

Annex 1: NL AltMOC2/7/14/16 MED.C.025

ILT
Luchtvaart
Analyse en Ontwikkeling

Datum
10 april 2014

1) Implementing Rule: MED.C.025 Content of aero-medical assessments

- (a) An initial aero-medical assessment shall include at least:
- (1) An assessment of the applicant cabin crew member's medical history; and
 - (2) A clinical examination of the following:
 - (i) Cardiovascular system;
 - (ii) Respiratory system;
 - (iii) Musculoskeletal system;
 - (iv) Otorhino-laryngology;
 - (v) Visual system; and
 - (vi) Colour vision.
- (b) Each subsequent aero-medical re-assessment shall include:
- (1) An assessment of the cabin crew member's medical history; and
 - (2) A clinical examination if deemed necessary in accordance with aero-medical best practice.
- (c) For the purpose of (a) and (b), in case of any doubt or if clinically indicated, a cabin crew member's aero-medical assessment shall also include any additional medical examination, test or investigation that are considered necessary by the AME, AeMC or OHMP.

2) Existing Acceptable Means of Compliance:

AMC2 MED.C.025 Cardiovascular system

- (a) Examination
- (1) A standard 12-lead resting electrocardiogram (ECG) and report should be completed on clinical indication, at the first examination after the age of 40 and then at least every five years after the age of 50. If cardiovascular risk factors such as smoking, abnormal cholesterol levels or obesity are present, the intervals of resting ECGs should be reduced to two years.
 - (2) Extended cardiovascular assessments should be required when clinically indicated.
- (c) Blood pressure
- Blood pressure should be recorded at each examination.
- (1) The blood pressure should be within normal limits.
 - (2) The initiation of medication for the control of blood pressure should require a period of temporary suspension of fitness to establish the absence of any significant side effects.

AMC7 MED.C.025 Genitourinary system

- (a) Urine analysis should be part of every aero-medical examination and/or assessment. The urine should not contain any abnormal element(s) considered to be of pathological significance.

AMC14 MED.C.025 Visual system

- (a) Examination
- (1) A routine eye examination should form part of the initial and all further assessments and/or examinations; and
 - (2) An extended eye examination should be undertaken when clinically indicated.

AMC16 MED.C.025 Otorhino-laryngology

- (a) Hearing should be satisfactory for the safe exercise of cabin crew duties and responsibilities. Cabin crew with hypoacusis should demonstrate satisfactory functional hearing abilities.
- (b) Examination
- (1) An ear, nose and throat (ENT) examination should form part of all examinations and/or assessments.
 - (2) Hearing should be tested at all assessments and/or examinations:
 - (i) The cabin crew member should understand correctly conversational speech when tested with each ear at a distance of 2 meters from and with the cabin crew member's back turned towards the examiner;
 - (ii) Notwithstanding (i) above, hearing should be tested with pure tone audiometry at the initial examination and when clinically indicated;
 - (iii) At initial examination the cabin crew member should not have a hearing loss of more than 34 dB at any of the frequencies 500 Hz, 1000Hz or 2000 Hz, or more than 50 dB at 3000 Hz, in either ear separately.

3) CAA The Netherlands Alternative Means of Compliance:

NL AltMOC2 MED.C.025 Cardiovascular system

- (a) Examination
- (1) A standard 12-lead resting electrocardiogram (ECG) and report should be completed on clinical indication, based on an extended questionnaire according AMC1 ARA.MED.135 (a) or equivalent.
 - (2) Extended cardiovascular assessments should be required when clinically indicated on bases of an extended questionnaire according AMC1 ARA.MED.135 (a) or equivalent.
- (c) Blood pressure
- Blood pressure should be recorded at the initial examination and on clinical indication, based on an extended questionnaire according AMC1 ARA.MED.135 (a) or equivalent.
- (1) The blood pressure should be within normal limits.

- (2) The initiation of medication for the control of blood pressure should require a period of temporary suspension of fitness to establish the absence of any significant side effects.

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NL AltMOC7 MED.C.025 Genitourinary system

- (a) Urine analysis should be part of the initial examination and on clinical indication, based on an extended questionnaire according AMC1 ARA.MED.135 (a) or equivalent. The urine should not contain any abnormal element(s) considered to be of pathological significance.

NL AltMOC14 MED.C.025 Visual system

- (a) Examination
- (1) A routine eye examination should form part of the initial; and
 - (2) An extended eye examination should be undertaken when clinically indicated on bases of an extended questionnaire according AMC1 ARA.MED.135 (a) or equivalent.

NL AltMOC16 MED.C.025 Otorhino-laryngology

- (a) Hearing should be satisfactory for the safe exercise of cabin crew duties and responsibilities. Cabin crew with hypoacusis should demonstrate satisfactory functional hearing abilities.
- (b) Examination
- (1) An ear, nose and throat (ENT) examination should form part of the initial examination and on clinical indication, based on an extended questionnaire according AMC1 ARA.MED.135 (a) or equivalent.
 - (2) Hearing should be tested at the initial examination and on clinical indication, based on an extended questionnaire according AMC1 ARA.MED.135 (a) or equivalent:
 - (i) The cabin crew member should understand correctly conversational speech when tested with each ear at a distance of 2 meters from and with the cabin crew member's back turned towards the examiner;
 - (ii) Notwithstanding (i) above, hearing should be tested with pure tone audiometry at the initial examination and when clinically indicated;
 - (iii) At initial examination the cabin crew member should not have a hearing loss of more than 34 dB at any of the frequencies 500 Hz, 1000Hz or 2000 Hz, or more than 50 dB at 3000 Hz, in either ear separately.

Annex 2: Risk assessment

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This risk assessment is made by KLM (Royal Dutch Airlines) and supported by ILT.

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Risk assessment

In 2009 a risk assessment was performed by KLM in order to establish the risk associated with the incapacitation of Cabin Crew during critical phases of flight. The assessment took place as a result of changed legislation with the introduction of EU-OPS in 2008 and the subsequent requirement to re-assess the medical fitness of Cabin Crew -- with an interval of 60 months as per 01-01-2010.

The safety scenario that was assessed was;

"What is the likelihood of incapacitation or inability to perform cabin crew duties by a KLM Cabin Crew member due to any physical or mental illness during critical phases of flight".

In order to calculate this scenario the KLM Occurrence Database "Sentinel" was questioned on all medical (crew) related reports between 1-09-2004 and 30-08-2009 (5 years). Only cases where incapacitation or inability to perform duties, due to medical issues that could have resulted from a condition likely to be found during a medical (re)assessment, were selected. This resulted in forty-one cases.

For the same time period a query was done on all situations where an emergency (including pan pan) was reported and where a precautionary landing was made (or prepared). This resulted in fifty-five records.

In the period mentioned KLM performed 583.000 commercial flights.

Based on the above figures the likelihood is calculated as $41/583.000 = 7.0 \times 10^{-5}$

The likelihood for an emergency (critical phase of flight) as $55/583.000 = 9.4 \times 10^{-5}$

The result of this query and calculation of the likelihood of the safety scenario assessed concluded that;

The likelihood of incapacitation or inability to perform cabin crew duties by a KLM Cabin Crew member due to any physical or mental illness during critical phases of flight over the mentioned period was $6,6 \times 10^{-9}$ (7.0×10^{-5} times 9.4×10^{-5})

⊖ This figure was considered lower than the certification requirements for the aircraft with which KLM operates its flights. Furthermore it was a factor 1000 lower than the criteria established for the incapacitation of cockpit crew members (ICAO DOC 8984 Manual of Civil Aviation Medicine) .

The impact of the assessed scenario was set as critical, leading to physical distress, high workload impairing accuracy and completion of tasks with the remaining cabin crew members. This in conjunction with the small likelihood leads to a low risk for KLM's operation (see appendix KLM Risk Matrix)

This outcome was used to support the decision to establish a medical re-assessment based on a questionnaire. This practice was and is in conformance with the guidelines of the ICAO medical class 2. Based on this practice a re-evaluation of the safety scenario of 2009 was made. In the time period 31-08-2009 thru 30-04-2013 the likelihood for the scenario changed to 1.1×10^{-8} , staying well below the certification and incapacitation criteria. (9.6×10^{-5} times 1.2×10^{-4} , 427K flights 41 incapacitations & 51 emergencies)

The likelihood for the given scenario over a ten year time span results in $8,5 \times 10^{-9}$
Based on this outcome the risk for the assessed worst case scenario remains low.