Special Conditions—Airworthiness (SCA)

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This Special Condition is issued pursuant to paragraph 511.07(1)(b), and subsections 511.13(7) and 513.07(7) of the Canadian Aviation Regulations (CARs) with respect to the standards of airworthiness for which the Minister will issue a type certificate:

Helly Hansen Canada Limited Model E-452

Life Preserving Helicopter Passenger Transportation Suit System

1. General

This Special Conditions - Airworthiness (SCA) prescribes the requirements for a Helicopter Passenger Transportation Suit System that also serves as a life preserver. This novel feature is inadequately addressed by the present standard of airworthiness. Therefore, this SCA forms part of the basis of certification pertaining to the approval of the type design of Model E-452 Life Preserving Helicopter Passenger Transportation Suit System.

2. Background and Discussion

Airworthiness Manual Section (AWM) 551.407 is the standard for aircraft passenger transportation suit systems, but does not address the requirements for compliance as an approved life preserver. The standard for life preservers is Technical Standard Order (TSO) C13f. Certification of the suit system to TSO-C13f standard cannot be achieved because of the intended one-size and constant wear character of the suit system.

The design of Model E-452 suit system incorporates an integrated, non-removable inflatable buoyancy element whose features are designed to satisfy the intent of TSO-C13f standard.

AWM 551.407 accepts either CAN/CGSB-65.17-M88 or CAN/CGSB-65.17-99 as acceptable standards for Helicopter Passenger Transportation Suit Systems. As requested by the applicant, Helly Hansen, for the purpose of this SCA, the standard CAN/CGSB-65.17-99 has been selected for this application.

3. Definitions

The following terminologies, as used in this document, are defined as:

Suit System - is a Helly Hansen Canada Limited Model E-452. The outfit comprising of an immersion suit and an integrated, non-removable inflatable buoyancy element intended for constant wear by an adult passenger in helicopter transportation.

Immersion Suit - is part of the Helly Hansen Canada Limited Model E-452 suit system. It is a watertight coverall-style garment, designed for water immersion that reduces thermal shock and delays the onset of hypothermia when exposed to cold water environment.

Inflatable Buoyancy Element - is an integral, non-removable part of the immersion suit.

4. Applicable Documents

The standards contained in the following documents form part of this SCA, unless otherwise limited herein.

Canadian General Standards Board CAN/CGSB-65.17-99, Helicopter Passenger Transportation Suit Systems, published in December 1999

FAA Technical Standard Order C13f, Life Preservers, 24 September 1992

In the event of conflict between these documents and this SCA, the requirements of this SCA shall prevail.

5. Performance Standards

Compliance is required with:

- CAN/CGSB-65.17-99 for a suit system with the exception of the Donning Time requirement per paragraph 8.1.3.2. The two-minute donning time test is not required as the Life Preserving Helicopter Passenger Transportation Suit System is donned by all persons prior to aircraft departure pursuant to CAR section 602.63 and as such, this activity does not need to occur within a predetermined time frame; and

- the requirements of TSO-C13f Type 1, in the adult Category, listed in the following table:

TSO-C13f Sections		**Applicable Notes**
Appendix 1, Section 3. Materials		
3.1	Nonmetallic Materials (3.1.1 through 3.1.9, inclusive)	
3.2	Metallic Parts	
Appendix 1, Section 4.1. Design and Construction		
4.1.1.	Reversibility	

TSO-C13f Sections		Applicable Notes
4.1.2	Compartmentation	
4.1.3	Protection Against Abrasion and Chafing	
4.1.4.1	Oral Inflation	
4.1.4.2	Oral Inflation Valve	
4.1.4.3	Manual Mechanical Inflation	
4.1.4.3.1	Gas Reservoir	
4.1.4.3.2	Pull Cord Assembly	Note 1
4.1.5	Deflation	
4.1.6	Functional Temperature Range	
4.1.7	Overpressure Protection	
4.1.8	Buoyancy	
4.1.9.1	Flotation Attitude	
4.1.12	Comfort, Fit, and Adaptability (4.1.12.1 through 4.1.12.5, inclusive)	
4.1.13	Survivor Locator Light	Note 2
4.1.15	Colour	
Appendix 1, Section 4.2. Marking		Note 3
4.2.1	Pictorial Presentation	
4.2.1.1	Orientation of Instructions	
4.2.1.2	Readability in Emergency Lighting	
4.2.3	Date of manufacture of fabric (month and year)	
4.2.4	Size Category	Note 4
Appendix 1, Section 5. Tests		
5.1	Material Tests	
5.2	Leakage Test	Note 5
5.3	Overpressure Test	Note 6
5.4	Submersion Test	
5.5	Salt Spray Test (5.5.1 through 5.5.2)	
5.6.1	Operating Force	
5.6.2	Pull Cord Strength	
5.6.3	Proof Pressure	
5.6.4	Mechanical Inflation Valve	
5.7.1	Jump Test	
5.8	Fire Protection Test	

Applicable Notes:

Note 1: Where the requirement presents a potential for interference with the proper functioning of the immersion suit, the pull cord may be relocated provided it remains visible and easily accessible to the wearer. The pull force to operate the mechanical inflation means must continue to comply with TSO-C13f sec. 5.6.1.

Note 2: Light may be mounted on either the immersion suit or inflatable buoyancy element, as appropriate.

Note 3: The CGSB standard (par 7.1) for written instructions continues to apply.

Note 4: The suit system is to have a placard inscribed with "Adult" along with size markings conforming to the classification requirement of the CGSB standard (par. 4.1).

Note 5: Test shall be conducted to the requirements of either the TSO or CGSB par. 6.2.2.3 b., whichever is determined to be more conservative.

Note 6: Test shall be conducted to the pressure requirements of either the TSO or CGSB par 6.2.2.3 b., whichever is determined to be more conservative.

6. Marking

In addition to the marking and identification required by CAR 201.10, CAN/CGSB-65.17-99, and the applicable sections of TSO-C13f, each immersion suit and inflatable buoyancy element must contain an information marking or placard that states the approved configuration in which the suit system must be worn by the passenger. The marking or placard must be displayed on the outer surface of the immersion suit and in an appropriate location on the inflatable buoyancy element.

The marking or placard prescribed for each immersion suit and inflatable buoyancy element must be displayed in a conspicuous place and may not be easily erased, disfigured, obscured or detached, as appropriate.

Gilles Morin
Chief, Regulatory Standards
Aircraft Certification Branch

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