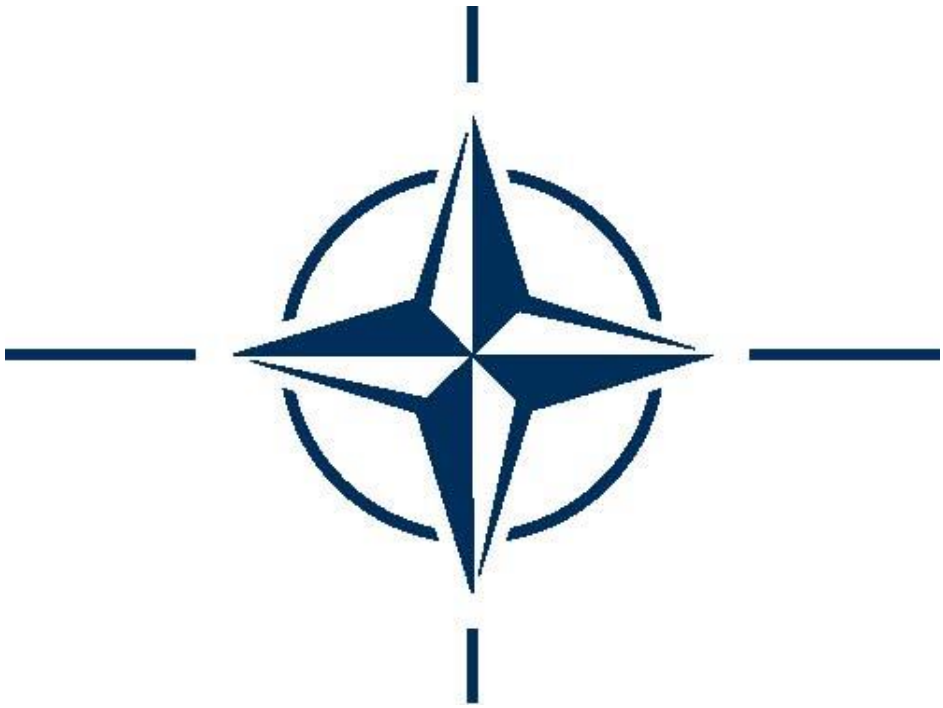
NATO STANDARD

AAMedP-1.13

MINIMUM REQUIREMENTS FOR PHYSIOLOGICAL TRAINING OF AIRCREW IN HIGH "G" ENVIRONMENT

Edition A Version 1

OCTOBER 2017



NORTH ATLANTIC TREATY ORGANIZATION

ALLIED AEROMEDICAL PUBLICATION

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NORTH ATLANTIC TREATY ORGANIZATION (NATO)

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NATO LETTER OF PROMULGATION

26 October 2017

1. The enclosed Allied Aeromedical Publication AAMedP-1.13, Edition A, Version 1, MINIMUM REQUIREMENTS FOR PHYSIOLOGICAL TRAINING OF AIRCREW IN HIGH "G" ENVIRONMENT, which has been approved by the nations in the MCASB, is promulgated herewith. The agreement of nations to use this publication is recorded in STANAG 3827.

2. AAMedP-1.13, Edition A, Version 1, is effective upon receipt.

4. This publication shall be handled in accordance with C-M(2002)60.

Edvardas MAŽEIKIS
Major General, LTUAF
Director, NATO Standardization Office

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RESERVED FOR NATIONAL LETTER OF PROMULGATION

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RECORD OF RESERVATIONS

CHAPTER	RECORD OF RESERVATION BY NATIONS
Note: The reservations listed on this page include only those that were recorded at time of promulgation and may not be complete. Refer to the NATO Standardization Document Database for the complete list of existing reservations.	

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RECORD OF SPECIFIC RESERVATIONS

[nation]	[detail of reservation]
BEL	BEL does not consider the centrifuge training as a qualification for flying in high sustained G environment but as a unique training session and evaluation of training techniques. If training could not be completed, the Belgian Armed Forces Air Component Staff will take measures in accordance with national procedures but the training sessions for the pilot concerned must not be repeated.
CAN	Although the STANAG defines high-onset rates as "at least 3 G/sec", Canada's centrifuge is limited to only provide a high onset rate of 2.8 G/sec.
CZE	CZE can not currently implement this STANAG in the full extent due to the absence of required equipment (a centrifuge). CZE do not intend to purchase such capability due to enormous financial burden and relatively limited number of high performance aircraft air crews to be trained in accordance with this STANAG. CZE pilots of high performance aircrafts are being trained according to the STANAG using centrifuge equipment of other countries.
GBR	Due to limitations of GBR equipment, GBR training will be undertaken with a G onset rate of 1 G/s. However, it is recognised that training with an onset rate of 3G/s or greater is highly desirable. Early familiarisation with the effets of high G and high-G onset rates will be provided for Typhoon aircrew in the air using the 2-seat variant of the aircraft.
ROU	The Romanian Air Forces do not have the equipment for physiological training of aircrew in high "G" environment, and the acquisition of such equipment is not specified in the Romanian Armed Forces endowment programs for short and medium term.
SVN	Slovenian Armed Forces does not have equipment and also not requirements for physiological training of aircrew in high "G" environment.
USA	US Navy states: Paragraph 5.f. does not apply. The US Navy does not require a physician to be present during training. Paragraph 6 does not apply. The US Navy does not require ECG monitoring during training. USAF states: US reservation is that all NATO aircrew flying US aircraft need to comply with requirements for high-G training.

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CHAPTER 1 INTRODUCTION

1.1 AIM

The aim of this publication is to determine the minimum requirements for the training of aircrew for duty in high onset and high sustained “G” (HSG) environments.

1.2 THE HSG ENVIRONMENT

1. An HSG environment is one in which the gravitational force (G), over a period of at least 15-seconds (classic definition by Gauer) (>2 sec), is equal to or greater than:

   a. +7 Gz for aircrew wearing anti-G ‘protection’,

   b. +5 Gz for aircrew without G ‘protection’.

2. High onset g is defined as a rate of onset of at least 3 g/sec.

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CHAPTER 2 HIGH SUSTAINED "G" TRAINING

2.1 HSG AIRCREW TRAINING

All aircrew (as identified by each nation) whose employment exposes them to the HSG environment should receive HSG training certified by a qualifying centrifuge run at the maximum acceleration level likely to be encountered in the trainee's aircraft type. For most high performance aircraft the gravitational force can go up to +9 Gz and we recommend that a 9 Gz profile is part of the training. The training goals are to:

a. Gain G awareness including personal symptoms of greyout and individual G tolerance

b. Enable aircrew to develop an effective AGSM appropriate to their anti-G system in a learning environment

c. Ensure that the AGSM is appropriately performed and effective at high onset rates and HSG

2.2 HSG TRAINING CRITERIA

Exposure of aircrew trainees to +Gz using a human centrifuge must be performed to the following standards:

2.2.1 MEDICAL

1. An appropriately qualified and competent physician shall be available throughout HSG training.

2. Prior to HSG training, trainees must :

a. Meet national medical standards for flying high performance aircraft

b. Satisfy pre-training medical requirements and when necessary, be excluded from HSG training until these requirements are met.

2.2.2 BRIEFING

Trainees must be briefed on the following:

c. The physiological symptoms of impending loss of consciousness (G-LOC)

d. Factors which may reduce G tolerance.

e. The effective employment of the anti-G straining manoeuvre.

2.2.3 EQUIPMENT AND TRAINEE POSITIONING

1. Equipment must be maintained and monitored by appropriately qualified and competent personnel.

2. Training must be conducted using a man-rated centrifuge capable of providing the required acceleration (criteria specified in para 2.1) and fitted with an intercom and with video recording systems. ECG monitoring and recording is recommended.

3. Trainees must use an anti-G system representative of their aircraft type. They should wear properly fitted operational-type anti-G systems, if necessary, connected to an operational-type of anti-G valve which functions to the same specifications as the valve installed in the trainee's high performance aircraft. Liquid-filled suits are permissible. If pressure breathing for G (PBG) is employed in the trainee's aircraft type, this should provided, with appropriate instruction in its correct use.

4. Trainees must be securely restrained in a typical high-performance seat with the seat-back at an angle appropriate to the trainee's aircraft type and with correct positioning of torso, limbs, hand and feet as realistically as possible. The use of a simulated control-column (center or side stick), rudder pedals and throttle is preferred.

2.2.4 QUALIFICATION

1. Trainees should be serially exposed to increasing G through training to provide familiarization with the HSG environment and to check procedures and equipment.

2. HSG training qualification is granted where a trainee completes a centrifuge run avoiding and/or countering the symptoms of impending G-LOC using an appropriately performed and effective AGSM at an acceleration level appropriate to their aircraft type.

2.2.5 TERMINATION AND TRAINING FAILURE

1. A centrifuge run may be terminated at any time by the trainee or by the supervisor.

2. Physiological and medical criteria for terminating a centrifuge run shall be established by each participating nation. If applicable including the criteria related to ECG abnormalities.

3. Trainees who do not complete the centrifuge qualification run will be required to repeat the training. If successful completion cannot be achieved, aeromedical disposition of the trainee shall be determined by national procedures.

2.3 HSG REFRESHER TRAINING

Refresher training is required following a 3-year absence from the high G environment and before returning to high performance flying, and is recommended for aircrew of high performance aircraft on a 5 yearly basis.

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