



**E452**  
**SURVIVAL SUIT**



# Helly Hansen Canada Ltd.

Presentation to

Offshore Helicopter Safety Inquiry

By

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# E452 SURVIVAL SUIT



## Overview of Presentation

- Corporate Overview
- Helly Hansen Quality Management system
- Aeronautical Maintenance Organization
- Experience and Expertise
- Involvement with Canadian General Standards Board (CGSB)
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- Issues Arising
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# E452 SURVIVAL SUIT



## Corporate overview

Helly Hansen Global  
Moss, Norway

Helly Hansen  
Sport Leisure  
Global

Helly Hansen Pro  
Industrial Workwear  
Global

Special Products  
Survival suits  
Global

Helly Hansen  
Sport Leisure  
Corporate (Delta BC)

Helly Hansen  
Canada Ltd  
Licensee (Nova Scotia)



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## Corporate overview (Facilities)

Helly Hansen  
Canada Ltd.  
Head Office/  
Eastern Distribution Center  
Dartmouth, NS

British Columbia  
Western  
Distribution Center

Nova Scotia  
Suit Maintenance  
Facility  
Dartmouth, NS

Newfoundland  
Suit Maintenance  
Facility  
St. John's



## Quality Management

**ISO Quality Management system.**

**Helly Hansen has had a registered ISO quality management system since 1998 as outlined below.**

- **Current Registration:**  
**ISO 9001:2008 Attained designation in September 2009**
- **Previously Registered to:**  
**ISO 9002:1994 Attained designation in January 1998**  
**ISO 9001:1994 Attained designation in Aug 1999**



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## Aeronautical Maintenance Organization: (AMO)

- Helly Hansen has been a Transport Canada Certified AMO for Helicopter Transport suit systems since 1993
- As an approved Transport Canada AMO we are subject to annual and unscheduled audits of our maintenance and manufacturing procedures.



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## Industry Experience and Expertise

- Offshore Helicopter Transport suit services.
  - Nova Scotia suit maintenance facility has been supplying and maintaining helicopter transportation suit systems since 1993.
  - Newfoundland Helicopter Transport suit maintenance facility was established in the fall of 2007 after award of the contract from the Grand Banks Operators (HMDC, Husky, Suncor).



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## Industry Experience and Expertise

- Research, Design, Development

**Donald Mah**, Manager R&D- 19 years industry experience in product development, design and research of marine and aviation safety equipment.

**Brian Farnworth**, 25 years experience in a variety of government and industrial research institutions, specializing in applying science to development of protective clothing and equipment.

**Larry Spears**, 25 years experience in marine safety training, product development and project management experience.





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## Involvement with CGSB

### What is the CGSB?

The Canadian General Standards Board (CGSB) is a federal government organization that offers client-centered, comprehensive standards development and conformity assessment services in support of the economic, regulatory, procurement, health, safety and environmental interests of our stakeholders — government, industry and consumers.

CGSB website Oct 18, 2009

[www.tpsgc-pwgsc.gc.ca/ongc/home/index-e.html](http://www.tpsgc-pwgsc.gc.ca/ongc/home/index-e.html)

The CGSB has published the following standards in regards to Immersion suits and Helicopter transport suits:

Immersion suit systems CAN/CGSB 65.16-2005 Published November 2005

Helicopter Passenger Transportation suit system CAN/CGSB 65.17-99 Published in December 1999



## Involvement with CGSB

### How is Helly Hansen Involved with the CGSB?

Helly Hansen is involved in the CGSB standards development process by providing Helly Hansen representatives who have subject matter expertise, at the expense of Helly Hansen, on multiple CGSB standards committees.

In particular Helly Hansen has been a member of the following CGSB working groups:

Immersion suits CAN/CGSB 65.16 –2005, 1999,1989 Publications

Helicopter Transport suits Can/CGSB 65.17- 1999,1988,1986 Publications



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## Request for Proposal (RFP)

Helly Hansen responded in December 2006 to an RFP issued by the Grand Banks Operators in Newfoundland and Labrador and Exxon Mobile in Nova Scotia for the provision and maintenance of helicopter transport suits.

Helly Hansen was awarded the contract on April 23, 2007.



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## RFP- Work Requirements

### **Scope of Work**

Provision and Maintenance of Helicopter Passenger Suits to be used at offshore locations in Nova Scotia and Newfoundland and Labrador; including the Sable Project, Hibernia Project, Terra Nova Project, and White Rose Project and other projects as determined by the Operators.

### **Helicopter Transport Suit Services**

Contractor shall deliver the suits, lifejackets, EBS/HUEBA units and PLBs to the heliport and pick them up when they return from offshore. The Helicopter Provider shall issue suits, life vests and EBS/HUEBA bottles to all passengers traveling offshore. The Helicopter Provider shall receive all suits returning from offshore. The contractor will pick-up any suits needing cleaning, repair or leak testing.



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## RFP- Suit Requirements

### Requirements-Suit System.

- Helicopter Transportation suits must have a dual approval that meets the current Transport Canada Aviation suit standard CAN/CGSB 65.17-1999 and current Transport Canada Marine abandonment suit standard CAN/CGSB 65.16-2005
- Approved Aviation Life vest or equivalent accepted by Transport Canada Aviation Division and Marine Division.
- Insulated boots or equivalent dry suit boots
- Spray hood that meets the requirements set out in marine immersion Can/CGSB 65.16-2005
- Bidder shall attach a reusable nose clip on each suit. The unit should be easily accessible with one hand operation.
- Bidder to supply a sizing chart describing the smallest to the largest sizes your suit will fit and all sizes being proposed for this contract. The smallest size will have to fit a 90 lb person and the largest will have to fit a 425 lb person. The average will be between 140 lbs and 250 lbs.
- Bidder must have the ability to change out boots to different sizes for personnel with big or small feet.
- Bidder shall bid based on the number of suits they feel is appropriate for each geographical location based on the POB numbers.
- Bidder is to identify how much advanced notice is required to increase suit inventory by 100 POB
- Bidder shall supply a copy of the original Transport Canada approval DATA for technical review. This includes both standards, Aviation and Marine and testing done in the pool with the results.



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## RFP- Personal Locator Beacon Requirements

### Requirements- Personal Locator Beacons (PLB)

- Bidder shall supply Personal Locator Beacons (PLB). The anticipated numbers of PLBs required are two (2) for each seat on the helicopters.
- For NS operations, the PLB will be a 406/121.5 PLB with approval from Transport Canada to be fastened/placed on the suit. (Supply Transport Canada Approval Documentation for Aviation and Marine approvals)
- For NL operations, the PLB will be a Sea Marshall 121.5.
- The unit must be approved for use by an independent body FAA, CAA, USCG etc.
- Owner will evaluate each system on an individual basis



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## RFQ- Emergency Breathing Systems Requirements

### Requirements- Emergency Breathing Systems (EBS/HUEBA)

- Bidder shall supply Emergency Breathing Systems / Helicopter Underwater Emergency Breathing Apparatus (EBS/HUEBA).
- EBS/HUEBA will be the Aqua Lung SEA LV-2 compressed air system or other equivalent device as approved by Operators.
- These units require Transport Canada approval to be fitted to the suit or vest
- The units will have a gauge not a pin device.
- Forty (40) EBS/ HUEBA units will be supplied per helicopter for passengers traveling offshore. Two will be supplied for each pilot.



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## Contract Startup

- On schedule startup both NS and NL
- On time preparation of NL suit servicing facility
- On time suit production. Helly Hansen produced 1200 suits at the startup of the contract.
- On time delivery of PLB's
- On time delivery of HUEBA's (Instructed by Grand Banks Operators not to put HUEBAS into service at the startup of the Contract.)
- 6 week orientation with staff at heliport
- Preparation E452 Feature Poster





# E452 SURVIVAL SUIT



## Service and Maintenance of Transport Suit system.

### Service and Maintenance Suit- Every Return Flight

- Removal of Thermal liner for inspection and cleaning
- Visual inspection of suit system Including:  
Exhaust Valve, Face Seal and flap, Front zipper, Whistle, Nose clip, PLB attachments, Boot Liners, lining fabric, Lining zipper, bar code, Inflation Mechanism/CO2, Oral Inflation tube, Buddy Line, Safety Light, Reflective tape, Cuffs, Gloves, Exterior/Interior Fabric, Spray Shield.
- Reinstallation of Thermal Liner
- Suit returned to service

Maintenance procedures as per Helly Hansen Maintenance Manuals certified by Transport Canada as part of the Type AP-22 Certificate



# E452 SURVIVAL SUIT



## Service and Maintenance of Transport Suit system.

### Service and Maintenance Suit- after every 8<sup>th</sup> cycle or 6 months

- Removal of suit from service
- Thermal liner of suit removed for Cleaning and inspection
- Visual inspection of suit system Including:  
Exhaust Valve, Face Seal and flap, Front zipper, Whistle, Nose clip, PLB attachments, Boot Liners, lining fabric, Lining zipper, bar code, Inflation Mechanism/CO2, Oral Inflation tube, Buddy Line, Safety Light, Reflective tape, Cuffs, Gloves, Exterior/Interior Fabric, Spray Shield.
- "Stole" test completed- Inflation and pressure test on Integrated Inflatable Lifejacket
- Leak Testing of Suit- Suit is Inflated and sprayed with solution to indicate any punctures or leaks in the suit.
- Reinstallation of Thermal Liner
- Final Inspection Including:  
**Cuffs, Gloves, Exhaust Valve, Nose Clip , Bar Codes, Manual Inflation Components, Spray Shield, Liner Installed, Front zipper, Buddy Line, whistle, Light, reflective tape, Boots, Shell fabric Condition, Interior fabric Inspection.**
- Suit returned to service

Maintenance procedures as per Helly Hansen Maintenance Manuals certified by Transport Canada as part of the Type AP-22 Certificate



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## Issues Arising

The following is an outline of issues arising in the first two years of the service contract and how they were addressed:

- Dec 31, 2007- Soft boot on 2/3XL suit noted as a possible tripping hazard and no foot protection ( No reinforced toe cap). Action- Suits taken from service and standard boot put on suits, suits returned to service.
- Feb 26, 2008- NS Intervention crew raised comfort issues with suits. Action: Some members have chosen favorite standard suit for use and some custom suits produced.
- May 8, 2008- Feedback from Petro Canada with respect to employee comments regarding suit leaking in training. Action- Evaluation of leakage in training environment on May 30, 2008. It was determined that suit performance was within specifications.



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## Issues Arising

- May 28, 2008- Service Bulletin issued regarding exhaust valve on suit and to leave valve in full vent position.
- June 3, 2008- Survey completed over 4 week period on inbound and outbound passengers traveling to NL offshore with questions on E-452. Action: Survey results reviewed with operators, passengers required to confirm that they can fully don the suit prior to flight.
- July 18, 2008- One of the Inflatable bladder punctured in training. Action: Evaluation of suit. New inspection procedure instituted for verification of Inflatable preparedness.
- Sept 2, 2008- Suit liner zipper separated in small section during flight. Action- Evaluation of suit. New inspection procedure instituted for Lining zippers.



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## Issues Arising

- Oct 28, 2008- CNSOPB, Sable operators request proposal to address comfort issues experience with the NS Intervention crew. Action: On December 5, 2008 Helly Hansen prepared proposal for the start of the HTS-1 suit project.

April 6, 2009- Feedback from Petro Canada with respect to passenger having difficulty donning suit on Inbound flight on March 12, 2009. Action: Suit inspected and found to be free from defect and returned to service with no further issues with the suit system. It was noted that the passenger did not report an issue donning the suit on outbound flight, nor was there a reported issue donning at heliport prior to outbound flight.



## Return to Flight

As part of the return to flight process Helly Hansen was contracted to conduct suit fittings on personnel prior to transport to the offshore by Helicopter. The fittings were conducted at the Heliport, at offsite fitting session and at the Helly Hansen suit maintenance facilities. We are currently under contract from the operators to conduct fittings as required for personnel traveling offshore at our Newfoundland maintenance facility.

The fitting process which was developed as part of the return to flight service consists of the following categories:

1. Donning of the suit
2. Verification of the ability to zip up the suit
3. Size verification
4. Checking of seals (Face, Wrist)
5. Mobility Checks



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## HTS-1 Suit Project

- The HTS-1 suit project is currently ongoing and in preparation for production pending final approval from Transport Canada.
- The HTS-1 suit was developed to address the comfort issues with the current E-452 suit system.
- The suit has been tested to the helicopter transport suit standard only- this eliminates the constraints in developing the suit to meet two standards.



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## Closing

- Helly Hansen is a service provider to the offshore industry under contract by the Grand Banks operators in Newfoundland and Labrador and the Sable project in Nova Scotia. The helicopter suit system supplied by Helly Hansen meets and exceeds the provisions of the latest CGSB standards and the terms of the contract with the Grand Banks operators.
- In an effort to continually improve the effectiveness and comfort of the suit system, Helly Hansen shall play an active role in the CGSB committee that has been established to review the helicopter transport suit standard.
- Pleased to Answer Questions