NATO STANDARD

AAMedP-1.19

USE OF HELICOPTER EMERGENCY UNDERWATER BREATHING APPARATUS (HEUBA)

Edition B, Version 1

MAY 2021

NORTH ATLANTIC TREATY ORGANIZATION

ALLIED AEROMEDICAL PUBLICATION

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NORTH ATLANTIC TREATY ORGANIZATION (NATO)

NATO STANDARDIZATION OFFICE (NSO)

NATO LETTER OF PROMULGATION

20 May 2021

1. The enclosed Allied Aeromedical Publication AAMedP-1.19, Edition B, Version 1, USE OF HELICOPTER EMERGENCY UNDERWATER BREATHING APARATUS (HEUBA), which has been approved by the nations in the MILITARY COMMITTEE AIR STANDARDIZATION BOARD, is promulgated herewith. The agreement of nations to use this publication is recorded in STANAG 7078.

2. AAMedP-1.19, Edition B, Version 1, is effective upon receipt and supersedes AAMedP-1.19, Edition A, Version 1, which shall be destroyed in accordance with the local procedure for the destruction of documents.

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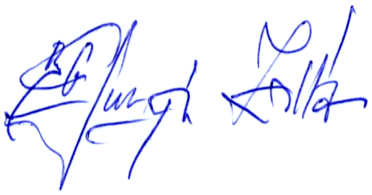
4. This publication shall be handled in accordance with C-M(2002)60.



Zoltán GULYÁS
Brigadier General, HUNAF
Director, NATO Standardization Office

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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]
SVN	Flight personnel of Slovenian Armed Forces is not equipped with HEUBA, the purchase of this devices is not planned in the medium term projects.
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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CHAPTER 1 RELATED DOCUMENTS

STANAG 3114 – AEROMEDICAL TRAINING OF FLIGHT PERSONNEL – AAMedP-1.2

Advisory Publication ACS (ASMG) 4043, Helicopter Emergency Underwater Breathing Device (EUBD).

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CHAPTER 2 AIM

The aim of this publication is to detail the principles of operation of helicopter emergency underwater breathing apparatus (HEUBA).

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CHAPTER 3 GENERAL

1. This publication relates to HEUBA used by flight personnel and other crew members.

2. There is sufficient objective data to state that aircrew may fail to survive following ditching into water and subsequent inversion and flooding of the crew compartment. This is despite underwater escape training and, in acceleration terms, survivable crash dynamics.

3. Survivors have highlighted the problems of:

   a. Reduced ability to hold one's breath in cold water.

   b. Disorientation.

   c. Difficulty in reaching egress points.

   d. Snagging hazards.

4. Consequently, sufficient breathing time must be provided for the release of the harness, opening of the escape hatch and completion of emergency escape.

5. HEUBA is unlike normal aircraft oxygen breathing systems which utilise an oronasal mask and have the potential for delivering breathing gas to incapacitated aircrew underwater. It requires positive action to place the mouthpiece in the mouth and purge water from the system, thus it cannot guarantee survival of incapacitated aircrew underwater.

6. The current generation of HEUBA utilises compressed gases. If HEUBA is activated and used underwater there is a risk that aircrew may hold their breath during ascent. As the air in the lungs expands during ascent, breath holding may give rise to pulmonary overpressure, rupture of alveoli and consequent entry of air into the circulation with cerebral arterial gas embolism (CAGE). There is some evidence that CAGE may occur in as little as 1 metre of water. The risk of CAGE is minimised if aircrew are trained and practised in the use of HEUBA.

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CHAPTER 4 DETAILS OF STANDARD

1. HEUBA will only be issued to personnel who have been trained in its use.

2. HEUBA should be man mounted and fully integrated into aircrew equipment assemblies. It should allow:

   a. Easy and rapid activation of the system whether the aircrew is restrained by harnesses or not.

   b. Minimal interference with any crew seat restraint system.

   c. Minimal probability of dislodgement during the crash phase.

   d. No interference with seat and control interfaces.

   e. Minimal probability of inflicting injury to the wearer during survivable crash situations.

   f. Emergency and normal escape and egress from the aircraft.

3. HEUBA should be capable of providing a minute volume of 45 L (BTPS) at peak flows up to 120 L (BTPS) per minute under adverse environmental conditions for a minimum of one minute. Ideally, the HEUBA should provide approximately 2 minutes of air required for a safe egress of a submerged helicopter at a depth of 20 feet, and a water temperature in the range of 2-20 degrees Celsius. There should be an indicator on the HEUBA to indicate its state of charge; the indicator should permit quick and unambiguous readings.

4. The training programme should include an introduction to inverted underwater escape training using HEUBA followed by shallow underwater escape training at a maximum depth of 1.5 metres as measured at the centre of the chest. The implications of using nose occluding devices during training should be considered. Continuation training is necessary so that aircrew maintain proficiency in the use of HEUBA. Annual continuation training is desirable.

5. Training staff should be aware of:

   a. The risks associated with breathing compressed gases underwater.

   b. How to recognise the relevant symptoms and signs of a medical complication of HEUBA training.

c. Other possible differential diagnoses.

d. Actions to be taken in an emergency.

6. The provision of medical cover and a recompression facility should be considered.

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