perception is not permitted.

3.2.6.2 Applicants must be tested for the ability to correctly identify a series of pseudo-isochromatic plates (tables) in daylight or in artificial light of the same colour temperature such as that provided by Illuminant "C" or "D" as specified by the International Commission on Illumination (ICI).

3.2.6.3 Applicants are deemed to have scored satisfactorily in these tests if they have committed no errors on the test.

3.2.6.4 Applicants who fail to obtain a satisfactory score in such a test may nevertheless be assessed as fit if the applicants are able to readily and correctly identify aviation coloured lights displayed by means of a recognised colour perception lantern, i.e. Farnsworth, Beyenne, Holmes-Wright type A or Spectrolux.

3.2.6.5 The procedure for the performance of a Farnsworth Lantern test must be as detailed in this document (Note: The Farnsworth D15 is not an acceptable test).

3.2.6.6 Applicants who obtain a satisfactory score in any of the tests in (4) above are deemed to be Grade II colour-safe.

3.2.6.7 Applicants who are deemed to be Grade II colour-safe must repeat steps (2) to (4) as necessary on an annual basis, provided the Executive Director reserves the right to extend such period as necessary.

3.2.6.8 Applicants who fail to obtain a satisfactory score in any of the tests detailed in (4) above may nevertheless be assessed as fit, provided the following criteria are met –

3.2.6.8.1 Applicants must submit a satisfactory report from an ophthalmologist declaring the applicant deuteranomalous (Red/Green colour deficient);

3.2.6.8.2 Applicants with any abnormality of colour perception other than deuteranomaly must be assessed as unfit, provided –

3.2.6.8.2.1 The applicant is declared an anomalous trichomat (Protanomaly, Deuteranomaly and Tritanomaly). Dichromats (Protanopia, Deuteranopia and Tritanopia) and Monochromats (Atypical cone monochromats and typical rod monochromats) must be declared Grade III colour-unsafe and unfit;

3.2.6.8.2.2 A medical certificate may be issued if medical conclusion indicates that the applicant has a minor colour perception defect which is compatible with the safe exercise of the privileges of the license, provided the certificate is endorsed with the following limitations:

3.2.6.8.2.2.1 "For private pilot license privileges only";

3.2.6.8.2.2.2 "Not valid for flight in the vicinity of a controlled aerodrome (unless the aircraft is in radio contact with aerodrome control)";

3.2.6.8.2.2.3 "Not valid for night flying, IFR flying or flying of EFIS equipped aircraft";

3.2.6.8.2.2.4 The applicant must submit a satisfactory report from an ophthalmologist on an annual basis.

3.2.6.8.3 Guidelines for Ophthalmologists as detailed in this document must be adhered to by the examining ophthalmologist.

3.2.6.8.4 Applicants must undergo a practical flight test with an instructor designated by the Executive Director;

3.2.6.8.5 The procedure for the practical flight test must be as detailed in this document;

3.2.6.8.6 A satisfactory report declaring that the applicant can safely identify all the aviation lights necessary for the safe performance of duties must be submitted;

3.2.6.8.7 Applicants who submit satisfactory reports related to 3.2.6.8.6 above must be deemed to be Grade II colour-safe.

3.2.6.8.8 Such restriction must appear on the applicant's medical certificate permanently.

3.2.6.8.9 Applicants who are deemed to be Grade II colour-safe in accordance with paragraph 3.2.6.8.7 must submit an ophthalmologist report on an annual basis.

3.2.6.8.10 Any deterioration in any of the visual parameters must result in an applicant being deemed unfit to fly, and being required to repeat step 3.2.6.8.4 above in its entirety.

3.2.6.8.11 Applicants who fail to obtain a satisfactory report from an instructor designated by the Executive Director must be deemed unfit.

3.2.6.9 Stereopsis and NPC testing will be required.

3.2.6.10 Full visual fields will be required.

3.2.6.11 The relevant protocols are contained in the Procedure for Farnsworth Lantern Testing and Practical Flight Testing in Colour Vision Deficiency.

3.3 Ear, nose and throat and hearing standards

3.3.1 Applicants must have no established medical history or clinical diagnosis of the following –

3.3.1.1 any pathological process, acute or chronic, of the internal ear or middle ear cavities;

3.3.1.2 any uphealed (unclosed) perforation of the tympanic membranes, except that an applicant with a single dry perforation may be eligible for a certificate if the defect does not prevent compliance with the hearing standards.

3.3.1.3 any chronic or serious recurrent obstruction of the Eustachian tubes;

3.3.1.4 any serious or recurrent disturbance of the vestibular system.

3.3.1.5 any obstruction to free nasal air entry on both sides;

3.3.1.6 any serious malformation, or serious acute or chronic condition of the buccal cavity or upper respiratory tract; or

3.3.1.7 any speech defect likely to interfere with the safe performance of duties in exercising the privileges of the licence.

3.3.2 Applicants must be free from any hearing defect which would interfere with the safe exercise of the privileges of the licence.

3.3.3 Applicants who are unable to hear an average conversational voice in a quiet room, using both ears, at a distance of 2 m from the examiner and with the back turned to the examiner, must be assessed as unfit.

3.3.4 Pilots with a private pilot licence instrument rating must have routine audiometry. Applicants must not have a hearing loss in excess of 35 dB at each frequency between 500 and 2000 Hz, or 50 dB at 3000 Hz, in either ear. Applicants failing to comply with this standard in either ear may be assessed fit if the hearing loss for both ears, when averaged at each frequency, does not exceed the stated limit, and the applicant achieves 90 per cent or better discrimination when speech audiometry is tested.

3.3.5 An applicant with a hearing loss greater than the above may be declared fit provided that the applicant has normal hearing performance against a background noise that reproduces or simulates the masking properties of flight deck noise upon speech and beacon signals. Alternatively, a practical hearing test conducted in flight in the cockpit of an aircraft of the type for which the applicant's licence and ratings are valid may be used

3.4 Electro-cardiography

3.4.1 Electro-cardiography must form part of the cardiovascular examination for the initial issue of a Class 2 medical certificate and at recertification at the following intervals: At the first examination after the ages of 40, 44, 48, 52, 54, 56, 58, 60 and annually thereafter.

3.4.2 Exercise electrocardiography may be required based on prior history or findings of cardiovascular examinations.

3.5 Flow Volume Lung Function requirements

3.5.1 Flow-volume lung function testing must form part of the respiratory assessment for the initial issue of a Class 2 medical certificate under the age of 40 years or of deemed necessary based on previous history and/ or clinical indication.

3.5.2 The flow-volume lung function testing must be done again at the first medical examination after the age 40, and again at the first medical examination after the age of 50.

3.5.3 For active smokers*, the requirement for flow/volume lung function testing must be not less than every 24 months (biennially) for licence holders under the age of 40 and not more than every 12 months (annually) after the age of 40.

3.5.4 All licence holders who have a clinical indication for Lung Function Testing must submit a Lung Function Tests at more frequent intervals.

3.5.5 Licence holders may be referred to the relevant protocols.

**Note: Active smoker refers to an individual who engages in the act of intentional inhalation of tobacco smoke from any tobacco product, including but not limited to, manufactured and hand rolled cigarettes, cigars, pipe tobacco ,cigarillos and includes an individual who engages in the act of*

intentional inhalation of vapour from an electronic cigarette.

Active smoking does not refer to passive smoking which is the unintentional inhalation by non-smokers of tobacco smoke introduced into the atmosphere by smokers, or smoking of any other substances such as herbal cigarettes or marijuana.

The consumption of tobacco products by other means, such as chewing, is also excluded from this standard.

3.5.6 Chest radiography should form part of the initial examination. Periodic chest radiography is usually not necessary but may be a necessity in situations where asymptomatic pulmonary disease can be expected.

4 Class 3 medical certificate

4.1 Physical and mental standards

The applicant may not suffer from any disease or disability which could render that applicant likely to become suddenly unable either to operate an aircraft safely or to perform assigned duties safely.

Applicants must have no established medical history or clinical diagnosis of –

4.1.1 Psychiatric and mental

4.1.1.1 Any of the following conditions that are of a severity which renders the applicant incapable of safely exercising the privileges of the licence, or makes it likely that within two years of the assessment the applicant will be unable to safely exercise the privileges of the licence, will be disqualifying unless acceptable and effective treatment has controlled any additional risk of functional disorder or sudden or subtle incapacitation –

4.1.1.1.1 a psychotic disorder, unless the psychosis was of toxic origin and there has been complete recovery;

4.1.1.1.2 alcohol or other psychoactive substance abuse or dependence;

4.1.1.1.3 character or behaviour disorder, severe enough to have resulted in an overt act.

4.1.1.1.4 any other psychiatric disorder;

4.1.1.1.5 an organic mental disorder;

4.1.1.1.6 schizophrenia or a schizotypal or delusional disorder;

4.1.1.1.7 a mood (affective) disorder;

4.1.1.1.8 a neurotic, stress-related or somatoform disorder;

4.1.1.1.9 a behavioural syndrome associated with physiological disturbances or physical factors;

4.1.1.1.10 a disorder of adult personality or behaviour, particularly if manifested by repeated overt acts;

4.1.1.1.11 mental retardation;

4.1.1.1.12 a disorder of psychological development;

4.1.1.1.13 a behavioural or emotional disorder, with onset in childhood or adolescence; or

4.1.1.1.14 a mental disorder not otherwise specified; such as might render the applicant unable to safely exercise the privileges of the licence applied for or held.

4.1.1.2 An applicant who has a history of psychoactive substance abuse or dependence may apply for an exemption to the designated body or institution if the following circumstances exist –

4.1.1.2.1 the applicant has been under medical treatment for psychoactive substance abuse and the medical practitioner concerned, approved by the designated body or institution, certifies that the applicant is free from the effects of psychoactive substance abuse;

4.1.1.2.2 the applicant provides the name of a sponsor who is prepared to certify that the applicant no longer takes a psychoactive substance in any form. Such a sponsor must be a person acceptable to the designated body or institution for this purpose;

4.1.1.2.3 the applicant signs an undertaking not to take any psychoactive substance while holding an air traffic service licence.

4.1.1.3 More details are contained in the Mood Disorder/ Depression Protocol.

4.1.2 Neurological

4.1.2.1 Any disease, injury or abnormality of the nervous system, the effects of which, according to medical conclusion, are likely to interfere with the safe exercise of the privileges of the licence

or cause sudden or subtle incapacitation, is disqualifying unless there is satisfactory evidence that acceptable and effective treatment has controlled any additional risk of functional disorder or sudden or subtle incapacitation. In particular, the following are not acceptable –

4.1.2.1.1 epilepsy;

4.1.2.1.2 any seizure disorder;

4.1.2.1.3 any disturbance of consciousness without satisfactory medical explanation of the cause;

4.1.2.1.4 migraine;

4.1.2.1.5 incapacitating headaches.

4.1.2.1.6 The relevant protocols are contained in Neurological/ Neurosurgical Protocol, Stroke Protocol, Brain Tumours Protocol and Parkinson's Disease Protocol.

4.1.3 Musculoskeletal

Any active disease of the bones, joints, muscles, or tendons, or any significant functional limitation arising from previous congenital or acquired disease or injury is disqualifying unless there is satisfactory evidence that acceptable and effective treatment has control1ed any additional risk of functional disorder or sudden or subtle incapacitation. Functional abnormalities affecting the bones, joints, muscles, or tendons, compatible with the safe exercise of the privileges of the licence, may be assessed as fit. An appropriate demonstration of ability may be required.

4.1.4 Gastrointestinal

4.1.4.1 Any disease or abnormality, or result of disease or surgical operation, affecting the digestive tract and its attachments including the biliary system and hernial orifices, of a severity likely to cause obstruction, significant functional disorder or infection, or sudden or subtle incapacitation, with be disqualifying unless there is satisfactory evidence that acceptable and effective treatment has control1ed any additional risk of functional disorder or sudden or subtle incapacitation.

4.1.4.2 The relevant protocol is contained in the Colon and Rectal Carcinoma Protocol and Oesophageal Cancer Protocol.

4.1.5 Respiratory

4.1.5.1 Any disease or abnormality, or result of disease or surgical operation, affecting the lungs, mediastinum, pleura, chest wall or respiratory passages of a severity likely to cause infection, functional disorder or sudden or subtle incapacitation, is disqualifying unless there is satisfactory evidence that acceptable and effective treatment has control1ed any additional risk of functional disorder or sudden or subtle incapacitation. Radiographic examinations are required for the initial issue of a Class 3 medical certificate.

4.1.5.2 The relevant protocols are contained in the Lung Function Assessment, Chronic Obstructive Airways Disease Protocol, Asthma Protocol and Pneumothorax Protocol.

4.1.6 Cardiovascular

4.1.6.1 Any disease or abnormality, or result of disease or surgical operation, which affects the heart or circulatory system and is of a severity likely to cause functional disorder or sudden or subtle incapacitation. Evidence of myocardial infarction, or significant hypertension, is disqualifying unless there is satisfactory evidence that acceptable and effective treatment has control1ed any additional risk of functional disorder or sudden or subtle incapacitation.

4.1.6.2 Disorders of cardiac rhythm requiring a pacemaker with be disqualifying unless there is satisfactory evidence that acceptable and effective treatment has control1ed any additional risk of functional disorder or sudden or subtle incapacitation. Applicants with evidence strongly suggestive of coronary artery disease, including the presence of cardiovascular risk factors, must be assessed as unfit unless adequate myocardial perfusion can be demonstrated and reversible risk factors controlled.

4.1.6.3 The relevant protocols are contained in the Hypertension Protocol and Coronary Artery Disease Protocol).

4.1.7 Metabolic, nutritional and endocrine

4.1.7.1 Any metabolic, nutritional or endocrine disorders likely to interfere with the safe exercise of the privileges of the licence, or to cause sudden or subtle incapacitation is disqualifying unless acceptable and effective treatment has controlled any additional risk of functional disorder or sudden or subtle incapacitation. Any applicant with a diagnosis of a metabolic, nutritional or endocrine disorder will generally be assessed as unfit, but may be considered for special certification by the designated body or institution.

4.1.7.2 The relevant protocols are contained in the Rheumatoid Arthritis Protocol, Diabetes Mellitus Protocol, Addison's Disease Protocol, Sarcoidosis Protocol and Multiple Sclerosis Protocol.

4.1.8 Haematologic and immunologic

4.1.8.1 Any active disease of the lymphatic system or of the blood is disqualifying unless there is satisfactory evidence that acceptable and effective treatment has controlled any additional risk of functional disorder or sudden or subtle incapacitation. Those with chronic diseases of these systems in a state of remission may be assessed as fit, provided appropriate specialist reports permit medical conclusion that the condition is not likely to affect the safe exercise of the privileges of the licence. Applicants with any infectious diseases, the effects of which are likely to cause sudden or subtle incapacitation, must be assessed as unfit until such time as there is satisfactory evidence that effective and acceptable treatment has removed such effects.

4.1.8.2 The relevant protocols are contained in the Sarcoidosis Protocol, 16 Multiple Sclerosis Protocol, Coagulation and Thrombotic Disorders Protocol, Acute Leukaemia Protocol, Warfarin Protocol, HIV/ AIDS Protocol and Bone Marrow Protocol.

4.1.9 Genitourinary

4.1.9.1 Any disease or abnormality or result of disease or surgical operation affecting the kidneys, urine, urinary tract, menstrual function or genital organs, to a degree likely to cause sudden or subtle incapacitation such that the applicant will be unable to safely exercise the privileges of the licence, is disqualifying unless there is satisfactory evidence that acceptable and effective treatment has controlled any additional risk of functional disorder or sudden or subtle incapacitation.

4.1.9.2 Pregnancy; Applicants who are pregnant must be assessed as unfit unless obstetrical evaluation and continued medical supervision indicate a low-risk uncomplicated pregnancy. Following confinement or termination of pregnancy, the applicant may not exercise the privileges of her licence until she has undergone re-evaluation in accordance with best medical practice and it has been determined that she is able to safely exercise the privileges of her licence and ratings.

4.1.9.3 The relevant protocol is contained in the Seminoma Protocol, Obstetrics and Gynaecological Protocol, Single Kidney Protocol, Breast Cancer Protocol, Testicular Cancer Protocol, Prostate Cancer Protocol, Renal Cancer Protocol and Bladder Cancer Protocol.

4.1.10 Oncology

Every applicant who has been treated for malignant disease must undertake an individual assessment before exercising licence privileges. The relevant protocols are contained in the Brain Tumours

Protocol, Colon and Rectal Carcinoma Protocol, Acute Leukaemia Protocol, Seminoma Protocol, Malignant Melanoma Protocol, Oncology Protocol, Oesophageal Cancer Protocol, Breast Cancer Protocol, Testicular Cancer Protocol, Prostate Cancer Protocol, Renal Cancer Protocol and Bladder Cancer Protocol.

4.2 Visual standards

4.2.1 General

4.2.1.1 An applicant may not have –

4.2.1.1.1 any condition or congenital abnormality of either eye or its attachments likely to impede the safe exercise of the privileges of the licence;

4.2.1.1.2 any abnormality of visual fields or binocular function;

4.2.1.1.3 any manifest squint, or large errors of eye muscle balance (phoria). The acceptable limits for ocular muscle balance are 12 prism dioptres for exophoria, 6 dioptres for esophoria; and 12 dioptre for hyperphoria measured at distance. If corrective lenses are required, phoria must be measured while using the appropriate corrective lenses;

4.2.1.1.4 any anatomical or functional monocularity at the initial issue of a Class 3 medical certificate. However, medical conclusion may permit experienced licence holders who become anatomically or functionally monocular to be granted a medical certificate with appropriate restrictions, following a period sufficient to permit adjustment to the monocular state.

4.2.1.2 Monocularity means that either an eye is absent, or its vision cannot be corrected to better than 6/24.

4.2.1.3 Substandard vision in one eye means central vision better than 6/24 but worse than 6/9, with normal visual fields.

4.2.1.4 Sunglasses worn during the exercise of the privileges of the licence or rating held should be non-polarizing and of a neutral grey tint.

4.2.1.5 Applicants who have undergone surgery affecting the refractive status of the eye must be assessed as unfit unless they are free from those sequelae which are likely to interfere with the safe exercise of their licence and rating privileges

4.2.1.6 The relevant protocols are contained in the Monocular Protocol and Radial Keratotomy/ PRK/ Lasik Protocol.

4.2.2 Near vision

4.2.2.1 Applicants must be able to read 6/9 (N5) at a distance of 33 centimetres and N14 at a distance of 100 centimetres or have equivalent visual acuity for these distances (6/12, 20/40 at 33 cm; 6/24, 20/80 at 100 cm). An applicant who meets this standard only by use of spectacles may be granted a medical certificate provided this is endorsed with the following limitation:

"Suitable corrective lenses must be readily available".

4.2.2.2 This means that these must be available for immediate use when exercising the privileges of the licence. This limitation may be satisfied by the availability of appropriate bifocal or trifocal spectacles which permit the reading of displays and a chart or manual held in one hand, without impeding the use of distance vision when wearing the spectacles. The wearing of single vision near correction (full lenses of one power only, appropriate to reading), significantly reduces distance visual acuity, and is not acceptable in an air traffic control tower. Nevertheless, full lenses may be acceptable in a radar room in which case the medical certificate must be endorsed with the following :

"Suitable corrective lenses must be readily available (full lenses permitted in radar room)",

to indicate this option has been permitted. Whenever there is a requirement to obtain or renew corrective lenses, an applicant must advise the optometrist of reading distances for the air traffic service unit in which the applicant is likely to function.

4.2.2.3 When near correction is required in accordance with this paragraph, a second pair of near-correction spectacles must be kept available for immediate use.

4.2.3 Distance vision

4.2.3.1 Applicants must have distance visual acuity of not worse than 6/6 or its equivalent (20/20, 1.0) in each eye separately with or without corrective lenses. When this standard can be obtained only by the use of corrective lenses, an applicant may be assessed as fit subject to the following endorsement on the medical certificate:

"Suitable corrective lenses (distance vision) must be worn".

4.2.3.2 This endorsement means that these lenses must be worn when the applicant exercises the privileges of the licence.

4.2.3.3 An applicant with uncorrected distance visual acuity of 6/24 or its equivalent (20/80, 0.25) or worse in either eye is also subject to the following limitation endorsed on the medical certificate:

"Suitable spare corrective spectacles must be readily available".

4.2.3.4 The visual acuity, with and without correction, must be recorded at each examination.

4.2.4 Combined distance and near vision correction

Applicants requiring distance vision correction must have a near point of accommodation not greater than 33 centimetres, as measured while wearing the required distance vision corrective lenses. Suitable correction for near vision may be necessary in addition to distance vision correction.

4.2.5 Dioptre limits

A need for corrective lenses for either eye within the range of plus or minus 3 dioptres (spherical equivalent) may be accepted, provided that the visual acuity without correction is not worse than 6/60 in each eye separately. Applicants with a large refractive error must use contact lenses or high-index spectacle lenses. Spectacle lenses outside this range are not routinely acceptable, but medical conclusion may permit an applicant to be assessed as fit on production of satisfactory specialist reports. The medical certificate must be, where appropriate, endorsed with the following:

(1) "Contact lenses only must be worn"; and

(2) "Spare spectacles must be readily available".

4.2.6 Colour perception standards

4.2.6.1 Applicants must demonstrate ability to perceive readily those colours the perception of which is necessary for the safe performance of duties. The use of tinted lenses to obtain adequate colour perception is not permitted.

4.2.6.2 Applicants must be tested for the ability to correctly identify a series of pseudoisochromatic plates (tables) in daylight or in artificial light of the same colour temperature such as that provided by Illuminant "C" or "D" as specified by the International Commission on Illumination (ICI).

4.2.6.3 Applicants who fail to obtain a satisfactory score in such a test may nevertheless be assessed as fit if the applicants are able to readily and correctly identify aviation coloured lights displayed by means of a recognised colour perception lantern, i.e. Farnsworth, Beyenne, Holmes-Wright type A or Spectrolux.

4.2.6.4 Stereopsis and NPC testing will be required.

4.2.6.5 Full visual fields will be required.

4.2.6.6 The relevant protocols are contained in the Procedure for Farnsworth Lantern Testing.

4.3 Ear, nose and throat and hearing standards

4.3.1 Applicants may have no established medical history or clinical diagnosis of the following –

4.3.1.1 any pathological process, acute or chronic, of the internal ear or middle ear cavities;

4.3.1.2 any unhealed (unclosed) perforation of the tympanic membranes, except that an applicant with a single dry perforation may be eligible for a certificate if the defect does not prevent compliance with the hearing standards;

4.3.1.3 any serious or recurrent disturbance of the vestibular system;

4.3.1.4 any serious malformation, or serious acute or chronic condition of the buccal cavity or upper respiratory tract; or

4.3.1.5 any speech defect likely to interfere with the safe performance of duties in exercising the privileges of the licence.

4.3.2 Applicants must be free from any hearing defect which would interfere with the safe exercise of the privileges of the licence. Routine audiometry is required at each medical examination. Applicants must not have a hearing loss in excess of 35 dB at each frequency between 500 and 2000 Hz, or 50 dB at 3000 Hz, in either ear. Applicants failing to comply with this standard in either ear may be assessed fit if the hearing loss for both ears, when averaged at each frequency does not exceed the stated limit, and the applicant achieves 90 per cent or better discrimination when speech audiometry is tested.

4.3.3 An applicant with a hearing loss greater than the above may be declared fit provided that the applicant has normal hearing performance against a background noise that reproduces or simulates that experienced in a typical air traffic control working environment. Alternatively, a practical hearing

test conducted in an air traffic control environment representative of the one for which the applicant's licence and ratings are valid may be used.

4.4 Electrocardiography

4.4.1 Electrocardiographymust form part of the cardiovascular examination for the initial issue of a Class 3 medical certificate, and at recertification at the following intervals: At the first examination after the ages of 25, 30, 35, 38, 40, and annually thereafter.

4.4.2 Exercise electrocardiography may be required based on prior history or findings of cardiovascular examinations.

4.5 Flow Volume Lung Function

4.5.1 Flow-volume lung function testing must form part of the respiratory assessment for the initial issue of a Class 3 medical certificate under the age of 40 years or of deemed necessary based on previous history and/ or clinical indication.

4.5.2 The flow-volume lung function testing must be done again at the first medical examination after the age 40, and again at the first medical examination after the age of 50.

4.5.3 For active smokers*, the requirement for flow/volume lung function testing may be not less than every 24 months (biennially) for licence holders under the age of 40 and not more than every 12 months (annually) after the age of 40.

4.5.4 All licence holders who have a clinical indication for Lung Function Testing must submit a Lung Function Tests at more frequent intervals.

4.5.5 Licence holders may be referred to the relevant protocols.

**Note: Active smoker refers to an individual who engages in the act of intentional inhalation of tobacco smoke from any tobacco product, including but not limited to, manufactured and hand rolled cigarettes, cigars, pipe tobacco ,cigarillos and includes an individual who engages in the act of intentional inhalation of vapour from an electronic cigarette.*

Active smoking does not refer to passive smoking which is the unintentional inhalation by non-smokers of tobacco smoke introduced into the atmosphere by smokers, or smoking of any other substances such as herbal cigarettes or marijuana.

The consumption of tobacco products by other means, such as chewing, is also excluded from this standard.

4.5.6 Chest radiography should form part of the initial examination. Periodic chest radiography is usually not necessary but may be a necessity in situations where asymptomatic pulmonary disease can be expected.

67.00.4 PERIOD OF VALIDITY

The medical standards and medical protocols referred to in regulation 67.00.4 are the standards and protocols contained in this technical standard.

67.00.5 FLEXIBILITY, WAIVER AND SPECIAL ISSUANCE

The medical standards and medical protocols referred to in regulation 67.00.5 are the standards and protocols contained in this technical standard.

67.00.7 APPLICATION FOR MEDICAL CERTIFICATE

1 Medical Declaration by applicant

1.1 In instances where a medical certificate is required by this Part, an applicant for a licence or rating must furnish a declaration to the medical examiner, clearly stating whether they have previously undergone a medical examination and, if so, the date, place and result of the last examination. The declaration must include a full medical history of the applicant, including facts concerning personal, familial and hereditary history and must be certified and signed.

1.2 The applicant must be made aware of the necessity for giving a statement that is as complete and accurate as the applicant's knowledge permits, and that any false statement must be reported to the Executive Director for appropriate action.

1.3 The applicant must indicate to the Aviation Medical Examiner (AME) whether a Medical Assessment has previously been refused, revoked or suspended and, if so, the reason for such refusal, revocation or suspension.

1.4 The AME must report any suspicion of a false declaration to the Executive Director for appropriate action in terms of regulation 67.00.13.

67.0012 MEDICAL CERTIFICATE APPLICANT AND HOLDER RIGHTS AND RESPONSIBILITIES

1 Pregnancy

In some instances, pregnancy may result in the licence holder not to be able to exercise the privileges of the licence safely. The circumstances and conditions in which this is the case are contained in the Obstetrics and Gynaecological Protocol.

67.00.15 DESIGNATION OF AVIATION MEDICAL EXAMINERS

1 Definitions

Any word or expression to which a meaning has been assigned in the Act, and the Civil Aviation Regulations, bears, when used in this technical standard, the same meaning unless the context indicates otherwise, and –

"AME' means designated aviation medical examiner;

"designated aviation medical examiner" means an aeromedically qualified doctor designated by the Executive Director, after consultation with the designated body or institution, and granted the authority to perform medical examinations or tests required for the issuing of Class 2 medical certificates; "designated senior aviation medical examiner" means a designated aviation medical examiner given the additional authority to perform medical examinations or tests required for the issuing of Class 1 and Class 3 medical certificates;

"designation" means the authority to exercise the powers and perform the duties of a designated aviation medical examiner, which commences on the date on which the document of designation is issued by the Executive Director to the designated aviation medical examiner and remains in force for a period of 12 months following this date;

"SAME" means a designated senior aviation medical examiner;

"termination of designation" means the revoking of a designation before the expiry of the 12-month period.

2. General

2.1 AMEs assume certain responsibilities directly related to the safety programme of either the Executive Director or the designated body or institution. They serve in their communities, as the aviation safety experts in respect of medical matters. They have the responsibility to ensure that only those applicants who are physically and mentally capable of performing safely, may exercise the privileges of their certificates.

2.2 To properly perform the duties associated with these responsibilities, AMEs must keep abreast of the general medical knowledge applicable to aviation, and Aviation Human Factors. They must also have detailed knowledge and understanding of all rules, regulations, policies and procedures relating to the medical certification of applicants. They must also possess acceptable equipment and have adequate facilities necessary to carry out the prescribed examinations.

3. Selection and retention of AMEs

In the selection and retention of AMEs, the designated body or institution, if appointed, or medical assessor may recommend only professionally qualified, practising physicians who have an expressed interest in promoting aviation safety to the Executive Director. Only those physicians who, in the opinion of the Executive Director, enjoy the fullest respect of their associates and members of the public whom they serve must be designated and retained as AMEs by the Executive Director.

3.1. Criteria for designation

3.1.1. Authority to perform Class 2 examinations

3.1.1.1 Qualifications

The applicant for designation as a AME with authority to perform examinations for Class 2 medical certificates must be a professionally qualified physician in good standing. In addition, the applicant must possess an unrestricted licence(s) to practice medicine, including unrestricted licence to practice in Namibia, the foreign country, or area in which the designation is sought. The applicant's past professional performance and personal conduct must be suitable for a position of responsibility and trust and the Executive Director may require to confirm this. The applicant must have completed basic training in aviation medicine and have practical knowledge and experience of the conditions in which the holders of licences and ratings carry out their duties. Acceptable practical experience includes for example; flight experience, simulator experience, on-site observations or other hands-on experience. Special consideration must be given to those applicants who are pilots, or who were previously designated but have relocated to a new geographical area, to Military Flight Surgeons, to practitioners of Hyperbaric and Deep Sea Medicine and experience in Aviation Human Factors.

3.1.1.2 Distribution

There must be a determined need for an AME in the area, based on adequacy of coverage related

to licence holder population.

3.1.1.3 Credentials

3.1.1.3.1 At the time of initial application for designation, the physician must submit the following documents or copies thereof –

3.1.1.3.1.1 medical degree;
3.1.1.3.1.2 certificate, diploma or degrees of any postgraduate professional training;
3.1.1.3.1.3 Namibian Medical and Dental Council registration certificate;
3.1.1.3.1.4 Namibian Medical and Dental Council certificate of good standing;
3.1.1.3.1.5 If a certificate of good standing for one reason or another cannot be obtained or available a declaration and/ or personal statement from the applicant might be considered on a case to case basis and in conjunction with the other available information;
3.1.1.3.1.6 certificate of aviation medicine training;
3.1.1.3.1.7 proof of practical knowledge and experience of the conditions in which the holders of licences and ratings carry out their duties;
3.1.1.3.1.8 a statement affirming that –

(i) there are no current restrictions of medical practice, and there are no adverse actions proposed or pending by the Namibian Medical and Dental Council that would limit medical practice; and

(ii) there are no known investigations, charged indictments, or pending actions in any court of law; and

3.1.1.3.1.9 proof of proficiency in the English language.

3.1.1.4 Conditions of designation

To become an AME, the applicant must agree to comply with the requirements specified in this Part.

3.1.1.5 Change of status

The AME must promptly notify the Executive Director or designated body or institution, should there be a change in the AME's status of authority to practice medicine.

3.1.1.6 Professionalism

The AME must be informed regarding the progress in aviation medicine, to be thoroughly familiar with the relevant techniques of examination, medical assessment, as well as certification of applicants, and to abide by the policies, rules and regulations of the Executive Director or designated body or institution.

3.1.1.7 Examinations

An AMEis required to personally conduct all medical examinations. Other physicians or paraprofessional personnel may perform specialised parts of the examinations under the general supervision of the AME, who must sign the documents, and list his/her designation identification number, both on the application form and on the medical certificate. In all cases the AME must review, certify, and assume responsibility for accuracy and completeness of the total report of examination.

3.1.1.8 Continuing education

3.1.1.8.1 CME Objective:

The purpose and the objective of the CME is to update the knowledge in Aviation Medicine, to be able to standardize the knowledge and to disseminate the knowledge. Most importantly to build and broaden the concept of Aviation Safety with its core values as those of not only Aviation Medicine but of Aviation Human Factors and the associated disciplines such as Aircraft Accident Investigations.

3.1.1.8.2 Types of CME credits:

In order to keep the system practical and flexible enough for every examiner irrespective of their geographical location or the type of their main practice or the number of examinations they perform, and to enable the maximum dissemination of knowledge and information two types of CME credits are offered, namely, Major Credits and Minor Credits.

3.1.1.8.2.1 Major Credits

- Participation in any of the recognized international scientific meetings (eg: ASMA), courses (eg: FAA refresher training), seminars, or workshops. (Each hour =1 credit, maximum credits which can be earned in 1 day=4, Max. number of credits towards every renewal 8)
- Teaching and Training of Aviation Medicine or Aviation Human Factors. (Each hour=2 credit. This applies to only formal teaching of large groups and maximum 4 credits can be earned per day, maximum 8 credits can be earned through this venue towards every renewal).
- Presentation/ Publication of Paper in either a recognized Aviation Medicine/ Aviation Human Factors Journal or at a recognized clinical conference, (5 credits per presentation/publication, Max 5 credits towards each renewal).

- Voluntary teaching and propagating the subject of Aviation Medicine and Aviation Human Factors for example to institutions like schools and colleges and mentorship for the same. (Max. 5 credits towards each renewal).

In order to earn the major credits proper certificates with authentic seal/ stamp and signatures of the departmental heads should be submitted to the NCAA Medical Assessor and it should be certified by her/him well in time before the audit for the next renewal is scheduled.

3.1.1.8.2.2 Minor Credits

These can be earned in the following ways.

- Client / Staff: Education and training of the clients in Aviation Medicine or Aviation Human Factors or of the Nursing and the technical staff assisting in the aeromedical examinations (.5 credits per hour of education. Max. 10 credits per year). A proper record of this activity should be kept by the examiner for authentication and audit purposes.

- Small Group Discussions in Aviation Medicine or Aviation Human Factors. (Credits.5 per hour of discussion. This could either be a face to face discussion or one on a media like Skype or online. Max 10 credits per year).

- Credited Aviation Medicine and/or Aviation Human Factor articles reading and participation. (credits will be honoured and rewarded as recommended by the originating organization. Max 10 credits per year.)

Certified and authentic records as downloaded from the site should be submitted.

- From time to time either the Medical Assessor will circulate or indicate an article or a YOUTUBE video of some current/ significant Aviation Safety event and ask for analysis. Participation should be objective, Aviation Medicine/ Aviation Human Factors oriented and should not be just a comment. (Each participation could be worth from .5 to 1 minor credit depending on the quality of the analysis and the time spent on it. Max. 10 credits per year).

- Self-study of Aviation Medicine and Aviation Human Factor topics from magazines, media, literature or elsewhere. (Max 5 credits per renewal. A list of the articles read or topics studied must be submitted).

- Aviation activities adding to the practical experience of the examiner such as

  i. Flying as pilot-in-command

ii. Simulator training

iii. Hypo and Hyperbaric chamber training

iv. Ejection seat training

v. Aircraft evacuation training

(credits to be decided on an individual basis but not to exceed 5 per renewal)

3.1.1.8.3 NCAA CME credit requirement for renewal

10 Major and 10 Minor CME credits would be required to be submitted along with the application for renewal.

On a case to case basis and wholly at the discretion of the Medical Assessor Major and the Minor credits might be mutually substituted to fulfil the requirement for renewal.

During the period between renewals if any examiner is having difficulty fulfilling part of the credit requirement or need any guidance they should personally contact the Medical Assessor earliest possible.

3.1.1.9 Facilities and equipment

The AME must have adequate facilities for performing the required examinations and possess, or agree to obtain, such equipment, or access to the necessary facilities, prior to conducting any aviation medical examination.

3.1.1.10 Conduct

The AME must comply with the policies, directives and regulations of the Executive Director or designated body or institution.

3.1.2 Authority to perform Class 1 and Class 3 examinations

In addition to the criteria for designation as a AME as contained in 3.1.1 above, the physician must demonstrate to the Executive Director, by compliance with the requirements for continued service as a AME, acceptable prior performance as a AME authorised to perform Class 2 examinations for a period of at least 3 years.

3.2 Duration of designation

Designations of physicians as AMEs are effective for 2 years following the date of issue, unless terminated earlier by the Executive Director or at the request of the designee. For continued service as an AME, the designee must apply for the renewal of the registration 60 days prior to the expiry of the current registration along with the necessary required documents and the applicable fee. In case

of the absence of an application the designation will not be renewed automatically. In the event of office relocation or change in practice, a designation will terminate and may be reissued, on request, by the Executive Director. In such a case however, the designation number will remain the same. In respect of the relocation, a determination of adequacy or coverage must be made again.

3.3 Legal and Moral Responsibilities of Designated Aviation Medical Examiners

3.3.1 Every designated examiner is a representative of the Executive Director of the NCAA. It is mandatory that the examiners realize that this designation is a privilege and not a right and thus fulfil their responsibilities associated with their appointment.

3.3.2 There might be times when the examiner might elect to perform the dual role that of the treating physician as well as the Aviation Medical Examiner for the applicant. Whether this situation arises from chance or choice the examiner is fully responsible and should consider any conflict of interests that may arise from the performance in this dual capacity.

3.3.3 The consequences of a negligent or wrongful certification, which would permit an unqualified person to take either the controls of an aircraft or perform any other Aviation related duties in an official capacity, can be serious at the least or disastrous at the most for the public, for the Government and for the Examiner. If the examination is cursory and the examiner fails to find a disqualifying defect that should have been discovered in the course of a thorough and careful examination, a safety hazard may be created and the Examiner may bear the responsibility for the results of such action.

3.3.4 Of equal concern if not more is the situation in which an examiner deliberately fails to report a disqualifying condition either observed in the course of the examination or otherwise known to exist. In this situation, both the applicant and the examiner in completing the application and medical report form may be found to have committed a criminal violation

3.3.5 Cases of falsification may be subject to criminal prosecution in accordance of the applicable national laws. This holds true whether the false statement is made by the applicant, the Examiner, or both. It is important that all Examiners be aware of the possible consequences of such conduct particularly in view of the pressures the examiners might sometimes endure being in the dual role of the applicants treating physician as well as their examiner and being subjected to ignore a disqualifying physical defect which to the knowledge of the examiner does exist.

3.3.6 Further when an applicant has been issued a medical certificate that should not have been issued, it is frequently necessary for the NCAA to begin a legal action to either revoke or suspend the certificate. The whole process involves precious time, extensive resource and high financial costs

not to mention the safety implications when the applicant may be free to exercise the privileges of the certificate till the legal process is completed.

3.3.7 The AME must immediately notify the Chief of Licensing and the Medical Assessor as the agents of the Executive Director should there be any change in status of authority to practice medicine.

3.3.8 Each AME should advise the Chief of Licensing and the Medical Assessor, as the agents of the Executive Director in writing of any change in the office address or the telephone number of the location of their Aeromedical exams. In case of the change of location the continuation of designation will be contingent upon the geographical need in the new location and a fresh audit of the new facility to prove its adequacy for the Aeromedical exams. The information should reach the aeromedical assessor 30 days in advance of the expected relocation and not retroactively.

3.3.9 Every AME should advice the Chief of Licensing and the Medical Assessor as the agents of the Executive Director of any planned dates of the AME not being available to perform the Aeromedical exams at the certified facility. Further she/he should advise if any other AME is delegated in their place to perform the exams. Unless in an emergency situation when the applicants should approach another designated AME on advice from the original AME's practice this notification should be made at-least 30 days in advance.

3.3.10 An AME is liable if she/he knowingly examines and issues a medical certificate to a candidate when the candidate has been given unfit by another designated examiner or the case has been deferred to the regulatory authority, the NCAA. If proved this might be considered grounds for disqualification of the AME.

3.3.11 No examiner should lodge a formal complaint against another examiner or any other stakeholder unless there is sufficient proof to substantiate the claim. When there is sufficient documentary proof, a confidential complaint should be lodged to the offices of the Executive Director NCAA through proper channel which is the Chief of Licensing and the Medical Assessor. This is a very serious matter and as such taken very seriously by the NCAA.

3.3.12 After proper enquiries if such a claim is found to be unsubstantiated the consequences and the repercussions will be equally damaging to the complainant as it would have been to the examiner against whom the complaint was lodged and had it been proven correct.

3.3.13 No one except the Chief of Licensing under the authority from the Executive Director NCAA has the authority to block the issuance of an applicant's license. Once the license has been issued it cannot be revoked until the investigation conclusively proves that the medical certificate was wrongly issued.

3.3.14 In such a situation the applicant has the right to launch a counter-complaint against the complainant if she/he feels that their rights have been violated.

3.4 Authority of an AME

3.4.1 The Examiner is delegated authority to :

3.4.1.3 Examine applicants for and holders of class I, II, or III as appropriate with their designation in accordance with the guidance and practices as laid down by the Executive Director or designated body or institution;

3.4.1.4 Issue, defer or deny medical certificates to applicants or holders of such certificates based upon whether they meet the applicable medical standards in accordance with the provisions of Part 67 of the CAR subject to reconsideration by the Executive Director or designated body or institution.

3.4.2 The Examiner may NOT:

3.4.2.3 Perform self- examinations for issuance of a medical certificate to themselves.

3.4.2.4 Issue a medical certificate to themselves or to an immediate family member, or

3.4.2.5 Generate or author their own medical status reports. Reports regarding the medical status of an airman should be written by their treating provider. A report completed by an airman will not be accepted, even if the airman is a physician.

3.5 Procedures for designation

3.5.1 Designation

3.5.1.1 Authority to perform Class 2 examinations

Physicians who request authority to perform Class 2 examinations must submit a written request (Initial application on form FSS PEL 67-01 or re-application on form FSS PEL 67-02) to the Executive Director. When appropriate, proof of continuing education must be submitted with the request for designation.

3.5.1.2 Authority to perform Class 1 and Class 3 examinations

Physicians who request senior SAME status must submit a written request (Initial application on form FSS PEL 67-01 or re-application on form FSS PEL 67-02) to the Executive Director. When appropriate, proof of continuing education must be submitted with the request for designation.

3.5.1.3 Notification

For designations in their geographical areas of responsibility, the Executive Director must inform the applicant in writing of his or her designation and must issue a Certificate of Designation

3.5.1.4 Examination documents

The designee must obtain the required forms from the Executive Director. These forms must be afforded an appropriate degree of security, and any loss must immediately be reported to the Executive Director.

3.5.2 Renewal of - or termination of designation

3.5.2.1 Evaluation

The medical assessor or designated body or institution must continuously evaluate the performance of each AME. Only physicians who have demonstrated satisfactory performance in the past and who continue to show a definite interest in the AME programme must be re-designated. In addition, the medical assessor or designated body or institution must identify those AMEs committing examination and certification errors and notify the Executive Director, in writing, for appropriate action to be taken. Information collected by the medical assessor or designated body or institution, includes the following –

- data on the adequacy of information on reports of medical examination;

- errors made on reports of aviation medical examinations;
- AME interest and participation in aeromedical programmes and conferences; and
- reports from the aviation and/or medical community concerning the AME's professional performance and personal conduct as it may reflect on the designated body or institution as well as the Executive Director.

3.5.2.2 Basis for termination or non-renewal of designation

Termination or non-renewal of designation may be based, in whole or in part, on the following criteria –

- failure to re-register punctually.
- no examinations performed during the 12 months of initial designation;
- disregard of, or failure to demonstrate knowledge of, the rules, regulations, policies and procedures of the designated body or institution;
- repeated errors after receiving warnings from the designated body or institution;
- failure to attend required conferences and/or continued aviation medical education;
- movement of the location of practice from where presently designated;
- failure to participate in any aviation medical programme when requested to do so by the designated body or institution or the Executive Director;
- unprofessional conduct in performing examinations;
- failure to comply with the provisions of Part 67 of the CAR;
- personal conduct or public notoriety that may reflect adversely on the designated body or institution or the Authority or the Executive Director;
- loss, restriction or limitation of a licence to practice medicine;
- any action that compromises public trust or interferes with the AME's ability to fulfil the responsibilities of his or her designation;
- any illness or medical condition that may affect the physician's sound professional judgment or ability to perform examinations;

- arrest, indictment or conviction for violation of law;
- request by the physician for termination of designation; or
- any other reason if it is determined to be in the best interest of aviation safety as determined by the Executive Director.

3.5.2.3 Procedures for renewing designations

Before expiration of designation, the AME concerned must apply for re-designation, in writing, to the Executive Director. Physicians whose re-applications are not received may not be re-designated. Where appropriate, proof of continuing education must be submitted with the request for designation.

3.5.2.4 Procedures for terminating or not renewing designations

When it is determined that a designation should be terminated or not renewed, the following procedures are applicable:

(i) The AME be notified in writing, by certified mail, of the reason(s) for the proposed action;

(ii) the written notification will give the AME the option and the time to respond in writing or in person within 30 days of the date of the letter;

(iii) in cases where a AME is suspected of fraud or any other activity for which emergency action is necessary to assure aviation safety, the medical assessor, inspector, designated body or institution will advise the Executive Director to immediately direct the AME in writing, by certified mail, to cease all further examinations pending further investigation. The investigation must be conducted expeditiously. However, if the Executive Director believes that the AME's cessation of further examinations should continue pending final disposition of the matter by the Executive Director, he or she may so direct the AME in writing, by certified mail. The termination procedures must be accomplished expeditiously.

3.5.2.5 Return of materials

Whether by determination not to re-designate or termination of designation during the designation year, the AME must return all Authority materials (including forms, identification card and certificate of designation, and stamp) to the Executive Director.

3.6 Requirements relating to waiver

3.6.1 If an applicant has an established medical history or clinical diagnosis of any of the following, the AME may not issue a medical certificate unless the applicant produces a valid waiver certificate –

3.6.1.1 Diabetes Mellitus requiring Insulin or other hypoglycaemic medication.

3.6.1.2 Angina Pectoris or clinically significant coronary artery disease.

3.6.1.3 Myocardial infarction, Coronary Angioplasty or Coronary Artery Bypass.

3.6.1.4 Cardiac valve surgery or anticoagulation therapy.

3.6.1.5 Psychosis.

3.6.1.6 Depression, anxiety disorder or personality disorder.

3.6.1.7 Alcoholism or drug dependence.

3.6.1.8 Epilepsy or convulsion(s) without satisfactory medical explanation of cause.

3.6.1.9 Head injury with Loss of Consciousness/Post Traumatic Amnesia >30 minutes.

3.6.1.10 Intracranial surgery, intracranial haemorrhage.

3.6.1.11 Disturbance of consciousness without satisfactory medical explanation of cause.

3.6.1.12 Obstructive airways disease on treatment with ß2 stimulants, theophylline preparations or oral steroids.

3.6.1.13 FEV1% (measured I actual) <70%.

3.6.1.14 Pulmonary embolism or coagulation disorder.

3.6.1.15 Menière disease.

3.6.1.16 Malignant neoplasm.

3.6.1.17 Colour vision defect.

3.6.1.18 Monocular vision.

3.6.1.19 Organ transplant.

3.6.1.20 Loss of limb(s) or vital organ(s).

3.6.2 A waiver certificate may only be issued by the medical assessor or designated body or institution.

3.6.3 The waiver serial number is assigned by the medical assessor, designated body or institution according to a set procedure which includes the class of medical, diagnosis and date of issue.

3.6.4 A waiver certificate is issued on the form contained in Annexure I (Waiver Certificate).

3.6.5 Details and Protocols of Waiver can be found in NAMCAR 67.00.5, Flexibility, Waiver and Special Issuance

3.7 Conditions and requirements for suitability of AMEs

3.7.1 Once prospective AMEs have successfully completed the selection process in point 3 above, they will be expected to procure such equipment necessary to conduct the medical examinations for the particular classes of medical certificates that they have been earmarked for.

3.7.2 The medical assessor will perform an on-site visit to determine the suitability of the procedures, facilities and equipment of the AME before his/her designation. Only when the AME has procured or has access to the required equipment, will the designation be finalised.

2 Medical requirements, standards, conditions and medication

2.1 The medical standards and protocols within these technical standards contains information regarding medical conditions that affects the applicant of holder of a medical certificate's ability to operate safely. If any of these conditions are identified, the applicant may not exercise the privileges of his/her licence until declared fit by an aviation medical examiner.

2.2 Details of medication that affects the applicant/holder/s ability to operate their duties safely are contained in Annexure II.

67.00.19 SUBSTANCE ABUSE

1. Substance abuse testing

All license holders in terms of the NAMCAR Parts 61,62, 63, 64, 65, and 66 are required to undergo, as part of their medical examinations, a substance abuse test with an accredited test centre of the Department of Health of Namibia. Where medical examinations are required to be carried out at 6 monthly intervals, the substance abuse test must be conducted at least once annually.

In instances where the medical examiner is suspecting substance abuse by a licence holder, he/she must require an immediate substance abuse test.

All employers who employ licence holders are required to implement a substance abuse test

programme and the phycoactive substance prevention and safety programme prescribed in Part 7 for the licence holders to be approved by the Executive Director.

2. Preliminary testing

Any employer who employs licenced personnel, that suspects substance abuse may at any time require a licence holder to undergo a substance abuse test, even if the licence holder has completed a substance abuse test recently.

The annual test programme is required to be carried out by an approved substance test professional.

If the substance abuse test result is positive, the employer must remove the licence holder from his safety critical position for a temporary period and send him/her to rehabilitation.

3. Confirmatory testing

Once the licence holder has completed his rehabilitation, he/she is required to complete confirmatory testing to confirm that he is no longer abusing the specific substance.

4. Specimen collection, packaging, transport, and analysis.

Substance abuse test specimens must be collected, packaged, transported and analysed in accordance with the Medical Health standards in Namibia.

The entire drug & alcohol testing process must be conducted so as to give accurate and reliable information about a donor's drug & alcohol use.

4.1 Definitions

Adulteration: Any process by which an individual knowingly interferes with (or attempts to interfere with) the processes of specimen collection, transport or analysis with the intention of avoiding a legitimate test result. The actions undertaken can include (but are not limited to) the addition of water or foreign substances to the specimen, specimen substitution, damaging bottle seals or packaging and the deliberate consumption of interfering substances or copious volumes of water prior to specimen collection;

Aliquot: A fractional part of a specimen (taken as a sample representing the whole specimen) used for testing;

Authorising Scientist: A person who reviews all pertinent data and quality control results in order to attest to the validity of the laboratory's test reports. This person may also function as the Toxicologist (see Toxicologist);

Calibrator: A solution of known concentration used to calibrate a measurement procedure or to compare the response obtained with the response of a test sample/unknown sample. The

concentration of the analyte of interest in the calibrator is known within limits ascertained during its preparation. Calibrators may be used as single point measurements or to establish a calibration curve over a range of interest;

Chain of Custody: Procedures to account for each specimen by tracking its handling and storage from point of collection to final disposal. These procedures require that the donor identity is confirmed and that a chain of custody form is used from time of collection to receipt by the laboratory. Within the laboratory appropriate chain of custody records must account for the samples until disposal;

Chain of Custody Form: A form used to document the procedures from time of collection until receipt by the laboratory;

Collection cup: Single-use container, made of plastic, large enough to easily catch and hold at least 55 mL of urine voided from the body. Must be individually wrapped in a sealed plastic bag or shrink wrapping; or must have a peelable, sealed lid or other easily visible tamper-evident system;

Collecting officer: A person trained to collect specimens from donors;

Collection Site: A place where individuals present themselves for the purpose of providing a specimen for subsequent analysis;

Confirmation Test: An analytical procedure to identify and quantify the presence of a specific drug or analyte which is independent of the initial test and which uses a different technique and chemical principle from that of the screen test in order to ensure reliability and accuracy;

Cut-off: A concentration level set to determine whether the sample is positive or negative for the presence of a drug;

Customer: The organisation requesting the drug testing service;

Donor: The individual from whom a specimen is collected;

Laboratory: The facility that is approved by SANAS (South African National Accreditation Standard) or equivalent providing the analytical services to detect drugs of abuse;

Medical Review Officer (MRO): A medical physician responsible for receiving laboratory results from the drug-testing laboratory that has knowledge of substance abuse and has appropriate training or experience to interpret and evaluate an individual's positive test result, in light of declared information;

Negative result (screen): A preliminary result established by screening test that indicates a drug possibly present in the sample is not detected above a specified cut-off;

Negative result (confirmation): A result reported by the laboratory that indicates that a suspected drug present in the sample is below a specified cut-off;

Non-negative result: A preliminary result established by screening test that indicates a drug possibly

present in the sample is detected above a specified cut-off. A specimen that is reported as adulterated, substituted or invalid;

Positive result (confirmation): A result reported by the laboratory as positive means that there is conclusive evidence that a drug is present in the sample tested at level greater than or equal to the confirmation cut-off concentration;

Quality control sample: A sample used to evaluate whether or not an analytical procedure is operating within pre-defined tolerance limits;

Reference method: A method in analytical chemistry considered to be acceptable for confirmation of results (e.g. mass spectrometry, refractometry, pH electrode);

Sample: A representative portion of a specimen submitted to a laboratory for testing;

Screen Test: A test to eliminate negative samples from further consideration and to identify the non-negative specimens that require confirmation testing;

Specimen: The portion of (normally) urine, blood or breath that is collected from a donor;

Standard (1): A reference material of known purity or a solution containing a reference material at a known concentration;

Standard (2): An agreed protocol or procedure (e.g. ISO:17025);

Standard Operating Procedure (SOP): A written document giving the detailed steps to be followed when undertaking a particular task (e.g. the analysis of a given drug in a urine sample);

Toxicologist: A person (holding a degree in the chemical sciences specializing in Analytical Chemistry and Toxicology) responsible for interpreting a positive analytical result for the customer or the customer's designated Medical Review Officer (MRO). This person must have suitable training and experience in the theory and practise of all methods and procedures employed in the laboratory, including a thorough understanding of chain of custody procedures, quality control practices, and analytical procedures relevant to the interpretation of a result.

4.2 Abbreviations

STT: Screening test technician

BAT: Breath Alcohol Technician

EBT: Evidential Breath testing device (Confirmatory breath test))

ASD: Alcohol Screening device

QAP: Quality assurance plan

ATF: Alcohol testing form

4.3 Urine Specimen Collection

(1) Specimens must be collected by suitably trained personnel (Collecting Officers) who have a thorough understanding of the principles of chain of custody.

(2) Collecting officers must be able to provide evidence of their training, and/or the instructions that they must follow during the collection process.

(3) The following restrictions apply:

(a) The immediate supervisor of a donor may not serve as the collector when that donor is tested, unless there is no feasible alternative.

(b) A co-worker who is in the same testing pool or who works with a donor on a daily basis may not serve as a collector when that donor is tested, unless there is no feasible alternative.

(c) An individual who has a personal relationship with the donor (e.g., spouse, ex-spouse, relative, close personal friend) may not serve as the collector, unless there is no feasible alternative.

(4) The collector should have identification with his/her name address, and telephone number and be able to provide it upon request of the donor.

(5) The following items should be available to the collecting officer before specimen donation occurs:

(a) Chain-of-Custody form

(i) The original copy accompanies the sample to the confirmatory laboratory and all persons involved in the transport and receiving of the sample should record their name and signature on the chain-of-custody form.

(ii) A copy should be handed to the licence holder, the medical review officer (MRO), and the Collection officer

(b) A link between the chain-of-custody form and collection cup.

(c) A demonstrably clean and unused collection cup which can hold a minimum of 50 mL.

(d) At least two collection cups for split specimen collection.

(i) Each cup must be able to hold a minimum of 20 mL.

(ii) In the case of single specimen collection it must be able to hold a minimum of 40 mL.

***NOTE**: In case of the use of immunoassay integrated test cup kits (also referred to as an "integrated split specimen cup"), the collection cup and sample bottle is integrated into the same device, hence a single specimen collection may be performed.*

(e) Blueing agent that must be added to toilet bowl water/tank before donor enters the collection area.
(f) Temperature measurement device able to determine temperatures between 32-38°C.
(g) Secure tamper-evident seal for each bottle.
(h) Leak resistant plastic bag.
(i) Disposable gloves for collector when handling donor specimens.
(j) Packaging components that satisfy current mail and courier regulations.

(6) A collection site is a permanent or temporary facility where a donor provides a urine specimen for a drug test.

(7) The site must have all necessary personnel, supplies, equipment, facilities, and supervision to provide for specimen collection, security, and temporary storage.

(8) A urine specimen collection site must provide for donor privacy while he or she provides the urine specimen.

(9) An observed collection must only be performed when required (e.g. as part of a re-collection in adulteration suspicion).

(10) The following facilities provide adequate privacy for urine collections:
(a) A single-toilet restroom with a full-length door
(b) A multi-stall restroom with partial-length doors
(c) A mobile restroom (e.g., a vehicle with an enclosed toilet stall).

(11) A source of water for washing hands must be provided.
(a) The water source should be external to the restroom where urination occurs.
(b) If the only source of water available is inside the restroom, the collector must secure the water source before the collection, and restore the water source to allow the donor to wash his or her hands after the collection.

(c) If a water source is not available, providing moist towelettes outside the restroom is a suitable alternative.

(12) A suitable clean surface for the collector to use as a work area must be available.
(a) The collector work area may be located outside the restroom or inside the restroom, only if the donor can have privacy while providing the urine specimen.

(13) The collector must maintain line-of-sight custody or provide for the secure temporary storage of specimens from the time the specimen is collected until it is sealed in a shipping container prior to transfer to an express carrier or courier for shipment to a laboratory.

(14) Either the collection officer or the donor, with both of them present, must unwrap or break the seal of the collection container.

(15) During the collection process the collection site must be dedicated solely to drug testing and comply with all local health and safety requirements.

(16) The collection officer and the donor must be present throughout all the procedures outlined in the paragraphs of this section and the entire process must be transparent.

(17) When a donor arrives at the collection site, the collection officer will request that the donor presents photographic identification (passport, national identity document, drivers licence, Authority license etc).
(a) If the donor does not have proper photographic identification, the collection officer will obtain a positive identification of the donor by an authorised supervisor or manager within the parent organisation.
(b) If the donor's identity cannot be established, the collection officer will not proceed with the collection and notify an authority.

(18) The collection officer will ask the donor to provide voluntary written informed consent before the collection commences.

(19) The following minimum precautions must be taken to ensure that unadulterated specimens are obtained and correctly identified:
(a) To deter the dilution of specimens at the collection site, toilet water colouring agents should be placed in toilet tanks wherever accessible or in the toilet bowl, so the reservoir of water in the toilet bowl always remains coloured.
a. Any other sources of water in the enclosure where urination occurs (e.g. taps, shower) will be secured prior to collection.

(b) The collection officer will ask the donor to remove any unnecessary outer garments that might conceal items or substances that could be used to tamper with or adulterate the donor's urine specimen.
(c) The donor will be instructed to wash and dry his or her hands prior to urination with inspection of the hands afterwards by the collection officer.
(d) After washing hands, the donor will remain in the presence of the collection officer and will not have access to any unregulated source of water, soap dispenser, cleaning agent, or any other materials that could be used to adulterate the specimen.
(e) The collection officer will give the donor a clean specimen collection cup.
(f) The donor will be instructed not to flush the toilet until the specimen is handed to the collection officer.
(g) The collection officer will note any unusual behaviour of the donor on the chain of custody form.

(20) Upon receiving the specimen from the donor, the collection officer will:
(a) Check the volume of urine in the specimen container and check the temperature of the urine specimen.
(i) The temperature-measuring device used must accurately reflect the temperature of the specimen and not contaminate the specimen.
(ii) If a thermometer is used it may only be done on the residual urine in the collection cup after the specimen has been transferred to the sample bottles earmarked and secured for possible confirmatory analysis (split or single).
(iii) The thermometer may under no circumstances be brought into contact with the urine that is designated for possible confirmatory analysis.
(iv) The time from urination to temperature measurement should not exceed 4 minutes.
(b) Inspect the specimen to determine its colour and appearance for any signs of contaminants.
(c) Any unusual findings will be noted on the chain of custody form.
(d) A re-collection may be performed and both specimens forwarded for testing by a laboratory with special notice on the chain of custody form.
(e) For a split specimen collection the volume must be approx. 50 millilitres (mL) or more and the temperature within the acceptable range of 32°C - 38°C, the collection officer may then proceed with step (j).

(i) If the volume is less than 50 ml, the specimen will be discarded and a second specimen will be collected.

(f) For a single specimen collection the volume must be approx. 20 millilitres (mL) or more and the temperature within the acceptable range of 32°C -38°C, the collection officer may then proceed with step (j).

(g) The donor may be offered a reasonable amount of liquid to drink for the purpose of re-collection (e.g., 250ml of water every 30 min, but not to exceed a maximum of 1 litre).

(h) If the temperature of the urine specimen is outside the acceptable range of 32°C -38°C, a second specimen will be collected (as above).

(i) If there is any reason to believe (temperature outside of range, visible contamination etc) that a donor may have adulterated, diluted, altered or substituted the specimen, another specimen will be obtained as soon as possible and both specimens will be forwarded to the laboratory for testing.

(j) Both the donor and the collection officer will keep the specimen container /specimen bottles in view at all times prior to the urine specimen being sealed and labelled.

(k) For a split collection, the specimen is split into a minimum of two specimen bottles (Sample A and Sample B).

(i) When the specimen is transferred from the specimen container to the specimen bottles, it will be poured and the collection officer will request the donor to observe the transfer of the specimen and the attachment of the tamper-evident seal/tape on the bottles.

(l) The sealed specimens together with the corresponding chain of custody documentation in a tamper evident container must be dispatched to the laboratory.

(i) In split collections one bottle will be used for the drug test (Sample A) while the second bottle (Sample B) will remain sealed at the analytical laboratory in case the donor wishes to challenge a positive confirmation result.
(ii) In single collections (including integrated test cups) the specimen is split immediately after reception at the laboratory, before any testing, into a sample for analysis (Sample A) and a stored challenge specimen (Sample B).

(m) At an appropriate time after the urine specimen has been collected and sealed into the transport bottles the collection officer will invite the donor to wash his/her hands.

(n) The specimen bottle will have an identification label that contains at a minimum the date, the donor's specimen number and the donor's signature/initials.

(i) The collection officer will enter all information on the chain of custody form to identify the origin of the specimen.
(ii) Specimen bottles and all pages of the chain of custody will be labelled at the time of collection with a unique identifier.

(o) The donor will be asked to read and sign a statement on the chain-of-custody form certifying that the specimen identified on the form was in fact the specimen provided by the donor and giving informed consent.

(p) The collection officer will complete the specimen chain-of-custody form and package with the urine specimen ready for dispatch as soon as possible.

(i) Specimens should be stored at 4°C (do not freeze).

(21) The specimens will be placed in containers designed to minimise the possibility of damage during shipment.

(22) The collection officer will keep a register of the transfer of the specimens to the courier from the collector.

4.4 Laboratory urine analysis

(1) Specimens are received at the laboratory where initial checks on the chain of custody documents and sample appearance are done.

(2) The following specimens will be deemed invalid:
(a) No chain of custody documentation accompanied the sample
(b) Chain of custody documentation incomplete (collector/donor details not filled in, donor consent absent)
(c) Identification parameters (name/ID/barcode/numerical) mismatched on sample and documentation
(d) No seals on specimens or seals broken/tampered with on any sample bottle
(e) Insufficient sample volume

(3) After the initial checks are complete samples may be placed in temporary storage at 2°C-10°C before further analysis.

(4) Upon reception of a split specimen (Sample A and Sample B) samples are separated and one sample is placed in long term storage at -20°C (only Sample B) for possible challenges to results by the donor.

(5) Upon reception of a single specimen (only Sample A) the sample is documented on the chain of custody and opened for a split performed by the laboratory before any further analysis.
(a) The sample is poured from Sample A into a clean sample bottle (Sample B) containing the unique identifier of Sample A, sealed and placed in long term storage at -20°C for possible challenges to results by the donor.

NOTE: *the basic protocol of specimen collection, sample validity testing, initial drug screen test (on-site or laboratory) and confirmation of all non-negative results must be followed.*

(6) Analysis performed by the laboratory is done utilising separate aliquots from the testing sample (Sample A).
(a) Aliquots are taken in a manner to exclude contamination of the sample.

(7) The following validity tests must be performed to ensure the collected specimen is unadulterated urine:
(a) temperature
(b) pH
(c) specific gravity/creatinine.
(d) nitrite
(e) oxidants (e.g. halogens, chromium (VI), pyridinium chlorochromate),
(f) gluteraldehyde
(g) surfactants (e.g. benzalkonium chloride)

(8) Any result that indicates adulteration (non-negatives) should be reported to the customer who may request additional confirmatory testing for adulterants.

(9) All preliminary drug tests must fulfill the following minimum requirements:
(a) All preliminary test results must be reviewed with regard to the validity of the results
(b) All assays must be calibrated against appropriate analytical standards.

(c) Where the assay has significant cross-reactivity or selectivity to related compounds the assay must be calibrated against one named standard, and where necessary the sensitivity to other compounds must be indicated.

(d) The Authority must be informed of the expected sensitivity and specificity to assayed compounds of interest.

(e) Suitable cut-offs from Substance Abuse and Mental Health Services Administration (SAMHSA) are to be employed (Table 1).

(f) Additional drug classes may be included at cut-offs established in scientific literature as long as the above mentioned minimum criteria is applied.

Table 1. Recommended cut-off concentrations for preliminary drug tests

Screening drug class	Cut-off (ng/mL)
Cannabis metabolites	50
Opiate metabolites	2000
Cocaine metabolites	300
Amphetamines	1000
Phencyclidine	25
Prescription medication (Benzodiazepines, Barbiturates etc) See NOTE	Therapeutic ranges

NOTE: *All prescription medication needs to be declared at all times by the licence holder and it is then the prerogative and responsibility of the employer to withdraw him/her from any safety sensitive duties. Prescription medication should be declared upfront before a drug test commences and should be noted on either of the "voluntary informed consent form" or the "chain-of-custody form".*

(10) All non-negative results from initial drug screen tests (on-site and laboratory) must be confirmed by a reference method such as Gas Chromatography-Mass spectrometry (GC-MS).

(a) Immunoassay and enzymatic assays (automated or point-of-care testing devices) are not regarded as confirmatory techniques for ethanol in blood but rather as preliminary testing techniques.

(11) The confirmatory drug test must provide a quantitative result from laboratory established standard operating procedures (SOP) that are in line with international standards and quality assurance programs.

(a) These include, but are not limited to, the use of pure analytical standards, calibrators and quality control samples.

(12) Suitable cut-off concentration values established by the Substance Abuse and Mental Health Services Administration (SAMHSA) are to be employed (Table 2).

(13) Additional drugs/metabolites may be included at cut-off concentration levels established in scientific literature as long as they are closely associated with cut-off concentration levels utilised in preliminary testing.

Table 2. Recommended cut-off concentrations for confirmatory drug tests

1 6-Acetylmorphine as evidence for heroin use is better associated (reduced false-negatives) within the un-conjugated fraction of opiate metabolites. Analysis of un-conjugated morphine and codeine allows better discernment between codeine and morphine usage (from scientific literature).

2 Positive confirmation of methamphetamine use at this cut-off requires amphetamine concentration greater or equal to 200ng/mL.

Confirmation drug or metabolite	Cut-off (ng/mL)
Cannabis metabolites	
11-Nor-Δ^9-Carboxy-THC	15
Opiate metabolites	
Morphine (Total)	2000
Codeine (Total)	2000
Morphine (Free)[1]	100
Codeine (Free)[1]	100
6-Acetylmorphine (Free/Total)[1]	10
Cocaine metabolites	
Benzoylecgonine	150
Amphetamines	
Amphetamine	500
Methamphetamine[2]	500
Phencyclidine	25
Prescription medication (Benzodiazepines, Barbiturates etc) See NOTE	Therapeutic ranges

(14) Only drugs which have been confirmed by a recognised confirmation test (like GC-MS) can be reported as positive.

(15) Before any laboratory test result is released, the results are reviewed and certified as accurate by an authorising scientist.

(16) The laboratory must report all non-negative test results for a specimen. For example, a specimen can be positive for a specific drug in addition to being adulterated.

(17) An analytical positive result may be due to medication (prescribed or over-the-counter) or to dietary causes.

(18) Interpretation is best carried out by a qualified toxicologist who may consult with the MRO, the donor, and the donor's GP.

(19) The toxicologist cannot issue a negative report for a positive analytical result even if the test result is likely to be due to the use of declared medication.

(20) Results are reported to the MRO within a maximum of 5 working days.

(21) The laboratory report must include:
(a) The specimen identification number
(b) The quantitative result/s for each sample submitted as well as the 99% confidence interval.
(c) The limit of detection (LOD) and the limit of quantitation (LOQ).

(22) Challenges to results by the donor for re-testing must be made within 72 hours of reporting results to the MRO.
(a) The stored sample (Sample B) should be released for analysis to a drug-testing laboratory able to demonstrate that they can accurately determine the concentration of a drug or metabolite at 50% of the confirmation cut-off concentration employed.
(b) The release must be supported by a chain of custody that can withstand legal scrutiny and requires authorisation from the customer and the donor.

(23) Long-term frozen storage (-20°C or below) ensures that positive urine samples will remain suitable for a retest.

(24) Unless otherwise authorised in writing by the Authority, the laboratory will retain all samples confirmed positive in properly secured long-term frozen storage for a minimum of 1 year.

(a) Within this one-year period the Authority may request the laboratory to retain the sample for an additional period of time.
(b) If no such request is received, the laboratory may discard the sample after the end of 1 year, except that the laboratory must be required to maintain any samples known to be under legal challenge for a further agreed period.

(25) The laboratory will maintain and make available for an agreed period (minimum 2 years), documentation of all aspects of the testing process involved in the generation of a positive result including the following:
(a) Chain-of-custody forms
(b) Quality assurance records
(c) Computer generated data

4.5 Breath Specimen Collection for Alcohol Testing

(1) The SST or the BAT who administers the alcohol must have qualification training and demonstrated proficiency in the alcohol testing device he or she will be using.

(2) The qualification training for BAT's and STT's must contain the following elements
(a) In depth knowledge in the operation of the alcohol testing device to be used. Their responsibility for maintaining the integrity and credibility of the testing process, ensuring privacy of the donors being tested, and avoiding conduct or statements that could be viewed as offensive or inappropriate.
(b) Trainers should provide their students with certificate of completion.
(c) The BAT student should successfully demonstrate that he/she can:

(i) Respond to the device's messages and commands or displays.
(ii) Take appropriate actions when an error message or malfunction occur within the deice
(iii) Recognize that an air blank has been conducted.
(iv) Identify and explain actions the technician will take when the device does not function properly.
(v) Explain when an external calibration check is required, if applicable to the device being used, and identify the procedures used to perform the check
(vi) Mock tests

(3) After completion of training, the student must complete at least seven consecutive error-free mock tests for initial BAT qualification and at least five consecutive error-free mock test for initial STT qualification.
(a) The mock tests must be conducted on the same device(s) the BAT/STT will use.
(b) If the device involves colour changes, contrasts, or colour readings, the technician must demonstrate that he/she can see the changes.
(c) The mock tests must portray a real event conducted with someone acting as the test subject.

(4) The BAT and STT should go for refresher training every three years to remain eligible to conduct alcohol tests.

(5) The content of the refresher training must include material equivalent to the initial training but updated as needed.

(6) The refresher training includes conducting error-free mock tests monitored by the trainer.

(7) Error correction training
(a) A BAT or STT who makes an error causing a screening test/confirmatory test to be invalid or cancelled must undergo correction training within 30 days of notification of the error. (He/she may continue with the normal testing duties, however, the goal is to complete the error correction training as soon as practical after the error occurred).

(8) The employer or agent designated by the Authority should be responsible for notifying the alcohol testing site of the error and the retraining requirement and for ensuring that the training takes place.

(9) Error correction training is not required for errors related to equipment failure, unless the failure is related to the BAT's failure to maintain EBT.

(10) Error correction failure is also required if, in the event of equipment failure, the BAT does not try to accomplish the test using another, alternative device, provided that the device is reasonably available.

(11) Error correction training should focus on the mistake(s) made and must include three error-free mock collections (at least two of which are related to the area in which the error was made.

(12) Breath and blood specimens for legally defensible alcohol testing need to be collected under circumstances which respect the dignity of the individual.

(13) Suitable records must be made when the specimen is collected to prove that:
(a) Breath alcohol test result can be traced back to the donor.
(b) The blood specimen collected and the sample received by the blood alcohol testing laboratory is one and the same.
(c) This is the first link in the chain of custody process which, when reconstructed at a later date, can be used to prove that the final result belongs to the specimen collected.

(14) The following restrictions apply to collecting officers:
(a) The immediate supervisor of an employee may not serve as the collector when that employee is tested, unless there is no feasible alternative.
(b) A co-worker who is in the same testing pool or who works with an employee on a daily basis may not serve as a collector when that employee is tested, unless there is no feasible alternative.
(c) An individual who has a personal relationship with the employee (e.g., spouse, ex-spouse, relative, close personal friend) may not serve as the collector, unless there is no feasible alternative.
(d) The collector should have identification with his/her name and his/her employer's name, address, and telephone number and be able to provide it upon request of the donor.

(15) A breath alcohol test site requires setup to an extend that ensure the testing devices are fully functional.

(16) Each alcohol test should be conducted with reasonable visual and auditory privacy so that bystanders cannot know or infer the results.

(17) A breath alcohol technician *(*BAT) is authorized to perform both screening and confirmation test.

(18) A screening test technician (SST) is authorized only to perform screening tests for alcohol.

(19) When a donor arrives at the collection site, the collection officer will request that the donor presents photographic identification (passport, national identity document, drivers licence etc).
(a) If the donor does not have proper photographic identification, the collection officer will obtain a positive identification of the donor by an authorised supervisor or manager within the parent organisation.
(b) If the donor's identity cannot be established, the collection officer will not proceed with the collection and notify an authority

(20) The collection officer will ask the licence holder to provide voluntary written informed consent before the collection commences.

(21) Only one donor is tested at a time.

(22) The BAT explains the procedure and shows the donor the instructions on the back of the alcohol testing form.

(23) The BAT completes Step 1 of the ATF and asks the donor to complete Step 2.

(24) If the donor refuses to sign Step 2 this is a refusal to test and the BAT documents the refusal to test on the ATF, then notify the Authority

(25) The alcohol test is initially performed with an ASD or EBT.

(26) If the initial concentration is at or above 0.10 mg ethanol / 1000 mL exhaled breath, the test is repeated 15-30 minutes later using an EBT.

(27) During the 15-20 minute interval, the BAT tells the donor to not eat, drink or belch, and to wait nearby within view of the BAT or another employer representative who will watch the donor to help ensure he or she complies.

(28) Prior to the confirmation test the BAT must ensure that an air blank reading zero is displayed, demonstrating that no alcohol is present in the EBT.

(29) The BAT should complete the confirmation test prior to collecting a urine specimen or conducting other tasks in which the donor cannot remain under direct observation of the BAT

(30) If circumstances delay confirmatory testing beyond 30 minutes, the BAT still performs a confirmation test and not another screening test and notes why the delay occurred.

(31) The breath sample may be screened (preliminarily tested) for the presence of alcohol with an alcohol screening device (ASD).
(a) If the screen results are negative no further analysis is necessary.
(b) If the screen/preliminary test resulted to be non-negative for the possible presence of alcohol above a predefined cut-off level, a confirmation test to obtain the exact breath alcohol concentration must be carried out utilizing an evidentiary breath testing device (EBT).

(32) Oral fluid preliminary testing may also be performed for preliminary testing purposes.
(a) If the screen results are negative no further analysis is necessary.

(33) The BAT shows the donor the result as displayed on the EBT and the EBT then prints the test result

(34) The BAT ensures that the results are affixed or directly printed on all three copies of the ATF, preferably in the designated space on the front of the ATF.

(35) Fixing of the result printout can take place either by:
(a) A label that is tamper evident
(b) Affixing the printout to the ATF with tamper evident tape.

(36) The BAT signs and dates Step 3 of the ATF

(37) The result is expressed on these copies as a number, rather than as positive or negative

(38) If the confirmation test is at or above 0.10 mg ethanol / 1000 mL exhaled breath, the BAT asks the donor to sign Step 4 of the ATF.
(a) If the donor refuses to sign Step 4, the BAT makes a note of the refusal on the ATF (but this is not a refusal to test).
(b) The BAT then immediately sends/faxes the ATF to the Authority.

(39) On a positive breath alcohol test
(a) The donor may ask for a blood alcohol test that should be performed by a recognized confirmatory analytical technique like HS-GC-FID.

(40) If the result is at or above 0.10 mg ethanol / 1000 mL exhaled breath, the BAT should instruct the donor to remain at the testing site until the employer arranges transportation for the donor.

4.6 Analytical procedure

(1) An evidential breath test device (EBT) must be able to print the result on triple ply paper or on three labels after an analysis.

(2) EBT devices to be utilized should be listed in the National Road Traffic Act, 1996 (Act No. 93 of 1996)

(3) The manufacturer of each ASD or EBT should have a quality assurance plan (QAP) that describes the accuracy checks, 95% confidence intervals or tolerance ranges, maintenance requirements and quality control procedures according to ISO 17025 guide.

(4) Each EBT's QAP should include external calibration checks for accuracy.
(a) An accuracy check is performed with known alcohol standards in a liquid solution or compressed dry gas.
(b) These standards should originate from laboratories complying to ISO 17025 for calibration.

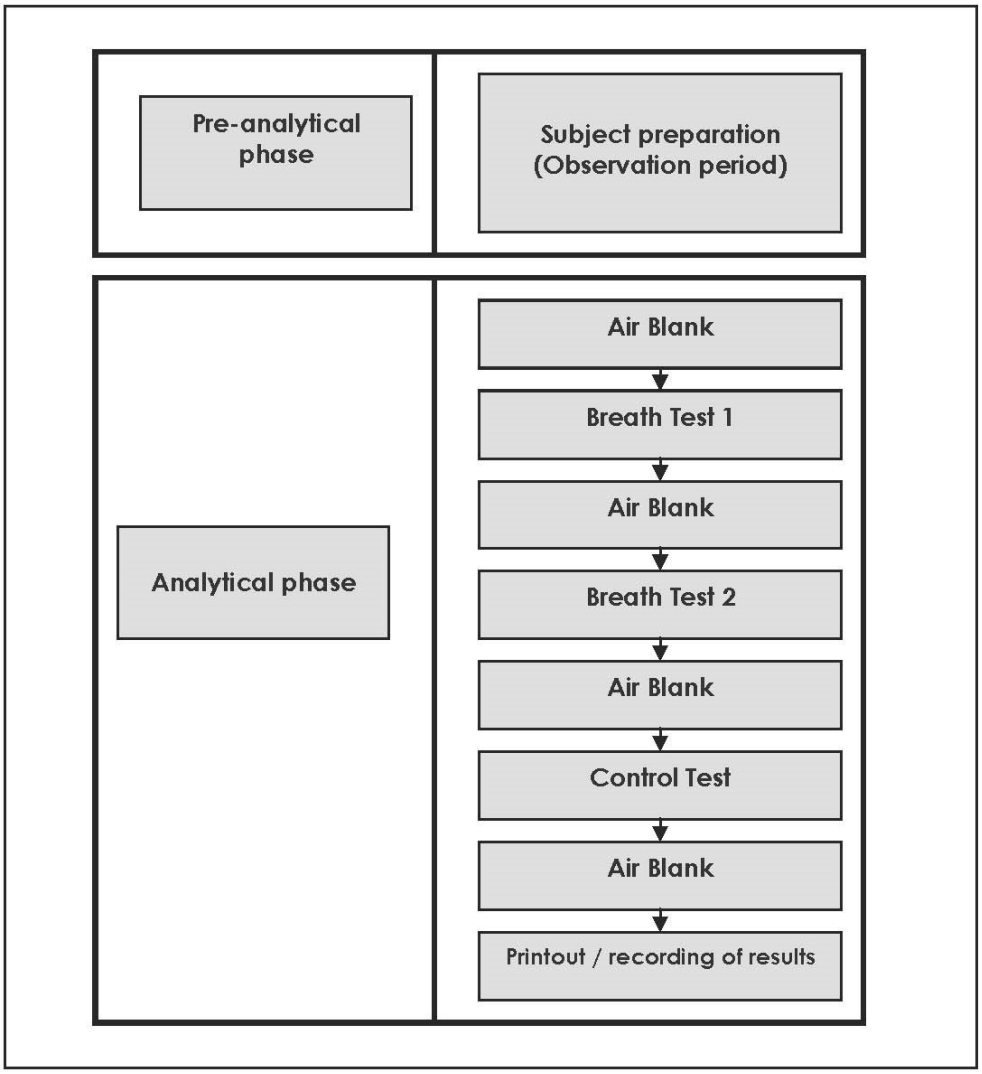
(5) The EBT's measured value when analysing the standards must be within the tolerance limits designated by the manufacturers QAP, which is typically ± 0.005 mg / 1000 ml exhaled air. The site should perform an accuracy check once a month and as soon as conveniently possible after every positive test.

(6) If the EBT fails a check, it should be taken out of service according to the manufacturer's QAP.

(7) Every result of 0.01 mg/ 1000 ml or above obtained on the EBT since the last valid check will be declared invalid.

(8) A logbook of calibration records needs to be kept with each device for a minimum of 2 years.

Table 3 Scheme of a breath alcohol analysis with integral scientific safeguard steps



4.7 SHY-LUNG

(1) The term "Shy-Lung" refers to a situation where the donor does not provide a sufficient amount of breath to permit a valid breath test.

(2) The donor must be given a minimum of two attempts to provide an adequate sample.

(3) If the donor does not provide an adequate sample based on the EBT requirement, the BAT should:
(a) Repeat the procedure if the BAT believes there is a strong likelihood of success with additional attempts.
(b) Try to conduct the test in annual mode if the EBT has this capability.
(c) Consider using an oral fluid device if the donor fails after two attempts, and the BAT is also a qualified STT.
(i) Breath will still be required if confirmation testing is necessary.
(d) Records the circumstances on the ATF and immediately informs the Authority.

(4) If the BAT believes the donor is purposefully not blowing adequately or forcefully into the breath testing device, then the BAT notes in Step 3, "Refusal to Test".

(5) Alternatively, a blood alcohol test may be performed as confirmation, after an elevated screening result.

(6) The donor must be sent for a Shy-Lung assessment to be conducted by a Specialist Physician or experienced MRO.
(a) The evaluating physician will communicate his/her determination directly to the Authority.
(b) If the physician states that there was a valid medical condition for the insufficient amount of breath, the test is deem invalid.
(c) If the physician identifies no valid medical reason, the donor is deemed to have refused testing

4.8 Alcohol test errors

(1) If a BAT or STT becomes aware of an event that will cause the test to be deemed invalid, he/she must try to correct the problem promptly, if practicable.
(a) This may require repeating the test, using a new ATF and, if needed, a new alcohol screening device or different EBT.
(b) Some errors cannot be corrected;
(c) Some errors are potentially correctable by amending the ATF

(2) If a valid test cannot be performed, the BAT or STT cancels the test and immediately informs the Authority.

(3) If the error is a fatal flaw, the test must be deemed invalid and the Authority must be informed within 48 hours of the cancellation.

(4) An invalid test is neither positive nor negative and does not count toward any required random rate or number of follow-up tests.

(5) Fatal errors in alcohol testing

1. BAT/STT fails to both print his/her name and sign the ATF

2. Saliva Screening test
   (a) The STT reads the result sooner or later than the time allotted by the manufacturer.
   (b) The ASD does not activate.
   (c) The ASD is used after its expiration date.

3. Screening or Confirmation evidential breath test
   (a) The test number or alcohol concentration displayed on the EBT is not the same as the test number or alcohol concentration on the printed result

4. Confirmation Evidential Breath Test:
   (a) Minimum 15 minute waiting period prior to confirmation test is observed.
   (b) EBT does not print a confirmation test result
   (c) Air blanks are not performed during a confirmation test.
   (d) The EBT fails the next external calibration check. In this situation, every result of 0.02 or above obtained on the EBT since the last valid external calibration check is cancelled.

(6) Correctable errors in alcohol testing

1. BAT.STT fails to sign the ATF

2. BAT/STT fails to note donor's refusal to sign (Step 4) if confirmation result is greater than or equal to 0.1 mg / 1000 mL exhaled breath.

4.9 Reporting of Results

(1) All results are to be communicated to the donor and to the Authority.

(2) The BAT should notify the Authority within 48 hours of any test that had a fatal flaw.

(3) If the alcohol testing result is confirmed to be at or above 0.1 mg / 1000mL:
(a) The licence holder must be removed from all duties

(b) The BAT should instruct the licence to remain at the testing site until transportation for the donor is arranged.

4.10 Blood specimen collection

(1) The collecting officer must be a medical/health professional registered at the Health Provisions Council of Namibia (HPCN) including a Medical doctor, phlebotomist, nursing sister etc.

(2) The collector should have identification with his/her name and his/her employer's name, address, and telephone number and be able to provide it upon request of the donor

(3) The following restrictions apply to collecting officers:
(a) The immediate supervisor of an employee may not serve as the collector when that employee is tested, unless there is no feasible alternative.
(b) A co-worker who is in the same testing pool or who works with an employee on a daily basis may not serve as a collector when that employee is tested, unless there is no feasible alternative.
(c) An individual who has a personal relationship with the employee (e.g., spouse, ex-spouse, relative, close personal friend) may not serve as the collector, unless there is no feasible alternative.

(4) The collection site must have the following:
(a) All necessary personnel, supplies, equipment, facilities, and supervision to provide for specimen collection, security, and temporary storage.
(b) A blood specimen collection site must provide for donor privacy while the blood is drawn.
(c) A suitable clean clinically sterile surface for the collector to use as a work area must be available.
(d) A bed for the donor to lie down.

(5) For the collection of blood specimens for alcohol analysis:
(a) Blood is collected from the cubital veins of the forearm
(b) Needles should be clean and dry and not contaminated in any manner, including water (as per standard clinical practice)
(c) The disinfectant used to clean the arm should not contain ethanol, isopropanol, or other volatile compounds
(d) Sodium fluoride (1%) is effective as preservative.

(6) Alcohol testing should be performed in whole blood.

(7) Potassium oxalate or EDTA will suffice as an anticoagulant.

(8) After properly labelling the two (2) tubes with all the required information, the specimen, a laboratory request form, and a chain-of-custody form should be sealed in an appropriate container.

(9) The samples must be stored in a fridge as soon as possible (2-4º C) until collection by the courier

(10) The collector must maintain line-of-sight custody or provide for the secure temporary storage of pecimens from the time the specimen is collected until it is sealed in a shipping container prior to transfer to an express carrier or courier for shipment to a laboratory.

(11) Suitable records must be made when the specimen is collected to prove that:
(a) The blood specimen collected and the sample received by the blood alcohol testing laboratory is one and the same.
(b) This is the first link in the chain of custody process which, when reconstructed at a later date, can be used to prove that the final result belongs to the specimen collected

(12) The original copy accompanies the sample to the confirmatory laboratory and all persons involved in the transport and receiving of the sample should record their name and signature on the chain-of-custody form

(13) One of three carbon copies of the chain-of-custody forms should be handed to each of the following:
(a) The licence holder
(b) The Medical Review Officer (MRO)
(c) Collection officer

(14) The specimens and accompanying documents should be sent to the laboratory as soon as possible.

(15) On receipt by the laboratory, specimens should be stored in a fridge by the laboratory and after analysis kept in a frozen or refrigerated state

(16) Collection officers will arrange to dispatch the collected specimens to the drug-testing laboratory.

(17) The specimens will be placed in containers designed to minimise the possibility of damage during shipment.

(18) Transfer of the specimens to the courier from the collector, and in turn from the courier to the laboratory, should be documented on the chain of custody.

4.11 Laboratory Analysis of a Blood Specimen

(1) If the screen results are negative no further analysis is necessary.
(a) Preliminary blood alcohol testing may be performed by Immuno-assay and enzymatic assays

(2) If the screen/preliminary tests are non-negative, a confirmation test to obtain the exact alcohol concentration must be carried out on another portion of the same blood sample.

(3) A screening/preliminary test is not a required if the client prefers the blood sample to be subjected to the confirmatory analytical procedure directly.

(4) The confirmatory test should not involve a repetition of the same analytical technology as was employed for the preliminary testing, but has to be performed by an Internationally recognized confirmatory technique (typically Head space- Gas Chromatography with Flame ionization detection, HS-GC-FID)

(5) Positive results are only reported after laboratory confirmation and may require further interpretation.

NOTE:It is of prime importance to note that immunoassay and enzymatic assays are **not** regarded as confirmatory techniques for ethanol in blood but rather as preliminary testing techniques.

(a) If the confirmatory breath alcohol test result is 0.10 mg ethanol / 1000 mL or higher in exhaled breath, the BAT then immediately sends/faxes the test result to the Authority.

(b) If a laboratory performs the analysis (e.g. blood testing), the result may be reported to the MRO or directly to the Authority if the test results is higher than 0.02 g ethanol / 100 mL blood.
(c) If the MRO receives the result, he/she relays it to the Authority without interpretation

(6) Challenges to results by the licence holder for re-testing must be made within 72 hours of reporting results to the MRO or the Authority.
a. The stored sample (Sample B) should be released for analysis to a drug-testing laboratory able to demonstrate that they can accurately determine the concentration of a drug or metabolite at 50% of the confirmation cut-off concentration employed.
b. The release must be supported by a chain of custody and requires authorisation from the customer and the donor.

(7) Suitable records must be made during the analytical process to prove that the sample received by the laboratory and the sample, about which the final report is written, are one and the same.

(8) All blood samples which prove positive above the cut-off concentration of 0.02 g / 100 mL and all records of the analytical process must be kept for :
a. 1 year – Records of alcohol tests with a concentration of less than the company cut-off concentration and cancelled alcohol tests
b. 2 years – Documentation of the inspection, maintenance, and calibration of EBT's
c. 5 years – Alcohol test results for both blood and breath at or above the Authority cut-off, and documentation of refusals and follow-up alcohol tests.

(9) If the customer requires an independent toxicological review, the laboratory must make available, if requested, the analytical data upon which it based its final report.

(10) Long-term frozen storage of samples will be at 0°C -4°C or below

(11) The laboratory will retain all samples confirmed positive in properly secured long-term cold storage for a minimum of 3 months.
1. Within this three month period the Authority or licence holder may request the laboratory to retain the sample for an additional period of time.
2. If no such request is received, the laboratory may discard the sample after the end of three months, except that the laboratory must maintain any samples known to be under legal challenge for a further agreed period.

1. PROTOCOL FOR ALLERGIES, SEVERE

In the case of severe allergies, the Examiner should deny or defer certification and provide a report to the Medical Assessor NCAA, that details the period and duration of symptoms and the nature and dosage of drugs used for treatment and/or prevention.

2. PROTOCOL FOR ASTHMA

ICAO Annex 1 – Personnel Licensing 6.3.2.8. states: "There may be no acute disability of the lungs nor any active disease of the structures of the lungs, mediastinum or pleura."

In the ICAO guidelines on Medical Assessment of the Respiratory System – Chapter 2, the following is stated: "Applicants with bronchial asthma should in general be assessed as unfit unless the clinical course is extremely mild and drug treatment is not required."

In Namibia there is a slightly more lenient approach. Although applicants who comply with the following protocols are able to fly, all cases that fall outside the minimum standards must be referred to the Medical Inspector or designated body or institution for certification.

1. Special examinations

(1) Lung function tests –

Interval: Same as ECG or more frequently on indication

(2) Chest X-ray: PA and Lateral on initial examination. Subsequent CXRs on indication only.

2. Minimum lung function standards

(1) FEV1 and FVC ≥ 70% of predicted values (to exclude restrictive lung disease) N.B. If one or both of these values are <70% refer for X-ray and pulmonologists report.

(2) FEV1/FVC ≥ 70% to exclude obstructive airways disease. N.B. Do not use % predicted values here.

3. Initial pilots/ATCs

(1) If FEV1/FVC ≤ 75%

Determine cause –

(a) Infection (e.g. bronchitis):

Temporarily unfit. Repeat after 7 to 14 days when cured and off medication.

(b) Reactive airways –

(i) Any form of asthma in the last 5 years or previous hospitalisation due to asthma: Temporarily unfit. Pulmonologists report.

(ii) Exercise induced asthma only: Temporarily unfit. Inhaled steroids for 4 weeks. Re-examine with provocation test (e.g. stress ECG).

(2) Acceptable lung function with –

(a) History of asthma in past 5 years. Temporarily unfit. Pulmonologists report.

(b) Use of bronchodilators. Unfit to fly with bronchodilators. Pulmonologists report.

4. Experienced pilots/ATCs

(1) If FEV1/FVC ≤ 70%

Manage according to the cause:

(a) Infection (e.g. bronchitis):

(i) Temporarily unfit. Repeat after 7 to 14 days when cured and off medication

(ii) Reactive airways:

- Treated for asthma in the last 5 years or previous hospitalisation due to asthma. Temporarily unfit. Pulmonologists report.
- Exercise induced asthma:
- Unless severe (e.g. FEV1/FVC ≤ 70%) provisionally fit. Inhaled steroids for 4 weeks. Re-examine after provocation test.

(2) Acceptable lung function with:

(a) History of wheezing in the absence of infection. Not taking medication and never admitted to hospital due to asthma.

Provisionally fit (if medication is taken – temporarily unfit) pending the pulmonologist's report.

(b) Use of bronchodilators.

Unfit to fly with bronchodilators. Pulmonologists report.

5. Any applicant who has had an FEV1/FVC ≤ 70% for reasons other than infections, should have an initial pulmonologists report followed by an annual lung function test.

6. The only medication that may be used in the management of asthma is –

(1) Inhalation steroids (e.g. Becotide ™, Becloforte™, Becodisks™, Pulmicort™, Clenil™, Inflammide™, Flixotide™, Viarox™, Ventzone™, etc.)

(2) Sodium cromoglycate (i.e. Lomudal ™) and Nedocromil (Tilade™) – are also acceptable.

7. All medication producing bronchodilation (i.e. Theophylline, ß2-stimulants, etc.) are incompatible with flying/air traffic control functions due to the side-effects. Asthma requiring use of these medications would therefore disqualify an applicant from flying/air traffic control duties.

3. PROTOCOL FOR NEUROPSYCHOLOGICAL EVALUATIONS FOR ADHD OR Attention Deficit Disorder (ADD)

Why is a neuropsychological evaluation required? Attention-Deficit/Hyperactivity Disorder (ADHD), formerly Attention Deficit Disorder (ADD), and medications used for treatment may produce cognitive deficits that would make an airman unsafe to perform pilot duties. This guideline outlines the requirements for a neuropsychological evaluation.

Who may perform a neuropsychological evaluation? Neuropsychological evaluations must be conducted by a licensed clinical psychologist who is either board certified or "board eligible" in clinical neuropsychology.

Will I need to provide any of my medical records? You should make records available to the neuropsychologist prior to the evaluation, to include:

- Copies of all records regarding prior psychiatric/substance-related hospitalizations, observations, or treatment not previously submitted to the NCAA.
- A complete copy of your agency medical records. You should request a copy of your agency records be sent directly to the psychiatrist and psychologist by the Medical Assessor NCAA.

<u>What must the neuropsychological evaluation report include?</u>

At a minimum:

- A review of all available records, including academic records, records of prior psychiatric hospitalizations, and records of periods of observation or treatment (e.g., psychiatrist, psychologist, or paediatric neuropsychiatrist treatment notes). Records must be in sufficient detail to permit a clear evaluation of the nature and extent of any previous mental disorders.
- A thorough clinical interview to include a detailed history regarding: psychosocial or developmental problems; academic and employment performance; legal issues; substance use/abuse (including treatment and quality of recovery); aviation background and experience;

medical conditions, and all medication use; and behavioral observations during the interview and testing.

- A mental status examination.
- Interpretation of a full battery of neuropsychological and psychological tests including, but not limited to, the "core test battery" (specified below).
- An integrated summary of findings with an explicit diagnostic statement, and the neuropsychologist's opinion(s) and recommendation(s) regarding clinically or aeromedically significant findings and the potential impact on aviation safety consistent with the NAMCARS.
- The results of a urine drug screening test for ADHD/ADD medications, including psychostimulant medications. The sample must be collected at the conclusion of the neurocognitive testing or within 24 hours afterward.

What is required in the "core test battery?"

The core test battery listed below provides a standardized basis for the NCAA's review of cases, and must include:

- The complete Wechsler Adult Intelligence Scales (Processing Speed and Working Memory Indexes must be scored)
- Trail Making Test, Parts A and B (Reitan Trails A & B should be used since aviation norms are available for the original Reitan Trails A & B, but not for similar tests [e.g., Color Trails; Trails from Kaplan-Delis Executive Function, etc.])
- Executive function tests to include: (1) Category Test or Wisconsin Card Sorting Test, and (2) Stroop Color-Word Test
- Paced Auditory Serial Addition Test (PASAT).
- A continuous performance test (i.e., Test of Variables of Attention [TOVA], or Conners' Continuous Performance Test [CPT-II], or Integrated Visual and Auditory Continuous Performance Test [IVA+]), or Gordon Diagnostic System [GDS].
- Test of verbal memory (WMS-IV subtests, Rey Auditory Verbal Learning Test, or California Verbal Learning Test-II).
- Test of visual memory (WMS-IV subtests, Brief Visuospatial Memory TestRevised, or Rey Complex Figure Test).
- Tests of Language including Boston Naming Test and Verbal Fluency (COWAT and a semantic fluency task).
- Psychomotor testing including Finger Tapping and Grooved Pegboard or Purdue Pegboard.
- Personality testing, to include the Minnesota Multiphasic Personality Inventory (MMPI-2).

(The MMPI-2-RF is not an approved substitute. All scales, subscales, content, and supplementary scales must be scored and provided. Computer scoring is required. Abbreviated administrations are

not acceptable.)

- Additional testing: If problems are noted on tests of reading or math, follow-up testing with appropriate achievement tests should be conducted (e.g., Woodcock-Johnson Tests of Achievement-III; Nelson-Denny Reading Test, especially Fluency and Comprehension; WRAT-IV Math; PIAT Reading Comprehension). □ CogScreen-Aeromedical Edition (CogScreen-AE) is recommended but not required.

NOTES: (1) All tests administered must be the most current edition of the test unless specified otherwise; (2) At the discretion of the examiner, additional tests may be clinically necessary to assure a complete assessment.

What must be submitted?

The neuropsychologist's report as noted above, plus the supporting documentation below:

- Copies of all computer score reports (e.g., Pearson MMPI-2 Extended Score Report, TOVA, CPT-II or IVA+ Report).
- An appended score summary sheet that includes all scores for all tests administered. When available, pilot norms must be used. If pilot norms are not available for a particular test, then the normative comparison group (e.g., general population, age/education-corrected) must be specified. Also, when available, percentile scores must be included.

Recommendations should be strictly limited to the psychologist's area of expertise.

What else does the neuropsychologist need to know?

- The NCAA will not proceed with a review of the test findings without the above data.
- The data and clinical findings will be carefully safeguarded in accordance with the APA Ethical Principles of Psychologists and Code of Conduct (2002) as well as applicable federal law.
- The raw neurocognitive testing data may be required at a future date for expert review by one of the NCAA's consulting clinical neuropsychologists. In that event, authorization for release of the data by the airman to the expert reviewer will need to be provided.

Additional Helpful Information

- Will additional testing be required in the future?
    - If eligible for unrestricted medical certification, no additional testing would be required.

- Useful references for the neuropsychologist:
  - MOST COMPREHENSIVE SINGLE REFERENCE: Aeromedical Psychology (2013). C.H. Kennedy & G.G. Kay (Editors). Ashgate.
  - Pilot norms on neurocognitive tests: Kay, G.G. (2002). Guidelines for the Psychological Evaluation of Aircrew Personnel. Occupational Medicine, 17 (2), 227-245.
  - Aviation-related psychological evaluations: Jones, D. R. (2008).
  - Aerospace Psychiatry. In J. R. Davis, R. Johnson, J. Stepanek & J. A. Fogarty (Eds.),
  - Fundamentals of Aerospace Medicine (4th Ed.), (pp. 406-424). Philadelphia: Lippencott Williams & Wilkins.

4. PROTOCOL FOR DIAGNOSED ADDISON'S DISEASE

4.1 Before an applicant for a pilot licence may be considered, he/she must comply with the following standards –

(1) Normal physical examination.

(2) The following blood test results must be normal before exercise –

(a) Urea and electrolyte screen.

(b) Blood glucose (random).

(c) Serum cortisol.

(d) Liver Function Test screen (this is necessary in order to ensure that the applicant is not abusing alcohol, which would predispose him to developing hypoglycaemia).

(3) Exercise must then be undertaken, and a series of blood samples must be taken, both during and after the exercise. The exercise must be on a treadmill, with the applicant running until he/she is exhausted, or until a heart rate equivalent to a 100% stress ECG is achieved.

(a) The blood test results required during exercise are the following:

(i) Urea and electrolyte screen (X 1).

(ii) Blood glucose (X 3).

(iii) Serum cortisol (X 1).

(b) The blood test results required after exercise are the following:

(i) Urea and electrolyte screen.

(ii) Blood glucose.

(iii) Serum cortisol.

All the results must be normal.

(4) The blood pressure and pulse rate must be monitored throughout the exercise, and any changes must be appropriate for the intensity of the exercise.

4.2 If all the above standards are achieved, the applicant may be certified, but with the following restrictions –

(1) May only fly with or as a co-pilot.

(2) May not fly when suffering from any infection, or when pyrexial (including "flu" or a common cold). Must be re-examined by the designated body or institution following resolution of the infection before he/she can resume flying.

(3) All surgical procedures, operations or use of medication, whatever the reason, will result in the applicant becoming unfit, until cleared by the designated body or institution. Will remain unfit for at least 6 weeks following surgery.

(4) Must always wear a Medic Alert disk specifying that he/she has Addison's Disease.

(5) Must always carry an emergency supply of Cortisone when flying.

(6) The following blood tests must be performed at least 3 times during the year (i.e. approximately every 4 months) in order to determine whether the applicant is complying with treatment –

(a) Urea and electrolyte screen.

(b) Blood glucose (random).

(c) Serum cortisol.

(d) Liver Function Test screen.

(e) Serum Renin determination.

(7) The applicant must be fully informed as to the disease, its treatment and possible complications.

(8) The applicant is required to submit an annual specialist Physician's report to the medical inspector, designated body or institution.

5 PROTOCOL for BLADDER CANCER

A. General:

i. A diagnosis of Bladder cancer is disqualifying and upon diagnosis, the applicant must be deemed medically unfit to exercise the privileges of the class of the license they hold until the proper treatment has been instigated, the applicant is fully recovered and disease free.

ii. Impairment to flying may result from urinary frequency/urgency and tumour(s) or clots causing urinary tract obstruction with resultant pain.

iii. Metastatic disease could cause any number of symptoms, including sudden incapacitation or subtle decrement of higher cognitive function.

iv. The clinical course of bladder cancer carries a broad spectrum of aggressiveness and risk. Low grade, superficial bladder cancers have minimal risk of progression to death. However, high-grade non-muscle invasive cancers frequently progress to death. Muscle-invasive cancers are often lethal.

v. Upon presentation, 55-60% of patients have a low-grade non-invasive disease, which is usually treated conservatively with transurethral resection and periodic cystoscopy.

vi. The remainder of patients have a high-grade disease, of which 50% is muscle invasive and is typically treated with radical cystectomy.

vii. Carcinoma in situ is managed by instilling chemotherapeutic or immunotherapeutic agents.

viii. Bladder cancer has the highest recurrence rate of any malignancy, thus creating a great need for accurate and diligent surveillance.

ix. Because of a fairly high risk of recurrence for both invasive and non-invasive disease, there is always a need for scheduled follow-up evaluation.

x. Early after treatment, the patient may be required to undergo urologic evaluation (urinalysis, cytology, cystoscopy, imaging, and additional labs) **every three months**. After two years without recurrence, **indefinite annual examinations** are usually recommended.

B. Medical requirements:

i. Considered after an applicant is fully recovered and disease free.

ii. The following examinations and procedure reports are required before the applicant's case can be considered with regard to medical certification/recertification:

1. Specialist reports including staging
2. Bladder exams every 6 months after treatment
3. Urological evaluation
4. Urinalysis (if bladder not removed)
5. Cytology, (urine cytology)
6. Cystoscopy
7. CT scan with contrast/MRI

iii. After two years without recurrence, indefinite annual examinations are required along with the following:

1. Histology reports
2. Radiological and imaging
3. CXR, Bone scans/ CT
4. Lab tests; FBC, U&E, LFT

C. Stage 1 &2

i. The outlook for stage 0 or I cancers is fairly good.

ii. Although the risk of the cancer returning is high, most bladder cancers that return can be surgically removed and cured.

D. Follow up:

i. 6 monthly specialist reports

ii. After two years without recurrence, **indefinite** annual examinations are required along with the following:

1. Annual radiological reports (CXR, CT scan with contrast/MRI)
2. Bone scans if clinically indicated

E. Restrictions:

i. Stage 1

1. Class 1: 12 Months multi-crew (as or with co-pilot)
2. Class 2: No restrictions
3. Class 3: 12 controlling under supervision (as or with second controller)

ii. Stage 2

1. Class 1: Months multi-crew (as or with co-pilot)
2. Class 2: Months with a safety pilot
3. Class 2 CCM: Months multi-crew
4. Class 3: Controlling under supervision (as or with second controller)

iii. License holders with stage 2 disease must be required to operate under a multi-crew environment, as or with co-pilot, or under-supervision (depending on their environment) etc., and/or until the aeromedical risk has been assessed and deemed favorable for the restriction to be lifted.

iv. **Stage 3 &4**

1. The cure rates for people with stage 3 tumours are less than 50%. Patients with stage IV bladder cancer are rarely cured. **So both stage 3 and 4 would be disqualifying.**

6 PROTOCOL FOR BONE MARROW TRANSPLANT

6.1 The holder of medical certificate is to be grounded from the date of harvesting.

6.2 Date of harvesting is calculated from the date of when the first injection of Granulocyte-Colony Stimulating Factor (G-CSF) is given.

6.3 The holder of medical certificate submits a Full Blood Count 2 weeks after completion of the procedure.

6.4 If the Full Blood Count is normal, the holder of medical certificate may be considered to exercise the privileges of their license they are applying for, if the Full Blood Count is abnormal, holder of medical certificate must remain grounded until all abnormalities have been corrected.

7 PROTOCOL ON BRAIN TUMOURS

7.1 It is important to consider 2 aspects –

- Is there neurological deficit that is incompatible with flying?
- Is the tumour likely to recur?

7.2 Supratentorial meningioma: These applicants should be made temporarily unfit upon diagnosis. Following successful surgery, they must be asymptomatic, and have no neurological deficit for a period of 2 years before being considered for re-certification by the medical assessor or designated body or institution. They will require a MR scan of the brain that shows no tumour, and an oncologist's report which states that –

(a) the applicant is in remission, and

(b) that he/she never had convulsions. The medical inspector, designated body or institution may find the applicant fit, with the restriction of an annual medical examination (including specialist's report).

7.3 Infratentorial meningioma, acoustic neuroma, pituitary adenoma, and benign extra-axial tumours require the same conditions as a supratentorial meningioma, except that the stipulated minimum period before re-certification is considered, is 1 year.

7.4 Pseudotumour Cerebri: These applicants are temporarily unfit until they have been headache free, and have had normal visual fields, for a period of 6 months.

7.5 Other CNS tumours: Unfit to fly.

8. PROTOCOL FOR BREAST CANCER

A. General

i. A diagnosis of Breast Cancer is disqualifying and upon diagnosis, the applicant must be deemed medically unfit to exercise the privileges of the class of the license they hold until all treatment is completed and there is documented proof that they are disease free.
ii. Clinical management of patients with early breast cancer is determined on individual basis, taking into account many factors, including the risk of cancer recurrence.
iii. The clinical management of breast cancer is directly linked to pathological assessment of the cancer.
iv. So, accurate pathological assessment of the breast cancer specimen is vital.
v. Common factors have been identified for predicting the risk of recurrence in patients with breast cancer.
vi. Node negative status at diagnosis has commonly been associated with a favourable outcome.
vii. But the risk of recurrence still exist for women with early breast cancer regardless of nodal status, oestrogen receptor status, age, chemotherapy regimen, time on Tamoxifen or time from initial diagnosis.
viii. Adjuvant Tamoxifen therapy has significantly improved patient outcomes. However, even with adjuvant therapy, more than 20% of node-negative patients had their disease recur within 15 years after diagnosis.
ix. Recurrences can occur after five years of being disease free, even with the successfully treated early breast cancer.
x. Risk of recurrence is greatest during the first two years following surgery.

xi. After two years, there is a steady decrease in the risk of recurrence until 5 years. After 5 years the risk of recurrence averages 4.3% per year.

xii. Up to at least 12 years, the risk of recurrence remains appreciable and even some patients considered low risk have some risk of the cancer coming back.

B. Medical requirements

i. The following examinations and procedure reports are required before the applicant's case can be considered with regard to medical certification/recertification:
   1. Specialist reports including clinical staging
   2. Histology reports
   3. Radiological assessment: CXR, CT/MRI/PET scan/Mammograms
   4. Baseline bone scan
   5. Nodal assessment: lymph node biopsies
   6. Bloods, e.g. FBC, LFT, U&E (Creat)
   7. Tumour markers such as HER2

C. Stage 1

i. Follow up requirements
   a) Annual specialist report
   b) Annual Radiological assessments (CXR) and bloods (LFT-ALP, FBC, U&E)

ii. Restrictions
   1. Class 1: Multi-crew (as or with co-pilot)
   2. Class 2: with safety pilot
   3. Class 2 CCM: Multi-crew
   4. Class 3: Controlling under supervision (as or with second controller)

D. Stage 2:

i. Follow up requirements
   i. 6 monthly specialist report
   ii. 6 monthly radiological assessments (CXR) and bloods (LFT-ALP, FBC, U&E)

ii. Restrictions
   1. Class 1: Multi-crew (as or with co-pilot)
   2. Class 2: with safety pilot
   3. Class 2 CCM: Multi-crew
   4. Class 3: Controlling under supervision (as or with second controller)
   5. License holders must operate under a multi-crew environment, as or with co-pilot, or under-supervision (depending on their environment) etc., until the aeromedical risk has been assessed and deemed favorable for the restriction to be lifted.

E. Stage 3

i. Disqualifying

F. Stage 4

i. Disqualifying

9 PROTOCOL FOR CARDIAC TRANSPLANT

9.1 The Examiner must defer issuance. Issuance is considered for Second-class applicants only. NCAA Cardiology Panel will review. Applicants found qualified will be required to provide annual followup evaluations. All studies must be performed within 30 days of application.

9.2 Requirements for consideration:

9.2.1 A current report from the treating transplant cardiologist regarding the status of the cardiac transplant, including all pre- and post-operative reports. A statement regarding functional capacity, modifiable cardiovascular risk factors, and prognosis for incapacitation

9.2.2 Current blood chemistries (fasting blood sugar, hemoglobin A1C concentration, and blood lipid profile to include total cholesterol, HDL, LDL, and triglycerides), within 30 days

9.2.3 Any tests performed or deemed necessary by all treating physicians (e.g., myocardial biopsy)

9.2.4 Coronary Angiogram

9.2.5 Graded Exercise Stress Test (see disease protocol) and stress echocardiogram

9.2.6 A current 24-hour Holter monitor evaluation to include selective representative tracings

9.2.7 Complete documentation of all rejection history, whether treated or not; include hospital records and reports of any tests done

9.2.8 A complete history regarding any infectious process

9.2.9 All complete history regarding any malignancy

9.2.10 List of all present medications and dosages, including side effects.

9.3 It is the responsibility of each applicant to provide the medical information required to determine his/her eligibility for airman medical certification. A medical release form may help in obtaining the necessary information. Please ensure full name appears on any reports or correspondence.

9.4 All information shall be forwarded to the NCAA Medical Assessor

10 PROTOCOL FOR CARDIOVASCULAR EVALUATION (CVE)

A current cardiovascular evaluation (CVE) must include:

- A personal and family medical history assessment
- Clinical cardiac and general physical examination
- An assessment and statement regarding the applicant's medications, functional capacity, and modifiable cardiovascular risk factors
- Prognosis for incapacitation
- Blood chemistries (fasting blood sugar, current blood lipid profile to include total cholesterol, HDL, LDL, and triglycerides) performed within the last 90 days

11. PROTOCOL FOR PREVIOUSLY DIAGNOSED CARCINOMA OF THE COLON AND RECTUM

A. General

i. A diagnosis of colorectal cancer is disqualifying and upon diagnosis, the applicant must be deemed medically unfit to exercise the privileges of the class of the license they hold.

B. Medical requirements

i. The following examinations and procedure reports are required before the applicant's case can be considered with regard to medical certification/recertification:

(a) Specialists reports, which must include clinical staging, and /or with Tumour Grade, colonoscopy findings and an indication whether adjuvant therapy is indicated or not.

(b) Histology report including Duke's /TNM Staging
(c) Blood test results: FBC, ESR; LFT including, LDH & ALP.
(d) Tumour markers e.g. CEA
(e) Presence of occult blood in the faeces – Haemoccult
(f) Radiological reports: CXR, PET scan
(g) If clinically indicated according to the colonoscopy and CEA findings, a CT scan of the abdomen, Lungs and Brain will be required.

ii. A minimum period of three months is required following colectomy before an applicant can be considered for recertification.

C. If Dukes A/Stage 1, requiring no adjuvant therapy:

i. Recertification is possible after 3 months post-surgery.
ii. Requirements are:
(a) The applicant must submit 3 monthly specialist's reports.
(b) 6 monthly radiological assessments for 3 years, thereafter annually till year 5; (CXR, PET scan)
(c) Colonoscopy to be done 1 year after completion of treatment and repeated annually if new polyps are noted or every 3 years if no polyps are noted.
(d) 6 monthly Laboratory tests; FBC, and ESR; LFT including: LDH & ALP; and tumour markers, i.e. CEA

iii. Restrictions:
(a) Minimum 3 months post-surgery
(b) Class 1: Multi-crew (as or with co-pilot)
(c) Class 2: No restrictions
(d) Class 3: Controlling under supervision (as or second controller)
(e) Class 4: No restrictions

D. Dukes B&C /Stage 2&3 requirements:

i. Must do full course of chemotherapy and radiotherapy.

ii. Recertification possible after 3 months post-surgery **if** on reapplication:
(a) Is clinically disease free and fully recovered from all treatments
(b) Has no side effects including cardiac side effects

iii. Follow up
(a) Must submit 3 monthly detailed specialists' reports
(b) Must do faecal occult blood tests 6 monthly
(c) Report from Radiation Oncologist specifying exposure areas and any sequelae
(d) 6 monthly radiological exams for 3 years thereafter annually till year 5 (CXR, PET scan)
(e) Colonoscopy or adequate air-contrast Ba Enema annually.
(f) 6 monthly Bloods: FBC, ESR, LFT including LDH, Serum CEA,

iv. Restrictions:
(a) Minimum 3 months grounding post-surgery, and has done full course chemotherapy and radiotherapy
(b) Class 1: Multi-crew (as or with co-pilot)
(c) Class 2: with a safety pilot
(d) Class 2 CCM: Months Multi-crew
(e) Class 3: Controlling under supervision (as or with second controller)
(f) Class 4: No restrictions

(g) License holders will be required to operate under a multi-crew environment, as or with co-pilot, or under-supervision (depending on their environment) etc., until the aeromedical risk has been assessed and deemed favorable for the restriction to be lifted.
(h) Consideration may be given to lift the protocol at 5 years for stage 1 & 2 and at 10 years for stage 3

E. Duke's D/Stage 4
i. Disqualifying.

12. PROTOCOL FOR CHRONIC OBSTRUCTIVE AIRWAYS DISEASE

Applicants with COAD are assessed according to the minimum lung function standards. If they have irreversible airways obstruction outside the minimum standard, they should be referred to a pulmonologist for assessment of vital capacity reduction, increased residual volume, presence of bullae, diffusion capacity, oxygen saturation and carbon dioxide retention. Bi-annual CXRs are recommended.

13. PROTOCOL FOR CORONARY ARTERY DISEASE

13.1 General

13.1.1 Aviation medical standards as laid down in Annex 1 of the Convention on International Civil Aviation by the International Civil Aviation Organisation to which Namibia is a contracting State, have identified broad medical conditions that, on the basis of expected risk of incapacitation, disqualify aviation personnel from flying.

13.1.2 Namibia is one of the countries that previously applied strict standards to initial applicants with a history of coronary heart disease who applied for a medical certificate. This previous protocol was also applied to aviation personnel regarding whom the risk of sudden incapacitation was reduced as a result of risk factor modification or rehabilitation, including therapeutic interventions.

13.1.3 The Authority has since reviewed this protocol, and is now making provision for aviation personnel with a history of Coronary Artery Disease. Initial and experienced applicants may be considered for any class of medical certificate. This consideration will be based on the individual medical condition of the applicant and risk factor involved.

13.1.4 This protocol applies to all applicants (initial and experienced) presenting with coronary artery disease (such as Myocardial Infarction, Angina Pectoris or asymptomatic coronary artery disease detected on investigation following assessment of risk factors). The protocol is applicable to isolated coronary artery disease and its risk factors only.

13.1.5 The presence of ischaemia/inducible ischaemia remains an exclusion factor.

13.2 Applicability

Operational Restrictions

CLASS I

ATPL Multi-crew – As/or with a co-pilot

Commercial Pilots

(a) Instructor – Student must have completed first solo flying

(b) Game Capturing – Applicant can fly solo only if there are no passengers.

(c) Crop Spraying – Applicant can fly solo if there are no passengers.

CLASS II – no restrictions

CLASS III – no restrictions

13.3 General Medical Requirements Applicable To All Applicants

13.3.1 Applicants will be temporarily taken off flying or controlling duties for a duration of not less than six months following the index event.

13.3.2 Applicants must be asymptomatic for at least six months following adequate intervention; the medical certificate will be withdrawn during this period.

13.3.3 Applicants on medication will be considered only if the medication is approved by the Medicine Control Council of Namibia and is compatible with flying.

13.3.4 All initial medical reports must be submitted to a panel of specialists for consideration, and should include the following –

(a) Hospital admission summary (History and Physical).

(b) If catherisation and/or angiography have been performed, all reports and actual films/CDs must be submitted for review. A cardiothoracic report, in cases of CABG/PTCI, detailing the cardiac event and procedures must be submitted.

(c) Applicants presenting with more than two stenoses of more than 30% within a vascular tree, must be assessed as unfit.

(d) An Angiogram may not reveal stenosis of greater than 50% in any major untreated vessel, in any vein/artery graft or at the site of an angioplasty/stent, except in a vessel supplying the infarct.

(e) The medical certificate of applicants presenting with any major vessel stenosis of 50% will be withdrawn, until appropriate intervention is undertaken.

13.4 Cardiovascular Evaluation

13.4.1 General physical and clinical cardiology assessment.

13.4.2 Family and medical history.

13.4.3 Functional capacity using New York Heart Association Functional Classification or Canadian Cardiovascular Score.

13.4.4 Prognosis of incapacitation.

13.4.5 Treatment.

13.4.6 Blood chemistry (fasting Lipid Profile, Urea, Urate and Creatinine and Fasting Blood Glucose).

13.5 Risk Factors for Ischaemic Heart Disease

13.5.1 The following are major modifiable risk factor for ischaemic heart disease and should be under control:

13.5.1.1 Smoking

An applicant with known ischaemic heart disease who continues to smoke should be assessed as "medically unfit".

13.5.1.2 Weight Reduction

Weight reduction in obese and overweight patients should be encouraged. Applicants are theoretically encouraged to set a goal to achieve a body mass index (BMI) <25kg/m or a waist circumference <102cm in men and 88cm in women.

13.5.1.3 Abnormal Lipid Profile

Applicants are encountered to be aware of their serum cholesterol levels and to maintain a normal level. Statins are recommended early for all applicants with a history of Non-ST elevation acute coronary syndrome- (NSTE-ACS) in the absence contraindications, irrespective of cholesterol levels, with the aim of achieving Low Density Lipoprotein (LDL) levels <2.6mmol\L.

13.5.1.4 Blood Pressure Control

Applicants are required to have a blood pressure control of <140/90, and <130/80 mmHg for those suffering from diabetes mellitus or renal dysfunction.

13.5.1.5 Maximal Stress ECG

(a) Applicants are required to be symptom-free and must complete a minimum of Bruce Stage 3 or 8.5 metabolic equivalents (METS).

(b) A minimum of 85% of the required target rate must be achieved

(c) The applicant must be free from inducible myocardial ischaemia or significant rhythm disturbances during the study. A 24-hour Holter ECG tracing is necessary to assess any significant rhythm disturbances.

(d) A stress Echocardiogram/Stress MRI/MIBI Scan or Coronary CT Scan will be required six months after the incident.

(e) If any of the above-mentioned tests show any significant abnormality, a Coronary Angiogram will be required; it must be within previously described limits.

(f) The left ventricular ejection fraction as a measure of left ventricular function using echocardiogram or gated radionuclide scintigraphy should be 50% or more at rest, and should not show a decrease of more than 5% with satisfactory exertion (85% predicted maximum

heart rate or >8 (METS)

(g) A threshold ejection fraction of 45% applies with the use of single proton emission computerised tomography (SPECT).

(h) In applicants with an ejection fraction between 40% and 50%, restricted medical certification may be considered after review of a 24 hour Holter. This should reveal no more 30 Ventricular ectopic beats per hour in the absence of anti-arrhythmic medication, with no more than 3 consecutive beats and a cycle length that is not less than 500msec.

(i) A Myocardial Perfusion Scan is required at least six months after Angioplasty/Stenting, but not necessarily after other events (Myocardial Infarction or Coronary Artery Bypass Grafting), unless there is doubt about the diagnosis Myocardial Infarction or adequacy of Bypass Grafting.

13.6 Therapeutic considerations

Only medication that is compatible with flying will be allowed.

13.7 Follow-up certification

13.7.1 Annual cardiologist's report, including –

(a) Resting and Maximal Stress ECG 12 lead ECG, symptom limited, with no evidence of myocardial ischaemia or ischaemia equivalent.(Some applicants will continue to have an "abnormal" stress test. A cardiologist's opinion should be sought for these cases and if necessary, MIBI or stress ECHO may be required);

(b) A normal 24 Hour Holter ECG will be required.

13.7.2 Blood chemistry must include –

(a) Urea & Creatinine.

(b) Fasting Lipid Profile.

(c) Fasting Blood Glucose.

(d) Haemoglobin & Platelets.

13.7.3 An angiogram will be required –

(a) if there is any cardiac abnormality detected, including symptom relapse.

13.7.4 Chest pain –

(a) regardless of whether typical or atypical for ischaemic heart disease, precludes medical certification insofar as it indicates an elevated probability of significant coronary artery

disease and an increased risk of an incapacitating cardiac event.

13.7.5 An applicant may be considered fit if –

(a) diagnostic testing indicates that the chest pain is not due to myocardial ischaemia.

(b) the initial assessment, including a review of the symptom history, must be without the effect of anti-ischaemic meditation that could possibly mark adverse findings.

(c) If coronary arteriography reveals normal coronary arteries, coronary vasospasm should be excluded.

13.8 Four-yearly

(a) A stress cardiolite/MIBI Scan/Stress MRI/Stress Echo or coronary Scan will be required.

(b) If any of the tests show any abnormality, a repeat Angiogram will be required.

14 PROTOCOL FOR COAGULATION AND THROMBOTIC DISORDERS

1. General

Inherited disorders of coagulation should be disqualified if there is any history of factor replacement or serious bleeding episodes.

(1) Haemophilia: Factor VIII deficiency should be denied certification. Von Willebrand's disease as well as other specific factor deficiencies should be denied certification if there is a history of factor replacement or serious bleeding episodes.

(2) Iatrogenic Thrombosis: After anticoagulant therapy has been discontinued, the applicant need not be disqualified.

(3) Deep vein Thrombosis: Certification should be denied for a period up to one year from the episode, and for six months after all anticoagulant therapy has been discontinued. Underlying contributing factors, such as malignancies, must be evaluated according to the guidelines set for those conditions.

(4) Pulmonary Embolism: A single episode of pulmonary embolisation, not associated with chronic deep venous thrombosis, should be considered disqualifying from the date of the embolisation and for at least 6 months after all anticoagulant therapy has been discontinued. More than one episode of pulmonary embolisation documented by radio-isotopic or angiographic methods should be denied certification permanently.

(5) Recurrent arterial emboli is disqualifying under any circumstances.

(6) Anticoagulant Medication: Anticoagulant drugs of the heparin class or coumarin/warfarin class are disqualifying while they are in use and for six months after they are discontinued.

(7) Haemorrhagic Platelet Abnormalities: Decreased circulating platelet count due to any cause may result in debilitating haemorrhagic episodes. Haemorrhage can also occur when platelet counts are normal but platelet function is abnormal.

(8) Congenital/Genetic Disorders: E.g. Protein S or Protein C Deficiency, Sneddon Syndrome. All unfit.

2. Lymphomas

(1) Hodgkin's Disease: Applicants with active Hodgkin's disease or applicants undergoing therapy for Hodgkin's disease should not be certified because of the risk of sudden incapacitation. Applicants with stages I and II-A who have had no evidence of disease for two years after completion of treatment are certifiable. Stages II-B through IV-B should be free of disease after completion of therapy for at least five years before consideration of certification, and should be re-evaluated every 6 months for 10 years. Numerous long-term complications of treatment for Hodgkin's disease includes the development of acute leukaemia and second malignancies of other types, radiation-related heart disease, pulmonary fibrosis, and hypothyroidism. Frequent re-evaluation. After 10 years there should be annual appraisals.

(2) Non-Hodgkin's Lymphoma: Well-differentiated and poorly-differentiated lymphocytic lymphoma, mixed lymphocytic lymphoma and histiocytic lymphoma of either nodular or diffuse type, are usually not curable, and these applicants should be disqualified permanently. B-cell, diffuse histiocytic lymphoma, particularly in the early stages, may be cured by radiation therapy and/or chemotherapy and, if they are free from disease without therapy for at least three years, they may be certified with re-evaluation to occur every three months for three years and then every 6 months. T-cell, diffuse histiocytic lymphoma, including immunoblastic lymphoma and T-cell lymphoblastic sarcoma, should not be certified because of their unpredictability. Burkitt's lymphoma should not be certified.

(3) Plasma-cell Dyscrasia: Applicants with multiple myeloma, Waldenstrom's macroglobulinemia or multiple plasmacytomas should not be certified. These disorders are not curable, require frequent therapy that is toxic, and are associated with sick effects such as neurological impairment that may lead to sudden incapacitation. Applicants with a single plasmacytoma may be cured and, if they are free of disease more than three years after therapy has been discontinued, they may be considered for certification with frequent follow-up.

(4) Applicants with benign monoclonal gammopathy with a monoclonal spike comprising less than 2 g/dl of protein, with fewer than 55 plasma cells in the bone marrow, and with a

haematopoietic compromise or osteolytic lesions may be certified if they have no evidence of progression of the disease for three years; they should be recertified every six months. The major risks of monoclonal gammopathy are progression to multiple myeloma and an increase in serum viscosity leading to neurological impairment.

(5) Applicants with amyloidosis associated with plasma cell dyscrasia should not be certified because of the high incidence of organ infiltration and the risk of sudden impairment. Applicants with gammopathy of alpha chain disease should not be certified. The median survival is approximately 12 months for gamma heavy chain disease, and the alpha chain disease is often associated with abdominal lymphoma, which is a progressive and fatal disorder.

(6) Applicants with cold agglutinin disease should not be certified because of the risk of sudden haemolysis. Applicants with cryoglobulinemia syndrome should not be certified because of the risk by sudden vascular incidents and neurological dysfunction.

3. Immunodeficiency syndromes

(1) Applicants with the AIDS should not be certified because of the high risk of opportunistic infections which can appear suddenly and cause acute incapacitation.

(2) Applicants with ARC (AIDS related complex) without evidence of previous opportunistic infection may be certified with follow-up every 6 months.

(3) Applicants with common variable immunodeficiency who do not have bronchiectasis and who are controlled with regular gamma globulin therapy may be certified, but they should be re-evaluated every six months.

15 PROTOCOL FOR CONDUCTIVE KERATOPLASTY

Conductive Keratoplasty (CK) is a refractive surgery procedure. It is acceptable for aeromedical certification, with Special Issuance, after review by the NCAA.

The following criteria are necessary for initial certification:

- The airman is not qualified for six months post procedure
- The airman must provide all medical records related to the procedure
- A current status report by the surgical eye specialist with special note regarding complications of the procedure or the acquired monocularity, or vision complaints by the airman

- A current NCAA Form, Report of Eye Evaluation
- A medical flight test may be necessary (consult with the NCAA)
- Annual follow-ups by the surgical eye specialist

16. PROTOCOL FOR MENTAL HEALTH

16.1 INTRODUCTION

16.1.1 To pilot an aircraft requires the utilization of a complex set of physical and cognitive skills. Interference with any aspect of these skills and their coordination may have serious personal and public safety consequences. The assessment of mental fitness shall therefore be made with due regard to the privileges of the licence and the ratings applied for or held, and to the conditions in which the applicants will have to carry out their duties. The period of validity of the Medical Assessment (between six months and five years) must also be taken into consideration.

16.1.2 The Standards and Recommended Practices of Annex 1, Chapter 6, while not sufficiently detailed to cover all individual conditions, require specific levels of mental fitness. Many decisions relating to individual cases will be left to the discretion of the medical examiner or will have to be decided by the medical assessor of the Licensing Authority. The contents of this chapter will provide guidance for making these decisions.

16.1.3 Annex 1 requirements on mental fitness, applicable to all categories of licences and ratings, are as follows:

16.1.3.1 The applicant shall have no established medical history or clinical diagnosis of:

16.1.3.1.1 an organic mental disorder;

16.1.3.1.2 a mental or behavioural disorder due to use of psychoactive substances; this includes dependence syndrome induced by alcohol or other psychoactive substances;

16.1.3.1.3 schizophrenia or a schizotypal or delusional disorder;

16.1.3.1.4 a mood (affective) disorder;

16.1.3.1.5 a neurotic, stress-related or somatoform disorder;

16.1.3.1.6 a behavioural syndrome associated with physiological disturbances or physical factors;

16.1.3.1.7 a disorder of adult personality or behaviour, particularly if manifested by repeated overt acts;

16.1.3.1.8 mental retardation;

16.1.3.1.9 a disorder of psychological development;

16.1.3.1.10 a behavioural or emotional disorder, with onset in childhood or adolescence; or

16.1.3.1.11 a mental disorder not otherwise specified;

such as might render the applicant unable to safely exercise the privileges of the licence applied for or held.

16.1.3.2 Recommendation.— An applicant with depression, being treated with antidepressant medication, should be assessed as unfit unless the medical assessor, having access to the details of the case concerned, considers the applicant's condition as unlikely to interfere with the safe exercise of the applicant's licence and rating privileges.

Note 1.— Guidance on assessment of applicants treated with antidepressant medication is contained in the Manual of Civil Aviation Medicine (Doc 8984).

Note 2.— Mental and behavioural disorders are defined in accordance with the clinical descriptions and diagnostic guidelines of the World Health Organization as given in the International Statistical Classification of Diseases and Related Health Problems, 10th Edition — Classification of Mental and Behavioural Disorders, WHO 1992. This document contains detailed descriptions of the diagnostic requirements, which may be useful for their application to medical assessment.

16.1.3.3 Any mental condition which the applicant experiences or has experienced in the past must be assessed to ascertain the associated functional deficit. The examiner must also consider the risk of recurrence of any disabling psychiatric condition. Furthermore, many psychiatric conditions exist co-morbidly with other psychiatric conditions and particularly with abuse or misuse of psychoactive substances. The examiner must also be aware that, although the psychiatric condition may have responded well to treatment, the demands of the aviation environment are such that virtually any decrement in cognitive ability may have significant consequences.

16.1.3.4 In order to control an aircraft, aircrew members need:

16.1.3.4.1 to know their position in space, which requires adequate sensory input (sight, hearing, balance, proprioception, etc.);

16.1.3.4.2 to evaluate flight conditions and to choose a safe course to ensure the aircraft arrives safely at its destination, which requires the capacity to acquire information, process the information, and make relevant decisions;

16.1.3.4.3 the physical capacity and the mental desire to carry out the chosen course of action.

16.1.3.5 Psychiatric conditions can cause an aircrew member to become incapacitated, which may be obvious or subtle, and the task of the medical examiner is to detect this or the likelihood thereof on the basis of the regulatory examination.

16.2 PREDISPOSITION TO PSYCHIATRIC ILLNESS

16.2.1 The predisposition to psychiatric illness is a combination of nature, nurture and life events.

16.2.2 The study of human genetics and the natural history of many psychiatric illnesses have made it evident that many conditions have a significant genetic component. It is now generally accepted that even human temperament has a significant genetic component. Although the genetic studies of psychiatric conditions including temperament are still in their infancy, it is to be expected that within a few decades, it will be possible to predict the emergence of mental illnesses in predisposed individuals.

16.2.3 This genetic predisposition, which may be stronger or weaker, is modified by life experiences related to childhood rearing or life events, which may result in the overt expression of a psychiatric illness. Persons with only a weak genetic predisposition may be able to withstand more nurture and/or life event stressors without expressing manifest psychiatric symptoms. In particular the study of psychiatric casualties of war and victims of disasters has demonstrated that no one is immune to the development of psychiatric symptoms when exposed to severe stressors.

16.2.4 In many cases, a psychiatric illness of adulthood has a harbinger of this illness in childhood and may be preceded by dissocial behaviour, poor academic achievement, difficulty in finding regular employment, use of addictive substances, anxieties, mood disorders and attachment failures. A history of any of these should lead the medical examiner to attempt to gather further information from family, schools or health care providers.

16.3 PSYCHOLOGICAL TESTING

16.3.1 Psychological testing of aircrew members is rarely of value as a screening tool. Personality tests alone have not been proven to be reliable tools to predict mental disorders or to assess with any degree of certainty an applicant's suitability for an aviation career. In general, the ability to pass the pilot ground school course is proof of adequate intelligence. Personality inventory testing may be of value in the

hands of a psychiatric consultant when used as an adjunct to a psychiatric evaluation. Specific testing may be conducted for research and/or treatment purposes.

16.3.2 In neuropsychiatric conditions, sophisticated neuropsychological tests can be of benefit to determine the degree of cognitive, volitional and behavioural effect caused by the illness/injury. These tests can be used to monitor the progress of a neuropsychiatric disease process and may be conducted at intervals for this purpose.

16.4 PSYCHIATRIC DISORDERS IN AVIATION PERSONNEL

In this chapter, the classification of psychiatric disorders follows that of the ICD-10 Classification of Mental and Behavioural Disorders of the World Health Organization (1992). There will be a cross-reference to the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) of the American Psychiatric Association where there are significant differences.

16.5 MOOD DISORDERS

16.5.1 Depressive mood disorders (DSM-IV: Major Depressive Disorder) are common disorders which present with depressed mood, reduced energy, impaired concentration and memory, loss of interest in surroundings, slowed cerebration, difficulty in making decisions, alteration of appetite and sleep, guilt feelings and low self-esteem. Suicide is common; the incidence varies with cultural background, but may approach 20 per cent per depressive episode. The illness is usually of insidious onset and persists for many months when not treated adequately. Depression may be accompanied by a number of somatic symptoms. There may be diurnal variation in the symptoms, and many persons with depression may have some good days in between. It is not unusual for sufferers to try to modify their symptoms (especially the dysphoria and insomnia) by the use of alcohol and/or drugs.

16.5.2 Depression leads to subtle (and sometimes obvious) incapacitation, mainly due to the decreased ability to concentrate as well as to distractibility and indecision, which are frequent features of the illness. It is these symptoms, along with the risk of suicide, which make a depressed individual unsuitable to work in the aviation environment. Because the symptoms wax and wane during a depressive episode, there may be days when the individual is relatively well and may appear to be fit to fly. However, the impaired concentration and the lack of cognitive agility are always more or less present and may interfere with the ability to integrate the multiple sensory inputs required to make decisions in an emergency.

16.5.3 Depression is by nature a recurrent disorder and, although single episodes do occur, the history of a depressive episode should alert the medical examiner to ask specific questions to ensure that the applicant does not currently have the illness. Those persons who have had one serious depressive episode have approximately a 50 per cent risk of experiencing a second episode.

16.5.4 Response to treatment of depressive episodes may be very good, and the sufferer may wish to return to his aviation position while still under treatment. It should be noted that even with good responses, there is usually some impairment of cognition and decision-making ability which may impair performance in an emergency, primarily by increasing the response time. The pronouncement of "being well" may refer only to relative improvement in comparison with the untreated state.

16.5.5 Because depressive mood disorders are recurring disorders, it is imperative that the "recovered" patient be monitored closely for signs of recurrence for a period of time following recovery. There is evidence that recurrence is most likely to happen during the first two years. An educative approach may help the individual recognize the earliest signs and thus facilitate early intervention. Ordinarily pilots should not be allowed to return to flying unless they have been off medication for at least some months after having returned to their euthymic state of health. In recent years, the use of SSRI (selective serotonin re-uptake inhibitors) has become widespread and there is indication that such treatment, aimed at preventing a new depressive episode, may be compatible with flying duties in carefully selected and monitored cases (see Appendix 2).

16.5.6 A history of mania, whether occurring in isolation or as part of a bipolar disorder, should lead to long-term disqualification. Mania is an unpredictably recurring disorder, which presents with grandiosity, increased energy, euphoria, reduced sleep, distractibility and poor judgement. It may progress to overt delusions with marked irritability, anger and danger to self and to others. Substance abuse is a fairly common consequence. Although this condition may respond moderately well to mood stabilizing agents, the risk of recurrence is significant and the degree of disruption of performance too great to allow a return to flying or air traffic control duties. When the episode of mania has remitted, the patient often feels as well as before and the reason why he should not assume or resume an aviation career requires a great deal of explanation. However, the significant risk of recurrence even with mood stabilizing medication, along with the degree of disruption of mental function when there is a recurrence, precludes an aviation career.

16.5.7 Hypomania is a clinical condition that does not meet the full criteria of mania. It involves the same symptoms, but at a lesser degree of intensity. It usually includes expansive mood (may progress to euphoria), heightened sense of self (may progress to grandiosity), decreased need for sleep, increased energy, and distractibility. Judgement may be altered by the expansive mood and feeling of self-importance. Persons with hypomanic episodes have unstable moods and are prone to developing frank manic episodes and/or depressions. Consequently, they should be considered unfit for licensing.

16.6 SCHIZOPHRENIA AND DELUSIONAL DISORDERS

16.6.1 The schizophrenic illnesses are disorders of thinking and perception. These disorders tend to occur in early adulthood (primarily in the 20's), often after a prodromal stage of several years. The perceptual disturbances most commonly take the form of auditory hallucinations, but may also

involve visual or somatic hallucinations. The presence of delusions, often persecutory, along with the hallucinations may be quite pervasive in the life of the sufferer, who may become perplexed and experience marked disturbance of affect, drive, interest, memory and concentration. Suicide and homicide are significant risks.

16.6.2 Because of their recurring nature and because of the pervasiveness of the disruptions, these conditions are disqualifying for medical certification. The introduction of the newer anti-psychotic medicines, which often lead to better medication compliance, have resulted in better outcome for the schizophrenias. Nevertheless, the schizophrenic disorders remain incompatible with aviation safety.

16.6.3 Delusional disorders may present without perceptual disturbances. Usually the delusions are relatively restricted and may follow only one theme, such as delusions of infidelity. The risk associated with a delusional disorder is that the person will act out behaviour to deal with the delusional belief without consideration of the effect of such action or behaviour on others.

16.6.4 A "brief psychotic disorder" may involve all the symptoms of schizophrenia, but it lasts less than one month and is followed by a full return to the premorbid level of functioning. This disorder is usually secondary to severe external stressors ("brief reactive psychosis"). If there is stability for at least one year without the need for anti-psychotic medication, this disorder need not preclude medical certification.

16.7 NEUROTIC, STRESS-RELATED, AND SOMATOFORM DISORDERS (DSM-IV Anxiety Disorders, Somatoform Disorders, Dissociative Disorders, Adjustment Disorders)

16.7.1 An aviation examiner must assess the degree to which any of the symptoms in this group of disorders will impair a pilot's alertness and his ability to evaluate sensory input, to concentrate on the task at hand, to make decisions, and to execute those decisions with adequate cognitive and motor skill. Preoccupation with symptoms, a sense of anxiety, and the impaired cognition associated with many of these disorders would usually, at least temporarily, be disqualifying. Response to treatment, side effects of medications, and the risk of recurrence of symptoms are determining factors in the evaluation.

16.7.2 Any mental disorder with anxiety is disqualifying until the person has been asymptomatic without the use of psychotropic medicines for a period of at least six months. Since many of these disorders are of a chronic nature, it is important that in a new applicant, the natural history of his disorder should be part of the evaluation. Unless the disorder is likely to be resolved without long-term use of medication, an aviation career should be discouraged.

16.7.3 Persons who have experienced psychiatric symptoms in response to external stressors (adjustment disorders) should be assessed temporarily unfit but may be reassessed after a period of stability without use of psychotropic medication. Persons who undergo lengthy periods of stress frequently

use alcohol and/or other psychoactive substances as a modifying agent. The medical examiner should always inquire about such use.

16.8 DISORDERS OF PERSONALITY AND BEHAVIOUR (DSM-IV Personality Disorders, Impulse Control Disorders, Paraphilias)

16.8.1 Personality disorders are deeply ingrained maladaptive patterns of behaviour which are present during the entire adult life of a person. These behavioural patterns may cause the person surprisingly little discomfort but are usually a source of distress to others. Because of the maladaptive quality of these personalities, they rarely fit well into society. They either marginalize themselves or are in various forms of conflict with their environment.

16.8.2 Many people have styles of behaviour which apear far from optimal, but these must be differentiated from personality disorders, which are clearly maladaptive and may lead to conflict. People whose behavioural patterns are less than optimal also usually recognize the problem and have the ability to make changes that improve their situation.

16.8.3 It would be rare for a person with a personality disorder to have the emotional, intellectual and social flexibility to be a good, safe and functional pilot or air traffic control officer. Except in rare circumstances, persons with personality disorders should not be allowed to work in the aviation environment.

16.8.4 Persons with impulse control disorders are particularly unsuitable for careers in aviation. The inability to control an impulse when the adverse consequences are obvious is a major concern in someone accepting the responsibilities of a safety-sensitive function within aviation. Moreover, persons with these disorders are also usually at odds with their environment, which is an added stressor and may lead to further inability to focus on the task at hand and detract from the attention required in aviation.

16.8.5 Applicants with disorders of behaviour (for example regarding habit, gender identity, sexuality) should be assessed on the basis of their ability to put aside the disorder (or any conflicts related to the disorder) in order to attend to the aviation task at hand. These persons may have significant conflicts with their environment, leading to further difficulties, which may become an impediment for them to hold an aviation licence.

16.9 ORGANIC MENTAL DISORDERS

16.9.1 A wide range of agents can cause organic disturbances of the brain. The resultant symptoms depend on the causal agent, the part(s) of the brain affected, the previous health of the brain, and the current environment of the person. The causal agent may be external (alcohol, drugs, medication, injury, etc.) or internal (tumours, endocrine disorders, degeneration, etc.). An organic mental disorder may present with a wide array of psychiatric symptoms. The examiner may not always detect such a

disorder unless he is aware of the possibility that the disorder may be present. The most common result of an organic insult to the brain is delirium or dementia, but anxiety, depression and behavioural changes may also have organic causes. An organic insult to the brain may result in reduced functioning, and once the insult is removed, there may still be concern about the continued optimal functioning of the brain.

16.9.2 The presenting symptoms of delirium are disturbed consciousness and a change in cognitive ability, developing over a short period of time. Return to the previous level of functioning may be swift once the causal agent is removed. A history of a delirium need not be a bar to licensing. If the delirium was caused by the use of alcohol or another psychoactive substance, a more intensive investigation should be undertaken. The operational aspects of cognitive incapacitation are further considered in Part I, Chapter 3.

16.9.3 Dementias are the result of progressive and irreversible brain damage, leading to impairment of memory and other cognitive disturbances. The most common dementia is Alzheimer's Disease1, which usually has a slow, insidious onset after age 65 to 70. It is not unusual that older persons with disturbed cognition are given a diagnosis of Alzheimer's Disease without the benefit of a full psychiatric examination. It is imperative to rule out the presence of a depressive illness or indeed any reversible medical conditions, which may present with symptoms of dementia before deciding on a diagnosis. With older aircrew, the medical examiner should be aware of the possible presence of early dementia and at least carry out some rudimentary tests of cognition (e.g., The Mini-Mental Status Examination, Appendix 1). If this examination gives any evidence of deterioration, there would be reason to embark on more extensive medical and psychological investigations (e.g. neuropsychological testing, basic biochemistry, EEG, CAT scan).

16.10 SLEEP DISORDERS

16.10.1 Insomnia affects up to one-third of the adult population, and large numbers of people complain of intermittent sleep difficulties. Individuals with insomnia become tense, anxious, preoccupied with sleep, and frequently complain of poor concentration and poor ability to focus on tasks. Persistent insomnia requires a complete history and thorough physical examination as the presence of organic causes must be ruled out (e.g. chronic pain, narcolepsy, sleep apnoea, episodic movement disorders).

16.10.2 Disturbed sleep is commonly associated with alcohol or substance abuse and with a host of psychiatric conditions including mood disorders, psychosis and anxiety disorders. At times the sleep disturbance may be one of the presenting complaints and when further history is obtained, the other symptoms of the psychiatric disorder will be revealed. The sleep disorder may consist of initial insomnia (commonly associated with anxiety), interrupted sleep (commonly associated with substance abuse, in particular alcohol), and early awakening (commonly associated with depression).

16.10.3 Insomniacs will frequently self-medicate with prescription or non-prescription medicines or with readily available substances such as alcohol.

16.10.4 Significant insomnia, if persistent, will lead to decreased function in many aspects of the insomniac's life. The consequences of the insomnia may be magnified by the presence of a psychiatric or medical illness.

1 Alzheimer's Disease: after Alois Alzheimer, German psychiatrist (1864–1915).

16.10.5 Insomnia may exist without the presence of an underlying psychiatric disorder or substance abuse. Such cases are diagnosed as non-organic insomnia (ICD-10) or primary insomnia (DSM-IV). Polysomnographic studies will usually show increased stage 1 sleep and decreased stages 3 and 4 sleep.

16.10.6 Primary insomnia is a difficult condition to treat. Insomniacs frequently use hypnotics, prescribed or not, with little or no beneficial effect on the insomnia, but which may result in decreased alertness the following day. However, the use of hypnotics is normally disqualifying for those who need alertness to perform safely in an aviation environment.

16.10.7 Because of the decreased ability to function, persons with persistent insomnia pose a particular risk in the aviation environment. The risk is compounded by their frequent use of sedative medication and substances (especially alcohol) to relieve their distress. Because of the chronicity and complexity of the problem in many persons, this clinical problem is best managed by a psychiatrist or a psychologist with expertise in the treatment of insomnia.

16.10.8 Occasional sleeplessness or transient insomnia (usually difficulty initiating sleep) is a common disorder and is most often associated with situational concerns. This sleep disorder should not last for more than days and only if it persists beyond that will a more in-depth inquiry be required. Many sleep hygiene techniques may be helpful in alleviating brief periods of insomnia. These techniques include reduced intake of caffeine and alcohol, avoidance of heavy meals or vigorous exercise prior to sleep, a relaxing and comfortable sleep environment, and perhaps a non-stimulating warm drink prior to sleep.

16.10.9 Occasional sleeplessness may be managed with small doses of short-acting sedatives with the proviso that no aviation related activity may be undertaken until the effects of the medication have passed. With short-acting medications such as temazepam (Restoril®), zolpidem (Ambien®), or zopiclone (Imovane®), there should be a period of 8 to 12 hours after intake of a single dose of the medicine before undertaking aviation related tasks. Such medicines should only be taken under the direct supervision of a physician having specialist knowledge of aviation (see Part III, Chapter 17).

16.10.10 Changes in circadian rhythm may also lead to periods of insomnia. This rhythm disruption may be related to travel over several time zones or night duty and rotating-shift schedules at the place of work. Although insomnia associated with circadian rhythm changes is usually of short duration, the dysfunction may be more extreme and longer lasting in some people. In some controlled situations, there may be some value in the use of very short-acting sedatives to aid in the adjustment of the circadian rhythm. There is some evidence that the use of melatonin may be helpful by accelerating the resynchronization of the circadian rhythm, but because this substance is not an approved pharmaceutical medicine and its safety, purity and effectiveness have not been established by any government agency, its use in aviation is not recommended.

16.11 FLYING AND PSYCHOACTIVE MEDICINES

16.11.1 With each passing year, physicians and patients are inundated with an ever wider range of psychoactive medicines which all promise better clinical response and fewer side effects. In many cases the marketing of these medicines implies that side effects are either not present or so minimal as to be insignificant. Although advances in psychopharmacology have been of great benefit in the treatment of psychiatric disorders, they rarely (if ever) return the patient to a pre-illness level of functioning. Most patients, on intensive examination, will report that although they feel much improved over their untreated state, they are aware that they have not had a total resolution of symptoms. Most will also report that although they have few side effects, they do experience some unwanted effects of the medication.

16.11.2 Because most psychiatric illnesses affect the ability to process information, to make a decision after the information processing, and then to undertake a course of action, any decrement in functioning could have a serious impact in an environment where events usually occur at a swift pace and where human beings are far from their natural habitat. It is for these reasons that psychoactive medicines may be used in the aviation environment only with the greatest degree of judiciousness and caution.

16.11.3 Aviation examiners must also be aware that their patients will not always volunteer information about taking medicine. As some of these medicines have few side effects, it may at times be difficult to detect their use. Medical examiners should therefore educate licence holders about the risks of psychoactive medicines.

16.12 DRUG USE (ABUSE AND DEPENDENCE)

16.12.1 Drugs, in the context of this chapter, refer to those non-prescription mood-altering substances that are ingested for the purpose of changing ones mental state, for non-medical purposes. The purpose of taking these substances may be to induce pleasure or to reduce pain or suffering.

16.12.2 These substances may be used occasionally, episodically, but their use may also become a part of the user's regular daily life. In the case of regular use, the user will most commonly increase the dosage and frequency in order to achieve the desired effect. ICAO has published guidance on the question of "Problematic use of Substances."2 Further discussion on the use of social drugs (alcohol, tobacco and illicit drugs) can be found in Part III, Chapter 14.

16.12.3 There is a wide range of substances that may be abused and the type will vary in different parts of the world, and this is usually determined by customs, accessibility, legality, and societal acceptances. The most commonly used substances are alcohol, cannabis, opiates, amphetamines, sedative/hypnotics, and hallucinogens.

16.12.4 The use of these substances may lead to "abuse" or "dependence" (DSM IV), or "harmful use" or "dependence" (ICD 10). Such use is likley to result in considerable medical, social, legal, and/or vocational difficulties.

16.12.5 Substance dependence (Dependence Syndrome, ICD 10) is defined as excessive use of the substance, inability to curb the use of the substance despite complications, increased tolerance to its effect and the occurrence of withdrawal symptoms.

16.12.6 Substance abuse (Harmful Use, ICD 10) is defined as the continued use of the substance even at times when its use is harmful to health, excessive use of the substance, problems (family, friends, work) related to the use of the substance, or legal problems related to its use.

16.12.7 The purpose of the use of these substances is to alter perception and this would clearly affect ones ability to make rational and judicious decisions. Therefore, their use should be prohibited before flying and for the amount of time that it would take to fully clear the substance from the body. Traditionally this time has been said to be 12 hours before flight, however this rule must be used with care as the degree of intoxication may require a longer period of time for the individual to achieve a return to baseline function. An individual who appears to meet the criteria for dependence syndrome or harmful use should not undertake safety-critical duties until evaluated by an appropriate specialist.

16.12.8 It is also important to consider that the use of many of these substances is illegal in many jurisdictions and therefore using these substances would imply poor judgment on the part of someone who intends to exercise licence or rating privileges.

16.12.9 The treatment of substance abuse and dependence is difficult and recurrences of use after treatment are common. A history of abuse or dependence should be the basis for withholding a Medical Assessment unless there is clear evidence that the condition has been adequately treated and that there is a comprehensive follow-up plan that would uncover any relapses.

16.12.10 Alcohol is generally the most available drug in the world as it is legally available in most countries and is often considered to be a part of normal socialization. However in Western countries about 7 per cent of the population are either alcohol-dependent or are alcohol abusers. Many people use alcohol for its anti-anxiety effects (e.g. in social settings) or as a sedative (e.g. for insomnia) even though these very effects will result in impaired judgment and/or decreased cognitive abilities.

Alcohol dependence (Alcoholism)

16.12.11 This is a chronic and progressive disease that can be very difficult to diagnose. Often the person has progressed well into the disease process before being brought to medical attention. It is unusual for the sufferer to have insight into the illness unless they have developed serious medical complications. They are often brought to medical attention by family or by the legal system. Any person who has more than one charge of driving a vehicle while impaired is highly suspect of being alcohol dependent.

16.12.12 As the person who is alcohol dependent cannot be relied upon to give an accurate account of his alcohol use, it is imperative to gather collateral information from a spouse, a friend, a colleague, the legal system, etc. The development of tolerance usually leads to increased intake of alcohol which has financial and health consequences. 9.12.13 The treatment of alcohol dependence requires a rigid protocol that usually begins with hospitalization. As the risk of recurrence is so high, there is also the need for a highly structured follow-up programme that that usually involves the family and may also involve friends and work colleagues. Many treatment programmes include the use of peer group support through programmes that are similar to those of Alcoholics Anonymous. It is often useful to include laboratory testing as part of the follow-up process mainly because of the significant incidence of recurrence and the fact that those who have been alcohol dependent will not be reliable in self reporting.

Alcohol abuse (Harmful use, ICD 10)

16.12.13 Alcohol abuse is also a chronic condition that will progress to alcohol dependence unless there is intervention. It is unusual for persons with alcohol abuse to solicit treatment unless there is some external pressure (spouse, family, work, legal problems). They will usually minimize the amount that they drink, and getting a reliable answer regarding intake is difficult. The key to making the diagnosis depends on a level of suspicion, collateral information, and medical and laboratory investigations. As these individuals will progress onto alcohol dependence if there is no treatment, they should be given the same treatment as individuals who are already dependent.

16.12.14 The diagnoses of alcohol abuse or dependence should lead to a suspension of medical certification until the person has shown a period of sobriety in a context of medical and psychological follow-up. This period of sobriety has traditionally been a period of three years.

16.12.15 More than one regulatory authority is achieving success in rehabilitating professional pilots by early intervention, treatment, follow-up and the possibility of re-certification within three to four months. The system utilizes:

16.12.15.1 Peer group, consisting of fellow workers, union or association members and family members, reinforced by exposure to recovering pilot alcoholics and Alcoholics Anonymous.

16.12.15.2 Management and supervisors, including the flight operations manager, supervisory and check pilots, simulator and other course instructors.

16.12.15.3 Medical consultants. The airline medical officer, where available, gathers valuable data for early recognition, out-patient counseling, evaluation and referral to a psychologist/addiction specialist.

Residential treatment in a recognized treatment facility and psychiatric assessment is followed by a full medical review and "tripartite" debriefing of the pilot.

16.12.16 Regulatory agencies. The medical and Licensing Authorities review each case on its individual merits and may recommend medical re-certification with close follow-up monitoring by the airline medical officer, peers, flight operations and regulatory agencies for at least two years.

The initial process takes approximately one month of clinical evaluation, one month of residential treatment and one month of rehabilitation.

16.12.17 Provided that the full protocol is followed, successfully treated pilots have been returned to flying in three to four months.

16.12.18 The fact that the treatment of alcohol dependence or abuse does not necessarily lead to the end of a professional pilot's career has had the effect of overcoming a "conspiracy of silence" when pilots are aware that a colleague is having problems related to alcohol. An example of a process of rehabilitation from harmful use of alcohol that is in place in one contracting State is provided Figure III-9-1.

16.12.19 Procedure for the Management of Alcohol/Substance Misuse

Possible Alcohol/ Substance misuse --Temp unfit Note (1)----

Review (Note 2) Blood tests (Note 3) Hair test (Note 4) Questionnaires (Note 5) ---- Results acceptable (Note 6)-------- Class 1 OML (Operational Multi-Crew) Class 2 Unrestricted---- 18 months satisfactory follow up (Note 7)------ Class 1 Unrestricted Follow up (Note 8)

NOTES: 1) If index of suspicion low (i.e. drunk driving conviction) pilot can be kept fit until reviewed. 2) By psychiatric specialist: the need for in/out patient treatment to be assessed. 3) In the case of alcohol misuse, to include MCV (mean corpuscular volume), GGT (gamma-glutamyl transferase), and % axis CDT (carbohydrate deficient transferrin). 4) In the case of substance misuse, to include analysis for cannabis, amphetamines, methamphetamines, cocaine, opiates and benzodiazepines. 5) To include "Severity of Alcohol Dependency", the "Alcohol Problems" and "Alcohol in the Workplace" questionnaires. 6) Initial applicants need a two-year period of documented sobriety/freedom from drug use. 7) Follow up should be three-monthly for the first year then six-monthly. Buddy reports should be obtained at each review. Blood/hair testing to be performed at each review. 8) Follow up may be required indefinitely in severe cases. If relapse occurs, a further period of grounding is required, pending further assessment/treatment.

Appendix 1 to Protocol 16

MINI MENTAL STATUS EXAMINATION

The Mini-Mental Status Examination (MMSE) is a widely used brief, standardized method for assessing cognitive mental status. It allows a gross assessment of orientation, attention, immediate and short-term recall, language, and the ability to follow simple spoken or written commands. It can be administered in the office whenever there is reason to suspect cognitive impairment. It takes about 20 minutes to administer. The maximum score is 30, and 95 per cent of persons should score 23 to 30. Anyone who scores less than 25 should undergo more sophisticated tests of cognition.

17 PROTOCOL FOR MOOD DISORDER (DEPRESSION)

1. General

(a) Aviation medical standards as laid down in Annex 1 of the convention on international Civil Aviation by the International Civil Aviation Organization, to which Namibia is a contracting State, have identified broad medical conditions that, on the basis of expected risk of incapacitation, disqualify aviation personnel from flying.

(b) Namibia is one of the countries that previously applied strict standards to applicants with a history of depression.

(c) The previous protocol did not take into consideration new therapeutic interventions, risk factor modification or rehabilitation, all of which may reduce the risk of sudden incapacitation.

(d) The Authority has since reviewed this protocol, and is now making provision for aviation personnel with a history of depression to apply for the privileges of the license they wish to apply for.

(e) This consideration must be based on the individual medical condition of the applicant and risk factors involved.

2. Background

(a) Depression is a disorder that defines a certain component of psychopathology that is grouped as “Mood Disorders”.

(b) Mood disorders are psychopathologic states in which a disturbance of mood is either a primary determinant or constitutes the core manifestation of the condition,

(c) These conditions, especially the depressive forms, are heterogeneous and are common in both psychiatry and general medicine.

(d) These conditions are becoming even more common as the stigmata associated with such a diagnosis are having less impact in the social spectrum of fife.

(e) The methods used to treat patients suffering from mood disorders have improved over recent years, and individuals that require pharmacotherapy may apply, or re-apply, for a license to fly or to undertake air traffic control work.

(f) The key areas of concern in certification of aircrew with mood disorders are the risk of suicidal ideation, suicide, lack of concentration, chronic tiredness, insomnia /hypersomnia and general malaise, with ail the ramifications resulting in a detrimental effect on global functioning of an individual.

3. Estimated incapacity risk

(a) The lifetime prevalence of major depression in males is about 5% to 12% and In females about 10% to 25%,

(b) There is no specific association with ethnicity, social status, income or marital status. The risk for a second episode after remission is 60%, 70% for a third episode and 90% for a fourth episode.

(c) This leads to the clinical conclusion that for the purpose of risk management in the aviation industry, a person should be treated optimally and permanently with the appropriate pharmacoiogicals, thereby reducing the risk of recurrence.

(d) During the Initial phase of therapy there may be a higher incidence of suicidal tendencies brought on by the appropriate therapeutic interventions.

(e) Without diligent care by the professional therapist and adequate protocol parameters disallowing the privileges of execution of an aviation-related license in the initial phase of treatment, the incapacity risk would be unacceptably high.

4. Protocol for mood disorder class applicability

4.1 Applicability

(1) Any class of certification may be applied for, subject to the following requirements;

(a) Class I

(i) Commercial passenger air transport operations - Mufticrew restriction

(ii) Flight instruction - Student must have completedfirst solo flight

(b) Class **II** - no restriction

(c) Class III - may operate under supervision

4.2 General medical requirements applicable to all applicants for initial consideration

(1) All symptoms of the psychiatric condition for which treatment is indicated must be eliminated by the single medication and the applicant must be symptom-free for 4 weeks prior to application for certification,

(2) An applicant must have no aeromedical significant side effects of the prescribed medication for a period of four weeks.

(3) Applicants must submit psychiatrist's and clinical psychologist's reports to the Medical Assessor, Designated body or Designated Institution for consideration.

(4) A consultation status report from the treating psychiatrist must attest to and describe the applicant's diagnosis, length and course of treatment, type and dosage of the antidepressant medication taken, Hamilton Scale (HAMD 17} score (must be consistently below 7) and presence of any side effects from the antidepressant the applicant takes or has taken in the past;

(5) Any additional information that may be required by the Medical Assessor, Designated body or Designated Institution.

(6) Applicants who meet the requirements prescribed above will be required to submit a monthly psychiatrist's report for a period of six months following initial certification.

(7) A follow-up psychiatrist's report will be required at nine months, then at 12 months post-certification.

(8) Should other co-morbidities exist or develop after the issuing of a certificate of fitness, then certification will not be granted (in the case of existing) or will be withdrawn by the Medical Assessor, Designated body or Designated Institution without re-assessment.

4.3 Protocol diagnostic inclusions

The following mood disorders are acceptable for the purpose of this protocol:

(a) Major Depressive Disorder (mild to moderate degree) either single episode or recurrent episode before commencement of therapy.
(b) Dysthymic Disorder:
(c) Adjustment Disorder with depressed mood.

4.4 Disqualifying conditions

(1) Any history of depressive disorder of a severe degree is disqualifying.

(2) The following conditions will by virtue of their risk profile exclude a person from obtaining a Certificate of Aviation-medical fitness:

(a) History of psychosis
(b) Impairment of arousal
(c) History of electro-convulsive therapy
(d) Concurrent treatment with multiple antidepressant medications
(e) History of multi-agent drug use (prior use of other psychiatric drugs in conjunction with antidepressant medications)
(f) History of discontinuation of acceptable medication and then a subsequent onset of depression
(g) Any other manifestation of mood disorder as specified at the time of promulgation, or at the discretion of the treating psychiatrist.

4.5 Acceptable oral medication

(a) Fluoxetine
(b) Sertraline
(c) Citalopram
(d) Escitalopram
(e) Other oral medication deemed acceptable by the Executive Director.

4.6 Annual follow-up for medical certification

After twelve months, the applicant must submit a psychiatrist's report at 6 monthly intervals to the Aviation Medical Department, until such time as cancellation of his/her license.

Appendix 1 to Protocol 17

SPECIFIC GUIDANCE CONCERNING USE OF ANTIDEPRESSANT MEDICATION

1. INTRODUCTION

This section provides guidance concerning Recommendation 6.3.2.2.1, introduced in 2009:

6.3.2.2.1 Recommendation.— An applicant with depression, being treated with antidepressant medication, should be assessed as unfit unless the medical assessor, having access to the details of the case concerned, considers the applicant's condition as unlikely to interfere with the safe exercise of the applicant's licence and rating privileges.

2. BACKGROUND

The use of antidepressant medication in aircrew and air traffic controllers (ATCO) has traditionally been disqualifying for medical certification due to the underlying medical condition and the potential safety-relevant side effects of the available medications to treat it. Until 2010 in the United States, in accordance with Federal Aviation Administration (FAA) rules, antidepressant usage must have ceased for at least three months before a fit assessment may be considered, while in Europe the Joint Aviation Authorities' policy is that no certification can be considered whilst using psychoactive medication.

Depression is a common, worldwide disorder in the adult population, although reported prevalence varies quite widely. In the United States the lifetime prevalence of major depressive disorder was found to be 16.2 per cent, which would involve almost 34 million U.S. adults, and for a twelve-month period the figure was 6.6 per cent.

Many patients require long-term treatment with antidepressants to reduce the risk of recurrence. One systematic review found that continuing antidepressant medication treatment after recovery dramatically reduced the proportion of patients who relapsed over one to three years, compared with placebo. The average rate of relapse on placebo was 41 per cent, compared with 18 per cent on active treatment.

There is emerging evidence in the literature that policies which disqualify pilots from flying whilst on antidepressant medications may lead to pilots flying when depressed and untreated, or flying on antidepressant medication but not reporting it to the regulatory authority. An Aerospace Medical Association position paper stated that, according to the Aviation Medicine Advisory Service database of pilots' telephone inquiries, approximately 15 per cent of pilots who had been advised by their physicians to take antidepressant medication showed an intention to take the medication and continue flying without informing the Federal Aviation Administration.

Canfield et al. reported on post-mortem toxicological evaluations performed on 4 143 pilots. Psychotropic medications were found in 223 pilots but only fourteen of these pilots had reported a psychological condition to the FAA and only one of the fourteen pilots had reported the psychotropic medication.

In 1987 in Australia, the Civil Aviation Safety Authority (CASA) began allowing aviation personnel who had been depressed to operate once they had been effectively treated and had become stable with the use of antidepressant medications. The policy had become somewhat liberal with the allowance of use of most medication groups including monoamine oxidase inhibitors (MAOI) and tricyclic antidepressants (TCA). There were no reported adverse outcomes related to this policy but in 2003 a more restrictive approach was introduced with increased surveillance and limitation to

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specific medications. A study, published in August 2007, focused on safety outcomes such as accidents and incidents in 481 certificate holders over a ten-year period and found no evidence of adverse outcomes related to allowing pilots to fly on antidepressant medication, provided specific criteria were met.

In Canada, pilots on maintenance therapy are allowed to fly "with or as co-pilot" under an aeromedically supervised treatment protocol in which pilots are followed prospectively.

The AsMA position paper points out that several factors must be considered in relation to safety should certificate holders be allowed to operate whilst using antidepressant medications. Firstly, it is important to establish the diagnosis. Selective serotonin reuptake inhibitors (SSRIs) are used to treat not just depression, but some other aeromedically significant illnesses such as obsessive compulsive disorder and panic disorder. Secondly, patients generally have their adverse reactions to SSRIs early in treatment; these side effects usually diminish as the patient becomes physiologically accustomed to the medication. Thirdly, the newer SSRIs have fewer side effects than the older antidepressants because they are designed to act only on receptors in specific areas of the brain.

Some of these medications are sedating and some are not, thus offering a therapeutic choice in treating depressed patients who show psychomotor agitation or retardation. Fewer side effects generally result in improved aeromedical safety. However, successful treatment of depression is a dynamic and complex process involving more than just writing a prescription, and the SSRIs can have some aeromedically significant side effects and withdrawal effects that are of little importance in ground-based clinical practice.

Finally, an important aspect to consider is that a diagnosis of depression often carries with it significant social stigma, and in many societies it is common that symptoms of depression are not discussed openly with either colleagues or members of the medical profession. Aeromedical policies that place an absolute prohibition on operating after a diagnosis of depression may also make it less likely that an aviator or air traffic controller will seek treatment or declare his illness to the Licensing Authority.

3. GUIDANCE

3.1 The assessment of pilot and air traffic controller applicants with depression

Depressive mood disorders (ICD-10: Depressive episode; DSM-IV-TR: Major Depressive Disorder) are common disorders which present with depressed mood, reduced energy, impaired concentration and memory, loss of interest in surroundings, slowed cerebration, difficulty in making decisions, alteration of appetite and sleep, guilt feelings, and low self-esteem. Suicide is common; the incidence varies with cultural background, but may approach 20 per cent per depressive episode.

The illness is usually of insidious onset and persists for many months when not treated adequately. Depression may be accompanied by a number of somatic symptoms. There may be diurnal variation in the symptoms, and many persons with depression may have some good days in between. It is not unusual for sufferers to try to modify their symptoms (especially the dysphoria and insomnia) by the use of alcohol and prescribed (or non-prescribed) medications or illicit drugs.

Depression leads to subtle (and sometimes overt) incapacitation, mainly due to the decreased ability to concentrate, as well as to distractibility and indecision, which are frequent features of the illness. It is these symptoms, along with the risk of suicide, which make a depressed individual unsuitable to work in the

aviation environment. Because the symptoms wax and wane during a depressive episode, there may be days when the individual is relatively well and may appear to be fit to fly. However, impaired concentration and lack of cognitive agility are always more or less present and may interfere with the ability to integrate the multiple sensory inputs required to make decisions in an emergency situation.

Depression is by nature a recurrent disorder, and although single episodes do occur, the history of a depressive episode should alert the medical examiner to ask specific questions to ensure that the applicant does not currently have the illness. Those persons who have had one serious depressive episode have approximately a 50 per cent risk of experiencing a second episode. Because depressive mood disorders are recurring disorders, it is imperative that the "recovered" patient be monitored closely for signs of recurrence for a period of time following recovery. There is evidence that recurrence is most likely to happen during the first two years. An educative approach may help the individual recognize the earliest signs and thus facilitate early intervention.

Historically, pilots have not been allowed to return to flying unless they have ceased taking medication for at least some months after having returned to their euthymic state of health. Whilst there is no evidence that selective serotonin reuptake inhibitors (SSRI) medications are more efficacious than older antidepressant medications, this new generation of antidepressants is better tolerated by patients and has an improved side effect profile. In recent years, the use of SSRIs has become widespread in the general population and there is reason to believe that such treatment may be compatible with flying duties in carefully selected and monitored cases. This may be in a situation of an initial successful response to treatment of acute depressive episode or where treatment is aimed at the prevention of recurrences.

It should be noted that even with good responses, there may be the potential for impairment of cognition and decision-making ability from either an incomplete response to treatment or from safety-relevant side effects of medications. From the patient's perspective, the pronouncement of "being well" may refer only to relative improvement in comparison with the untreated state. Applicants therefore need to be carefully assessed for the presence of any residual symptoms and any performance-relevant side effects of the medication.

3.2 The assessment of pilot and air traffic controller applicants treated with antidepressants

States may, on a case-by-case basis, certificate applicants who are prescribed (and are taking) an approved SSRI antidepressant medication for an established diagnosis of depression which is in remission. Conditions necessary for air safety may be imposed on the certificate as appropriate, for example "holder to fly as or with co-pilot", thus limiting operations to multi-crew aircraft. Pilots and ATCOs taking other types of antidepressants should not usually be considered for certification.

States' certification of pilots and ATCOs taking medications accepted by the Licensing Authority should be conditional on the following:

a) The applicant should be under the care of a medical practitioner experienced in the management of depression;

b) The applicant should:

1) be stable on an established and appropriate dose of medication for at least four weeks before returning to flying/ATC duties and exhibiting:

i) minimal, acceptable side-effects;

ii) no medication interactions or allergic response;

2) be subject to regular clinical review by the medical practitioner with progress reports provided to the medical section of the Licensing Authority. The applicant may be involved in other concurrent treatment (e.g. psychotherapy);

3) have no other significant psychiatric co-morbidities;

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4) require no other psychoactive medications;

c) demonstrate symptoms of depression being well controlled, without evidence of psychomotor retardation;

d) have no suicidal ideation or intent;

e) have no history of psychotic symptoms;

f) have no features of arousal (e.g. irritability or anger);

g) have a normal sleep pattern;

h) have resolution of any significant precipitating factors of the depression.

Ongoing cognitive-behavioural, rational-emotive or similar therapy is desirable, but not necessarily required for certification.

Pilots or ATCOs authorized to fly or perform duties when taking SSRIs or related antidepressant medications must cease exercising the privileges of their licences if their antidepressant medication is altered or if the dose changes. Their supervising medical practitioner may return them to duty when they are assessed as stable and without unacceptable side effects.

Pilots and ATCOs whose medication is being reduced with a view to cessation should stop exercising the privileges of their licences for the entire period during which they are weaned off medication, plus an additional period of at least two weeks. Their supervising medical practitioner may return them to duty when they are assessed as stable and without unacceptable side effects or evidence of withdrawal syndrome.

The use of objective assessment tools in the monitoring of these certificate holders is encouraged. The Hamilton rating scale3 is one such tool and formal neuropsychological testing is another option. Simulator or other functional-based testing can also be utilized to assess performance. States should provide guidance on preferred medications with lower side-effect profiles such as sertraline, citalopram, and escitalopram.

Outcome criteria/data on the cohort returned to work should be established prospectively and captured for review of the programme.

3 Hamilton Rating Scale for Depression (HRSD), also known as the Hamilton Depression Rating Scale (HDRS) or HAM-D, is a 21-question multiple choice questionnaire used to rate the severity of major depression. After Max Hamilton, German psychiatrist and medical statistician (1912–1988)

18 PROTOCOL FOR NEUROPSYCHOLOGICAL EVALUATIONS FOR TREATMENT WITH SSRI MEDICATIONS

Depressive disorders and medications used to treat depression are medically disqualifying for pilots and NCAA Air Traffic Control Specialists

Why is a neuropsychological evaluation required?

Depression and other conditions treated with selective serotonin reuptake inhibitor (SSRI) medications, as well as the SSRIs themselves, may produce cognitive deficits that would make an airman unsafe to perform pilot duties. This guideline outlines the requirements for a neuropsychological evaluation.

Who may perform a neuropsychological evaluation?

Neuropsychological evaluations must be conducted by a licensed clinical psychologist who is either board certified or "board eligible" in clinical neuropsychology.

Will I need to provide any of my medical records?

You should make records available to the neuropsychologist prior to the evaluation, to include:

- Copies of all records regarding prior psychiatric/substance-related hospitalizations, observations or treatment not previously submitted to the NCAA.

What must the neuropsychological evaluation report include?

At a minimum:

- A review of all available records, including academic records, records of prior psychiatric hospitalizations, and records of periods of observation or treatment (e.g., psychiatrist,

psychologist, or pediatric neuropsychiatrist treatment notes). Records must be in sufficient detail to permit a clear evaluation of the nature and extent of any previous mental disorders.

- A thorough clinical interview to include a detailed history regarding: psychosocial or developmental problems; academic and employment performance; legal issues; substance use/abuse (including treatment and quality of recovery); aviation background and experience; medical conditions, and all medication use; and behavioral observations during the interview and testing.
- A mental status examination.
- Interpretation of testing including, but not limited to, the tests as specified below.
- An integrated summary of findings with an explicit diagnostic statement, and the neuropsychologist's opinion(s) and recommendation(s) regarding clinically or aeromedically significant findings and the potential impact on aviation safety consistent with the Namibian Aviation Regulations.

What is required for testing?

- CogScreen-AE (a brief test battery developed specifically for use with pilots to assess the neurocognitive domains most critical to flight performance). If the neuropsychologist interprets the clinical interview and CogScreen-AE results to show no evidence of neuropsychological impairment or deficiencies, then no further neurocognitive testing needs to be conducted at that time as part of the evaluation.
- If the neuropsychologist interprets the clinical interview and CogScreen-AE results as raising concerns about or showing neuropsychological impairment or deficiencies, then the neuropsychologist should perform a full battery of testing. The required testing must include:
- The Wechsler Adult Intelligence Scales (Processing Speed and Working Memory Indexes must be scored)
- Trail Making Test, Parts A and B (Reitan Trails A & B should be used since aviation norms are available for the original Reitan Trails A & B, but not for similar tests [e.g., Color Trails; Trails from Kaplan-Delis Executive Function, etc.])
- Executive function tests to include: (1) Category Test or Wisconsin Card Sorting Test; and (2) Stroop Color-Word Test
- Paced Auditory Serial Addition Test (PASAT).
- A continuous performance test (i.e., Test of Variables of Attention [TOVA], Conners' Continuous Performance Test [CPT-II], or Integrated Visual and Auditory Continuous Performance Test [IVA+]), or Gordon Diagnostic System [GDS].
- Test of verbal memory (WMS-IV subtests, Rey Auditory Verbal Learning Test, or California Verbal Learning Test-II).

- Test of visual memory (WMS-IV subtests, Brief Visuospatial Memory TestRevised, or Rey Complex Figure Test.)
- Tests of Language, to include the Boston Naming Test and testing for verbal fluency (i.e., the COWAT and a semantic fluency task).
- Psychomotor testing, to include Finger Tapping and either Grooved Pegboard or Purdue Pegboard.
- Personality testing to include Minnesota Multiphasic Personality Inventory (MMPI-2). (The MMPI-2-RF is not an approved substitute. All scales, subscales, content, and supplementary scales must be scored and provided. Computer scoring is required. Abbreviated administrations are not acceptable.)

NOTES: (1) All tests administered must be the most current edition of the test unless specified otherwise; (2) At the discretion of the examiner, additional tests may be clinically necessary to assure a complete assessment.

What must be submitted?

The neuropsychologist's report as noted above, plus the supporting documentation below:

- Copies of all computer score reports (e.g., Pearson MMPI-2 Extended Score Report, CogScreen-AE Report).
- An appended score summary sheet that includes all scores for all tests administered. When available, pilot norms must be used. If pilot norms are not available for a particular test, then the normative comparison group (e.g., general population, age/education-corrected) must be specified. Also, when available, percentile scores must be included.

Recommendations should be strictly limited to the psychologist's area of expertise.

What else does the neuropsychologist need to know?

- The NCAA will not proceed with a review of the test findings without the above data.
- The data and clinical findings will be carefully safeguarded in accordance with the regulations applied as well as applicable federal law.
- Raw psychological testing data may be required at a future date for expert review by one of the NCAA's consulting clinical psychologists. In that event, the airman/NCAA ATCS will need to provide an authorization for release of the data to the expert reviewer. Contact your Medical Assessor office for more information.

Useful references for the neuropsychologist:

- MOST COMPREHENSIVE SINGLE REFERENCE:
    - Aeromedical Psychology (2013). C.H. Kennedy & G.G. Kay (Editors). Ashgate.

- Pilot norms on neurocognitive tests:
  - Kay, G.G. (2002). Guidelines for the Psychological Evaluation of Aircrew Personnel. Occupational Medicine, 17 (2), 227-245.
  - Aviation-related psychological evaluations: Jones, D. R. (2008).
  - Aerospace Psychiatry. In J. R. Davis, R. Johnson, J. Stepanek & J. A. Fogarty (Eds.),
  - Fundamentals of Aerospace Medicine (4th Ed.), (pp. 406-424). Philadelphia: Lippencott Williams & Wilkins.

19. PROTOCOL FOR THE PSYCHIATRIC EVALUATION

Who may perform a psychiatric evaluation?

Psychiatric evaluations should preferably be performed by Psychiatry and Neurology certified consultant of the American Board of Osteopathic Neurology and Psychiatry.

- We strongly advise using a psychiatrist with experience in aerospace psychiatry and/or familiarity with aviation standards. Using a psychiatrist without this background may limit the usefulness of the report.
- If we have specified that additional qualifications in addiction psychiatry or forensic psychiatry are required, please ensure that the psychiatrist is aware of these requirements and has the qualifications and experience to conduct the evaluation.

What must the psychiatric evaluation report include?

At a minimum:

- A review of all available records, including academic records, records of prior psychiatric hospitalizations, and records of periods of observation or treatment (e.g., psychiatrist, psychologist, social worker, counselor, or neuropsychologist treatment notes). Records must be in sufficient detail to permit a clear evaluation of the nature and extent of any previous mental disorders.
- A thorough clinical interview to include a detailed history regarding: psychosocial or developmental problems; academic and employment performance; legal issues; substance use/abuse (including treatment and quality of recovery); aviation background and experience; medical conditions, and all medication use; and behavioral observations during the interview.
- A mental status examination.

- An integrated summary of findings with an explicit diagnostic statement, and the psychiatrist's opinion(s) and recommendation(s) for treatment, medication, therapy, counseling, rehabilitation, or monitoring should be explicitly stated.

Opinions regarding clinically or aeromedically significant findings and the potential impact on aviation safety must be consistent with the Namibian Aviation Regulations.

What must be submitted by the psychiatrist?

The psychiatrist's comprehensive and detailed report, as noted above, plus copies of supporting documentation. Recommendations should be strictly limited to the psychiatrist's area of expertise.

20. PROTOCOL FOR PSYCHIATRIC AND PSYCHOLOGICAL EVALUATIONS

Why are both a psychiatric and a psychological evaluation required?

Mental disorders, as well as the medications used for treatment, may produce symptoms or behavior that would make an airman unsafe to perform pilot duties. Due to the differences in training and areas of expertise, separate evaluations and reports are required from both a qualified psychiatrist and a qualified clinical psychologist for determining an airman's medical qualifications. This guideline outlines the requirements for these evaluations.

Will I need to provide any of my medical records?

You should make records available to both the psychiatrist and clinical psychologist prior to their evaluations, to include:

- Copies of all records regarding prior psychiatric/substance-related hospitalizations, observations or treatment not previously submitted to the NCAA.
- A complete copy of your agency medical records. You should request a copy of your agency records be sent directly to the psychiatrist and psychologist by the Medical Assessor NCAA.

THE PSYCHIATRIC EVALUATION

Who may perform a psychiatric evaluation?

Psychiatric evaluations must be conducted by a qualified psychiatrist who is board-certified by the American Board of Psychiatry and Neurology or the American Board of Osteopathic Neurology and Psychiatry.

- We strongly advise using a psychiatrist with experience in aerospace psychiatry. Using a psychiatrist without this background may limit the usefulness of the report.
- If we have specified that additional qualifications in addiction psychiatry or forensic psychiatry are required, please ensure that the psychiatrist is aware of these requirements and has the qualifications and experience to conduct the evaluation.

What must the psychiatric evaluation report include?

At a minimum:

- A review of all available records, including academic records, records of prior psychiatric hospitalizations, and records of periods of observation or treatment (e.g., psychiatrist, psychologist, social worker, counselor, or neuropsychologist treatment notes). Records must be in sufficient detail to permit a clear evaluation of the nature and extent of any previous mental disorders.
- A thorough clinical interview to include a detailed history regarding: psychosocial or developmental problems; academic and employment performance; legal issues; substance use/abuse (including treatment and quality of recovery); aviation background and experience; medical conditions, and all medication use; and behavioral observations during the interview.
- A mental status examination.
- An integrated summary of findings with an explicit diagnostic statement, and the psychiatrist's opinion(s) and recommendation(s) for treatment, medication, therapy, counseling, rehabilitation, or monitoring should be explicitly stated. Opinions regarding clinically or aeromedically significant findings and the potential impact on aviation safety must be consistent with the Namibian Aviation Regulations.

What must be submitted by the psychiatrist?

The psychiatrist's comprehensive and detailed report, as noted above, plus copies of supporting documentation. Recommendations should be strictly limited to the psychiatrist's area of expertise.

THE PSYCHOLOGICAL EVALUATION

Who may perform a psychological evaluation?

Clinical psychological evaluations must be conducted by a clinical psychologist who possesses a doctoral degree (Ph.D., Psy.D., or Ed.D.), has been licensed by the state to practice independently, and has expertise in psychological assessment. We strongly advise using a psychologist with experience in aerospace psychology. Using a psychologist without this background may limit the usefulness of the report.

What must the psychological evaluation include?

At a minimum:

- A review of all available records, including academic records, records of prior psychiatric hospitalizations, and records of periods of observation or treatment (e.g., psychiatrist, psychologist, social worker, counselor, or neuropsychologist treatment notes). Records must be in sufficient detail to permit a clear evaluation of the nature and extent of any previous mental disorders.
- A thorough clinical interview to include a detailed history regarding: psychosocial or developmental problems; academic and employment performance; legal issues; substance use/abuse (including treatment and quality of recovery); aviation background and experience; medical conditions, and all medication use; and behavioral observations during the interview.
- A mental status examination.
- Interpretation of a full battery of psychological tests including, but not limited to, the "core test battery" (specified below).
- An integrated summary of findings with an explicit diagnostic statement, and the psychologist's opinion(s) and recommendation(s) for treatment, medication, therapy, counseling, rehabilitation, or monitoring should be explicitly stated.

Opinions regarding clinically or aeromedically significant findings and the potential impact on aviation safety must be consistent with the Namibian Aviation Regulations.

What is required in the "core test battery?"

The core test battery listed below provides a standardized basis for the NCAA's review of cases, and must include:

- Intellectual/Neurocognitive domain, to include both:

- The Wechsler Adult Intelligence Scale (recent edition; Processing Speed and Working Memory Indexes must be scored).
- The Trail Making Test, Parts A & B (Reitan Trails A & B should be used since aviation norms are available for the original Reitan Trails A & B, but not for similar tests [e.g., Color Trails; Trails from Kaplan-Delis Executive Function, etc.].)

- Personality domain, to include the Minnesota Multiphasic Personality Inventory-2. (The MMPI-2-RF is not an approved substitute. All scales, subscales, content, and supplementary scales must be scored and provided. Computer scoring is required. Abbreviated administrations are not acceptable.)
- For cases in which there are questions regarding reality testing/thought disorder and/or defensive invalid profiles were produced on the self-report measure(s), the Rorschach (Rorschach Performance Assessment System [R-PAS]) is preferred. Exner's Comprehensive System is also accepted.
- For cases in which the clinical history or presentation indicates a possible personality disorder, the Millon Clinical Multiaxial Inventory-III (MCMI-III).
- Additional tests that the psychologist deems clinically necessary (based upon presenting problem, clinical history and/or clinical presentation) to assure a complete assessment. Findings suggesting deficits in the Intellectual/Neurocognitive domain, the examiner should either:
  - Refer the airman for a neuropsychological evaluation by a qualified clinical neuropsychologist in order to determine the extent and likely aeromedical significance of any neurocognitive deficit(s); or
  - If the examiner is a qualified clinical neuropsychologist, administer a comprehensive battery of neuropsychological tests.

Note: Requirements for neuropsychological testing are listed in the addendum below.

What must be submitted?

The neuropsychologist's report as noted above, plus the supporting documentation below.

- For self-report measures: Copies of all computer score reports (e.g., Pearson MMPI-2 Extended Score Report, Pearson MCMI-III Profile Report with Grossman Facet Scores),
- For performance measures: Copies of entire protocol (e.g., Rorschach response sheets, location charts, and associated computer score reports,)
- For intellectual/neurocognitive measures: An appended score summary sheet that includes all scores for all tests administered. When available, pilot norms must be used. If pilot norms are not available for a particular test, then the normative comparison group (e.g., general population, age/education-corrected) must be specified. Also, when available, percentile scores must be included.

Recommendations should be strictly limited to the psychologist's area of expertise.

What else does the psychologist need to know?

- The NCAA will not proceed with a review of the test findings without the above data.
- The data and clinical findings will be carefully safeguarded in accordance with the concerned Ethical Principles of Psychologists and Code of Conduct as well as applicable federal law.
- Raw psychological testing data may be required at a future date for expert review by one of the NCAA's consulting clinical psychologists. In that event, authorization for release of the data by the airman to the expert reviewer will need to be provided.

Additional Helpful Information:

Will additional evaluations or testing be required in the future?

If eligible for unrestricted medical certification, no additional evaluations would be required. However, pilots found eligible for Special Issuance will be required to undergo periodic re-evaluations. The letter authorizing special issuance will outline the specific evaluations or testing required.

Useful references for the psychologist:

- MOST COMPREHENSIVE SINGLE REFERENCE:
  - Aeromedical Psychology (2013). C.H. Kennedy & G.G. Kay (Editors). Ashgate.
- Pilot norms on neurocognitive tests:
  - Kay, G.G. (2002). Guidelines for the Psychological Evaluation of Aircrew Personnel. Occupational Medicine, 17 (2), 227-245.
- Aviation-related psychological evaluations:
  - Jones, D. R. (2008). Aerospace Psychiatry. In J. R. Davis, R. Johnson, J. Stepanek & J. A. Fogarty (Eds.),
  - Fundamentals of Aerospace Medicine (4th Ed.), (pp. 406-424). Philadelphia: Lippencott Williams & Wilkins.

ADDENDUM – IF NEUROPSYCHOLOGICAL TESTING IS INDICATED

Who may perform a neuropsychological evaluation?

Neuropsychological evaluations must be conducted by a licensed clinical psychologist who is either board certified or "board eligible" in clinical neuropsychology. "Board eligible" means that the clinical neuropsychologist has the education, training, and clinical practice experience that would qualify him or her to sit for board certification with the American Board of Clinical Neuropsychology, the American Board of Professional Neuropsychology, and/or the American Board of Pediatric Neuropsychology.

Requirements for the evaluation.

Requirements for providing records to the neuropsychologist, conducting the evaluation, and submitting reports are the same as noted above for the clinical psychologist.

What is required in the "core test battery?"

The core test battery listed below provides a standardized basis for the NCAA's review of cases, and must include:

- CogScreen-Aeromedical Edition (CogScreen-AE).
- The complete Wechsler Adult Intelligence Scales (Processing Speed and Working Memory Indexes must be scored).
- Trail Making Test, Parts A and B (Reitan Trails A & B should be used since aviation norms are available for the original Reitan Trails A & B, but not for similar tests [e.g., Color Trails; Trails from Kaplan-Delis Executive Function, etc.])
- Executive function tests to include: (3) Category Test or Wisconsin Card Sorting Test, and (4) Stroop Color-Word Test
- Paced Auditory Serial Addition Test (PASAT).
- A continuous performance test (i.e., Test of Variables of Attention [TOVA], or Conners' Continuous Performance Test [CPT-II], or Integrated Visual and Auditory Continuous Performance Test [IVA+]), or Gordon Diagnostic System [GDS].
- Test of verbal memory (WMS-IV subtests, Rey Auditory Verbal Learning Test, or California Verbal Learning Test-II).
- Test of visual memory (WMS-IV subtests, Brief Visuospatial Memory TestRevised, or Rey Complex Figure Test).

- Tests of Language including Boston Naming Test and Verbal Fluency (COWAT and a semantic fluency task).
- Psychomotor testing including Finger Tapping and Grooved Pegboard or Purdue Pegboard.
- Personality testing, to include the Minnesota Multiphasic Personality Inventory (MMPI-2). (The MMPI-2-RF is not an approved substitute. All scales, subscales, content, and supplementary scales must be scored and provided. Computer scoring is required. Abbreviated administrations are not acceptable.)

NOTES: (1) All tests administered must be the most current edition of the test unless specified otherwise; (2) At the discretion of the examiner, additional tests may be clinically necessary to assure a complete assessment.

What must be submitted?

The neuropsychologist's report, plus

1.1. Copies of all computer score reports (e.g., CogScreen-AE score report, Pearson MMPI-2 Extended Score Report, TOVA, CPT-II or IVA+ Report).
1.2. An appended score summary sheet that includes all scores for all tests administered. When available, pilot norms must be used. If pilot norms are not available for a particular test, then the normative comparison group (e.g., general population, age/education-corrected) must be specified. Also, when available, percentile scores must be included.

21 PROTOCOL FOR DIABETES MELLITUS

22.1 DIET CONTROLLED

A medical history or clinical diagnosis of diabetes mellitus may be considered previously established when the diagnosis has been or clearly could be made because of supporting laboratory findings and/or clinical signs and symptoms. When an applicant with a history of diabetes is examined for the first time, the Examiner should explain the procedures involved and assist in obtaining prior records and current special testing.

Applicants with a diagnosis of diabetes mellitus controlled by diet alone are considered eligible for all classes of medical certificates under the medical standards, provided they have no evidence of associated disqualifying cardiovascular, neurological, renal, or ophthalmological disease. Specialized examinations

need not be performed unless indicated by history or clinical findings. The Examiner must document these determinations on the appropriate NCAA Form.

22.2 TYPE II MEDICATION-CONTROLLED (NON INSULIN)

This protocol is used for all diabetic applicants treated with oral agents or incretin mimetic medications (such as exenatide), herein referred to as medication(s).

An applicant with a diagnosis of diabetes mellitus controlled by medication may be considered by the NCAA for an Authorization of a Special Issuance of a Medical Certificate (Authorization). For medications currently allowed, see chart of Acceptable Combinations of Diabetes Medications.

When medication is started the following time periods must elapse prior to certification to assure stabilization, adequate control, and the absence of side effects or complications from the medication.

- Metformin only. A 14 day period must elapse.
- Any other single diabetes medication requires a 60-day period.

The initial Authorization decision is made by the AMCD and may not be made by the Examiner. An Examiner may re-issue a subsequent airman medical certificate under the provisions of the Authorization.

The initial Authorization determination will be made on the basis of a DIABETES or HYPERGLYCEMIA ON ORAL MEDICATIONS STATUS REPORT signed and completed by the airman's treating provider or a report from the treating physician. The report must contain a statement regarding the medication used, dosage, the absence or presence of side effects and clinically significant hypoglycemic episodes, and an indication of satisfactory control of the diabetes. The results of an A1C hemoglobin determination within the past 30 days must be included. Note must also be made of the presence of cardiovascular, neurological, renal, and/or ophthalmological disease. The presence of one or more of these associated diseases will not be, per se, disqualifying but the disease(s) must be carefully evaluated to determine any added risk to aviation safety.

Re-issuance of a medical certificate under the provisions of an Authorization will also be made on the basis of reports from the treating physician. The contents of the report must contain the same information required for initial issuance and specifically reference the presence or absence of satisfactory control, any change in the dosage or type of medication, and the presence or absence of complications or side effects from the medication. In the event of an adverse change in the applicant's diabetic status (poor control or complications or side effects from the medication), or the appearance of an associated systemic disease, an Examiner must defer the case with all documentation to the Medical Assessor NCAA for consideration. If, upon further review of the deferred case, NCAA decides that re-issuance is appropriate, the Examiner may again be given the authority to re-issue the medical certificate under the provisions of the Authorization based on data provided by the treating physician, including such information as may be required to assess the status of

associated medical condition(s). At a minimum, followup evaluation by the treating physician of the applicant's diabetes status is required annually for all classes of medical certificates.

An applicant with diabetes mellitus - Type II should be counseled by his or her Examiner regarding the significance of the disease and its possible complications.

The applicant should be informed of the potential for hypoglycemic reactions and cautioned to remain under close medical surveillance by his or her treating physician.

The applicant should also be advised that should their medication be changed or the dosage modified, the applicant should not perform airman duties until the applicant and treating physician has concluded that the condition is:

- under control;
- stable;
- presents no risk to aviation safety; and
- consults with the Examiner who issued the certificate, and the NCAA Medical Assessor

22.3 INSULIN-TREATED DIABETES MELLITUS - TYPE I & TYPE II

Consideration will be given only to those individuals who have been clinically stable on their current treatment regimen for a period of 6 months or more. The NCAA has an established policy that permits the special issuance medical certification to some insulin treated applicants. Individuals certificated under this policy will be required to provide medical documentation regarding their history of treatment, accidents, and current medical status. If certificated, they will be required to adhere to monitoring requirements and are prohibited from operating aircraft outside the Namibian Air Space. The following is a summary of the evaluation protocol and an outline of the conditions that the NCAA will apply for Second class applicants. First and Third class applicants will be evaluated on a case-by-case basis by the NCAA Medical Assessor's office.

A. Initial Certification

1. The applicant must have had no recurrent (two or more) episodes of hypoglycemia in the past 5 years and none in the preceding 1 year which resulted in loss of consciousness, seizure, impaired cognitive function or requiring intervention by another party, or occurring without warning (hypoglycemia unawareness).

2. The applicant will be required to provide copies of all medical records as well as accident and incident records pertinent to their history of diabetes.

3. A report of a complete medical examination preferably by a physician who specializes in the treatment of diabetes will be required. The report must include, as a minimum:

a. Two measurements of glycosylated hemoglobin (total A1 or A1c concentration and the laboratory reference range), separated by at least 90 days. The most recent measurement must be no more than 90 days old.

b. Specific reference to the applicant's insulin dosages and diet.

c. Specific reference to the presence or absence of cerebrovascular, cardiovascular, or peripheral vascular disease or neuropathy.

d. Confirmation by an eye specialist of the absence of clinically significant eye disease.

e. Verification that the applicant has been educated in diabetes and its control and understands the actions that should be taken if complications, especially hypoglycemia, should arise. The examining physician must also verify that the applicant has the ability and willingness to properly monitor and manage his or her diabetes.

f. If the applicant is age 40 or older, a report, with ECG tracings, of a maximal graded exercise stress test.

g. The applicant shall submit a statement from his/her treating physician, Examiner, or other knowledgeable person attesting to the applicant's dexterity and ability to determine blood glucose levels using a recording glucometer.

NOTE: Student pilots may wish to ensure they are eligible for medical certification prior to beginning or resuming flight instruction or training. In order to serve as a pilot in command, you must have a valid medical certificate for the type of operation performed.

B. Subsequent Medical Certification

1. For documentation of diabetes management, the applicant will be required to carry and use a whole blood glucose measuring device with memory and must report to the FAA immediately any hypoglycemic incidents, any involvement in accidents that result in serious injury (whether or not related to hypoglycemia); and any evidence of loss of control of diabetes, change in treatment regimen, or significant diabetic complications. With any of these occurrences, the individual must cease flying until cleared by the FAA.

2. At 3-month intervals, the airman must be evaluated by the treating physician. This evaluation must include a general physical examination, review of the interval medical history, and the results of a test for glycosylated hemoglobin concentration. The physician must review the record of the airman's daily blood glucose measurements and comment on the results. The results of these quarterly evaluations must be accumulated and submitted annually unless there has been a change. (See No. 1 above - If there has been a change the

individual must report the change(s) to the NCAA and wait for an eligibility letter before resuming flight duties).

3. On an annual basis, the reports from the examining physician must include confirmation by an eye specialist of the absence of significant eye disease.

4. At the first examination after age 40 and at 5-year intervals, the report, with ECG tracings, of a maximal graded exercise stress test must be included in consideration of continued medical certification.

C. Monitoring and Actions Required During Flight Operations

To ensure safe flight, the insulin using diabetic airman must carry during flight a recording glucometer; adequate supplies to obtain blood samples; and an amount of rapidly absorbable glucose, in 10 gm portions, appropriate to the planned duration of the flight. The following actions shall be taken in connection with flight operations:

1. One-half hour prior to flight, the airman must measure the blood glucose concentration. If it is less than 100 mg/dl the individual must ingest an appropriate (not less than 10 gm) glucose snack and measure the glucose concentration one-half hour later. If the concentration is within 100 -- 300 mg/dl, flight operations may be undertaken. If less than 100, the process must be repeated; if over 300, the flight must be canceled.

2. One hour into the flight, at each successive hour of flight, and within one half hour prior to landing, the airman must measure their blood glucose concentration. If the concentration is less than 100 mg/dl, a 20 gm glucose snack shall be ingested. If the concentration is 100 -- 300 mg/dl, no action is required. If the concentration is greater than 300 mg/dl, the airman must land at the nearest suitable airport and may not resume flight until the glucose concentration can be maintained in the 100 -- 300 mg/dl range. In respect to determining blood glucose concentrations during flight, the airman must use judgment in deciding whether measuring concentrations or operational demands of the environment (e.g., adverse weather, etc.) should take priority. In cases where it is decided that operational demands take priority, the airman must ingest a 10 gm glucose snack and measure his or her blood glucose level 1 hour later. If measurement is not practical at that time, the airman must ingest a 20 gm glucose snack and land at the nearest suitable airport so that a determination of the blood glucose concentration may be made.

(Note: Insulin pumps are acceptable)

Appendix A to Protocol 21 -DIABETES or HYPERGLYCEMIA ON ORAL MEDICATIONS

STATUS REPORT (Updated 08/30/2017)

Name _____ Birthdate _____

Applicant ID# _____ PI#_____

Please have the provider who treats your diabetes enter the information in the space below. Return the completed form to your AME or to the NCAA.

1. Provider printed name _____ and phone # _____

2. Date of last clinical encounter for diabetes _____

3. Date of most recent DIABETES MEDICATION change _____

4. Hemoglobin A1C lab value _____ and date _____ (A1C lab value must be taken more than 30 days after medication change and within 90 days of re/certification)

5. List ALL current medications (for any condition) *

_____
_____
_____
_____

If YES is circled on any of the questions below, please attach narrative, tests, etc.

6. Any side effects from medications Yes No

7. ANY episode of hypoglycemia in the past year Yes No

8. Any evidence of progressive diabetes induced end organ disease

Cardiac……. Yes No
Neurological……. Yes No
Ophthalmological……..…… Yes No Peripheral neuropathy…… Yes No Renal disease…….. Yes No

9. Does this patient take ANY form of insulin Yes No

10. Any clinical concerns? Yes No

Treating Provider Signature Date

Note: Acceptable Combinations of Diabetes Medications and copies of this form for future follow-ups can be obtained from the NCAA.

Appendix B to Protocol 21- DIABETES ON INSULIN Re-Certification

STATUS REPORT

Name _____ Birthdate _____

Applicant ID# _____ PI# _____

Class Applied _____ Circle one: INITIAL / Re-Certification

Please have the provider who treats your diabetes enter the information in the space below. Return the completed form to your AME or to the NCAA at:

1. Provider printed name_____ phone _____

2. Date of last clinical encounter for Diabetes _____

3. Date of most recent DIABETES MEDICATION CHANGE _____ And describe what was changed:

4. Quarterly hemoglobin A1c (A1c's must be done > 30 days after meds change and < 90 days of recertification.)

Quarterly A1Cs

Value Date

#1 #2 #3 #4

5. Review the blood glucose self-monitoring log book, recording device download, or continuous glucose monitoring (CGM) data, if used. Comment on stability, variance (highs and lows), and any other concerns you have. If control is good and there are no concerns, state that also.

Appendix C to Protocol 21 - DIABETES ON INSULIN Re-Certification

STATUS REPORT (Updated 08/30/2017)

Name _____ Birthdate _____

Applicant ID# _____ PI# _____

In lieu of #6 and #7, the physician's office may attach a current medication list. The list should note for what condition the medications are used.

6. List Insulin treatment schedule:

7. List ALL other current medications* (for any condition) and why they are used/diagnosis treated. Dosage is not required.

IF YES on any of the questions below, please attach narrative, tests, etc.

8. Any side effects from medications.....Yes No

9. ANY episode of hypoglycemia in the past year REQUIRING ASSISTANCE from another person.....Yes No

10. Any evidence of progressive diabetes induced end organ disease:
Cardiac.....Yes No
Neurological.....Yes No Ophthalmological
.....Yes No Neuropathy
.....Yes No Renal disease
.....Yes No

11. Any clinical concerns or other comments? .....Yes No

Treating Provider Signature Date

For more information, see:

- Acceptable Combinations of Diabetes Medications
- Pharmaceuticals (Therapeutic Medications) - Diabetes Mellitus - Insulin Treated

22. PROTOCOL FOR MAXIMAL GRADED EXERCISE STRESS TEST REQUIREMENTS

1. If a plain GXT is required and is uninterpretable for any reason, a radionuclide GXT will then be required before further consideration
2. GXT requirements: o 100% of predicted maximal heart rate unless medically contraindicated or prevented either by symptoms or medications o Complete Stage 3 (equivalent to at least 9 minutes) o Studies of less than 85% of maximum predicted heart rate and less than 9 minutes of exercise (6 minutes for age 70 or greater) may serve a basis for denial o Beta blockers and calcium channel blockers (specifically diltiazem and verapamil), or digitalis preparations should be discontinued for 24-48 hours prior to testing (if not contraindicated and only with the consent of the treating physician) in order to obtain maximum heart rate
3. If the GXT is done on beta blockers, calcium blockers, or pharmais drugs, the applicant must provide explanation from the treating cardiologist as to why the medication(s) cannot be held.
4. The worksheet with blood pressure/pulse recordings at various stages, interpretive report, and actual ECG tracings* must be submitted o Tracings must include a rhythm strip, a full 12-lead ECG recorded at rest (supine and standing), one or more times during each stage of exercise, at the end of each stage, at peak exercise, and every minute during recovery for at least 5 minutes or until the tracings return to baseline

level.*Computer generated, sample-cycle ECG tracings are unacceptable in lieu of the standard tracings. If submitted alone, this may result in deferment until this requirement is met

5. In patients with bundle branch blocks, LVH, or diffuse ST/T wave changes at rest, it will be necessary to provide a stress echo or nuclear stress test.
6. Reasons for not renewing:
    - The applicant is unable to achieve at least 85% of maximal heart rate on stress testing or less than 9 minutes (6 minutes if age 70 or greater);
    - The applicant develops 1 mm or greater ST segment depression at any time during stress testing, unless the applicant has additional medical evidence such as a nuclear imaging study or a stress echocardiogram showing the absence of reversible ischemia or wall motion abnormalities reviewed and reported by a qualified cardiologist;
    - The nuclear stress testing shows evidence of reversible ischemia, a stress echocardiogram shows exercised induced wall motion abnormalities, or either study demonstrates a negative change from the prior study of the same type;
    - The ejection fraction on a nuclear stress test or stress echocardiogram is 40% or less; or a 10% decrease from a prior study; or
    - The applicant reports any other disqualifying medical condition or undergoes therapy not previously reported

23 PROTOCOL FOR GRADED EXERCISE STRESS TEST BUNDLE BRANCH BLOCK REQUIREMENTS

If the Bundle Branch Block (BBB) has been previously documented and evaluated, no further evaluation is required. A medical certificate should not be issued to any class if the applicant has a new onset of a BBB. A right BBB in an otherwise healthy person 30 years of age or younger should not require a CVE. All other individuals who do have a right BBB require a CVE but a radionuclide study should not be required unless the standard exercise stress test cannot be interpreted. A stress echocardiogram may be sufficient in most cases. A left BBB in a person of any age should have a CVE and should include a radionuclide perfusion study. Those individuals who have a negative work-up may be issued the appropriate class of medical certificate. No followup is required. If any future changes occur, a new current CVE will be required.

If areas of ischemia are noted, a coronary angiogram may be indicated for definitive diagnosis. According to the current literature, approximately 40% of individuals with LBBB will demonstrate a false positive thallium

reperfusion defect in the septal area Some cases may be forwarded to a NCAA-selected cardiology consultant specialist for review and recommendation for medical certification.

24 PROTOCOL FOR HISTORY OF HUMAN IMMUNODEFICIENCY VIRUS (HIV) RELATED CONDITIONS

Persons on antiretroviral medication will be considered only if the medication is approved by the U.S. Food and Drug Administration and is used in accordance with an acceptable drug therapy protocol. Acceptable protocols are cited in Guidelines for the Use of Antiretroviral Agents in HIV-Infected Adults and Adolescents developed by the Department of Health and Human Services Panel on Clinical Practices for Treatment of HIV Infection.

For persons taking HIV medication for long-term prevention or Pre-Exposure Prophylaxis (PrEP), see Item 48. General Systemic - Human Immunodeficiency Virus (HIV).

Application for special issuance must include reports of examination by a physician knowledgeable in the treatment of HIV-infected persons and a medical history emphasizing symptoms and treatment referable to the immune and neurologic system. In addition, these reports must include a "viral load" determination by polymerase chain reaction (PCR), CD4+ lymphocyte count, a complete blood count, and the results of liver function tests. An assessment of cognitive function (preferably by Cogscreen or other test battery acceptable to the Federal Air Surgeon) must be submitted. Additional cognitive function tests may be required as indicated by results of the cognitive tests. At the time of initial application, viral load must not exceed 1,000 copies per milliliter of plasma, and cognitive testing must show no significant deficit(s) that would preclude the safe performance of airman duties.

Application for special issuance must include reports of examination by a physician knowledgeable in the treatment of HIV-infected persons and a medical history emphasizing symptoms and treatment referable to the immune and neurologic system. For initial consideration, see the following Human Immunodeficiency Virus (HIV) Specification Sheet for the required clinical reports and documentation (including cognitive testing).

If granted Authorization for Special Issuance, follow-up requirements will be specified in the Authorization letter. However, the usual requirements will be:

 First 2 years of surveillance: see the Under 2 Year Surveillance HIV Specification Sheet

 After the first 2 years of surveillance: see the After 2 Years Surveillance HIV Specification Sheet

APPENDIX: HUMAN IMMUNODEFICIENCY VIRUS (HIV) SPECIFICATION

Persons who are infected with the HIV and who do not have a diagnosis of Acquired Immunodeficiency Syndrome (AIDS) may be considered for any class medical certificate, if otherwise qualified. Persons on an antiretroviral medication will be considered only if the medication is approved by the U.S. Food and Drug Administration and is used in accordance with an acceptable drug therapy protocol. Current studies should be submitted no later than 30-days from test date. In order to be considered for a medical certificate the following data must be provided:

1. A current report from a physician knowledgeable in the treatment of HIV-infected persons and a medical history emphasizing symptoms and treatment referable to the immune system;

2. Current viral load determination by polymerase chain reaction (PCR) – for persons who have had an AIDS defining illness 2 determinations, 1 month apart);

3. Current CD4 (for persons who have had an AIDS defining illness, 2 determinations, 1 month apart) and lymphocyte count;

4. Current complete blood count (CBC) with differential;

5. Results of current liver function tests;

6. BUN and creatine;

7. a. A current assessment of cognitive function (preferably by CogScreen-AE [Aeromedical Edition] or other test battery) must be provided with the Initial application. Follow-up neurological- psychological evaluations are required annually for first and second-class pilots and every other year for third-class.

b. If CogScreen-AE is not available, we suggest the following:

1. MMPI 2. WAIS-R 3. Memory Test (one of the following) a. Wechsler Memory Scale b. Rey auditory Verbal Learning Test 4. Trails Making Test (A&B) 5. Category Test (booklet or machine) 6. Sensory-Motor Screening 7. Language Functioning Test (one of the following) a. Speech Sounds Perception Test b. Aphasia Screening Test

All of the above should be submitted together to the NCAA Medical Assessor

1. For applicants with a history of cytomegalovirus (CMR) retinitis, a current ophthalmological evaluation with visual fields must be provided with the initial application and at 6 month-intervals thereafter.

UNDER 2 YEAR SURVEILLANCE HIV SPECIFICATION

Please provide the NCAA with a current status report from a treating physician knowledgeable and experienced in the treatment of HIV-infected persons. This report should include the information outlined below, along with any separate additional testing. The results should be sent to the Medical Assessor NCAA After review, if the airman is determined qualified, the Medical Assessor will send a letter to the airman authorizing the Aviation Medical Examiner (AME) to issue a new time-limited medical certificate, as applicable. Both the initial and subsequent medical determinations may only be made by the Medical Assessor NCAA.

The current status report should include:

 Every 3 months: determinations of viral load, CD4 cell count, a clinical assessment of cognitive function, and any other laboratory and clinical tests deemed necessary by the treating physician. These results may be aggregated and included in the written current status report every 6 months unless there is an adverse change;

 Every 6 months a written current status report from the treating physician knowledgeable and experienced in the treatment of HIV-infected persons. To include the following: a medical history emphasizing symptoms and treatment referable to the immune system, any signs or symptoms of atherosclerotic cardiovascular disease, and diabetes mellitus or insulin resistance and a clinical assessment of cognitive function;

 Formal cognitive/neuropsychiatric testing, preferably with CogScreen-AE [Note: initial and periodic testing should be done with the same test instruments each time in order to allow valid comparisons over time]. Formal cognitive function testing if due; and

 Any other tests advised by the treating physician.

AFTER 2 YEARS SURVEILLANCE HIV SPECIFICATION

Please provide our office with a current status report from a treating physician knowledgeable and experienced in the treatment of HIV-infected persons. This report should include the information outlined below, along with any separate additional testing.

The results should be sent to the Medical Assessor NCAA After review, if the airman is determined qualified, the Medical Assessor will send a letter to the airman authorizing the Aviation Medical Examiner (AME) to issue a new time-limited medical certificate, as applicable. Both the initial and subsequent medical determinations may only be made by the Medical Assessor NCAA.

The current status report should include:

 Every 6 months: determinations of viral load, CD4 cell count, a clinical assessment of cognitive function and any other laboratory and clinical tests deemed necessary by the treating physician. These results may be aggregated and included in a written current status report every 12 months unless there is an adverse change;

 Every 12 months a written current status report from the treating physician knowledgeable and experienced in the treatment of HIV-infected persons. To include the following: a medical history emphasizing symptoms and treatment referable to the immune system, any signs or symptoms of atherosclerotic cardiovascular disease, and diabetes mellitus or insulin resistance and a clinical assessment of cognitive function;

 Formal cognitive/neuropsychiatric testing, preferably with CogScreen-AE [Note: initial and periodic testing should be done with the same test instruments each time in order to allow valid comparisons over time]. Formal cognitive function testing if due; and

 Any other tests advised by the treating physician.

25 PROTOCOL FOR HYPERTENSION

A blood pressure which is consistently >160/100 mmHg disqualifies a person from all classes of medical certification. A person is deemed unfit, until such time the person can prove control on acceptable medication.

1. Mild Hypertension

(1) A person is considered to be having mild hypertension if his or her systolic BP is 140–159 or diastolic BP is 90–99.

(2) In the case of a mild hypertension referred to in paragraph (1), a person must –

(a) undergo regular 3 monthly BP checks for a year;

(b) undergo Lifestyle Modification (According to the National Guidelines on the Management

of Hypertension);

(c) adjust or alter medication if already on therapy;

(d) undergo Cardiovascular Risk Assessment; and

(e) may continue to fly, in the case of a pilot.

2. Moderate Hypertension

(1) A person is considered to be having moderate hypertension if his or her systolic BP is 160–179 or diastolic BP is 100–109.

(2) In the case of a moderate hypertension referred to in paragraph (1), a person must –

(a) Exclude reactive hypertension

(b) If hypertension established:

(i) Urine Dipstix for Microalbuminurea

(ii) Clinical examination.

(iii) Blood tests:

(aa) Urea and Electrolytes

(bb) Fasting Glucose

(cc) Fasting Total Cholesterol, and if Total Cholesterol is >5.00 a fasting Lipogram should be done

(c) Begin therapy with an acceptable agent.

(d) Cardiovascular Risk Assessment.

(e) Ground pilot for two weeks .

(f) After one month a clinical evaluation will be done.

3. Moderate/Severe Hypertension

(1) A person is considered to be having moderate/severe hypertension if his or her Systollic BP is 160–179 mmHg or Diastollic BP is 100–109 mmHg (for moderate) or Systolic BP of >180 or Diastolic BP of >110 (for severe).

(2) In the case of a moderate/severe hypertension referred to in paragraph (1), a person must –

(a) review medication (therapy);

(b) be considered medically fit and not exercise the privileges of his or her licence until hypertension is adequately controlled on acceptable medication.

4. Once Normotensive/Diagnosed Reactive Hypertension

(1) A person is considered to be normotensive if his or her Systolic BP is 120–129 or Diastolic BP is 80–84.

(2) Once the licence holder is normotensive or diagnosed to have reactive hypertension as per paragraph (1), a person must –

(a) be deemed fit to fly, with 6-monthly follow-up for one year, consisting of –

(i) Clinical examination

(ii) Resting ECG (<40 or falls into the Blue or Green Risk Categories – see Table 2)

(iii) Stress ECG (>40 or falls into the Yellow, Orange, or Red Risk Categories – see Table 2) See note*

(iv) Blood tests:

(aa) U & E including Creatinine

(bb) Fasting Glucose

(cc) Fasting Lipogram

Note *Stress ECG for Yellow Risk Category to be done by AME. Stress ECG for Orange and Red Risk Categories to be done by a Cardiologist. Risk categories as per Table 2.

(b) undergo annual follow-up thereafter consisting of:

(i) Clinical examination

(ii) Resting ECG (<40 or falls into the Blue or Green Risk Categories – see Table 2)

(iii) Stress ECG (>40 or falls into the Yellow, Orange, or Red Risk Categories – see Table 2) See note*

(iv) Blood tests (U&E including Creatinine, Fasting Glucose, Fasting Lipogram).

Note *Stress ECG for Yellow Risk Category to be done by AME. Stress ECG for Orange and Red Risk Categories to be done by a Cardiologist. Risk categories as per Table 2.

CARDIOVASCULAR RISK ASSESSMENT

Cardiovascular Risk Assessment must be done based on the Namibian Hypertension Guidelines.

TABLE 1

MAJOR RISK FACTORS, TARGET ORGAN DAMAGE, AND ASSOCIATED CLINICAL CONDITIONS		
MAJOR RISK FACTORS	**TARGET ORGAN DAMAGE**	**ASSOCIATED CLINICAL CONDITIONS**

Levels of systolic and diastolic BP	Left ventricular hypertrophy: based on ECG	Coronary heart disease
Smoking	Microalbuminuria: albumin/ creatinine ratio 3 –30 mg/mmol	Heart failure
Dyslipidaemia Total cholesterol >6.5 mmol/l, OR creatinine ratio >30 mg/mmol LDL >4 mmol/l, OR HDL men <1 and women <1.2 mmol/l	Slightly elevated creatinine Men 115–133 µmol/l Women 107–124 µmol/l	Chronic kidney disease: albumin creatinine ratio >30 mg/mmol
Diabetes mellitus Men >55 years Women >65 years		Stroke or transient ischaemic attack
Family history of early onset of: cardiovascular disease Men aged <55 years Women aged <65 years		Peripheral arterial disease
Waist circumference – abdominal obesity Men ≥102 cm Women ≥88 cm The exceptions are South Asians and Chinese: men >90 cm and women >80 cm		Advanced retinopathy Haemorrhages OR Exudates Papilloedema

TABLE 2

Stratification of risk to quantify prognosis					
Other risk factors and disease history	BP (mmHg)				
	Normal SBP 120–129 or DBP 80–84	High-normal SBP 130–139 or DBP 85–89	Stage 1 Mild hypertension SBP 140–159 or	Stage 2 Moderate hypertension SBP 160–179	Stage 3 Severe hypertension SBP >180

			DBP 90–99	or DBP 100–109	or DBP >110
No other major risk factors	Average risk	Average risk	Low added risk	Moderate added risk	High added risk
1–2 major risk factors	Low added risk	Low added risk	Moderate added risk	Moderate added risk	Very high added risk
≥ 3major risk factors or target-organ damage or diabetes mellitus	Moderate added risk	High added risk	High added risk	High added risk	Very high added risk
Associated clinical conditions	Very high added risk	Very high added risk	Very high added risk	Very high added risk	Very high added risk

Average Risk and Low Added Risk

Bloods (Fasting Glucose, Fasting Lipogram, U&E-including Creatinine)

Resting ECG: less than the age of 40 years

Stress ECG: 40 years of age and above (to be done by a DAME)

Moderate Added Risk

Annual Stress ECG (done by a DAME-Designated Medical Examiner)

Annual Bloods (U&E – including Creatinine, Fasting Glucose, Fasting Lipogram) for all Classes

Applicable Protocol for Co-morbidity

High Added Risk

Stress ECG (to be done by a Cardiologist – minimum stress level should be 85%)

Annual Bloods (U&E – including Creatinine, Fasting Glucose, Fasting Lipogram)

Applicable Protocol for Co-morbidity

Very High Added Risk

Stress ECG (to be done by a Cardiologist – minimum stress level should be 85%)

Annual Bloods (U&E – including Creatinine, Fasting Glucose, Fasting Lipogram)

Applicable Protocol for Co-morbidity

26 PROTOCOL FOR EVALUATION OF IMPLANTED PACEMAKER

A 2-month recovery period must elapse after the pacemaker implantation to allow for recovery and stabilization. Submit the following:

1. Copies of hospital/medical records pertaining to the requirement for the pacemaker, make of the generator and leads, model and serial number, admission/discharge summaries, operative report, and all ECG tracings.

2. Evaluation of pacemaker function to include description and documentation of underlying rate and rhythm with the pacer turned "off" or at its lowest setting (pacemaker dependency), programmed pacemaker parameters, surveillance record, and exclusion of myopotential inhibition and pacemaker induced hypotension (pacemaker syndrome), Powerpack data including beginning of life (BOL) and elective replacement indicator/end of life (ERI/EOL).

3. Readable samples of all electronic pacemaker surveillance records post surgery or over the past 6 months, or whichever is longer. It must include a sample strip with pacemaker in free running mode and unless contraindicated, a sample strip with the pacemaker in magnetic mode.

4. An assessment and statement from a physician regarding general physical and cardiac examination to include symptoms or treatment referable to the cardiovascular system; the airman's interim and current cardiac condition, functional capacity, medical history, and medications.

5. A report of current fasting blood sugar and a current blood lipid profile to include: total cholesterol, HDL, LDL, and triglycerides.

6. A current Holter monitor evaluation for at least 24-consecutive hours, to include select representative tracings.

7. A current M-mode, 2-dimensional echocardiogram with Doppler.

8. A current Maximal Graded Exercise Stress Test Requirements .

9. It is the responsibility of each applicant to provide the medical information required to determine his/her eligibility for airman medical certification. A medical release form may help in obtaining the necessary information.

No consideration can be given for special issuance until all the required data has been received.

The use of the airman's full name and date of birth on all correspondence and reports will aid the NCAA in locating the proper file.

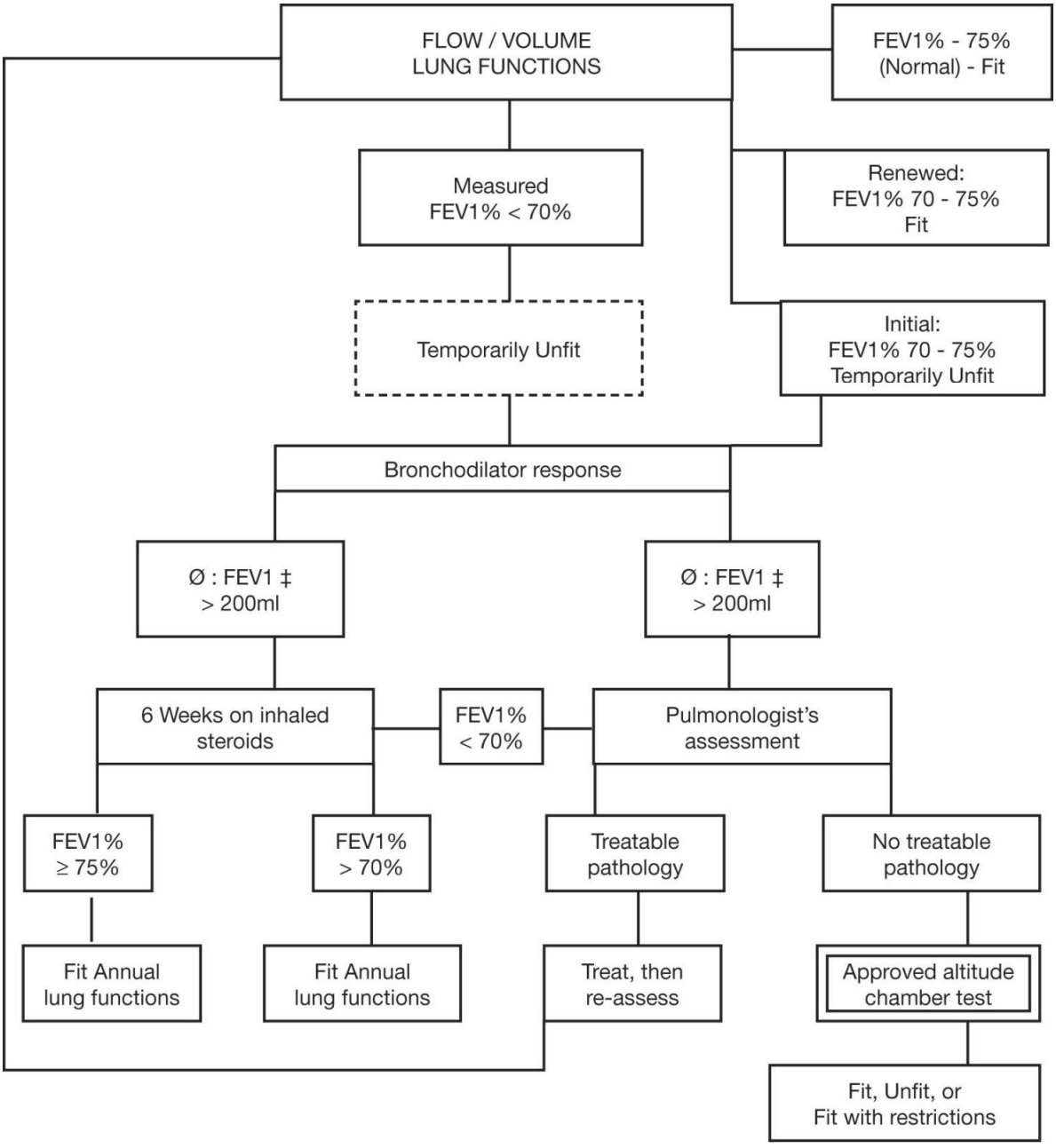
27 PROTOCOL FOR LIVER TRANSPLANT (RECIPIENT)

The Examiner must defer initial issuance. An applicant with a history of liver transplant must submit the following for consideration of a medical certificate. Applicants found qualified will be required to provide annual follow up evaluations per their authorization letter.

Requirements for initial consideration:

- A six (6) month post-transplant recovery period with documented stability for the last three (3) months;
- Pre-transplant treatment notes that identify the diagnosis, indication for transplant, and any sequelae prior to transplant. If alcohol was a contributing factor (abuse or dependence), submit evidence of treatment and recovery;
- Hospital reports to include admission note, operative note, and hospital discharge summary;
- A current status report from the treating physician that describes: o The status of the transplant, functional capacity, modifiable risk factors, and prognosis for incapacitation; and o Any recent or expected change in treatment plan
- Complication history such as: o Rejection or graft versus host disease/GVHD; o Infection Hepatitis C (HCV) or CMV; and/or o Malignancy due to hepatocellular carcinoma (HCC) or following transplant and initiation of immune-suppressants
- Current medication list to include names and dosage of immunosuppressive medications, the presence or absence of any side effects, and how long the airman has been on these medications.
- Lab and images to include copies of most recent lab performed by the treating physician (CBC, CMP with LFTs) and any other tests deemed necessary by the treating physician such as imaging or liver biopsy

28 PROTOCOL FOR LUNG FUNCTION ASSESSMENT (FLOW DIAGRAM)



29 PROTOCOL ON PREVIOUSLY DIAGNOSED ACUTE LEUKAEMIA

Any applicant who has a previous history of having had any type of acute leukaemia in the past will be required to comply with the following requirements before recertification may be considered –

1. Must comply with the criteria for complete remission i.e. –

   (1) Clinical: the disappearance of any abnormal clinical findings due to the leukaemia, and return to good physical health.

   (2) Haematological –

   (a) The peripheral blood must have returned to normal, with reference to:

      (i) Haemoglobin (Hb).

      (ii) Total, and differential, white cell count.

      (iii) Platelet count.

   (b) Recognisable leukaemia cells may not be present in a bone marrow preparation, and there may have been not more than 5% normal blast cells present in a marrow preparation of normal cellularity.

2. The applicant must have completed his/her last treatment at least two years before submitting his/her application to the medical inspector or designated body or institution. (This includes all modalities of treatment for leukaemia).

3. The applicant must have undergone at least six-monthly medical follow-up in an appropriate specialised unit. A report detailing the follow-up programme and the applicant's medical record must be submitted with the application to the medical inspector or designated body or institution.

4. During the initial post-remission period of two years his/her blood picture should have been closely monitored. Although the specific results are unlikely to be required by the medical inspector or designated body or institution, it is necessary that he/she has been monitored as follows –

   (1) During the first year after treatment has been stopped –

   (a) 6-weekly blood profile.

   (b) 12-weekly bone marrow evaluation.

   (c) 12-weekly lumbar puncture.

   (2) During the second year after treatment has been stopped –

   (a) 8-weekly blood profile.

   (b) 16-weekly bone marrow evaluation.

5. After two years of documented remission the applicant may submit an application for certification.

If the results of the above tests are within acceptable limits the applicant may be granted certification, with the following restrictions –

(1) Must continue with follow-up at a suitable specialist unit, and submit six monthly reports to the designated body or institution.

(2) Must continue to have blood profile monitored at 8–12 weekly intervals (for a year, then 6 monthly).

(3) Must undergo an Aviation Medical Examination at least annually (or more frequently if indicated).

(4) Must do an ECG and stress ECG with each aviation medical examination.

30 PROTOCOL FOR PREVIOUSLY DIAGNOSED MALIGNANT MELANOMA

1. Initial investigations: (Required in all cases, before the applicant's case can be discussed with regard to medical certification) –

(1) Specialist report including clinical staging.

(2) Pathology report (to include) –

(a) Maximum thickness.

(b) Clark's level.

(c) Excision margins.

(3) Radiology reports –

(a) Chest X-ray.

(b) CT scan abdomen.

(c) CT brain scan.

(4) Haematology –

(a) FBC, ESR

(b) LFTs including –

(i) LDH.

(ii) Alkaline Phosphatase.

(iii) SGOT & SGPT.

2. Waiver requirements are dependent on the above reports, and may be applied once all above reports have been received. The requirements are as detailed below –

(1) CLARK 1: Yearly waiver with –

(a) Yearly clinical examination.

(2) CLARK 2 & CLARK 3 <1,5 MM: Yearly waiver with –

(a) Yearly clinical examination.

(b) Yearly chest x-ray.

(c) Yearly LFTs.

(d) Yearly FBC & ESR.

(3) CLARK 3 1,5–2,25 MM, CLARK 4 UPPER <1,5 MM: Yearly waiver with –

(a) 6-Monthly examination and yearly specialist report.

(b) Yearly chest x-ray.

(c) Yearly LFTs.

(d) Yearly FBC & ESR.

(4) CLARK 3 >2,25 MM, CLARK 4 LOWER & STAGE 2 DISEASE WITH FEWER THAN 4 REGIONAL LYMPH NODES INVOLVED: Yearly waiver with –

(a) 6-Monthly specialist report for the first year.

(b) 6-Monthly examination with yearly specialist report.

(c) 6-Monthly chest x-ray in first year, then yearly chest x-ray.

(d) 6-Monthly LFTs.

(e) Yearly CT brain scan.

(f) 6-Monthly FBC & ESR.

(5) CLARK 5, LESIONS >4 MM & STAGE 2 DISEASE WITH 4 OR MORE REGIONAL LYMPH NODES INVOLVED: Permanently unfit.

31. PROTOCOL FOR MEDICATION CONTROLLED METABOLIC SYNDROME

(Glucose Intolerance, Impaired Glucose tolerance, Impaired Fasting Glucose, Insulin Resistance, and Pre-Diabetes)

This protocol is used for all applicants with Glucose Intolerance, Impaired Glucose tolerance, Impaired Fasting Glucose, Insulin Resistance, and/or Pre-Diabetes treated with oral agents or incretin mimetic medications (exenatide), herein referred to as medication(s).

An applicant with a diagnosis of diabetes mellitus controlled by medication may be considered by the NCAA for an Authorization of a Special Issuance of a Medical Certificate (Authorization). For medications currently allowed, see chart of Acceptable Combinations of Diabetes Medications.

When medication is started the following time periods must elapse prior to certification to assure stabilization, adequate control, and the absence of side effects or complications from the medication.

- Metformin only. A 14 day period must elapse.
- Any other single diabetes medication requires a 60-day period.

The initial Authorization decision is made by the NCAA and may not be made by the Examiner. An Examiner may re-issue a subsequent airman medical certificate under the provisions of the Authorization.

The initial Authorization determination will be made on the basis of a report from the treating physician. There must be sufficient information to rule out diabetes mellitus. For favorable consideration, the report must contain a statement regarding the medication used, dosage, the absence or presence of side effects and clinically significant hypoglycemic episodes, and an indication of satisfactory control of the metabolic syndrome. The results of an A1C hemoglobin determination within the past 30 days must be included. Note must also be made of the presence of cardiovascular, neurological, renal, and/or ophthalmological disease. The presence of one or more of these associated diseases will not be, per se, disqualifying but the disease(s) must be carefully evaluated to determine any added risk to aviation safety. Re-issuance of a medical certificate under the provisions of an Authorization will also be made on the basis of reports from the treating physician. The contents of the report must contain the same information required for initial issuance and specifically reference the presence or absence of satisfactory control, any change in the dosage or type of medication, and the presence or absence of complications or side effects from the medication. In the event of an adverse change in the applicant's status (development of diabetes mellitus, poor control or complications or side effects from the medication), or the appearance of an associated systemic disease, an Examiner must defer the case with all documentation to the AMCD for consideration.

If, upon further review of the deferred case, AMCD decides that re-issuance is appropriate, the Examiner may again be given the authority to re-issue the medical certificate under the provisions of the Authorization based on data provided by the treating physician, including such information as may be required to assess the status

of associated medical condition(s). At a minimum, followup evaluation by the treating physician of the applicant's metabolic syndrome status is required annually for all classes of medical certificates.

An applicant with metabolic syndrome should be counseled by his or her Examiner regarding the significance of the disease and its possible complications, including the possibility of developing diabetes mellitus.

The applicant should be informed of the potential for hypoglycemic reactions and cautioned to remain under close medical surveillance by his or her treating physician.

The applicant should also be advised that should their medication be changed or the dosage modified, the applicant should not perform airman duties until the applicant and treating physician has concluded that the condition is:

- Under control;
- Stable;
- Presents no risk to aviation safety; and
- Consults with the Examiner who issued the certificate, Medical Assessor.

32 PROTOCOL FOR MULTIPLE SCLEROSIS

It is unsafe for an applicant with multiple sclerosis to pilot an aircraft for the following reasons –

- There is a risk of sudden loss of vision, vertigo, or convulsions.
- High temperatures and stress situations tend to precipitate an attack.
- It is a progressive disease.
- It tends to repeat.

Diagnosis is made on the history and physical examination. Special examinations which can confirm the diagnosis include –

- Evoked potentials –
  - Visual.
  - Somatosensory.
  - Auditory.
  - Brain stem.
- Cerebrospinal fluid:

- IgG index.
- Oligoclonal bands.

- MRI
  - Demonstration of periventricular plaques.

As a rule, the pattern that the disease takes in the first 3 years is the pattern that the disease will follow. It remains, however, an unpredictable disease!

When the diagnosis of multiple sclerosis is made, the applicant should be made temporarily unfit and referred to the medical inspector, designated body or institution for a decision.

If an applicant is asymptomatic, the medical inspector, designated body or institution may make him/her fit to fly with the restriction that he/she must have a 6 monthly examination, including a neurologist's assessment. If, at any of the follow-up examinations, any of the following are found, the applicant may be declared unfit –

Sudden visual loss.

Sensory disturbances in the hands.

Mood changes.

Vertigo or convulsion.

Exacerbations during stress situations or exposure to high temperatures.

33 PROTOCOL FOR MUSCULOSKELETAL EVALUATION

The Examiner should defer issuance. An applicant with a history of musculoskeletal conditions must submit the following if consideration for medical certification is desired:

- Current status report
- Functional status report
- Degree of impairment as measured by strength, range of motion, pain

NOTE: If the applicant is otherwise qualified, the NCAA may issue a limited certificate. This certificate will permit the applicant to proceed with flight training until ready for a medical flight test. At that time, and at the applicant's request, the NCAA will authorize the student pilot to take a medical flight test in conjunction with the regular flight test. The medical flight test and regular private pilot flight test are conducted by an FAA inspector. This affords the student an opportunity to demonstrate the ability to control the aircraft despite the handicap. The NCAA inspector prepares a written report and indicates whether there is a safety

problem. A medical certificate and statement of demonstrated ability (SODA) may be provided to the airman from NCAA Medical Assessor's office if the MFT is successful and the airman is otherwise qualified. When prostheses are used or additional control devices are installed in an aircraft to assist the amputee, those found qualified by special certification procedures will have their certificates limited to require that the device(s) (and, if necessary, even the specific aircraft) must always be used when exercising the privileges of the airman certificate.

34. PROTOCOL FOR OBSTETRICS AND GYNAECOLOGY

(a) General Requirements

The provision for aviation personnel with obstetrics and gynaecology medical conditions to obtain a medical certificate may be considered for any class of medical certificate based on individual medical condition of the applicant and risk factor management.

(b) Background

Approximately thirty per cent of pregnant women experience nausea and vomiting, and this can result in dehydration and malnutrition. Approximately fifteen per cent of embryos abort in the first trimester. Cardiac output rises in early pregnancy, accompanied by an increase in stroke volume, heart rate, and plasma volume. Haemoglobin (and haematocrit) begins to fall between the third and fifth month of pregnancy and is lowest by the eighth month. Adequate diet with supplementary iron and folic acid is necessary, but self-medication and prescribed medicine should be avoided. The incidence of venous varicosities is three times higher in females than males and deep venous thrombosis and pulmonary embolism are among the most common serious vascular diseases occurring during pregnancy.

As the uterus enlarges, it compresses and obstructs the flow through the vena cava. Progressive growth of the foetus, placenta, uterus and breasts, and the vasculature of these organs, leads to an increased oxygen demand; and increased blood volume and oxygen demands produce a progressive increase in workload on both the heart and lungs. Hormonal changes affect pulmonary function by lowering the threshold of the respiratory centre to carbon dioxide, thereby influencing the respiratory rate.

In order to overcome pressure on the diaphragm, the increased effort of breathing leads to greater consciousness of breathing and possibly greater cost in oxygen consumption. The effect of hypoxia at increased altitude further increases the ventilatory effort required to provide for increasing demands for oxygen in all tissue.

Aviation personnel must inform their Designated Medical Examiner (DAME) if they become are aware of any medical condition that would make them unable to meet the requirements of the licence they are applying

for or if they are taking medication that is not compatible with flying.

The medical examiner should consider the important physiological changes associated with pregnancy, which might interfere with the safe operation of an aircraft at any altitude throughout a prolonged or difficult flight –

Factors which may considerably reduce flight safety and classify an "abnormal" pregnancy include:

- A history of multiple pregnancies,
- Previous pre-term deliveries,
- Cervical incompetence,
- Bleeding, increased uterine activity,
- Reduced oxygen carrying capacity in the blood (anemia),
- Reduced placental respiratory reserve such as intrauterine growth retardation,
- Post maturity,
- Pre-eclampsia,
- Chronic hypertension or
- Placental infarction.
- Flight during pregnancy increases the risk for oedema (swelling) and blood clot formation due to obstruction of the vena cava from uterine compression and lack of mobility.

1. Menstrual Disturbances

Applicants for all classes of medical assessments, with gynecological disorders that are likely to interfere with the safe exercise of their licence and rating privileges must be assessed as unfit to fly.

Dysmenorrheal is a common condition with symptoms ranging from mild discomfort to severe abdominal pain, headache and backache, nausea and vomiting, diarrhea, dizziness and fatigue. Usually, the condition is limited to 24–48 hours around the onset of the menstrual flow and fitness for aviation duties is rarely reduced to a significant degree. Treatment with oral contraceptives and NSAIDs (non-steroidal anti-inflammatory drugs) is very efficient and is generally well tolerated.

The use of oral contraceptives is acceptable in the aviation environment, but when medication with a NSAID is first used, an initial off-duty trial should take place so that the medical examiner can ascertain that there are no significant side effects such as gastro-intestinal symptoms, visual disturbances and drowsiness. In severe cases, especially when an underlying disease such as endometriosis or pelvic inflammatory disease is suspected (secondary dysmenorrhea), appropriate diagnostic evaluation is important and specialist opinion should be sought.

Premenstrual syndrome (PMS) may occur during the week before the onset of menstruation. The symptoms

are partly mental such as mood swings, anxiety and depression, and partly physical such as bloating, headache and poor coordination. Because of the broad spectrum of symptoms and their varying severity and the many different kinds of medication usually prescribed, each case has to be assessed on its own merits. In most cases pharmaceutical therapy will prove unsatisfactory, and fitness for aviation duties is often reduced for a number of days every month.

2. Endometriosis

Endometriosis can cause quite severe discomfort such as lower abdominal or suprapubic pain, usually just before or during the first days of the menstruation period. There are several medical and surgical treatment options. If symptoms are well controlled by oral contraceptives or mild analgesics, this condition is usually compatible with aviation duties. Those who undergo surgical treatment with a successful outcome will normally be cured and able to fly safely after a suitable period of recovery.

The middle group, consisting of patients with moderate symptoms but on medication and with decreased fitness several days per month, is more difficult to evaluate and assess. Usually the final decision should be deferred to the medical inspector or designated body or institution for further evaluation. Themedical inspector, designated body or institution, in consultation with a gynaecologist, should weigh all relevant factors carefully before making a recommendation.

3. Genitourinary System

Applicants for all classes of Medical Assessments with sequelae of disease of or surgical procedures on the kidneys or the genito-urinary tract, in particular obstructions due to stricture or compression, must be assessed as unfit to fly unless the applicant's condition has been investigated and evaluated in accordance with the best medical practice and is assessed not likely to interfere with the safe exercise of the applicant's licence or rating privileges.

Major gynaecological surgery will normally entail unfitness to fly for a period of two to three months and some procedures such as hysterectomy may require more extensive periods of recovery.

Applicants who are pregnant must be assessed as unfit to fly, unless obstetrical evaluation and continued medical supervision indicate a low-risk uncomplicated pregnancy.

Once pregnant, a report from a gynaecologist and an aviation medical examiner to confirm the pregnancy.

It is advisable that a treating obstetrician is aware of the type of flying the applicant intends to carry out. Common complications of pregnancy can be detected and treated, by careful prenatal evaluation, observation, and care.

Low-risk uncomplicated pregnancy must be evaluated and supervised. Pregnancy is considered a normal, uncomplicated and low-risk, if there is supporting medical information from her obstetrician, family physician and/or midwife supporting that the applicant may continue to exercise the privileges of her licence.

Close medical supervision must be established for the part of the pregnancy where the applicant continues to

carry out their duties, and all abnormalities should be reported to the medical examiner.

4. Applicability

Medical Requirements for Pregnant Class I, II

Applicant may continue to exercise the privileges of her licence from the end of the 12th week (first trimester) until the end of the 26th week of the gestational period –

- Applicant must be declared to be medically fit to fly if her pregnancy is considered normal, uncomplicated and low-risk.
- A medical report from a treating obstetrician, family physician and/or midwife will be required.
- Close medical supervision where the pilot continues flying, and all abnormalities should be reported to the medical examiner.

5. Medical Requirements for Class III

During the gestational period, precautions should be taken for the timely relief of an air traffic controller in the event of early onset of labour or other complications –

- The fit assessment should be limited to the period until the end of the 34th week of gestation.
- Once pregnancy is confirmed, the pregnant air traffic controller should report to the medical examiner. If declared fit, she may continue to exercise the privileges of her licence.

6. Medical requirements following confinement or termination of pregnancy

Miscarriage (spontaneous abortion) occurs in about fifteen per cent of all pregnancies and is terminated spontaneously. Observation for a few days to ensure that bleeding has stopped may be all that is needed, but vacuum suction or dilatation and curettage to ensure completion of the abortion is frequently performed.

Induced abortion, usually by vacuum suction or by dilatation and curettage, will in the majority of cases entail unfitness for less than a week as these procedures are generally very safe, the rate of serious complications is <1% and the mortality rate is <1 in 100 000 cases. Complication rates increase as gestational age increases. Although uncommon, post abortion bleeding and pelvic inflammation, peritonitis and septicemia may occur.

The “abortion pill” (mifepristone, a progesterone-receptor blocker) is used within the first seven weeks of pregnancy. A second drug (prostaglandin) is given two days later to start uterine contractions and complete the abortion. This method is very safe and unfitness is limited to a few days. For most women, abortion has no adverse mental sequelae but for those who have a desired pregnancy terminated for medical reasons (maternal or fetal) or who have considerable ambivalence, the mental sequelae may be pronounced. The medical examiner should therefore pay particular attention to the psychological effects of induced abortion before allowing return to aviation duties.The applicant may not exercise the privileges of her licence, until

she has undergone re-evaluation in accordance with best medical practice and it has been determined that she is able to safely exercise the privileges of her licence and ratings. Uncomplicated pueperium and full recovery: able to resume aviation duties six weeks after confinement.

35 PROTOCOL FOR OBSTRUCTIVE SLEEP APNEA

1. Quick Start for AMES

Sleep apnea has significant safety implications due to cognitive impairment secondary to the lack of restorative sleep and is disqualifying for airman medical certification. The condition is part of a group of sleep disorders with varied etiologies. Specifically, sleep apneas are characterized by abnormal respiration during sleep. The etiology may be obstructive, central or complex in nature. However, no matter the cause, the manifestations of this disordered breathing present safety risks that include, but are not limited to, excessive daytime sleepiness (daytime hypersomnolence), cardiac dysrhythmia, sudden cardiac death, personality disturbances, refractory hypertension and, as mentioned above, cognitive impairment. Certification may be considered once effective treatment is shown.

This protocol is designed to evaluate airmen who may be presently at risk for Obstructive Sleep Apnea (OSA) and to outline the certification requirements for airmen diagnosed with OSA. While this protocol focuses on OSA, the AME must also be mindful of other sleep-related disorders such as insomnia, parasomnias, sleep-related movement disorders (e.g. restless leg syndrome and periodic leg movement), central sleep apnea and other hypersomnias, circadian rhythm sleep disorders, etc., that may also interfere with restorative sleep. All sleep disorders are also potentially medically disqualifying if left untreated. If one of these other sleep-related disorders is initially identified during the examination, the AME must contact their RFS or AMCD for guidance.

2. Risk Information

The American Academy of Sleep Medicine has established risk criteria for OSA. When applying these risk criteria, the AME is expected to employ their clinical judgment.

Persons with physical findings such as a retrograde mandible, large tongue or tonsils, neuromuscular disorders, or connective tissue anomalies are at risk of OSA requiring treatment despite a normal or low BMI. OSA is also associated with conditions such as refractory hypertension requiring more than two medications for control, diabetes mellitus, and atrial fibrillation. Over 90% of individuals with a BMI of 40 or greater have OSA requiring treatment. Up to 30% of individuals with OSA have a BMI less than 30.

- AME Actions - On every exam, the Examiner must triage the applicant into one of 6 groups:

- If the applicant is on a Special Issuance Authorization for OSA (Group/Box 1 of OSA flow chart), select Group 1 on the AME Action Tab: o Follow Medical Assessor o Notate in the respective block; and o Issue, if otherwise qualified
- If the applicant has had a prior sleep assessment (Group/Box 2 of OSA flow chart), select Group 2 on the AME Action Tab:
- If the airman is under treatment, provide the requirements of the AASI and advise the airman they must get the Authorization of Special Issuance; o Give the applicant Specification Sheet A and advise that a letter will be sent from the NCAA Medical Assessor's office requesting more information. The letter will state that the applicant has 90 days to provide the information to the NCAA/AME; o Notate; o Issue, if otherwise qualified
- If the applicant does not have an AASI/SI or has not had a previous assessment, the AME must:
    - Calculate BMI; and o Consider AASM risk criteria Table 2 & 3 o If the AME determines the applicant is not currently at risk for OSA (Group/Box 3 of OSA flow chart), select Group 3 on the AME Action Tab:
    - Notate in Block 60; and
    - Issue, if otherwise qualified
- If the applicant is at risk for OSA but in the opinion of the AME the applicant is at low risk for OSA , the AME must (Group/Box 4 of OSA flow chart),
    - select Group 4 on the AME Action Tab:
    - Discuss OSA risks with applicant;
    - Provide resource and educational information, as appropriate;
    - Issue, if otherwise qualified; and
    - Notate
- If the applicant is at high risk for OSA, the AME must (Group/Box 5 of OSA flow chart),
    - select Group 5 on the AME Action Tab: o Give the applicant Specification Sheet B and advise that a letter will be sent from the Federal Air Surgeon requesting more information. The letter will state that the applicant has 90 days to provide the information to the FAA/AME.
    - Notate and o Issue, if otherwise qualified
- If the AME observes or the applicant reports symptoms which are severe enough to represent an immediate risk to aviation safety of the national airspace (Group/Box 6 of OSA flow chart),
    - select Group 6 on the AME Action Tab.
    - Notate
    - THE AME MUST DEFER

Appendix A to Protocol 35 - Obstructive Sleep Apnea Specification Sheet A Information Request

Your application for airman medical certification submitted this date indicates that you have been treated or previously assessed for Obstructive Sleep Apnea (OSA).

You must provide the following information to the NCAA Medical Assessor Office within 90 days:

- All reports and records regarding your assessment for OSA by your primary care physician and/or a sleep specialist.
- If you are currently being treated, also include:
  - A signed Airman Compliance with Treatment form or equivalent;
  - The results and interpretive report of your most recent sleep study; and
  - A current status report from your treating physician indicating that OSA treatment is still effective.
- For CPAP/ BIPAP/ APAP: A copy of the cumulative annual PAP device report. Target goal should show use for at least 75% of sleep periods and an average minimum of 6 hours use per sleep period.
- For Dental Devices or for Positional Devices: Once Dental Devices with recording / monitoring capability are available, reports must be submitted.
- To expedite the processing of your application, please submit the aforementioned information in one mailing using your reference number (PI, MID, or APP ID).

Appendix B to Protocol 35 - Obstructive Sleep Apnea Specification Sheet B Assessment Request

Due to your risk for Obstructive Sleep Apnea (OSA), and to review your eligibility to have a medical certificate, you must provide the following information to the Aerospace Medical Certification Division (AMCD) or your Regional Flight Surgeon's Office for review within 90 days:

- A current OSA assessment in accordance with the American Academy of Sleep Medicine (AASM) by your AME, personal physician, or a sleep medicine specialist.
- If it is determined that a sleep study is necessary, it must be either a Type I laboratory polysomnography or a Type II (7 channel) unattended home sleep test (HST) that provides comparable data and standards to laboratory diagnostic testing. It must be interpreted by a sleep medicine specialist and must include diagnosis and recommendation(s) for treatment, if any.
- In communities where a Level II HST is unavailable, the NCAA will accept a level III HST. If the HST is positive for OSA, no further testing is necessary and treatment in accordance with the protocol must be followed. However, if the HST is equivocal, a higher level test such as an in-lab sleep study will be needed unless a sleep medicine specialist determines no further study is necessary and documents the rationale.

- If your sleep study is positive for a sleep-related disorder, you may not exercise the privileges of your medical certificate until you provide:
  - A signed Airman Compliance with Treatment form or equivalent;
  - The results and interpretive report of your most recent sleep study; and
  - A current status report from your treating physician addressing compliance, tolerance of treatment, and resolution of OSA symptoms.
- If you are not diagnosed with a sleep-related disorder or the study was negative for a sleep-related disorder, you may continue to exercise the privileges of your medical certificate, but the evaluation report along with the results of any study, if conducted, must be sent to the NCAA. All information provided will be reviewed and is subject to further NCAA action.
- In order to expedite the processing of your application, please submit the aforementioned information in one mailing using your reference number (PI, MID, or APP ID).

36 PROTOCOL FOR OESOPHAGEAL CANCER

A. General

i. A diagnosis of oesophageal cancer is disqualifying and upon diagnosis, the applicant must be deemed medically unfit to exercise the privileges of the class of the license they hold.

ii. Oesophageal cancer is uncommon, but is not rare! It is very common over age 55, with the average age at diagnosis being 72.

iii. Oesophageal cancer does not usually cause any noticeable symptoms until the cancer has spread beyond the oesophagus and into nearby tissue.

iv. Therefore, the outlook for oesophageal cancer is poor compared with other types of cancer. On average, 30% of people with oesophageal cancer will live for one year after diagnosis.

v. Average of 8% will live for five years after the diagnosis.

vi. Even with early diagnosis an estimation of 34% to 42% of people will live for 2 years after the diagnosis.

B. Two main types of Oesophageal Cancer are:

1. Squamous cell carcinoma (90% – 95%) – upper part of the oesophagus
2. Adenocarcinoma of the oesophagus (50% – 80%) – lower part of the oesophagus

C. Medical requirements:

i. Recertification is possible as most patients return to their regular level of activities within 2 months after surgery.

ii. Grounding period applicable until appropriate treatment has been instituted and the applicant is tumor free.

iii. The following examinations and procedure reports are required before the applicant's case can be considered with regard to medical certification/recertification:

1. Specialist report including Staging and/ or with Tumour Grading
2. Histology report
3. Radiological reports: CXR, PET scan
4. Bloods: e.g. FBC, LFT, U&E (Creat), Ca^{2+}

D. Stage 1 &2

i. Patients without lymph node involvement have a significantly better prognosis and 5-year survival rate compared to patients with involved lymph nodes.

ii. Follow-up treatment may include evaluation with CT scans and upper endoscopy to watch for possible recurrence.

iii. In stage 0, the cancer is confined to the superficial lining of the eosophagus. In stage I, the cancer has not invaded the outer muscle layer of the oesophagus.

iv. Surgery to remove the tumour offers the best chance for cure.

v. If the disease is caught early, the five-year survival rate is much higher — 75% for patients diagnosed in stage 0 and 50% for those diagnosed in stage I.

vi. Follow up:

1. 3 monthly Specialist report
2. 6 monthly Radiological reports for 3 years, then annually till year 5
3. CXR, PET scan
4. Endoscopic examination annually
5. 6 Monthly Bloods e.g. FBC, LFT, U&E (Creat), Ca^{2+}

vii. Restrictions:

1. Class 1: multi-crew (as or with co-pilot)
2. Class 2: No restrictions
3. Class 3: Controlling under supervision (as or with second controller)
4. Consideration may be given to lift the protocol at 5 years

E. <u>Stage 3</u>

i. Stage 3 oesophageal cancer is generally disqualifying. The 5 year survival rate is about 20% to 30%.

ii. Follow up:
1. 3 monthly Specialist report
2. 6 monthly Radiological reports for 3 years, then annually till year 5
3. CXR, PET scan
4. Endoscopic examination annually.
5. 6 Monthly Bloods e.g. FBC, LFT, U&E (Creat), Ca^{2+}

iii. Restrictions:
1. Class 1: multi-crew as or with co-pilot
2. Class 2: with a safety pilot
3. Class 2 CCM: multi-crew
4. Class 3: Controlling under supervision (as or with second controller)
5. **Consideration may be given to lifting the protocol after 5 years**
6. License holders must operate under a multi-crew environment, as or with co-pilot, or under-supervision (depending on their environment) etc., until the aeromedical risk has been assessed and deemed favourable for the restriction to be lifted.

F. <u>Stage 4</u>

i. Stage 4 lesions are associated with a 5-year survival rate of less than 5%.

ii. Stage 4 disease is disqualifying.

37 PROTOCOL FOR ONCOLOGY

A. Treatment Modalities available for cancer

1. Surgery:

a) Surgery is the commonest primary treatment for malignant disease, and is frequently the only treatment.

b) A return to flying, from the purely surgical aspect, depends on the extent of the surgical operation.

1. Radiotherapy:

a) This is usually given as an intensive course.

b) The aim of radiotherapy maybe curative, for example when given to an isolated group of lymph nodes which have proved by biopsy to contain lymphoma; or as adjuvant treatment, for example to the abdominal nodes following orchidectomy for a seminoma of the testis, on the assumption that they may contain metastatic tumours.

c) Many patients undergoing radiotherapy suffer non-specific systemic effects (tiredness, malaise and nausea) which make it inadvisable for any pilot to fly whilst receiving such treatment.

2. Chemotherapy:

a) Pilots, ATC's, CCM's and other aviators should be assessed as unfit during any period of treatment with cytotoxic chemical agents.

b) The only exception to an unfit assessment during adjuvant treatment for malignancy is endocrine therapy.

c) Certain adjuvant hormone and anti-hormone treatments following (for example) breast or prostate cancer treatment may be acceptable if there are no side effects.

3. Stem Cell transplantation:

a) It is possible to return to flying after stem cell transplantation if there is sustained remission.

4. Complementary and Alternative medicine:

a) Where such treatments are used in the presence of continued active disease, the applicant is assessed as unfit.

b) Where the treatment is used to prevent onset of malignancy or recurrence, the treatment must be considered on a case-by-case basis, with regard to the individual's overall health and the potential effect of the treatment.

5. Hormonal Therapy:

a) Endocrine therapy is used as part of the treatment of some cancers (such as hormone and anti-hormone treatment following breast and prostate cancer). Pilots, ATCs, CCM's and other aviators may be returned to flying or controlling if there are no side effects from their hormonal therapy.

2. Acceptable aviation risk:

1. The primary treatment, be it surgery, radiotherapy, chemotherapy or a combination of these, should have removed all signs of tumour/malignancy when measured clinically or by investigation.
2. Thus the risk to flight safety is the possibility that local or metastatic recurrence will cause sudden or insidious incapacitation whilst the pilot is flying.
3. After treatment of malignancy, the prognosis improves with recurrence-free time after the original episode.
4. Following "successful" primary treatment, the risk that tumour / malignancy will cause an insidious or sudden incapacitation depends on two factors.

a) The actual risk of recurrence, which will depend on the pathological stage of the tumour or its TNM classification.

b) The site of that recurrence and this will depend on the primary tumour type.

3. Principle of Aeromedical Certification of Pilots, ATC's, CCM's and other aviators with malignancy:

1. When considering the aero-medical risk (and therefore the risk to aviation safety) posed by a pilot, CCM or ATC suffering from a malignancy, the SACAA will evaluate the following:

a) Cancer specific issues:

i. Such as type of cancer (tissue and histological diagnosis), the likelihood of recurrence, site of recurrence, presence of any para-neoplastic syndromes, potential for a recurrence to cause overt or subtle in-flight incapacitation:

b) Issues related to the treatment of the cancer:

i. When assessing the aero-medical risk of a pilot, ATC, or CCM with a malignancy, accurate tissue diagnosis of the malignancy is essential:

c) Complications of Malignancy:

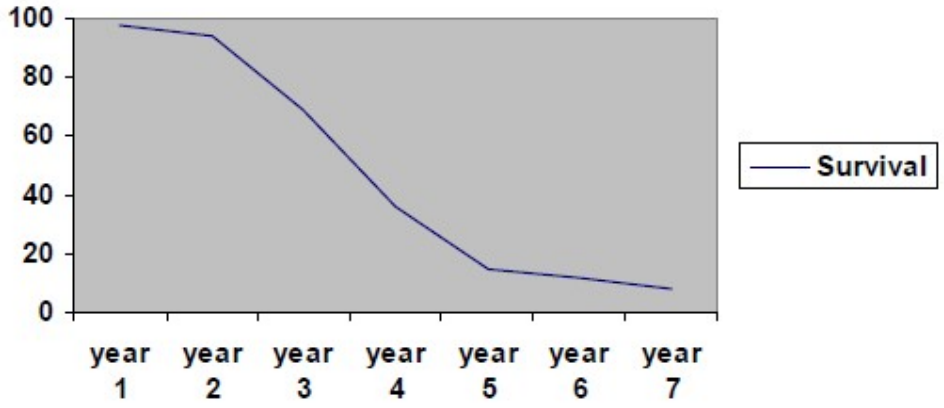
i. The common complications of the malignancy are usually pain, wasting, neuropathy, nausea, anorexia, seizures, hypercalcaemia, hyperuricaemia, viscus obstruction, organ failure, and para-neoplastic syndromes:

d) Likelihood of Recurrence

i. The overall survival curve for individuals diagnosed with a theoretical malignancy must be considered.

ii. For most cancer types, annual recurrence rates can be calculated from survival curves. (As cure following recurrence is rare, overall survival approximates recurrence).

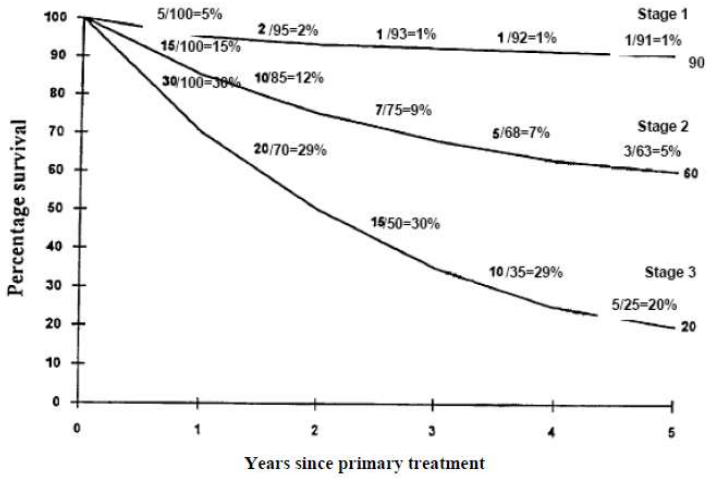
Table 1



e) Staging

i. Recurrence rates are greatly influenced by the stage of disease when primary treatment occurred.
ii. Many cancers are staged using a TNM (Tumour, Node, and Metastasis) classification.
iii. The variation in survival rates for a theoretical cancer according to the degree of spread evident at diagnosis.

Table 2



f) Site of recurrence

i. Each tumour has a characteristic pattern of recurrence.
ii. Thus for a theoretical tumour, metastases might occur according to the distribution.

Table 3

Site	Incidence (%)
Local and lymph nodes	60
Liver	20
Brain	10
Lung	5
Bone	5
Bone Marrow	0

g) Risk of particular metastasis causing incapacitation

i. Several assumptions are made when assessing the risk of a particular metastasis causing incapacitation (either subtle or overt).
ii. For a theoretical cancer, recurrence in a regional lymph node carries a relatively small risk of incapacitation.
iii. On the other hand, brain metastasis has a near-100% potential for incapacitation (whether sudden due to a fit or bleed, or subtle as a result of pressure effects or headache etc.).

Table 4

Site	Incapacitation weighting (%)
Local and lymph nodes	5
Liver	5
Lung	5
Bone	5
Bone marrow	20
Brain	100

h) Tumour Markers

i. The relapse or active progression of certain tumours may be effectively followed by measuring tumour markers.

4. Protocols for Specific cancers (UNDER REVIEW)

1. Malignant Melanoma

A. **General**

i. A diagnosis of Malignant Melanoma is disqualifying and upon diagnosis, the applicant is deemed medically unfit to exercise the privileges of the class of the license they hold.
ii. Risk of spread to brain is about 36 to 54% and there is a risk for recurrence.
iii. Patients who have previously developed melanoma are identified as having between a 3% to 5% chance of going on to develop a second primary melanoma.

B. **Medical requirements**

i. The following examinations and procedure reports are required before the applicant's case can be considered with regard to medical certification/recertification:

1. Specialist Report including staging

2. Pathology report including the following

   TNM Staging

   Breslow Depth Classification for Stage 1 and 2

   Excision Margins

   Location

   Sex

   Sentinel node assessment
3. Radiology reports if done
4. Laboratory tests: LDH; ALP

ii. Certification requirements are dependent on the above reports, and may be applied once all above reports have been received. The specific requirements are as detailed below:

C. **Stage 1 & 2 (T1-4, N0, M0) requirements**

1. If Breslow <0.76 mm:

a) No grounding period applicable (if sentinel node negative and well).
b) Medical certification may be decided upon by Medical Assessor, if uncomplicated, and they may be no need for AMC/panel decision.

c) Follow up requirements:
   i. Annual specialist report (treating specialist) for lifelong as the disease is unpredictable
   ii. Annual Clinical examination and bloods (LDH, ALP)

d) Restrictions
   i. No restrictions: All licence classes

2. If Breslow 0.76 – 1.49 mm:

a) No grounding period applicable (if sentinel node negative and well)

b) Follow up requirements:
   i. Annual specialist report (treating specialist) for lifelong as the disease is unpredictable
   ii. Annual Clinical examination and bloods (LDH, ALP)

c) Restrictions
   i. No restrictions: All licence classes

3. If Breslow 1.5 - 2.49 mm;

a) No grounding period applicable (if sentinel node negative and well)

b) Follow up requirements
   i. Annual specialist report (lifelong)
   ii. Annual Clinical exams and bloods (LDH, ALP)
   iii. Annual bloods (LDH, ALP)
   iv. Annual PET scan

c) Restrictions
   i. No restrictions: All licence classes

4. If Breslow 2.50 – 3.99 mm;

a) No grounding period applicable (if sentinel node negative and well)

b) Follow up requirements
   i. Annual specialist report (lifelong)
   ii. Annual Clinical exams and bloods (LDH, ALP)
   iii. Annual bloods (LDH, ALP)
   iv. Annual PET scan

c) Restrictions
   i. No restrictions: All licence classes

5. If Breslow >4 mm;

a) No grounding period applicable (if sentinel node negative and well)

b) Follow up requirements
   i. Annual specialist report (lifelong)
   ii. Annual Clinical exams and bloods (LDH, ALP)
   iii. Annual bloods (LDH, ALP)
   iv. Annual PET scan

c) Restrictions
   i. No restrictions: All licence classes

D. **Stage 3 (any T, N1/N2, M0)**
1. Follow up requirements
   a) 6 monthly specialist reports for one year, then annually (lifelong)
   b) 6 monthly clinical examinations and bloods (LDH, ALP)
   c) Annual PET scan or MRI Brain

2. Restrictions
   a. Class 1: Multi-crew (As or with co-pilot)
   b. Class 2: Safety Pilot
   c. Class 2 CCM: Multicrew
   d. Class3: Controlling under supervision (as or with second controller)
   e. License holders must operate under a multi-crew environment, as or with co-pilot, or under-supervision (depending on their environment) etc., until the aeromedical risk has been assessed and deemed favourable for a restriction to be lifted.

   f. Multi-crew restriction may not be applicable to Agricultural work (crop spraying), surveying, or culling

E. **Stage 4 (any T, any N, M1)**
1. Disqualifying

38 PROTOCOL FOR PARKINSON'S DISEASE

Parkinson's disease per se is not a disqualifying condition. The applicant is assessed on the following grounds –

- Bradykinesia.
- Rigidity.
- Tremor.

- Balance disturbances.
- Fast eye tracking.
- Voice quality.

If an applicant has been stable on therapy for 6 months, exhibits no drug side effects (orolingual dyskinesia, orthostatic hypotension or on-off phenomenon), the medical inspector, designated body or institution will consider him/her for flying fitness.

39 PROTOCOL FOR PEPTIC ULCER

An applicant with a history of an active ulcer within the past 3-months or a bleeding ulcer within the past 6-months must provide evidence that the ulcer is healed if consideration for medical certification is desired.

Evidence of healing must be verified by a report from the attending physician that includes the following information:

- Confirmation that the applicant is free of symptoms
- Radiographic or endoscopic evidence that the ulcer has healed
- The name and dosage medication(s) used for treatment and/or prevention, along with a statement describing side effects or removal

This information should be submitted to the Medical Assessor NCAA. Under favorable circumstances, the NCAA may issue a certificate with special requirements. For example, an applicant with a history of bleeding ulcer may be required to have the physician submit followup reports every 6-months for 1 year following initial certification.

The prophylactic use of medications including simple antacids, H-2 inhibitors or blockers, proton pump inhibitors, and/or sucralfates may not be disqualifying, if free from side effects.

An applicant with a history of gastric resection for ulcer may be favorably considered if free of sequela.

40 PROTOCOL FOR PNEUMOTHORAX

1. Traumatic Pneumothorax

(1) Uncomplicated cases. Fit to fly 6 weeks after discharge from hospital. Confirmatory chest x-ray and lung function test required.

(2) Complicated cases (e.g. empyema, chronic pneumothorax, other serious injuries, etc.) – refer to pulmonologist. Decision by Aviation Medical Panel.

2. Spontaneous Pneumothorax

(1) Initial pilots –

History of previous spontaneous pneumothorax. Temporarily unfit. Refer to pulmonologist.

(2) Experienced pilots –

(a) First episode –

May be considered for recertification 6 weeks after discharge from hospital. Confirmatory chest x-ray, lung function and pulmonologists report (stipulating state of recovery, chance of recurrence and underlying pathology) required.

(b) More than one episode –

Temporarily unfit. May be recertified 6 to 12 weeks following successful pleurodesis.

41 PROTOCOL FOR RHEUMATOID ARTHRITIS

1. All pilots suffering from rheumatoid arthritis, need a rheumatologists report stating whether or not the disease is in remission or controllable on acceptable medication.
2. The only acceptable medication at present is MethotrexateTM in dosages not exceeding 5 mg per day.
3. Gold salts, NSAID's, anti-malarials (in anti-rheumatic dosages), etc. are not compatible with flying.
4. The AME must determine whether the arthritic damage already incurred would compromise the pilot's flying safety.

42 PROTOCOL FOR SARCOIDOSIS

1. For the first application after the disease process started, the following must be submitted, in addition to a flying medical examination, after which a decision will be taken by the medical inspector, designated body or institution–

   (1) Blood tests –

   (a) ESR

   (b) Angiotensin Converting Enzyme

   (c) Ca2+

   (d) Uric Acid

   (2) Stress ECG

   (3) CXR

   (4) Lung Function Test

2. Every six months after the first application was granted, the following must be submitted –

   (1) Blood tests:

   (a) ESR

   (b) Angiotensin Reversal Enzyme

   (c) Ca2+

   (d) Uric Acid

   (2) Lung Function Test

   (3) Aviation medical examination

3. Annually after the first application was granted, the following must be submitted –

   (1) CXR

   (2) Specialist Physician/Pulmonologist Report

4. Stress ECG can be submitted at the normal intervals for the specific age group.

Note: The following is not required any more by this protocol –

1. Thallium scan of the heart
2. 24-hour Hölter ECG
3. Six-monthly stress ECG

43 PROTOCOL FOR PREVIOUSLY DIAGNOSED SEMINOMA

1. An orchidectomy must have been performed successfully, without complications.

2. A specialist report from an oncologist or Hospital Department of Oncology must state that no metastases have been found, and that the applicant is undergoing monthly follow-up.

3. For the period of 2 years following diagnosis and surgery the applicant is required to submit the following reports to the designated body or institution –

   (1) Three monthly chest x-ray examination reports.

   (2) CT scan reports (if considered necessary by Oncologist. Copies of CT scan reports must be submitted to the designated body or institution).

   (3) Tumour marker results –

   (a) Fetoprotein.

   (b) Lactate dehydrogenase (LDH).

   (c) Human chorionic gonadotropin (HCG).

4. After the initial two year period, the applicant will be required to submit these reports each six months to the designated body or institution.

5. The applicant is temporarily unfit to fly while on chemotherapy (and for at least one week after cessation of medication).

6. A yearly aviation medical examination is required.

7. This protocol is only valid for private pilots.

44 PROTOCOL FOR STROKE

The diagnosis of a TIA can be difficult to make with certainty. An applicant who presents with symptoms suggestive of a TIA should be thoroughly assessed.

The presence of an asymptomatic bruit is associated with an increased risk for a stroke, and 6-monthly examinations should be done thereafter.

The following conditions are disqualifying –

- Cerebral infarct, embolism, or haemorrhage.

- Cerebral aneurysm or A-V malformation. These applicants may be made fit again after surgical repair (not proximal ligation or "packing") if angiogram done after 1 year shows successful repair.

The incidental discovery of an asymptomatic occlusion of a cerebral vessel will not necessarily make an applicant unfit – he/she must be fully assessed.

45 PROTOCOL FOR TESTICULAR CANCER

A. General

i. A diagnosis of Testicular cancer is disqualifying and upon diagnosis, the applicant must be deemed medically unfit to exercise the privileges of the class of the license they hold, until proper treatment has been instigated, client is fully recovered and disease free.

B. Medical Requirements:

i. An orchidectomy must have been performed successfully, without complications.

ii. Certification considered at least 4 weeks post-surgery, and one week post radio-chemotherapy, and at full recovery.

iii. The following examinations and procedure reports are required before the applicant's case can be considered with regard to medical certification/recertification:

1. A specialist report including staging.
2. Radiological reports: CT scan/ MRI of the Abdomen.
3. Tumour marker levels: α fetoprotein; Lactate dehydrogenase (LDH); Human chorionic gonadotropin (HCG)

iv. The applicant is temporarily unfit to fly while on chemotherapy (and for at least one week after cessation of medication).

C. Stage 1 (Non Metastatic disease):

i. Certification must be after full recovery.

ii. Cure rates of 100% are possible

iii. **Follow up:** The applicant must submit;
1. 6 monthly Specialist's reports for the first 2 years, then annually till year 10 (At year 10, if all clear and favourable, protocol falls off).
2. CT scan/ MRI abdomen annually till year 10
3. 6 monthly tumour markers till year 10

iv. **Restrictions:**
1. Restricted to operate in a multi-crew environment, as or with co-pilot, with a safety pilot, or controlling under supervision depending on the environment for at least 6 months.
2. Restriction falls away after confirmation that the cancer is stage 1 (no metastasis).

D. Stage 2 (Pelvic and Abdomen L/N spread)

i. Certification will be after full recovery:
ii. Survival rates of 97% are possible
iii. **Follow up:** The applicant must submit;
1. 6 monthly Specialist's reports for the first 2 years, then annually till year 10 (At year 10, if all clear and favourable, protocol falls off).
2. CT scan/ MRI abdomen annually till year
3. 6 monthly tumour markers till year 10

iv. Restrictions:
1. Restricted to operate in a multi-crew environment, as or with co-pilot, with a safety pilot, or controlling under supervision depending on the environment for at least 6 months.
2. Restriction falls away after confirmation that the cancer is stage 2 (no distant metastasis).

E. Stage 3/4 (Local and Distant metastatic disease)

i. Certification must be after full recovery:
ii. Prognosis remains good (65 to 85% cure rates)

iii. **Follow up:** The applicant must submit;
1. 6 monthly Specialist's reports for the first 2 years, then annually till year 10 (At year 10, if all clear and favourable, protocol falls off).
2. CT scan/ MRI abdomen annually till year 10
3. 6 monthly tumour markers till year 10

iv. Restrictions:

1. While chemotherapy is required, there can be no certification.
2. On recertification, License holders must operate under a multi-crew environment, as or with co-pilot, or under-supervision (depending on their environment) for at least 6 months and/or until the aeromedical risk has been assessed and deemed favorable for the restriction to be lifted.

46 PROTOCOL FOR THROMBOEMBOLIC DISEASE

An applicant with a history of thromboembolic disease must submit the following if consideration for medical certification is desired:

- Hospital admission and discharge summary

- Current status report including:
  - Detailed family history of thromboembolic disease
  - Neoplastic workup, if clinically indicated
  - PT/PTT
  - Protein S & C
  - Leiden Factor V
  - If still anticoagulated with warfarin (Coumadin), submit all (no less than monthly) INRs from time of hospital discharge to present

For applicants who are just beginning warfarin (Coumadin) treatment the following is required:
- Minimum observation time of 6 weeks after initiation of warfarin therapy;
- Must also meet any required observation time for the underlying condition; AND
- 6 INRs, no more frequently than 1 per week

47 PROTOCOL FOR CARDIAC VALVE REPLACEMENT

Applicants with tissue and mechanical valve replacement(s) are considered after the following:

- First- and Third-class initial applicants are reviewed by the NCAA's cardiology panel and must have a 6-month recovery period to ensure stabilization before consideration.

- Copies of hospital/medical records pertaining to the valve replacement; include make, model, serial number and size, admission/discharge summaries, operative report, and pathology report;
- If applicable, a current evaluation from the attending physician regarding the use of Coumadin to confirm stability without complications, drug dose history and schedule, and International Normalized Ratio (INR) values (within acceptable range) accomplished at least monthly during the past 6-month period of observation;
- A current report from the treating physician regarding the status of the cardiac valve replacement. This report should address your general cardiovascular condition, any symptoms of valve or heart failure, any related abnormal physical findings, and must substantiate satisfactory recovery and cardiac function without evidence of embolic phenomena, significant arrhythmia, structural abnormality, or ischemic disease.
- A current 24-hour Holter monitor evaluation to include select representative tracings; Current M-mode, 2-dimensional echocardiogram with Doppler. Submit the video resulting from this study; A current maximal GXT – See GXT Protocol;
- If cardiac catheterization and coronary angiography have been performed, all reports and films must be submitted, if requested, for review by the agency. Copies should be made of all films as a safeguard against loss;.
- Following heart valve replacement, first- and second-class certificate holders shall be followed at 6-month intervals with clinical status reports and at 12-month intervals with a CVE, standard ECG, and Doppler echocardiogram. Holter monitoring and GXT's may be required periodically if indicated clinically. For third-class certificate holders, the above followup testing will be required annually unless otherwise indicated.
- Applicants who have received multiple heart valve replacements must be deferred, however, the Medical Assessor may consider certification of all classes of applicants who have undergone a Ross procedure (pulmonic valve transplanted to the aortic position and pulmonic valve replaced by a bioprosthesis).

It is the responsibility of each applicant to provide the medical information required to determine his/her eligibility for airman medical certification. A medical release form may help in obtaining the necessary information.

All information shall be forwarded in one mailing to NCAA

48 MONOCULAR/AMBLYOPIC PROTOCOL

To be applicable if (optimally corrected) vision in the weak eye is 6/12 or worse.

Pre-conditions: There must be no active ocular pathology.

Vision (uncorrected or corrected) in the better eye must be 6/6 or better (distance vision) and 6/9 or better (near vision).These are absolute requirements, not open to waiver.

Initial applicants: In addition to the required standards, initial applicants must pass a practical flight test by a Authority approved instructor before being declared fit according to the protocol.

49 PROTOCOL FOR RADIAL KERATOMY/PRK/LASIK

1. Initial requirements

(1) Waiting period of six months (three months after PRK/LASIK) after surgery.

(2) Reports from the treating ophthalmologist immediate post-surgery and after the six month waiting period –

(a) Visual acuity and other visual parameters should be within the standards required for the license type applied for.

(b) There should not be any fluctuation of vision.

(c) There should not be any glare problems.

(d) There should not be any post-operative complications that can jeopardise flight safety.

(e) Should not be on any unacceptable medication.

2. Procedure

(1) After the six month waiting period the applicant should submit the initial report and also the six monthly follow-up report from the treating ophthalmologist to the medical inspector or designated body or institution and his/her case will be presented by the DAME.

(2) If the reports are favourable, he/she will be declared fit to fly on this protocol.

3. Requirements once on this protocol

(1) Follow-up reports six monthly from the treating ophthalmologist for the first year after being declared fit to fly.

(2) Yearly reports from the treating ophthalmologist thereafter.

(3) Any change in the status of the visual status will automatically render the applicant unfit, and will require a full investigation before further consideration.

Note: This protocol will be applicable to all licence classes of the civil aviation sector.

50 PROTOCOL FOR BINOCULAR MULTIFOCAL AND ACCOMMODATING DEVICES

This Protocol establishes the authority for the Examiner to issue an airman medical certificate to binocular applicants using multifocal or accommodating ophthalmic devices. Devices acceptable for aviation-related duties must be FDA approved and include:

Intraocular Lenses (multifocal or accommodating intraocular lens implants) Bifocal/Multifocal contact lenses

Examiners may issue as outlined below:

- Adaptation period before certification: - Surgical lens implantation – minimum 3 months post-operative - Contact lenses (bifocal or multifocal) – minimum one month of use
- Must provide a report to include the FAA Form 8500-7, Report of Eye Evaluation, from the operating surgeon or the treating eye specialist. This report must attest to stable visual acuity and refractive error, absence of significant side effects/complications, need of medications, and freedom from any glare, flares or other visual phenomena that could affect visual performance and impact aviation safety
- The following visual standards, as required for each class, must be met for each eye:

Distant First- and Third-Class 20/20 or better in each eye separately, with or without correction

Second-Class 20/40 or better in each eye separately, with or without correction

Near All Classes 20/40 or better in each eye separately (Snellen equivalent), with or without correction, as measured at 16 inches

Intermediate First- and Third-Class 20/40 or better in each eye separately (Snellen equivalent), with or without correction at age 50 and over, as measured at 32 inches

Second-Class No requirement

Note: The above does not change the current certification policy on the use of monofocal nonaccommodating intraocular lenses.

51 PROTOCOL FOR FARNSWORTH LANTERN TESTING

The procedure for testing for colour deficiency using the Farnsworth lantern must be as follows –

Note: Only the Farnsworth lantern will be acceptable

1. The test must be conducted in a completely dark room.
2. Applicants must be seated at a distance of 3m from the lantern.
3. Three runs comprising nine pairs of lights must be conducted.
4. Lights must be flashed for a maximum period of 3 seconds only, and the applicant must be expected to give a verbal answer during this time.
5. The first run is to familiarise the applicant with the test.
6. The assessor must inform the applicant that only three colours will be accepted as correct answers: White, Red or Green.
7. All answers given by the applicant during the first (practice) run must be duly disregarded.
8. In the next two test runs, only one error will be permitted per run.
9. Applicants who do not commit any errors in the first test run do not have to undergo a second test run.
10. If an applicant commits one error in the first test run, a second test run will be given.
11. Any errors more than one per test run will be declared a fail.
12. Applicants who obtain a satisfactory score in the Farnsworth lantern test are deemed to be Grade II colour-safe.
13. Applicants who fail to obtain a satisfactory score in the test are deemed to be Grade III colour-unsafe, unless they submit satisfactory reports from an ophthalmologist and a flight instructor designated by the Executive Director.

52 PROTOCOL FOR PRACTICAL FLIGHT TESTING IN COLOUR VISION DEFICIENCY

Applicants who fail to obtain a satisfactory score in the Farnsworth lantern, Beyenne, Holme-Wright type A or Spectrolux colour perception lanterns, as the case may be, must undergo a practical flight test with an instructor designated by the Executive Director in accordance with the following requirements –

1. The test may be conducted in a simulator or aircraft.
2. If conducted in a simulator, the simulator must be of the same Class as the aircraft to be flown by the applicant.
3. All tests must be conducted in an EFIS-equipped aircraft, or EFIS cockpit simulator.
4. The procedure and environmental requirements detailed below must be approximated as far as is practicable in a simulator test.
5. The test must be undertaken by two (2) instructors, one of whom must be an instructor designated by the Executive Director for the assessment of applicants during a practical flight test for colour perception purposes.
6. An instructor designated by the Executive Director for the assessment of applicants during a practical flight test for colour perception purposes must have normal colour vision.
7. The instructor designated by the Executive Director must administer the test to the applicant, while the second instructor must pilot the aircraft during the test.
8. The test must be conducted at dusk.
9. The test must be conducted at a small aerodrome with minimal lighting.
10. The instructors must communicate with tower/ground station operators prior to undertaking the test.
11. On the ground, the applicant must be requested to identify ground lights, taxi lights, etc.
12. The tower/ground station must be requested to flash lights at the aircraft.
13. Red, Green and White lights must be flashed by the tower/ground station in a random manner, and the applicant must be requested to identify the lights as they are being flashed by the tower.
14. Lights must be flashed a minimum of eighteen (18) times, and the applicant must be requested to provide a correct answer within three (3) seconds of any light being flashed.
15. After take-off, the aircraft must conduct low-level flying circuits at a maximum height of 3 miles for a minimum period of thirty (30) minutes while the tower/ground station continues to flash lights at the aircraft.

16. A minimum of eighteen (18) lights must be identified by the applicant during this period.
17. The applicant must also be requested to identify landscape features at this stage.
18. The instructor piloting the aircraft must then fly to a pre-determined point and do a turn-around.
19. At 13 miles from the final destination, the applicant must be requested to identify the runway.
20. At 11 miles from the final destination, on a long and high final approach, the applicant must be requested to identify the PAPI lights.
21. At 7 miles from the final destination, the applicant must be requested to identify the runway lights.
22. At 5 miles from the final destination, with White PAPI lights, a rapid descent must be undertaken, and the applicant must be requested to identify the PAPI lights as they change colour.
23. At all stages during the flight and on the ground, the applicant must be requested identify various colours and shades on the EFIS screen, and all difficulties must be noted.
24. The test must be a minimum of one and a half (1½) hour duration;

25. Applicants are deemed to have performed satisfactorily in the test if they are able to identify all the parameters they are being tested on.

53 WARFARIN PROTOCOL

GENERAL

Aviation personnel presenting with coagulation disorders should be disqualified if there is a history of a serious bleeding episode and factor replacement.

The provision of medical certification for aviation personnel on Warfarin may be considered for any class of medical certificate based on the individual medical condition of the applicant and risk factor management.

Applicants on Warfarin may not take part in aerobatic activities.

APPLICABILITY

Class I ATPL

The applicant may only be considered with a restriction as a Multi-crew, with or as a Co-pilot.

Class I CPL

A. Applicant may fly solo if they comply with the following restrictions

- The applicant must not have associated co-morbidities.
- Proof of INR control, 80% of the time in three months after initiation of Warfarin, while declared temporarily unfit to fly.

B. Applicant may fly with a safety pilot if

- Applicant has associated co-morbidities that are poorly controlled.
- Safety pilots must not have any restrictions other than corrective lenses or glasses.
- Proof of INR control, 80% of the time in three months after initiation of Warfarin, while declared temporarily unfit to fly.

Class II

A. Applicant may fly solo if

- There are no associated co-morbidities.
- Proof of INR control 80% of the time in three months while declared temporarily unfit to fly , on Warfarin treatment.

B. Applicant may fly with a safety pilot if

- Applicant has associated co-morbidities that are poorly controlled.
- Safety pilot must not have any restrictions other than corrective lenses/ glasses.
- Proof of INR control, 80% of the time in three months after initiation of Warfarin, while declared temporarily unfit to fly.

Class III: Applicants may be considered if they meet the prescribed criteria

GENERAL MEDICAL EXAMINATION REQUIREMENTS APPLICABLE TO ALL CERTIFICATE HOLDERS

(a) All initial medical reports must be submitted to the medical inspector, designated body or institution for approval.

(b) Applicants must submit the initial baseline INR and a cardiologist report before the initiation of Warfarin, then he/she must submit a weekly INR report after initiation of Warfarin until there is proof of stability; the applicant can then submit one monthly INR reports.

(c) The applicant must submit his/her INR reports to the DAME on a monthly basis.

(d) The applicant must submit a full medical examination report, including INR and a cardiologist report to the medical panel on a six monthly basis.

(e) Medication must be well-tolerated by the aviation personnel for a three-month observation period (during which the applicant must be declared temporarily unfit to fly to ensure safety).

(f) All applicants must submit proof of stability of the INR, 80% of the time in three months, prior to consideration for medical certification.

(g) Licensed aviation personnel presenting with INR outside the required range must be declared temporarily unfit to fly for a four-week observation period, in which he/she must submit four reports separately (weekly) to prove INR stability to the medical inspector, designated body or institution.

(h) Applicants should not take any other medication without approval, either by the DAME, or by the specialist managing his condition.

(i) Applicants who present with an acute illness must be declared temporarily unfit to fly until they are fully recovered and their INR re-assessed.

GENERAL MEDICAL CONDITIONS

A. Deep Vein Thrombosis

Certification should be denied for the period of the episode, and for three months post initiation of anticoagulation therapy.

The applicant must be declared temporarily unfit to fly for a three month observation period, in which he/she must be required to submit three months' INR reports (baseline INR reports, weekly INR report until stability is reached, then one monthly reports) the levels of which must be between 2 and 3, 80% of the time.

The applicant must submit his/her monthly INR reports to the DAME.

Underlying contributing factors such as malignancies must be evaluated according to the guidelines set for those conditions.

B. Atrial Fibrillation

Certification should be denied for the initial period of the episode, while the condition is being investigated.

The applicant must be declared temporarily unfit to fly for a three month observation period, in which he/she must submit three months' INR reports (baseline INR reports, weekly INR report until stability is reached, then one monthly reports) the levels of which must be between 2 and 3, 80% of the time.

The applicant must submit his/her monthly INR reports to the DAME.

Underlying contributing factors must be evaluated according to the guidelines set for those conditions.

C. Valvular Replacement

Certification should be denied for the period of the episode.

The applicant must be declared temporarily unfit to fly for a three month observation period, in which he/she must submit three months' INR reports (baseline INR reports, weekly INR report until stability is reached, then one monthly reports) the levels of which must be between 2 and 3, 80% of the time.

The applicant must submit his/her monthly INR reports to the DAME.

Underlying contributing factors must be evaluated according to the guidelines set for those conditions.

D. Pulmonary Embolism

Certification should be denied for the initial period of the episode, and for three months post initiation of anticoagulation therapy, while the condition is being investigated.

The applicant must be declared temporarily unfit to fly for a three month observation period, in which he/she must submit three months' INR reports (baseline INR reports, weekly INR report until stability is reached, then one monthly reports) the levels of which must be between 2 and 3, 80% of the time.

Underlying contributing factors must be evaluated according to the guidelines set for those conditions.

Recurrent arterial emboli is disqualifying under any circumstances.

A single episode of pulmonary embolism, not associated with chronic deep venous thrombosis, should be considered disqualifying from the date of the embolisation and for at least three months after anti-coagulation treatment has been initiated.

More than one episode of pulmonary embolisation documented by CT scan method should be denied certification permanently.

The applicant will submit his/her monthly INR reports to the DAME.

E. Haemophilia

Applicants with Factor VIII Deficiency must be denied certification.

Applicants with Von Willebrand Disease as well as other factor deficiency diseases must be disqualified if there is a history of factor replacement or serious bleeding episodes.

F. Haemorrhagic Platelet Abnormalities

Applicants with decreased circulating platelet count and abnormal platelet function must be disqualified from flying.

ANNEXURE I WAIVER CERTIFICATE

WAIVER CERTIFICATE This is not a medical certificate, and cannot be used in place of one, but should be displayed along with the medical certificate.			
This certifies that: Of			
Date of birth	ID number	Licence number	Sex
Has been medically waivered for			
WAIVER SERIAL NUMBER:			
Restrictions:			
Class of Medical Certificate Authorised:			
FOR THE EXECUTIVE DIRECTOR OR DESIGNATED BODY OR INSTITUTION 57Date			
Signature			

ANNEXURE II MEDICATION AND FLYING

1. General

1.1 This Chapter outlines the general principles for the use of medications in flying.

1.2 Any intake of medicine or narcotic substance must be declared in the formal declaration signed by aviation personnel and handed to physicians in charge of the evaluation of flying fitness at each medical examination. In principle, pilots taking medication either prescribed or obtained 'over the counter' have to be regarded as unfit unless a AME, a designated body(DB) or the Authority has been contacted and endorsed a resumption of flying duties. The use of herbal medication and alternative treatment modalities requires particular attention to possible side effects and should also be reported to the AME/DB and the Authority.

1.3 The decision as to whether an aviation participant is medically fit for the privileges' of the license he or she applies for whilst taking medication must be taken in conjunction with knowledge of the applicants clinical situation and the dosage and side effects associated with the medication. The consumption of such substances may have consequences on qualification for three reasons:

1.3.1 the disease requiring treatment may be cause for disqualification;

1.3.2 flight conditions may modify the reactions of the body to a treatment (e.g. jet lag, dehydration, moderate hypoxia)

1.3.3 and most importantly, medication may cause adverse side effects that impair flight safety.

1.4 It should be noted that the effects of medication do not necessarily immediately appear when treatment is started or disappear when the treatment is stopped, and that the subject may be temporarily disqualified during the initial period of treatment or during the withdrawal period.

1.5 Flying personnel should nevertheless not be deprived of an efficient treatment because of their professional occupation. What is important is to find a compromise between flying fitness requirements, medical treatment and illness that is the most suitable both for the patient and flying safety.

1.6 Flying personnel must be declared fit by their AME according to the circumstances and not by their medical practitioner. One of the goals of the AME must be to make flying personnel aware of the problems caused by treatment so that they refrain from taking unreported medication whose side effects may not have been assessed.

1.7 It is possible that new therapeutic agents will become available that offer significant treatment advantages. If such agents are considered by the Authority to be appropriate for use by aircrew, due consideration will be given to aero medical and safety aspects, their use may be approved. However, as a general rule, medication may only be endorsed by the AME, if the applicant has taken the respective medication whilst not on flying duty for an appropriate period of time (temporary disqualification) with proven efficacy and without any side effects that could interfere with flying duties.

2 Medication Guidelines

2.1 The medical condition is the primary concern, and a clinical assessment of being unfit to exercise aviation related task will determine the period of unfitness.

2.2 The class of medical fitness determines which medical conditions will be allowable for the exercise of the aviation license, or how it may be waivered.

2.3 Knowledge of existing criteria and protocols as produced by the Authority is mandatory for proper interpretation of aviation medical fitness.

2.4 All drugs not published in the NAM-CATS 67 need to be verified by the Authority before prescribing.

2.5 Central acting drugs generally are unacceptable and unsafe as medication for aviation personnel.

2.6 The side effect profile needs careful attention to determine acceptability.

2.7 The applicant's co-morbidities may cause medical unfitness.

2.8 The applicant's possible adverse reactions to the medication must be monitored before a decision regarding fitness may be made.

2.9 The period of being unfit after the use of unacceptable medications largely depends on the manner and time of elimination of the drug.

Hypolipidaemic agents

Dyslipidaemia in flying personnel should be treated in conjunction with an appropriate diet and weight reduction if appropriate.

Name	Acceptable	Unacceptable	Comments
Fibrates			Treatment with fibric acids (e.g. fenofibrate or gemfibrozil) should be discontinued in the case of gastrointestinal side effects or elevated transaminase concentration
Statins	Cholestyramine	Fluvastatin Lovastatin Combined formulas	HMG-CoA reductase inhibitors are acceptable with preference for hydrophilic molecules such as pravastatin rather than lipophilic substances such as simvastatin which may induce sleep disorders.
Others	Acipimox (niacin derivative) used in low doses and accepted on a case-by-case basis.		

Blood and Haemopoeitic

Name	Acceptable	Unacceptable	Comments
Plasma expanders		All agents in this group are unacceptable	
Anticoagulants	Warfarin-refer to the protocol-acceptable	Haemostatics, the indications for use are disqualifying	
Fibrinolytics		All agents in this group are unacceptable	

Platelet aggregation inhibitors, Injectables	Disprin/Aspirin in low-dose (≤100mg/day) acceptable	All agents in this group are unacceptable	
Sclerosing agents		All agents in this group are unacceptable	
Haematinics	Prophylactics in pregnancy are acceptable		Anaemia has to be corrected before consideration.
Haemoglobin-based Oxygen carrier		This medication is not considered	
Respiratory System			
Coughs and cold	Drugs containing only carbosysteine, guaifenesin or acetylcysteine without an alcohol base are accepted.	Tripolidine Pseudoephedrine Ephedrine Codeine & modifieds Theophyllin Dextromethorphane Diphenhydramine Promethazine Noscapine Phenyltoloxamine Methadone	
Bronchodilators			Sympathomimetics:The use of Short-acting Beta Agonists(SABA) /Long-acting Beta Agonists(LABA) should be restricted to eight(8) hours or more prior to flying, but may be used in an unusual asthmatic attack in flight to allow the safe completion of the flight.

Ear, Nose and Throat			
Name	**Acceptable**	**Unacceptable**	**Comments**
Topical nasal preparations	These medications are acceptable.		
Ear drops and ointments	These medications are acceptable.		
Mouth and Throat preparations	These medications are acceptable.		
Gastro-Intestinal tract			
Digestants	These medications are acceptable.		
Appetite suppressants		All agents in this group are unacceptable	
Anti-spasmodics	Mebeverine Alverine Peppermint Oil	Hyoscine Diphenhidramine Alcohol substrates Belladonna Chlordiazepoxide Propantheline Methixene	Antimuscarinics (e.g. dicyclomicine, mepenzolate, pipenzolate, poldine and propatheline) are used to reduce smooth muscle spasm in non-ulcerative dyspepsia, irritable bowel syndrome and diverticular disease. They all have atropine-like side-effects of confusion, dry mouth, reduced power of accommodation, difficulty with micturition and constipation, which preclude their use.
Acid reducers			
Antacids		Magnesium as a single drug is unacceptable.	

Antacids and combinations		Dicyclomine Magnesium dominant drugs Oxethazaine	
Name	**Acceptable**	**Unacceptable**	**Comments**
H2 receptor antagonists	Cimetidine allowable if taken more than 8 hours before aviation activity. Ranitidine allowable if taken more than 12 hours before aviation activity		
Proton pump inhibitors	Omeprazole		
Cycloprotective		Misoprostol	
Motility enhancers		All agents in this group are unacceptable	
Laxatives		Magnesium salts	
Antidiarrhoeals	Loperamide not to be taken less than 6 hours before aviation activity.	Codeine phosphate Cophenotrope Morphine Atropine (Lomotil) Aminopentamide	

Liver, gall bladder and bile		These agents are unacceptable due to disease profile	Treatment for the dissolution of gallstones is not compatible with flying status as it may cause diarrhoea and cholecystitis.
Suppositories and anal ointments	These agents are acceptable		Soothing preparations containing bismuth subgallate, zinc oxide and haemamelis often mixed with a small dose of corticosteroid may be acceptable in short courses for topical application.

Name	Acceptable	Unacceptable	Comments
Others	Sulfasalazine enteric coated may be used with 6 monthly ophthalmology reporting, FBC, UKE, and urinalysis	Sibutramine Budesonide Infliximab Orlistat	
Antihelmintics			
Antihelmintics	Mebendazole Albendazole Praziquantel	Piperazine	
Dermatological			
Anti-bacterial antiseptic agents	These medications are acceptable.		
Anti-parasitics	These medications are acceptable.		
Fungicides	These medications are acceptable.		
Cortico-steroids	These medications are acceptable.		
Psoriasis		Systemic Etretinate Acitretin	Systemic etretinate for psoriasis may cause serious drying of the skin and mucosa and particularly of the conjunctival tissues, intensified by flying conditions. It is not recommended for aircrew.
Acne		Tretinoin Isotretinoin Cyproterone acetate	

		Minocycline	
Melanin inhibitors and stimulants		These medications are unacceptable	
Emollients and Protectives	These medications are acceptable		
Others		Imiquimod Minoxidil	
OPTHALMICS Aviation activities only to commence once all visual normality is regained			
Anti-infective and antiviral	Chloramphenicol Ciprofloxacin Olfloxacin Oxytetracycline Fusidic Acid Moxyfloxacin Acyclovir		Anti-infective and anti-inflammatory eye preparations are usually not compatible with flying status due to the underlying condition. The Authority should be consulted if there is any doubt.
Corticoids	These medications are acceptable		
Combinations		All treatment containing Aminoglycosides are unacceptable	
Decongestants		These medications are unacceptable.	

Mydriatics		These agents are unacceptable	
Others		Injectables Verteporfin	
Urinary System			
Anti-diuretics		This medication is not compatible with flying	
Urinary alkalinizes		The chronic use of this medication is not compatible with flying	
Urinary antiseptics		Pipemidic acid Nalidixic acid Tamsulosin Lanthanum Flavoxate	
Others		Lanthanum Tamsulosin Flavoxate	
Genital System			
Contraceptives	These medications are acceptable		
Vaginal Preparations	These medications are acceptable		
Oxytocics		These agents are unacceptable	

Uterine antispasmodics		These agents are unacceptable	
Sexual dysfunction			Temporary colour vision disturbance have been reported after the use of phosphodiesterase-type-5 inhibitors (e.g. vardenafil, sildenafil). 72 hours should elapse after use prior to flying.
Anti-Microbials			
Name	**Acceptable**	**Unacceptable**	**Comments**
Anti-Microbials	Beta-lactams, Erythromycin(short course) Azithromycin (short course) Other Macrolides, Chloramphenicols Sulphonamides and combinations Quinolones Clindamycin(short course) Na-Fusidate Fosfomycin	Telithromycin Roxithromycin Aminoglycosides Tetracycline Injectables are not acceptable.	All antibiotics should be used for 48 hours without any side effects before commencing aviation activities.
Anti-fungal agents			
Anti-fungal agents	Fluconazole Itraconazole Nystatin Terbinafine		

	Griseofulvin Ketoconazole		
Anti-protozoa agents			
Anti-protozoa agents	Metronidazole Atovaquone Chloroquine	Pirimethamine Tinidazole Halofantrine Mefloquine	
Anti-viral agents			
Name	Acceptable	Unacceptable	Comments
Anti-viral agents	Acyclovir		Anti-Retroviral-case-by case management, refer to protocol

Anti-retroviral agents			
Nucleoside Reverse Transcriptase Inhibitors (NRTI's)	Zizovudine Retrovir Lamivudine Didanosine Abacavir Emtricitabine Tenofovir	Efavirenz	Anti-Retroviral-case-by case management, refer to protocol Initially- monthly FBC for 6 months
Non-Nucleoside Reverse Transcriptase Inhibitors (NNRTI's)	Nevirapine		Initially- ALT & AST – 2 weeks, 6 weeks
Proteases Inhibitors (PI)	Atazanavir Lopinavir/Ritonavir Saquinavir Nelfinavir	Indinavir	
Others	Raltegravir Darunavir Etravirine Maraviroc Amprenvir	Tipranavir	
	Fosamprenavir		
Fusion Inhibitors	Fuzeon		
Endocrine System			

Name	**Acceptable**	**Unacceptable**	**Comments**

Anti-diabetic agents	Oral Metformin Thiazolidenediones Pioglita Rosiglitazone Acarbose:	Insulin Glargine Detemir Glulisine Lispro	Oral Glipizide Tolbutamide Gliclazide Glibenclamide Glimepiride Chlorpropamide Repaglinide Nateglinide	Insulin Neutral protamine Hagedorn Premix analogues (biphasic)	Refer to Diabetic Protocol
Thyroid	Thyroxine		Neo-Mercazole		Refer to Protocol
Parathyroid	Corticosteroids, only low dose Prednisone is acceptable		Calcitonin,		Refer to Protocol
Hormones					
Name	**Acceptable**		**Unacceptable**		**Comments**
Androgens and Anabolic steroids	Testosterone Mesterolone Oestrogens Progestogens Tibolone		Metenolone Nandrolone		
Tropic Hormones	Clomiphene		Injectables and implants		
Hormone Inhibitors	Tamoxifen Anastrazole				Case-by-case basis and 3 months stabilisation period required.

Vitamins, Tonics, Minerals and Electrolytes			
Name	**Acceptable**	**Unacceptable**	**Comments**
Vitamins	These agents are acceptable.		In general, pilots, cabin crew, and ATCs should not exceed the Recommended Daily Allowances for these products.
Vitamins with minerals	These agents are acceptable		In general, pilots, cabin crew, and ATCs should not exceed the Recommended Daily Allowances for these products
Tonics		Alcohol based combinations unacceptable	
Minerals and electrolytes	These agents are acceptable		In general, pilots, cabin crew, and ATCs should not exceed the Recommended Daily Allowances for these products
Amino-Acids	These agents are acceptable		In general, pilots, cabin crew, and ATCs should not exceed the Recommended Daily Allowances for these products
Cytostatics			
Immunological Immunosuppressant's Immunostimulants			This section will come under review soon.
Chelating agents, Ion exchange Preparations			
Chelating agents, Ion exchange Preparations		These agents are unacceptable	
Biological			
Name	**Acceptable**	**Unacceptable**	**Comments**

Biological	Immunisation regimens are acceptable		No aviation-related duties for 24 hours after receiving the following vaccinations (primary and boosters): Adult diphtheria and tetanus Poliomyelitis Hepatitis A & B Measles, mumps, rubella Yellow fever Typhoid Tuberculosis (Mantoux Test or Bacille Calmette-Guerin); Influenza Varicella Meningococcal Pneumococcal Cholera. After receiving the following immunisations (primary and boosters) there should be no aviation-related duties for a minimum of 72 hours: Japanese Encephalitis.
Enzymes			
Enzymes		These agents are unacceptable	
Poison Antidotes			
Name	Acceptable	Unacceptable	Comments

Poison Antidotes		These agents are unacceptable	
Others			
Others	Nicotine adjuvants are acceptable	Bupropion is unacceptable	

3. Pharmaceutical medications

3.1. As an Examiner you are required to be aware of the regulations and Agency policy and have a responsibility to inform airmen of the potential adverse effects of medications and to counsel airmen regarding their use. There are numerous conditions that require the chronic use of medications that do not compromise aviation safety and, therefore, are permissible. Airmen who develop short-term, self-limited illnesses are best advised to avoid performing aviation duties while medications are used.

3.2. Aeromedical decision-making includes an analysis of the underlying disease or condition and treatment. The underlying disease has an equal and often greater influence upon the determination of aeromedical certification. It is unlikely that a source document could be developed and understood by airmen when considering the underlying medical condition(s), drug interactions, medication dosages, and the sheer volume of medications that need to be considered.

3.3. A list may encourage or facilitate an airmen's self-determination of the risks posed by various medical conditions especially when combination therapy is used

3.4. Do Not Issue - Do Not Fly

3.4.1. The information in this section is provided to advise Aviation Medical Examiners (AMEs) about two medication issues:

3.4.1.1. Medications for which they should not issue (DNI) applicants without clearance from the Namibia Civil Aviation Authority (NCAA), and

3.4.1.2. Medications for which they should advise airmen to not fly (DNF) and provide additional safety information to the applicant.

Note: The lists of medications in this section are not meant to be all-inclusive or comprehensive, but rather address the most common concerns.

3.4.2 For any medication, the AME should ascertain for what condition the medication is being used, how long, frequency, and any side effects of the medication. The safety impact of the underlying condition should also be considered.

3.4.2.1 <u>Do Not Issue.</u>

AMEs should not issue airmen medical certificates to applicants who are using these classes of medications or medications:

3.4.2.2 Angina medications

- *nitrates (nitroglycerin, isosorbide dinitrate, imdur), ranolazine (Ranexa), Anticholinergics (oral)* e.g: atropine, benztropine (Cogentin)
- Cancer treatments including chemotherapeutics, biologics, radiation therapy, etc., whether used for induction, "maintenance," or suppressive therapy.
- Controlled Substances (Schedules I – V). An open prescription for chronic or intermittent use of any drug or substance.
- This includes medical marijuana, even if legally allowed or prescribed under state law.

Note: for documented temporary use of a drug solely for a medical procedure or for a medical condition, and the medication has been discontinued, see below.

3.4.2.3 Diabetic medications

- NOT listed on the Acceptable Combinations of Diabetes Medications. o e.g.: SGLT-2 inhibitors such as Invokana, Farxiga and Jardiance are NOT allowed.

3.4.2.4 Dopamine agonists used for Parkinson's disease or other medical conditions:

bromocriptine (Cycloset, Parlodel) o pramipexole (Mirapex), ropinirole (Requip), and o rotigotine (NeuPro) requires at least one-year of post-marketing experience with a new drug before considering if for aeromedical certification purposes. New antibiotics, lipid-lowering drugs, and antihypertensive medications may be considered earlier than one year. Please contact the RFS or AMCD for guidance on specific applicants.

3.4.2.5 Hypertensive (centrally acting) including but not limited to –

clonidine o nitrates o guanabenz, methyldopa, and reserpine Malaria medication - mefloquine (Lariam)

3.4.2.6 Over-active bladder (OAB)/Antimuscarinic medications

These carry strong warnings about potential for sedation and impaired cognition.*e.g.: tolterodine (Detrol), o oxybutynin (Ditropan), solifenacin (Vesicare).*

3.4.2.7 **Psychiatric or Psychotropic medications,** *(even when used for something other than a* mental health condition) including but not limited to:

- oantidepressants (certain SSRIs may be allowed - see SSRI policy)
- antianxiety drugs – e.g.: alprazolam (Xanax) antipsychotics
- attention deficit disorder (ADD) or attention deficit hyperactivity disorder (ADHD) medications mood stabilizers
- sedative-hypnotics
- stimulants tranquilizers

3.4.2.8 **Seizure medications**, even if used for non-seizure conditions such as migraines

3.4.2.9 **Smoking cessation** aid – e.g.: varenicline (Chantix)

3.4.2.10 **Steroids,** high dose (greater than 20 mg prednisone or prednisone-equivalent per day)

3.4.2.11 **Weight loss medications** – ex: combinations including phentermine or naltrexone.

3.4.3 Do Not Fly.

3.4.3.1 Airmen should not fly while using any of the medications in the Do Not Issue section above or while using any of the medications or classes/groups of medications listed below without an acceptable wait time after the last dose. All of these medications may cause sedation (drowsiness) and impair cognitive function, seriously degrading pilot performance. This impairment can occur even when the individual feels alert and is apparently functioning normally - in other words, the airman can be "unaware of impair."

3.4.3.2 For aviation safety, airmen should not fly following the last dose of any of the medications below until a period of time has elapsed equal to:

3.4.3.3 5-times the maximum pharmacologic half-life of the medication; or

3.4.3.4 5-times the maximum hour dose interval if pharmacologic half-life information is not available. For example, there is a 30-hour wait time for a medication that is taken every 4 to 6 hours (5 times 6) Label warnings. Airmen should not fly while using any medication, prescription or OTC, that carries a label precaution or warning that it may cause drowsiness or advises the user "be careful when driving a motor vehicle or operating machinery." This applies even if label states "until you know how the medication affects you" and even if the airman has used the medication before with no apparent adverse effect. Such medications can cause impairment even when the airman feels alert and unimpaired (see "unaware of impair" above).

3.4.4 Allergy medications:

- Sedating Antihistamines. These are found in many allergy and other types of medications and may NOT be used for flight. This applies to both nasal AND oral formulations.
- Nonsedating antihistamines. Medications such as loratadine, desloratadine, and fexofenadine may be used while flying, if symptoms are controlled without adverse side effects after an adequate initial trial period.

3.4.5 Muscle relaxants:

3.4.5.1 This includes but is not limited to carisoprodol (Soma) and cyclobenzaprine (Flexeril).

3.4.5.2 Over-the-Counter active dietary supplements such as Kava-Kava and Valerian.

3.4.6 Pain medication:

3.4.6.1 *Narcotic pain relievers. This includes but is not limited to morphine, codeine, oxycodone (Percodan, Oxycontin), and hydrocodone (Lortab, Vicodin, etc.).*

3.4.6.2 *Non-narcotic pain relievers such as tramadol (Ultram).*

3.4.7 **"Pre-medication" or "pre-procedure" drugs**. *This includes all drugs used as an aid to* outpatient surgical or dental procedures.

3.4.8 **Sleep aids.** All the currently available sleep aids, both prescription and OTC, can cause impairment of mental processes and reaction times, even when the individual feels fully awake.

1. See wait times for currently available prescription sleep aids
2. Diphenhydramine (Benadryl) - Many OTC sleep aids contain diphenhydramine as the active ingredient. The wait time after diphenhydramine is 60 hours (based on maximum pharmacologic half-life).

3.4.9 The list of medications referenced below provides aeromedical guidance about specific medications or classes of pharmaceutical preparations and is applied by using sound aeromedical clinical judgment. This list is not meant to be totally inclusive or comprehensive.

Note: All medication names have been adapted from US pharmacopeia and in case of any confusion with the local pharmacopeia please consult a registered pharmacist to find the equivalent Namibian names.

3.4.9.1 ACNE medications

3.4.9.1.1 Medical history

Topical acne medications, such as Retin A, and oral antibiotics, such as tetracycline, used for acne are acceptable if the applicant is otherwise qualified.

For applicants using oral isotretinoin (Accutane), there is a mandatory 2-week waiting period after starting isotretinoin prior to consideration. This medication can be associated with vision and psychiatric side effects of aeromedical concern - specifically decreased night vision/ night blindness and depression. These side-effects can occur even after cessation of isotretinoin. A report must be provided with detailed, specific comment on presence or absence of psychiatric and vision side-effects. The AME must document these findings in Block 60, Comments on History and Findings. Some applicants will have to be deferred. For applicants issued, there must be a "NOT VALID FOR NIGHT FLYING" restriction on the medical certificate. A waiting period and detailed information is required to remove this restriction. The restriction cannot be removed until all the requirements are met. See Pharmaceutical Considerations below.

3.4.9.1.2 Protocol:

N/A

3.4.9.1.3 Pharmaceutical considerations:

3.4.9.1.3.1 Use of oral isotretinoin must be permanently discontinued for at least 2 weeks prior to consideration date (confirmed by the prescribing physician) and;

3.4.9.1.3.2 Eye evaluation must be done and;

3.4.9.1.3.3 The airman must provide a signed statement of discontinuation that:

(a) Confirms the absence of any visual disturbances and psychiatric symptoms,and
(b) Acknowledges requirement to notify the NCAA and obtain clearance prior to performing any aviation safety-related duties if use of isotretinoin is resumed

3.4.9.2 ALLERGY – ANTIHISTAMINES

3.4.9.2.1 Medical history:

Item 18.e., Hay fever or allergy The applicant should report frequency and duration of symptoms, any incapacitation by the condition, treatment, and side effects. The Examiner should inquire whether the applicant has ever experienced any barotitis ("ear block"), barosinusitis, alternobaric vertigo, or any other symptoms that could interfere with aviation safety.

3.4.9.2.2 Protocol:

See Disease Protocols – Allergies, Severe

3.4.9.2.3 Pharmaceutical considerations:

For hay fever requiring antihistamines:

(a) The nonsedating antihistamines loratadine, desloratadine, and fexofenadine may be used while flying if, after an adequate initial "trial period," symptoms are controlled without adverse side effects.
(b) Applicants with seasonal allergies requiring any other antihistamine (oral and/or nasal) may be certified by the examiner only as follows:
    a. With the stipulation that they do not exercise the privileges of airman certificate while taking the medication, AND
    b. Wait after the last dose until either:
        i. At least five maximal dosing intervals* have passed. For example, if the medication is taken every 4-6 hours, wait 30 hours (5x6) after the last dose to fly, or,
        ii. At least five times the maximum terminal elimination half-life has passed. For example, if the medication half-life* is 6-8 hours, wait 40 hours (5x8) after the last dose to fly.

* Examiners are encouraged to look up the dosing intervals and half-life.

For hay fever controlled by Desensitization:

(a) AME must warn airman to not operate aircraft until four hours after each injection.

(b) Airmen who are exhibiting symptoms, regardless of the treatment used, must not fly. In all situations, the examiner must notate the evaluation data.

3.4.9.3 ALLERGY – IMMUNOTHERAPY

3.4.9.3.1 Medical history:

Hay fever or allergy. The applicant should report frequency and duration of symptoms, any incapacitation by the condition, treatment, and side effects. The Examiner should inquire whether the applicant has ever experienced any barotitis ("ear block"), barosinusitis, alternobaric vertigo, or any other symptoms that could interfere with aviation safety.

3.4.9.3.2 Protocol:

See Disease Protocols – Allergies, Severe

3.4.9.3.3 Pharmaceutical considerations

3.4.9.3.4 Allergy Shots: For conditions controlled by desensitization, AME must warn the airman to not operate aircraft until four hours after each injection.

3.4.9.3.5 Sublingual immunotherapy (SLIT) used for allergic rhinitis is acceptable.

3.4.9.3.6 Allowed with a 24-hour no fly after the first dose each season AND; A 4-hour no fly after each subsequent dose.

3.4.9.3.7 Not allowed in airmen 65 or older who have a diagnosis of asthma which does not meet fitness criteria.

3.4.9.3.8 Airman should confirm with the treating physician that the airman is not taking any other medication(s) that would impair the effectiveness of epinephrine, should it be needed, or increase the risk of heart rhythm disturbances.

3.4.9.4 ANTACIDS

3.4.9.4.1 Medical history:

Item 18.i.,Stomach, liver, or intestinal trouble. The applicant should provide history and treatment, pertinent medical records, current status report, and medication. If a surgical procedure was done, the applicant must provide operative and pathology reports.

3.4.9.4.2 Protocol: N/A

3.4.9.4.3 **Pharmaceutical considerations**

The prophylactic use of medications including simple antacids, H-2 inhibitors or blockers, proton pump inhibitors, and/or sucralfates may not be disqualifying, if free from side effects.

3.4.9.5 ANTICOAGULANTS

3.4.9.5.1 **Medical history:**

The applicant should describe the condition to include, dates, symptoms, treatment, and provide medical reports to assist in the certification decision-making process. These reports should include, as indicated by the applicable underlying condition(s) and class applied for: 24-hour Holter monitor, operative reports of any coronary intervention (including the original cardiac catheterization report), stress tests (including worksheets and original tracings or a legible copy). For myocardial perfusion imaging, we require the interpretive report and copies of the actual images in both grey-scale and color (in digital format or hard copy.) for all classes of medical certificates, there is cause for denial if there is an established medical history or clinical diagnosis of myocardial infarction, angina pectoris, cardiac valve replacement, permanent cardiac pacemaker implantation, heart replacement, or coronary heart disease (CHD) that has required treatment (or if untreated, that has been symptomatic or clinically significant).

3.4.9.5.2 **Protocol**:

As per the specific underlying condition(s), see Coagulation and Thrombotic Protocols and Warfarin protocol

3.4.9.5.3 **Pharmaceutical considerations**

For applicants who are just beginning warfarin (Coumadin) treatment the following is required:

- Minimum observation time of 6 weeks after initiation of warfarin therapy;
- Must also meet any required observation time for the underlying condition; AND
- 6 INRs, no more frequently than 1 per week

For applicants who are on an established use of warfarin (Coumadin), status report from the treating physician should address and include:

- Drug dose history and schedule;
- Comment regarding side effects; AND
- A minimum of monthly International Normalized Ratio (INRs) results for the immediate prior 6 months.

3.4.9.6 ANTIDEPRESSANTS

3.4.9.6.1 **Medical history**:

Mental disorders of any sort; depression, anxiety, etc.

An affirmative answer toany of the above. requires investigation through supplemental history taking. Dispositions will vary according to the details obtained. An applicant with an established history of a personality disorder that is severe enough to have repeatedly manifested itself by overt acts, a psychosis disorder, or a bipolar disorder must be denied or deferred by the Examiner.

3.4.9.6.2 **Aeromedical decision considerations**:

See, protocols

3.4.9.6.3 **Protocol**:

protocol on Mental Health and concerned conditions

3.4.9.6.4 **Pharmaceutical considerations**

The use of a psychotropic drug is disqualifying for aeromedical certification purposes – this includes all antidepressant drugs, including selective serotonin reuptake inhibitors (SSRIs). However, the NCAA has determined that airmen requesting first, second, or third class medical certificates while being treated with one of four specific SSRIs may be considered The Authorization decision is made on a case-by-case basis. The Examiner may not issue.

3.4.9.7 High or low blood pressure

3.4.9.7.1 Medical history: High or low blood pressure.

3.4.9.7.2 Protocol:

N/A. See Hypertension

3.4.9.7.3 Pharmaceutical considerations

- Seven-day (7) no fly/ground trial is required when starting a new hypertension (HTN) medication to verify no side effects.
- AME should issue (if otherwise qualified) if the airmen is on 3 or fewer medications
- Uses of beta-adrenergic blockers ARE allowed with insulin, meglitinides, or sulfonylureas.

ACCEPTABLE HTN Medications (when certification criteria are met)

✓ Alpha adrenergic blockers

✓ Calcium channel blockers

✓ Angiotensin converting enzyme (ACE) inhibitors

✓ Direct renin inhibitors

✓ Angiotensin II receptor antagonists (ARBs)

✓ Direct vasodilators

✓ Beta-adrenergic blockers

✓ Diuretics

UNACCEPTABLE HTN Medications (as a single agent or in any combination product)

DO NOT ISSUE

- Clonidine (ex. Catapres/Clorpres)
- guanabenz
- guanfacine/Tenex
- methyldopa
- Nitrates (ex. nitroglycerin/isosorbide dinitrate/isosorbide mononitrate)
- resperine

3.4.9.8 Contraceptives And Hormone Replacement Therapy

3.4.9.8.1 **Medical history**:

Use of Oral or Repository Contraceptives or Hormonal Replacement Therapy are not disqualifying for medical certification. If the applicant is experiencing no adverse symptoms or reactions to hormones and is otherwise qualified, the Examiner may issue the desired certificate.

3.4.9.8.2 Aeromedical decision considerations: n/a

3.4.9.8.3 **Protocol:** N/A

3.4.9.8.4 Pharmaceutical considerations: See Medical History

3.4.9.9 ERECTILE DYSFUNCTION AND BENIGN PROSTATIC HYPERPLASIA MEDICATIONS

3.4.9.9.1 **Medical history**:

Use of medication for erectile dysfunction (ED) and/or benign prostatic hyperplasia (BPH) may not be disqualifying for medical certification if there are no side effects, the underlying

condition is not aeromedically significant, and the applicant is otherwise qualified. If the medication is used for any other condition, do not issue – NCAA approval is required.

3.4.9.9.2 **Aeromedical decision considerations:** See Genitourinary System**,GU**

3.4.9.9.3 **Protocol:** N/A

3.4.9.9.4 **Pharmaceutical considerations**:

The use of medications below for G-U conditions including ED and BPH may not be disqualifying, if free from side effects. For the required minimum wait time after use, see the wait time table.

If the medications below are used for any other non G-U condition (e.g., pulmonary arterial hypertension [PAH]) the examiner must defer issuance of a medical certificate.

- Alpha blockers are allowed for daily use if there no side effects. No minimum wait time is required after use once the airman has successfully passed the 7-day ground trial period required for all hypertension medication.
- If alpha blockers are used in combination with PDE5 inhibitors (common examples are listed below), the airman should not fly until verification that no hypotensive episodes or other side effects are noted.
- Nitrates are not allowed.

3.4.9.9.5 Erectile Dysfunction And Benign Prostatic Hyperplasia Pde-5 Inhibitor Medication Wait Times

Trade Name Generic Name

Required minimum waiting time after last dose before resuming pilot duties Cialis (daily use) Tadalafil 2.5 or 5 mg daily is allowed if no side effects after 7 days Cialis (prn use)

Tadalafil 24 hours

Levitra Vardenaf 8 hours

Staxyn Vardenafil 8 hours

Stendra Avanafil 8 hours

Viagra Sildenafil 8 hours

3.4.9.10 GLAUCOMA MEDICATIONS

3.4.9.10.1 **Medical history**:,

Medical History, Eye or vision trouble except glasses. The applicant should provide history and treatment, pertinent medical records, current status report, and medication and dosage.

3.4.9.10.2 **Aeromedical decision considerations**:, Ophthalmoscopic

3.4.9.10.3 **Protocol:** N/A

3.4.9.10.4 **Pharmaceutical considerations**

Applicants using miotic or mydriatic eye drops or taking an oral medication for glaucoma may be considered for Special Issuance certification following their demonstration of adequate control. Miotics such as pilocarpine cause pupillary constriction and could conceivably interfere with night vision. Although the NCAA no longer routinely prohibits pilots who use such medications from flying at night, it may be worthwhile for the Examiner to discuss this aspect of the use of miotics with applicants. If considerable disturbance in night vision is documented, the NCAA may limit the medical certificate: NOT VALID FOR NIGHT FLYING.

3.4.9.11 MALARIA MEDICATIONS

3.4.9.11.1 **Medical history:**

This medication is absolutely disqualifying for pilots. Mefloquine (Lariam) is associated with adverse neuropsychiatric side-effects, even weeks after the drug is discontinued. Because of the association with adverse neuropsychiatric side-effects, even weeks after discontinuation, a pilot who elects to use mefloquine for malaria prophylaxis or who contracts malaria and is treated with mefloquine will be disqualified for pilot duties for the duration of use of mefloquine and for 4 weeks after the last dose. In this instance, the pilot must contact the NCAA or his/her Aviation Medical Examiner prior to returning to flight duties after use.

3.4.9.11.2 **Aeromedical decision considerations**:

For return to pilot duties there must be no history of neurologic or psychiatric symptoms during and or after mefloquine use. Examples of symptoms related to mefloquine use include: dizziness or vertigo, tinnitus, and loss of balance; anxiety, paranoia, depression, restlessness or confusion, hallucinations and psychotic behavior.

3.4.9.11.3 **Protocol:** N/A

3.4.9.11.4 **Pharmaceutical considerations:**

- Use of mefloquine must be discontinued for at least 4 weeks prior to consideration and:
- The airman must contact the their AME before resuming pilot duties
- For return to pilot duties there must be no history of neurologic or psychiatric symptoms during and or after mefloquine use.

3.4.9.12 SEDATIVES

3.4.9.12.1 **Medical history and convictions or administrative actions.**

3.4.9.12.1.1 Medical History: Substance Dependence; or failed a drug test ever; or substance abuse or use of illegal substance in the last 2 years.

"Substance" includes alcohol and other drugs (e.g., PCP, sedatives and hypnotics, anxiolytics, marijuana, cocaine, opioids, amphetamines, hallucinogens, and other psychoactive drugs or chemicals). For a "yes" answer to Item 18.n., the Examiner should obtain a detailed description of the history. A history of substance dependence or abuse is disqualifying. The Examiner must defer issuance of a certificate if there is doubt concerning an applicant's substance use.

3.4.9.12.1.2 Convictions or Administrative Actions:

The events to be reported are specifically identified. If "yes" is checked, the applicant must describe the conviction(s) and/or administrative action(s) in the EXPLANATIONS box. The description must include:

- The drug or alcohol offense for which the applicant was convicted or the type of administrative action involved (e.g., attendance at an educational or rehabilitation program in lieu of conviction; license denial, suspension, cancellation, or revocation for refusal to be tested; educational safe driving program for multiple speeding convictions; etc.);
- The name of the state or other jurisdiction involved; and
- The date of the conviction and/or administrative action

If there have been no new convictions or administrative actions since the last application, the applicant may enter “PREVIOUSLY REPORTED, NO CHANGE.” Convictions and/or administrative actions affecting driving privileges may raise questions about the applicant’s fitness for certification and may be cause for disqualification.

A single driving while intoxicated (DWI) conviction or administrative action usually is not cause for denial if there are no other instances or indications of substance dependence or abuse. The Examiner should inquire regarding the applicant’s alcohol use history, the

circumstances surrounding the incident, and document those findings.

NOTE: The Examiner should advise the applicant that the reporting of drug or alcohol offenses (i.e., motor vehicle violation) on the history part of the medical application does not relieve the airman of responsibility to report each motor vehicle action to the NCAA within 60 days of the occurrence.

3.4.9.12.2 **Aeromedical decision considerations**:

Psychiatric, Aerospace Medical Disposition table.

3.4.9.12.3 **Protocol**:

See Substances of Dependence/Abuse

3.4.9.12.4 **Pharmaceutical considerations**

Aerospace Medical Dispositions, Psychiatric Conditions

3.4.9.13 SLEEP AIDS

3.4.9.13.1 Medical history:

Use of sleep aids is a potential risk to aviation safety due to effects of the sleep aid itself or the underlying reason/condition for using the sleep aid.

All the currently available sleep aids, both prescription and over the counter, can cause impairment of mental processes and reaction times, even when the individual feels fully awake. (As examples, see the Food and Drug Administration drug safety communications on zolpidem and eszopiclone)

Medical conditions that chronically interfere with sleep are disqualifying regardless of whether a sleep aid is used or not. Examples may include primary sleep disorders (e.g., insomnia, sleep apnea) or psychological disorders (e.g., anxiety, depression). While sleep aids may be appropriate and effective for short term symptomatic relief, the primary concern should be the diagnosis, treatment, and resolution of the underlying condition before clearance for aviation duties.

Occasional or limited use of sleep aids, such as for circadian rhythm disruption in commercial air operations, is allowable for pilots. Daily/nightly use of sleep aids is not allowed regardless of the underlying cause or reason. See Pharmaceutical Considerations below.

3.4.9.13.2 **Aeromedical decision considerations:** N/A

3.4.9.13.3 Protocol: N/A

3.4.9.13.4 Pharmaceutical considerations:

Because of the potential for impairment, we require a minimum wait time between the last dose of a sleep aid and performing pilot duties. This wait time is based on the pharmacologic elimination half-life of the drug (half-life is the time it takes to clear half of the absorbed dose from the body). The minimum required wait time after the last dose of a sleep aid is 5-times the maximum elimination half-life.

The table on the following page lists several commonly prescribed sleep aids along with the required minimum wait times for each.

SLEEP AID WAIT TIMES

Trade Name Generic Name

Required minimum waiting time after last dose before resuming pilot duties

Ambien zolpidem* 24 hours

Ambien CR zolpidem (extended release) 24 hours

Edluar zolpidem (dissolves under the tongue) 36 hours

Intermezzo zolpidem (for middle of the night awakening) 36 hours

Lunesta eszopiclone 30 hours

Restoril temazepam 72 hours

Rozerem ramelteon 24 hours

Sonata zaleplon 6 hours

Zolpimist zolpidem (as oral spray) 48 hours

* *NOTE: The different formulations of zolpidem have different half-lives, thus different wait times.*

ANNEXURE III. NEUROPSYCHOLOGICAL EVALUATIONS FOR POTENTIAL NEUROCOGNITIVE IMPAIRMENT

1. Why is a neuropsychological evaluation required?

Head trauma, stroke, encephalitis, multiple sclerosis, other suspected acquired or developmental conditions, and medications used for treatment, may produce cognitive deficits that would make an airman unsafe to perform pilot duties. This guideline outlines the requirements for a neuropsychological evaluation.

2. Who may perform a neuropsychological evaluation?

Neuropsychological evaluations must be conducted by a licensed clinical psychologist who is either board certified or "board eligible" in clinical neuropsychology.

3. Will I need to provide any of my medical records?

You should make records available to the neuropsychologist prior to the evaluation, to include:

- Copies of all records regarding prior psychiatric/substance-related hospitalizations, observations or treatment not previously submitted to the NCAA.
- A complete copy of your agency medical records. You should request a copy of your NCAA records be sent directly to the psychiatrist and psychologist by the Medical Assessor's office at NCAA

4. What must the neuropsychological evaluation report include?

At a minimum:

- A review of all available records, including academic records, records of prior psychiatric hospitalizations, and records of periods of observation or treatment (e.g., psychiatrist, psychologist, or pediatric neuropsychiatrist treatment notes). Records must be in sufficient detail to permit a clear evaluation of the nature and extent of any previous mental disorders.
- A thorough clinical interview to include a detailed history regarding: psychosocial or developmental problems; academic and employment performance; legal issues; substance use/abuse (including treatment and quality of recovery); aviation background and experience; medical conditions, and all medication use; and behavioral observations during the interview and testing.
- A mental status examination.
- Interpretation of a full battery of neuropsychological and psychological tests including, but not limited to, the "core test battery" (specified below).

- An integrated summary of findings with an explicit diagnostic statement, and the neuropsychologist's opinion(s) and recommendation(s) regarding clinically or aeromedically significant findings and the potential impact on aviation safety consistent with the Namibian Aviation Regulations.

5. What is required in the "core test battery?"

The core test battery listed below provides a standardized basis for the NCAA's review of cases, and must include:

- CogScreen-Aeromedical Edition (CogScreen-AE).
- The complete Wechsler Adult Intelligence Scales (Processing Speed and Working Memory Indexes must be scored),
- Trail Making Test, Parts A and B (Reitan Trails A & B should be used since aviation norms are available for the original Reitan Trails A & B, but not for similar tests [e.g., Color Trails; Trails from Kaplan-Delis Executive Function, etc.])
- Executive function tests to include: (1) Category Test or Wisconsin Card Sorting Test, and (2) Stroop Color-Word Test Paced Auditory Serial Addition Test (PASAT).
- A continuous performance test (i.e., Test of Variables of Attention [TOVA], or Conners' Continuous Performance Test [CPT-II], or Integrated Visual and Auditory Continuous Performance Test [IVA+]), or Gordon Diagnostic System [GDS].
- Test of verbal memory (WMS-IV subtests, Rey Auditory Verbal Learning Test, or California Verbal Learning Test-II),
- Test of visual memory (WMS-IV subtests, Brief Visuospatial Memory TestRevised, or Rey Complex Figure Test),
- Tests of Language including Boston Naming Test and Verbal Fluency (COWAT and a semantic fluency task),
- Psychomotor testing including Finger Tapping and Grooved Pegboard or Purdue Pegboard.
- Personality testing, to include the Minnesota Multiphasic Personality Inventory (MMPI-2). (The MMPI-2-RF is not an approved substitute. All scales, subscales, content, and supplementary scales must be scored and provided. Computer scoring is required. Abbreviated administrations are not acceptable.)

NOTES: (1) All tests administered must be the most current edition of the test unless specified otherwise;

(2) At the discretion of the examiner, additional tests may be clinically necessary to assure a complete assessment.

6. What must be submitted?

The neuropsychologist's report as noted above, plus the supporting documentation below:

- Copies of all computer score reports (e.g., CogScreen-AE score report, Pearson MMPI-2 Extended Score Report, TOVA, CPT-II or IVA+ Report).
- An appended score summary sheet that includes all scores for all tests administered. When available, pilot norms must be used. If pilot norms are not available for a particular test, then the normative comparison group (e.g., general population, age/education-corrected) must be specified. Also, when available, percentile scores must be included.
- Recommendations should be strictly limited to the psychologist's area of expertise.

7. What else does the neuropsychologist need to know?

- The NCAA will not proceed with a review of the test findings without the above data.
- The data and clinical findings will be carefully safeguarded in accordance with the Concerned
- The raw neurocognitive testing data may be required at a future date for expert review by one of the NCAA's consulting clinical neuropsychologists. In that event, authorization for release of the data by the airman to the expert reviewer will need to be provided.

8. Additional Helpful Information

a. Will additional testing be required in the future?

If eligible for unrestricted medical certification, no additional testing would be required. However, pilots found eligible for Special Issuance will be required to undergo periodic re-evaluations. The letter authorizing special issuance will outline required testing, which may be limited to specific tests or expanded to include a comprehensive test battery.

b. Useful references for the neuropsychologist:

MOST COMPREHENSIVE SINGLE REFERENCE:

- Aeromedical Psychology (2013). C.H. Kennedy & G.G. Kay (Editors). Ashgate.
- Pilot norms on neurocognitive tests: Kay, G.G. (2002). Guidelines for the Psychological Evaluation of Aircrew Personnel. Occupational Medicine, 17 (2), 227-245.
- Aviation-related psychological evaluations: Jones, D. R. (2008). Aerospace Psychiatry. In J. R. Davis, R. Johnson, J. Stepanek & J. A. Fogarty (Eds.), Fundamentals of Aerospace Medicine (4th Ed.), (pp. 406-424). Philadelphia: Lippencott Williams & Wilkins.