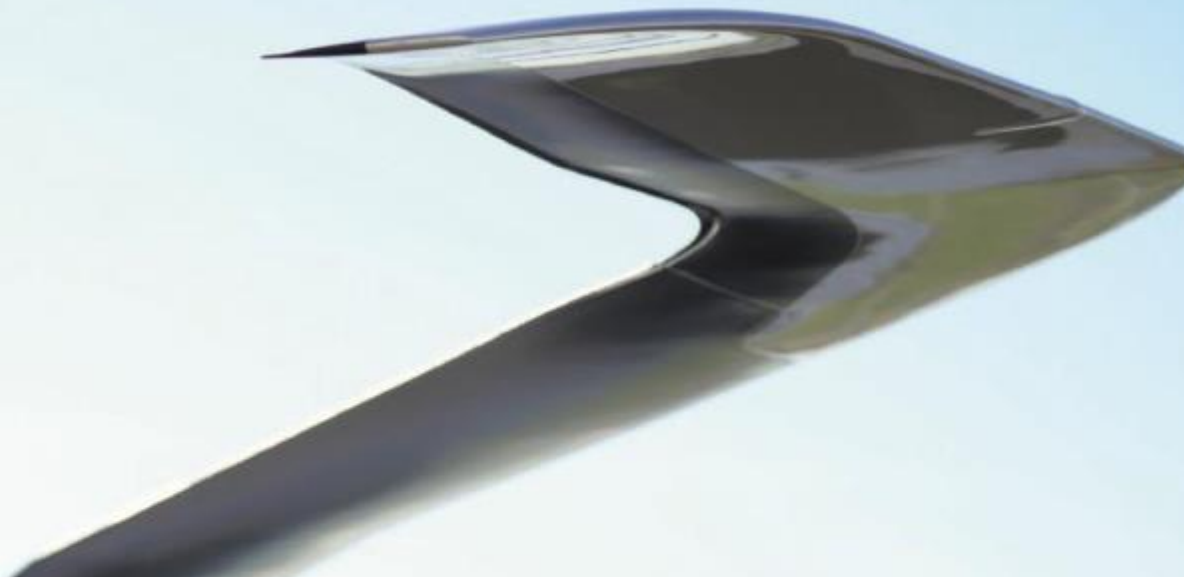


ESPN-R Session

Part II – Hoist Workshop

Alexander WEISSENBOEK, *Airbus Helicopters*
Julien EYMARD, *Leonardo Helicopter*





HELICOPTERS

European Safety Promotion Network – Rotorcraft (ESPN-R) Hoist Operation - Working Group

EASA Rotorcraft and VTOL Symposium - Day 2

Julien Eymard, Leonardo Helicopters

Alexander Weissenboeck, Airbus Helicopters

Cologne – November 17th, 2021



ALEXANDER WEISSENBOECK



- ❖ +30 years of Aviation (Rotor & Fixed Wing) experience
- ❖ EASA Part 66 B1.1, 1.3 / C Licensed Engineer & Qualified Hoist Operator
- ❖ *...various functions within Airbus Helicopters since 2007:*
 - System Design Responsible for Goodrich Hoist System
 - Head of Field Technical Assistance for France & Germany (OEM TechReps)
 - Technical Expert for Engines and Optional Equipment
 - Team Leader Quality Management Prototype Flight Test, Certifying Staff
- ❖ *...and a previous life as Technical Director at BOSCH Corporate Aviation Stuttgart and Certifying Staff at ALT / Air Lloyd, St. Augustin Hangar.*

CUSTOMER SUPPORT MANAGER
AIRBUS HELICOPTERS



JULIEN EYMARD



- ❖ *21 years as Helicopter Flight Engineer in the French Air Forces;*
- ❖ *Leonardo Helicopters Rear Crew Flight Instructor since 6 years;*
- ❖ *Flight Training and Services Design;*
- ❖ *SAR, CSAR & HEMS Specialist;*
- ❖ *Hoist, Cargo Hook, Tactical Insertion and Mission Console Operator;*
- ❖ *Personal Protective Equipment Instructor & Inspector;*
- ❖ *Member of ESPN-R Hoist Safety Promotion Task Force.*



SENIOR REAR CREW INSTRUCTOR
LEONARDO HELICOPTERS



Helicopter Rescue Hoist Thematics and Safety Promotion

1. Welcome and Introduction
2. Hoist Safety Promotion: Why does it matter? ...and members of the group
3. Mission “Where and how can Hoist accidents and incidents occur...and how to prevent these?”
4. Hoist Operator Training guide
5. Pilot Training Guide for Hoist Operations
6. Simulated Helicopter Hoist Operations
7. Interactive session: Where do we go from here? and Q & A



A little bit of history....



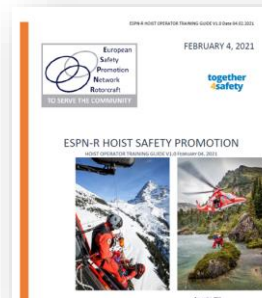
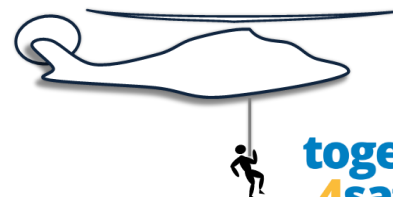
T.O ESPN-R HHO
Alpnach
Switzerland
July 2017



HO Training
Guide Kick-Off
Babcock
Colico
Italia
December 2018



Workshop
Airbus
Helicopters
Donauworth
Germania
October 2019



2020
Hoist
Operator
Training
Guide

First HHO
Symposium
September
2021



Workshop
Leonardo
Helicopters
Sesto Calende
Italia
November 2021



2018
Hoist
Operations
Best
Practices

Workshop
Bavarian
Mountain Rescue
Bad Toelz
Germania
March 2019



Workshop
DRF
Rheinmunster
Germania
September 2020



Pilot Training
Guide Kick-Off
Web Meeting
July 2021



EUROPEAN
ROTORS
November 2021



Core working member of the hoist operational task force:

- Karl Mueller – Swiss Air Forces
- Christoph Hess – Swiss Air forces
- Klaus Hopf – Bavarian Helicopter Police Squadron (retired)
- Frank Weiskopf – Bavarian Helicopter Police Squadron
- Michel Masson – EASA
- John Franklin – EASA
- Fabrice Legay – EASA
- Dario De Liguoro - Leonardo Helicopters Company
- Julien Eymard - Leonardo Helicopters Company
- Walter Traversa – Babcock Italy
- Michele Valenza - Babcock Italy
- Sebastian Schneider - DRF Luftrettung
- Jörg Redetzky - DRF Luftrettung
- Roland Benning – ADAC Luftrettung
- Peter Schellig – ADAC Luftrettung
- Kim Gardberg – CHC
- Ivo Airaudi – Airgreen
- Davide Subrero - StarWorkSky
- Philippe Dugourd – Luxembourg Air Rescue
- Remco Siemerink – Helicopter Travel Munich
- Werner Greipl – Helicopter Travel Munich
- Rupert Gleissl – Airbus Helicopters & Bergwacht Bayern
- Christian Balta – Airbus Helicopters
- Bernd Osswald – Airbus Helicopters
- Alexander Weissenboeck – Airbus Helicopters

....and many more contributors from all over the world....



Content

Helicopter Hoist History / Mission Evolution

Operations and Training Risks and Mitigations

Hoist Operator Training Guide

Pilot Training Guide for Hoist Operations

Simulated Helicopter Hoist Operations



First Helicopter Civilian Rescue, November, 1945

East Coast of the United States



"If a man is in need of rescue, an airplane can come in and throw flowers on him, and that's just about all."

"But a direct lift aircraft could come in and save his life."

Helicopter pioneer Igor Sikorsky

Hoist History – early day's, mainly (military) Rescue Missions



Hoist History – Nowadays



Hoist History – Today, Harbor Pilot Transfer



24 November, 2021

Hoist History – Today, Windfarm Technical Staff Transfer



Military & Parapublic - SAR, MedEvac, Tactical OPS



Military & Parapublic - SAR, MedEvac, Tactical OPS



Content

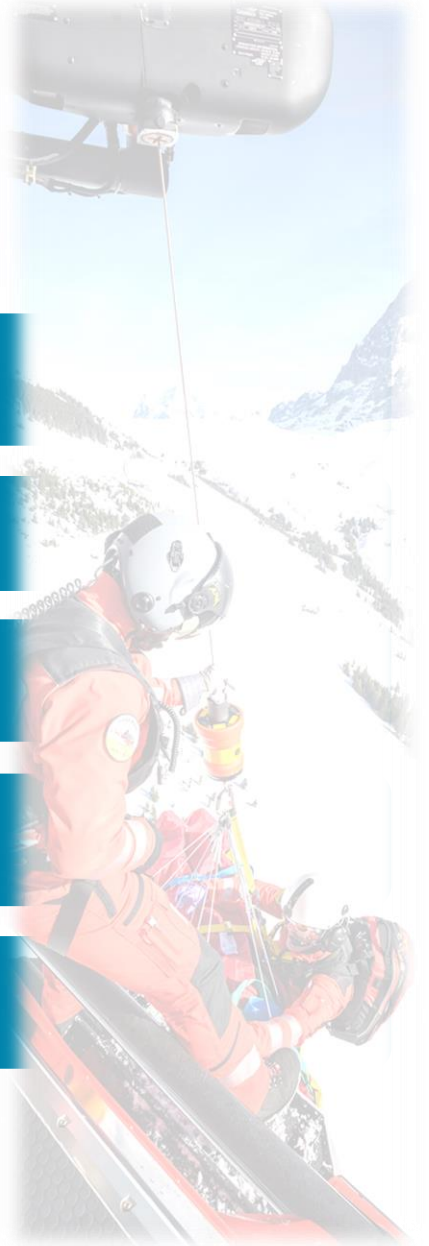
Helicopter Hoist History / Mission Evolution

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Hoist operator not secured in cabin



Hoist operator not secured in cabin → “confirm secured” question by PIC standardization / checklist “before hoist operation / opening of door” → four eye principle / **buddy check** as performed by scuba divers.

Safety check prior to hoisting up



A safety check should be performed prior to the extraction of HEC. The aim of the safety check is to prevent entanglement unintended detachment during initial lift off (see *D-LOK issue*) by ensuring that the rigging and equipment has been checked and that the load is clear of obstructions. Once the pilot is satisfied that the check is complete, he is clear to depart the scene. The safety check shall prevent inadvertent entanglement / hooking of rescuer on alpinist securing harness, etc...

(Dynamic) Shock Load on hoist cable and/or hoist passenger



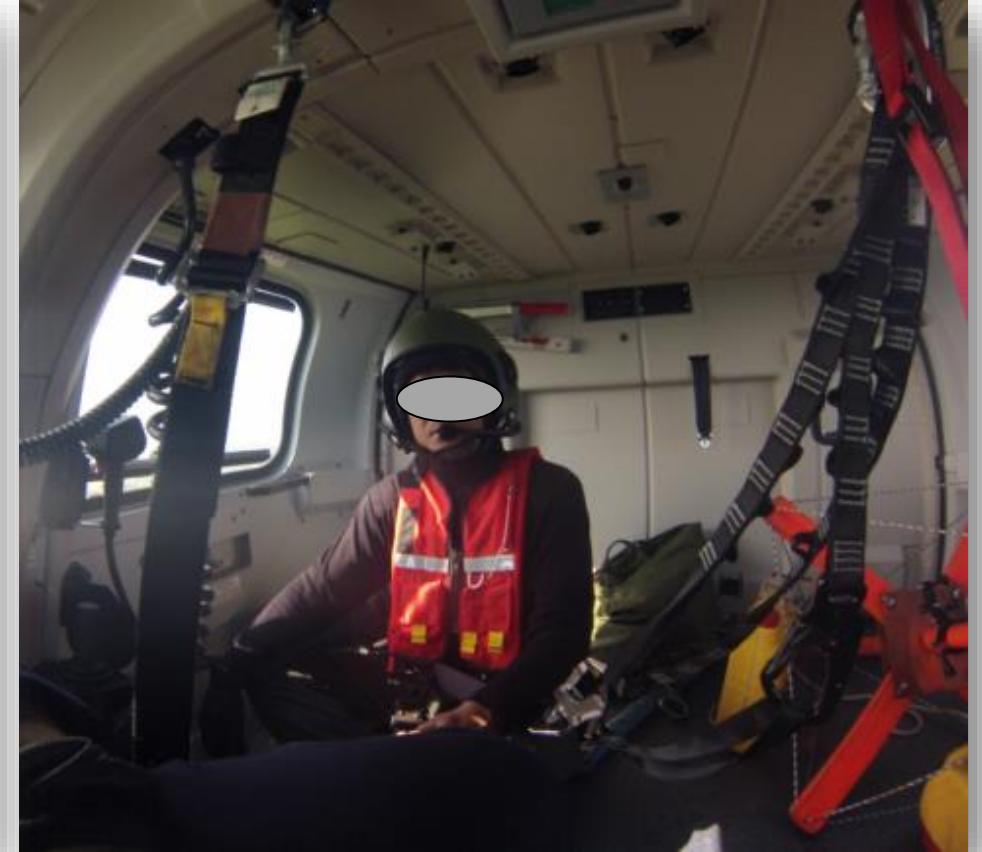
Avoiding shock load is also a topic: either by falling into the rope or cable or by sustaining a rapid and uncontrolled departure.

Mission Briefing on the ground and in flight



Lack of Mission Briefing concept → mitigation by simple questioning of crew member, such as: are we really going to location XYZ to motivate communication between crewmember to create situational awareness.

Cabin safety



Cabin safety (non-secured jacket / backpack / loose equipment) → loose objects stowed & secured, seats to be taken by all passengers / crewmembers during T/O, Landing and flight and sliding door shall be closed whenever possible and emergency exits not obstructed.

Pilot loss of visual reference



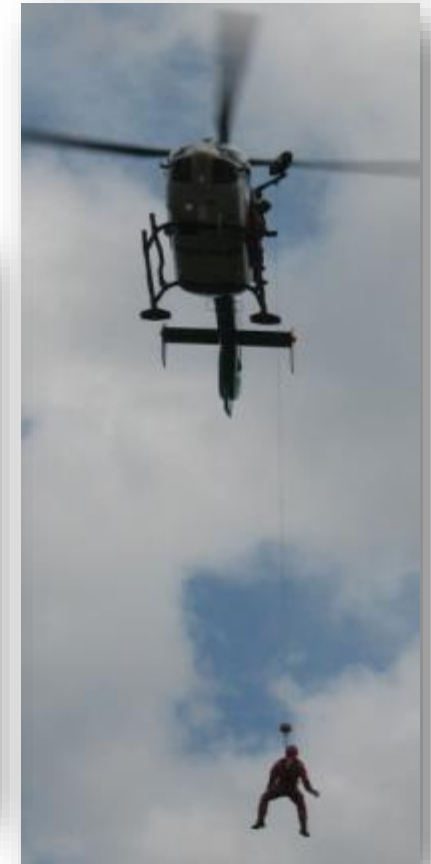
PIC loss of visual reference / HMD (helmet mounted display) / information overload – weight of information provided of PIC (fear of chime / Gong) → reduction of radio communication (temporary on hoist mission – info to ATC) Example for off-shore harbor pilot transfer: during vessel hoist maneuver: PF only Intercom and hoist commands vs. PNF ATC and vessel communications.

Offshore Passenger Emergency Equipment Configuration



Incorrect Offshore Passenger Emergency Equipment Configuration, such as: wrong Vest, automatic life vest, wrong survival suit, too much lift/boost or automatic release (designed for vessel but utilized for helicopter transfer).

Uncontrolled rotation of passenger → video



Uncontrolled rotation of passenger during hoisting up → mitigation: check of equipment / briefing - mostly vertical position, no heavy or large backpacks – eventually put in front and not on back / increase of forward speed of HC / critical cable length between 15 to 22 meter → avoid this cable length, either longer or shorter winch / personal position (“Scheißhocke” or toilet position) / potential rotational vertigo when spinning and potential risk drop / fall from height due to dizziness when set down in mountainous terrain .

With faster hoist cable speeds, critical cable length can be passed faster/safer – hydraulic (slower 0,9 m/s) vs. electric (1,25 m/s) (faster).

Voice and visual commands for rescuer on the ground

Normal



OK!



Helicopter
tied to the
ground



Cable free
to reel in



Ready to
hoist up



XX meters to
the ground



Helicopter
tied to the
ground



Ready to
hoist up

Emergency/abnormal



Abort hoist
operation



Disconnect
from Hook



Loss of radio
communication



Pay
attention

Voice and visual commands for all involved in the hoist operation must be clear, limited and standardized to provide essential and minimum information → to be intensively trained in initial training and re-trained at recurrent training. CRM concept to be revised as it may not take into account specific mission and crews involved in rescue, law enforcement and other missions. Writing a strong document related to the CRM in HEMS/HHO...is now a necessity. Not only should the hoist operator be involved but also the other crew member such as HEC.

PCDS - Personnel Carrying Device System



PCDS for persons transported on the hoist hook to be standardized and no textile interfaces / loops allowed in hoist hook → CM CS 005 issue 1 / CS27 Amd.5 & CS29 Amd.5 to be enforced → link [here](#)

Persons on the ground



Do not rely solely on persons on the ground providing information (wind, clearance of landing / operation area, etc.) as they may not be experienced / trained enough → to be confirmed by the flight crew during the situation assessment/ reconnaissance fly-over.

Untrained persons (by-standers) approaching a helicopter



Untrained persons (by-standers) approaching a helicopter with engines on and rotor turning, may have less useful awareness / consciousness.

Guard/escort hoist passengers when possible - (similar to operations at public heliports).

Hoist Operator positioning in helicopter (with wheel landing gear)



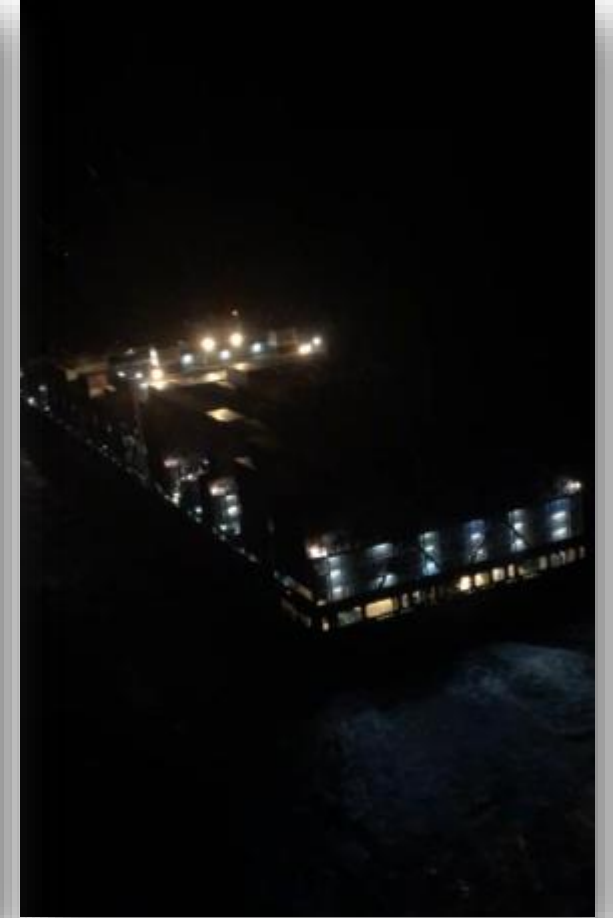
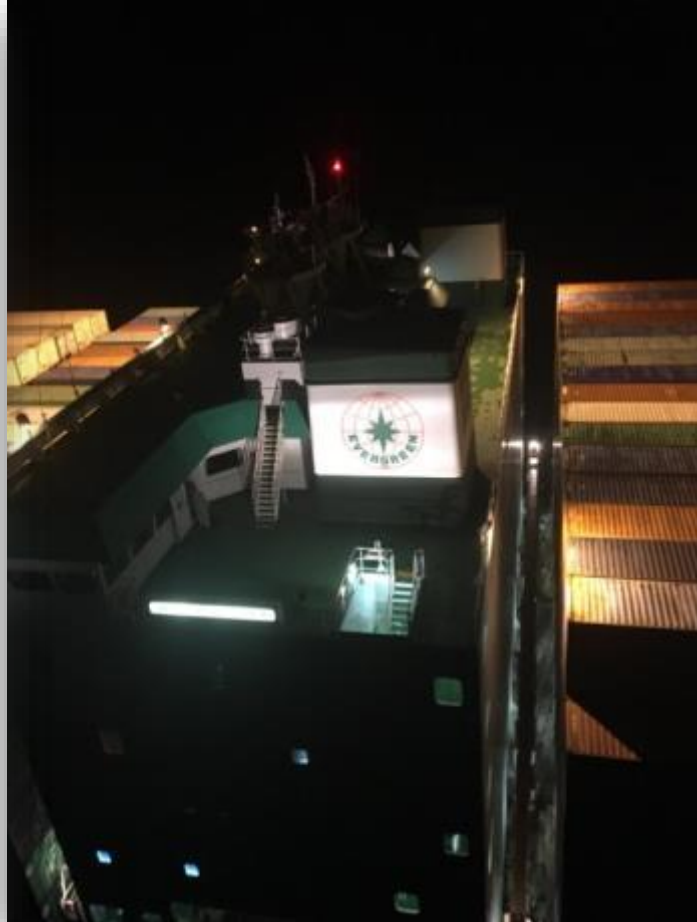
Hoist Operator positioning: HO shall not have the full body outside the cabin with the two feet on the footstep. Also the Lanyard of the HO harness must be set to avoid the HO to fall outside the cabin. The best positions are for helicopter with retractable landing gear (~~and no articulating boom~~): one knee (or foot on the cabin floor and one foot on the step; or two knees (or feet) on the cabin floor.

Hoist Operator positioning outside helicopter (with skid landing gear)



For aircrafts with skids (and an articulating boom), it is possible to have the two feet outside the cabin using a step designed for these types of operations.

Hoist maneuvers at night offshore



For hoist maneuvers at night off shore: in extreme dark environment with limited visual reference for the flight crew (as off shore and only illumination of the vessel) → highly skilled and trained flight crew are necessary, as helicopter autopilot in automatic mode of flight director position, attitude and altitude hold/auto hover is not able to use the ship as reference due to relative track & motion.

Training – theoretical, operational and maintenance



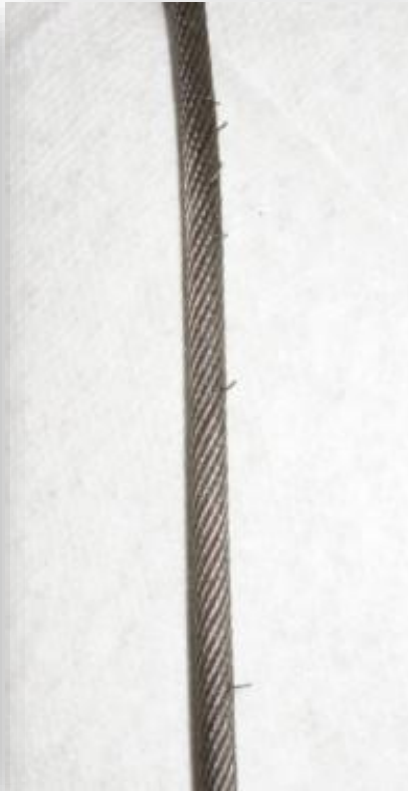
Hoist operator basic requirements / assessment / qualification / certification → AOC to reflect qualification procedure / syllabus → **ESPN-R Hoist Operator training Guide.**

Initial, Proficiency / recurrent check concept NORM & EMERG procedures → informational briefing of FLM, regulations, organizational, equipment, etc. changes (classroom & operational tasks).

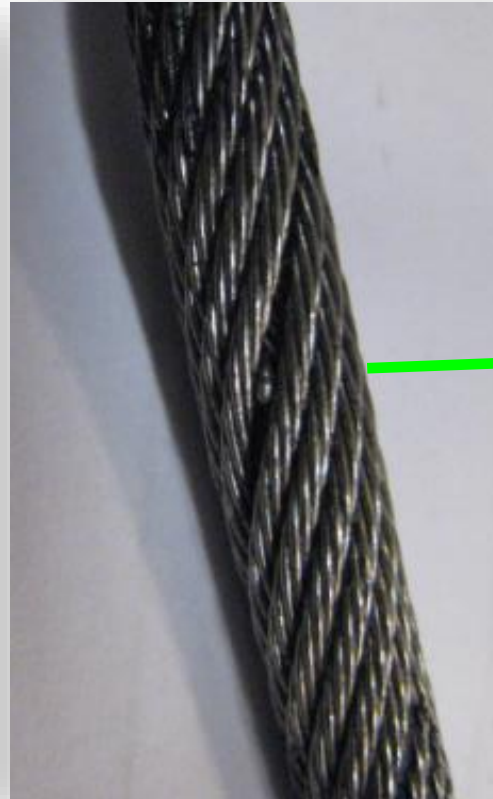
Cable damages during hoist operation



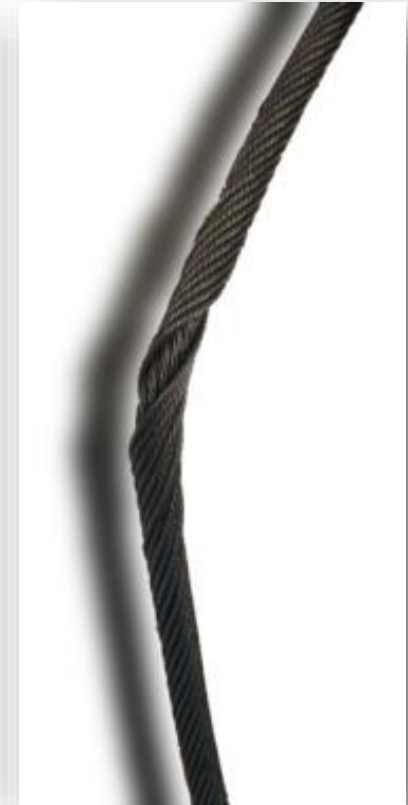
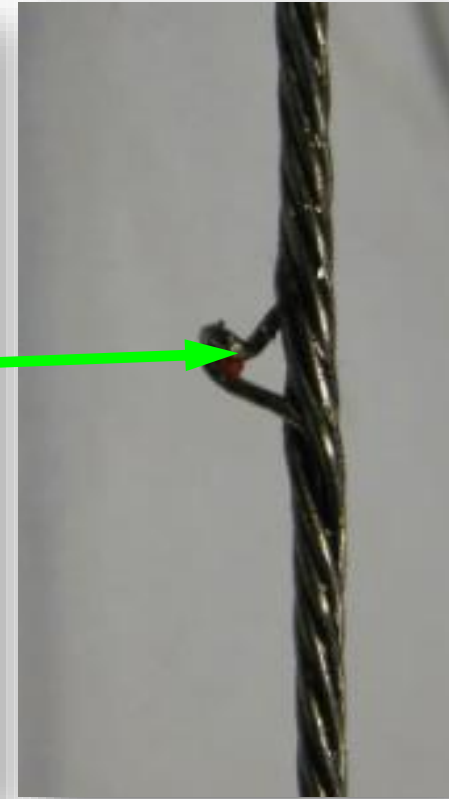
Birdcaging



Severe Abrasion



Shock Load



Kink

Training of hoist operator of hoist cable damages during hoist operation to avoid potential loss of load and substantial damage of equipment.

Cable damages during hoist operation



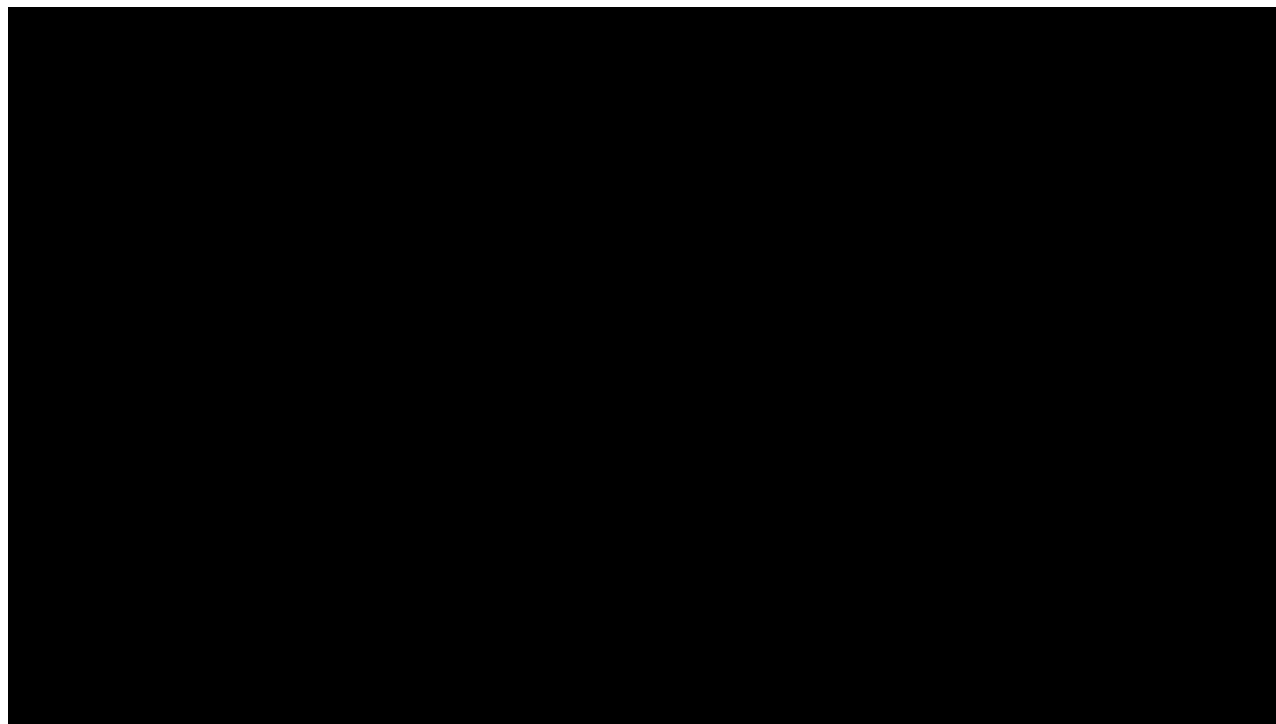
Cable Misswrap



Cable Chafing on Landing Gear Skid Tube

Training of hoist operator of hoist cable damages during hoist operation to avoid potential loss of load and substantial damage of equipment and awareness of hoist operator of basic hoist technical theory to better understand consequences in a case of hoist emergency or malfunction.

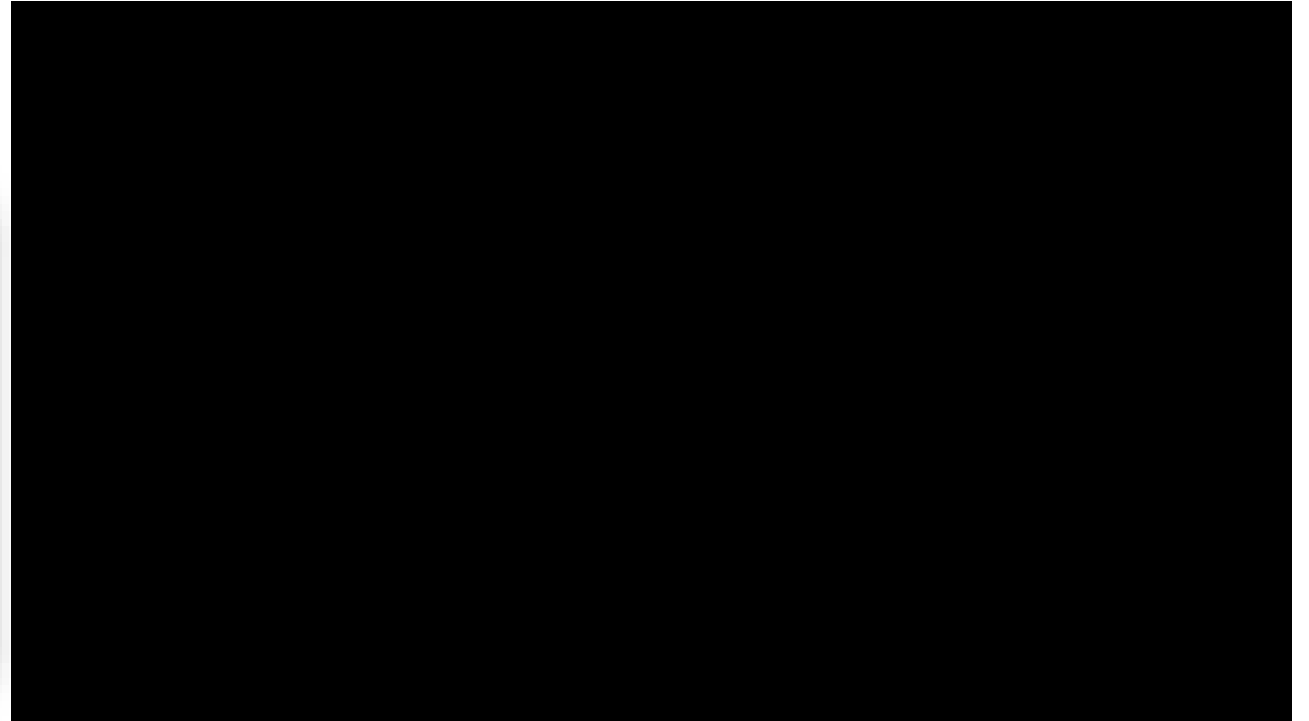
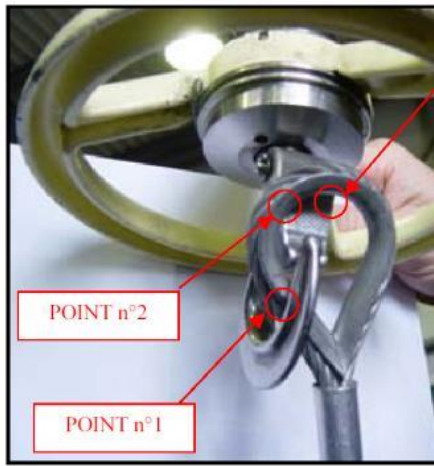
HOIST SYSTEM CONSIDERATIONS (Not limited to...)



**CORRECT
APPLICATION OF
MAINTENANCE
PROCEDURES.**

Training of Hoist Operator on hoist cable damages during Hoist Operation to avoid potential loss of load and substantial damage of equipment and awareness of Hoist Operator of basic hoist technical theory to better understand consequences in a case of hoist emergency or malfunction.

Dynamic rollout phenomena on hoist hooks



Video link → [here](#)


All crew members involved in hoist and/or external sling load operation shall be attentive to the dynamic rollout (ring reversal) phenomenon → hook and equipment shall be checked for compatibility.

Hoist Tools and Ground Support Equipment



Dedicated ground support equipment (GSE/AGE) shall be available by the OEM to ensure correct application of maintenance procedures.

Development of “Whitepaper” and issuing of Airbus Helicopters Safety Promotion




No. 3195-P-00

SAFETY PROMOTION NOTICE

SUBJECT: GENERAL

ESPN-R Hoist Task Force recommendations

For the attention of




AIRCRAFT CONCERNED	Version(s)	
	Civil	Military
EC129	B	L1
AS350	B, BA, BB, B1, B2, B3, D	A2, C2, C3, U2
AS500	E, F, F1, F2, N, NP	AF, AN, SN, UF, UN, AP
EC130	BA, T2	F, Fa, Fi, K, K2
SA330 / AS365	C1, C2, C3, M, N1, N2, N3	MA, MB, SA, SB, UB, MBc
SA366		GA
EC155	B, B1	
SA330	J	Ba, L, Jm, S1, Sm
SA341	G	B, C, D, E, F, H
SA342	J	L, L1, M, M1, Ma
ALOUETTE II	313B, 3130, 318B, 318C, 3180	
ALOUETTE III	316B, 316C, 3160, 319B	
LAMA	319B	
EC225	LP	
EC725		AP
AS332	C, C1, L1, L2	B, B1, F1, M, M1
AS532		A2, U2, AC, AL, SC, UE, UL
EC175	B	
EC339		KUH/Surton
BO105	C (C23, CR, CR-4, CB-5), D (DB, DBS, DB-4, DBS-4, DBS-5), S (CS, CBS, CBS-4, CBS-5), LS A-3	CBS-5 KLH, E-4
MBB-BK117	A-1, A-3, A-4, B-1, B-2, C-1, C-2, C-2c, D-2, D-2m	D-2m
EC135	T1, T2, T2+, T3, P1, P2, P2+, P3, EC635 T1, EC635 T2+, EC635 T3, EC635 P2+, EC635 P3, TM, P3H, EC635 TM, EC635 P3H	

Revision 0 2019-09-19

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This document is available on the internet: www.airbushelicopters.com/technic



No. 3195-P-00

2.2 OPERATIONAL RECOMMENDED PRACTICES


Depending on whether the hoisting operations are performed by night or during the day, onshore or offshore, specific recommended practices & scenarios can be identified.

2.2.1 OFFSHORE HOISTING OPERATIONS

One of the specifics of offshore flight is usually laminar wind conditions. However, with the increasing use of large tankers or cruisers, specific risks need to be tackled.

2.2.1.1 Operating close to large vessels: 1 Cliff effect

Large vessels are an obstacle to laminar winds at sea and can generate dynamic updrafts and vortices, much like what can be encountered in mountain flying.
Risk identified: quick variations of dynamic updraft due to ship heading change or squalls from a different direction can induce significant height gain or loss.



Mitigation: strong awareness to this effect must be maintained

- by the pilot for choosing the hovering area, approach vector and the risk caused by obstacles in case of downdraft,
- by the hoist operator, to make sure that height variations do not occur with a hoist passenger close to the ship.

Revision 0 2019-09-19

Page 42/48

Revision 1 2020-07-07

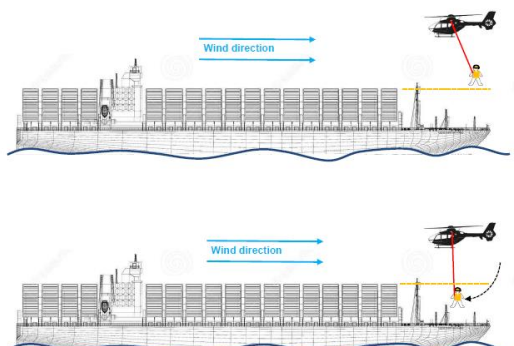
This document is available on the internet: www.airbushelicopters.com/technic



No. 3195-P-00

2.2.1.2 Operating close to large vessels: 2 Swing back effect

Large obstacles windward will “mask” the wind from the hoist passenger at some point on the way down.
Risk identified: No longer pushed by the wind, the hoist passenger will swing back to a position vertically below the helicopter.



Risk mitigation: the hoist operator needs to anticipate this effect and adapt the approach vector and cable reeling speed accordingly.

Revision 0 2019-09-19

Page 43/48

Revision 1 2020-07-07

This document is available on the internet: www.airbushelicopters.com/technic

Notice (SPN) 3195-P-00-Rev-0-EN in September 2019 and revision in 2020 to also include e.g. off-shore hoisting operation information



European
Safety
Promotion
Network
Robustness
TO SERVE THE COMMUNITY

Hoist OPS Safety Promotion Task Force EASA Rotorcraft and VTOL Symposium - Day 2 November 17th, 2021 JE,AW

38

24 November, 2021

Content

Helicopter Hoist History / Mission Evolution

Operations and Training Risks and Mitigations

Hoist Operator Training Guide

Pilot Training Guide for Hoist Operations

Simulated Helicopter Hoist Operations

ESPN-R HOIST OPERATOR TRAINING GUIDE V1.0 Date 04.02.2021

FEBRUARY 4, 2021



together
4safety

ESPN-R HOIST SAFETY PROMOTION

HOIST OPERATOR TRAINING GUIDE V1.0 FEBRUARY 04, 2021



Photo credit: by REGA



Hoist Operator Training Guide

The aim of this training guide is to give a guideline for Hoist Operator Technical Crew Members, based on the existing Regulation (EU) 965/2012 on air operations in order to clarify (but not limited to) hoist operator prerequisites, training, checking and assignment into duties.

Considering the already existing EASA set of regulations the ESPN-R Hoist Operation Safety Promotion group suggests and recommends an effective and “modular” way to train HO Technical Crew Members.

Latest version is publicly available on Together4Safety, Leonardo and Airbus Helicopters websites.

together
4safety

Initially develop a *Hoist Operator Industry Standard*, which was re-named later to a **Hoist Operator Training Guide**



First Kick-off Dec. 2018



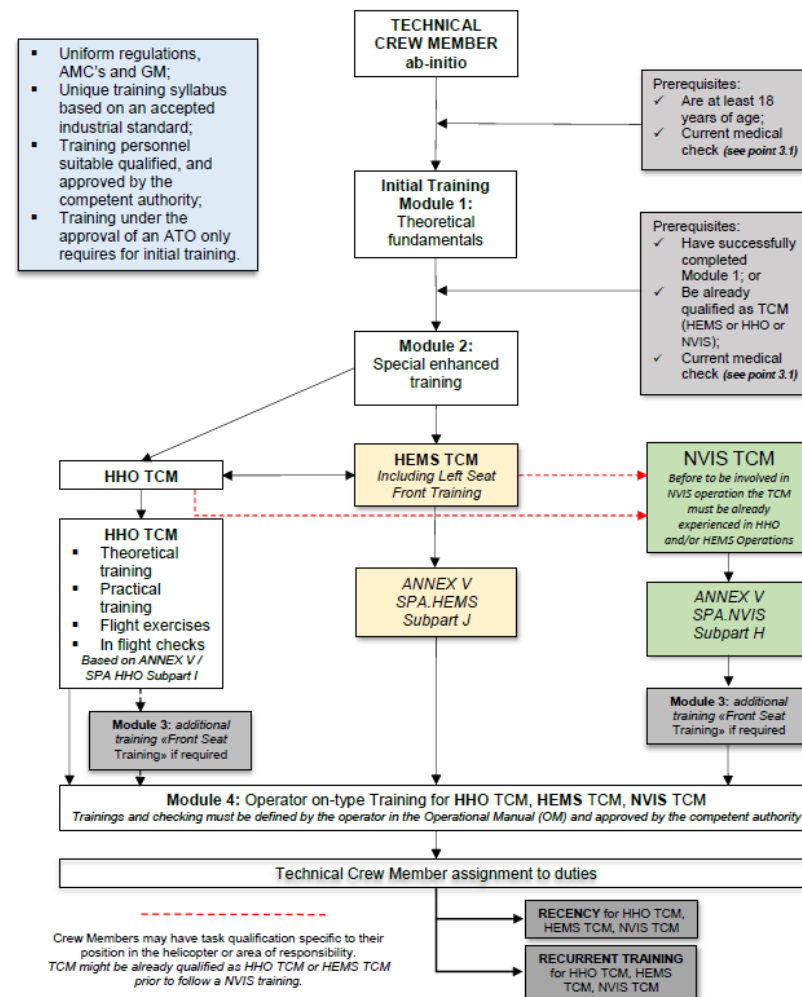
3rd Workshop Airbus Helicopters Oct. 2019



2nd Workshop Bad Toelz Mar. 2019



4th Workshop DRF Luftrettung Sept. 2020

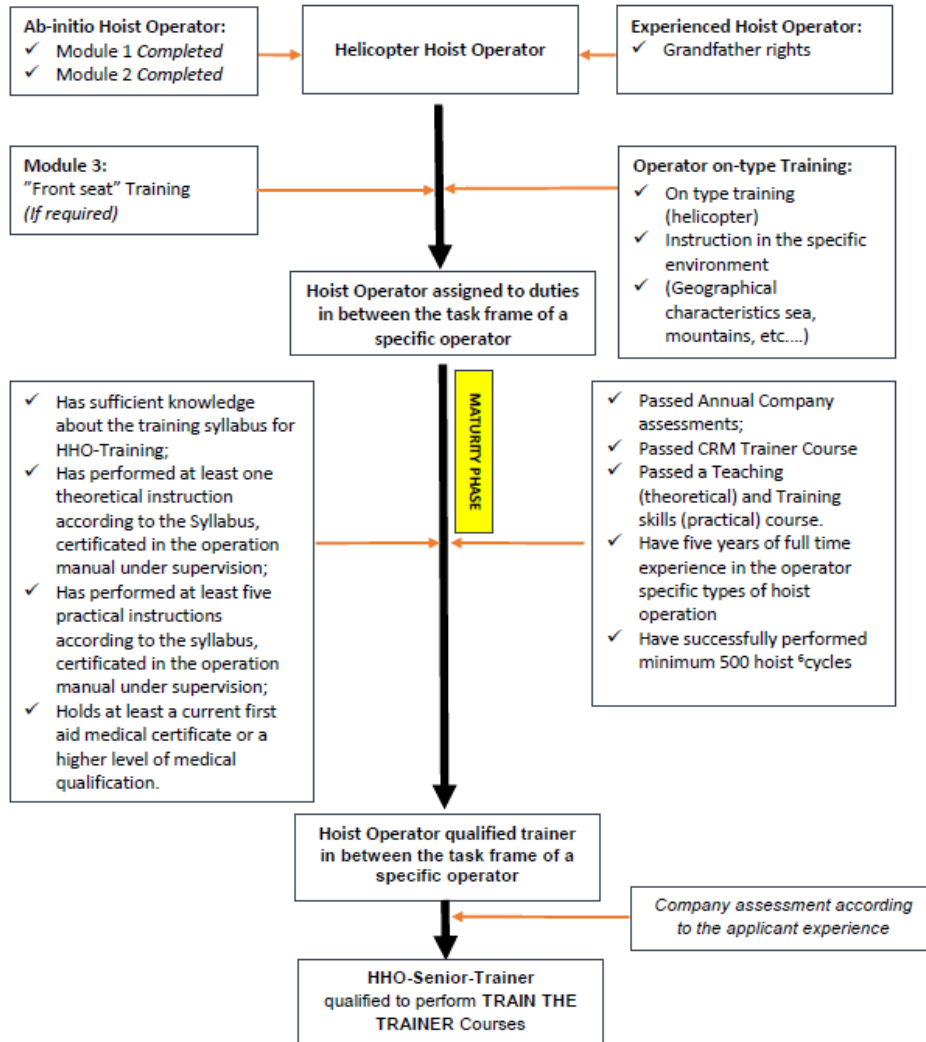


...and many more virtual harmonization meetings and iteration loops...

Hoist Operator Training Guide

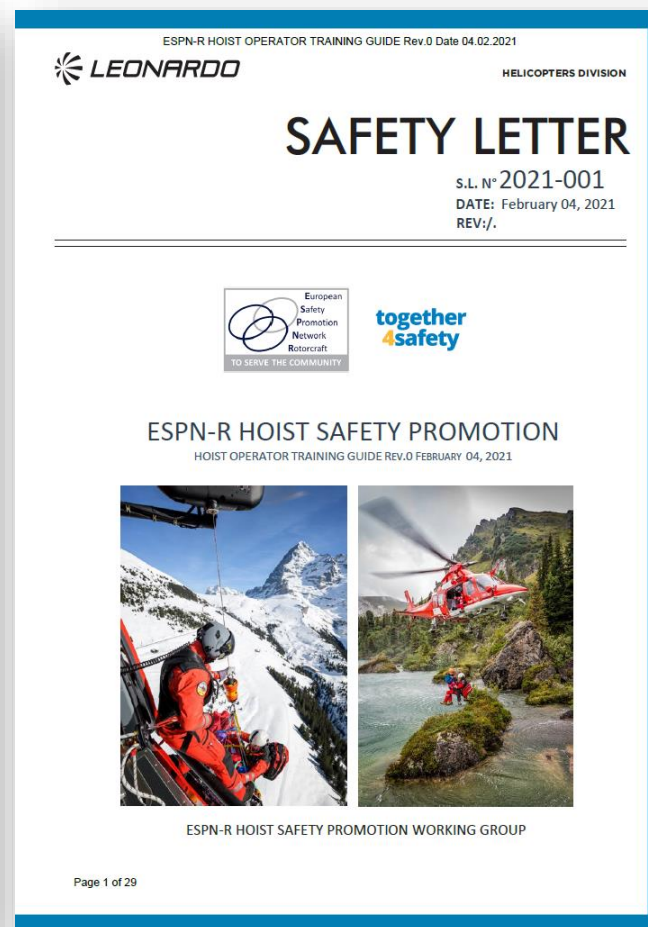
ANNEX 01

1. From Hoist Operator to Senior Hoist Operator Trainer:



“This document, which is focused on the Hoist Operator, aims to highlight on the different training phases of the Hoist Operator from ab-initio to Senior Trainer. Considering the interactions with other crewmembers and specificities of the mission, the Hoist Operator training philosophy cannot be limited to the use of the hoist system only. It must cover essential aspects of Helicopter Hoist Operation including, but not limited to, Crew Resources Management, Airmanship etc...”

....and finally on February 24th, 2021 the ESPN-R Hoist Operator Training Guide was released by together4safety, Leonardo Helicopters and Airbus Helicopters.



Link together4safety→ [here](#)

....And on March 1st, 2021 HeliOffshore referenced the ESPN-R Hoist Operator Training Guide in their **Wind Farm Recommended Practice (WinReP)**

Version 1.0

HO-WF-RP-v1.0

Wind Farm Recommended Practice (WinReP)

Recommended Practice for Wind Farm Operations

Enter >

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Link to HeliOffshore → [here](#)

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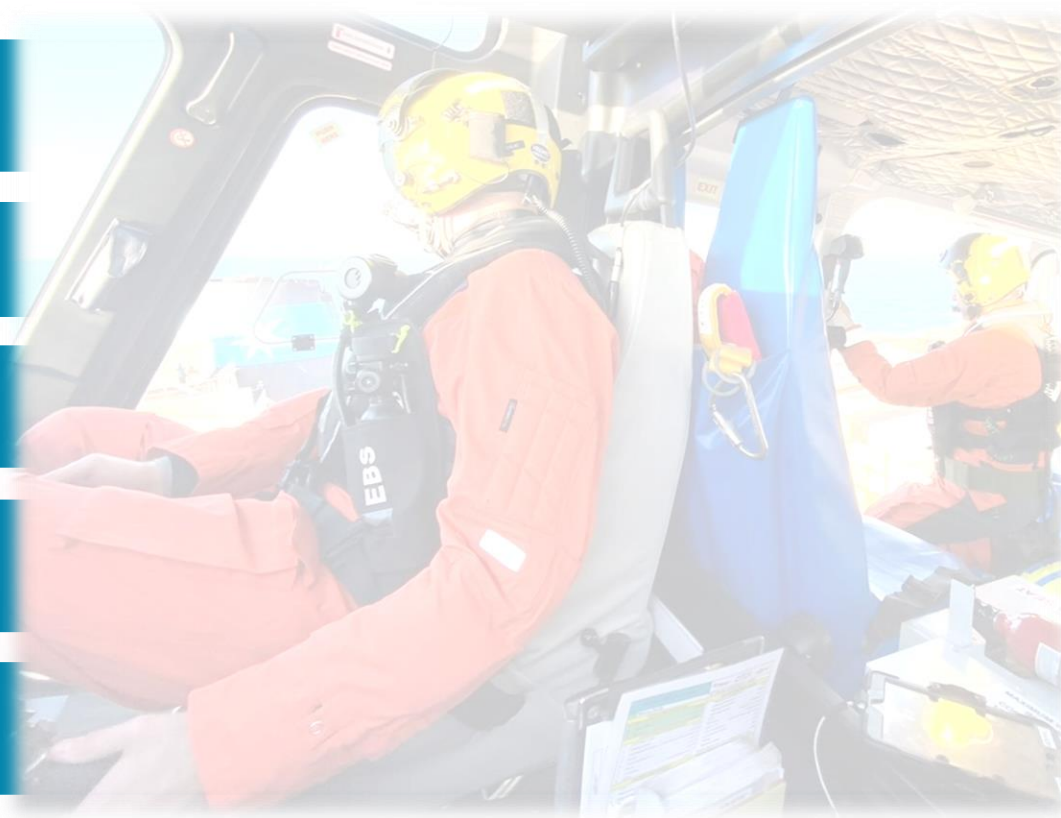
Helicopter Hoist History / Mission Evolution

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Pilot Training Guide for Hoist Operations

Simulated Helicopter Hoist Operations



Pilot Hoist Operations Training Guide Workshops



First Kick-off DRF Luftrettung Sept. 2021



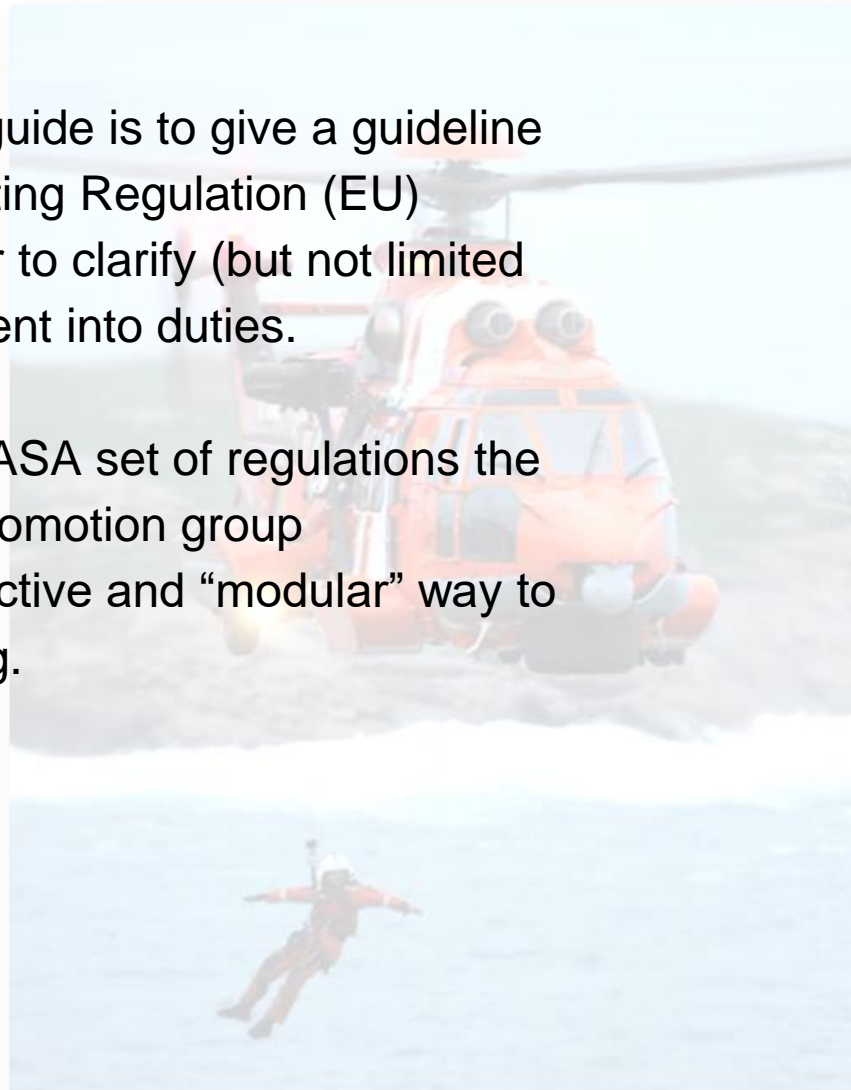
2nd Workshop Leonardo Training Academy Nov. 2021

...and already more virtual harmonization meetings and iteration loops...

Pilot Hoist Operations Training Guide

The aim of this upcoming training guide is to give a guideline for pilot training, based on the existing Regulation (EU) 965/2012 on air operations in order to clarify (but not limited to) training, checking and assignment into duties.

Considering the already existing EASA set of regulations the ESPN-R Hoist Operation Safety Promotion group suggests and recommends an effective and “modular” way to perform pilot education and training.



Content

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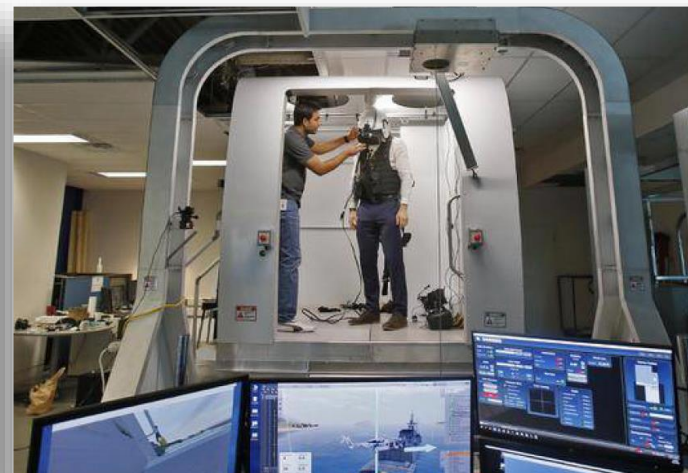


DRAFT Whitepaper on Simulated Helicopter Hoist Operations

- ❑ Nowadays the **environmental and financial impacts of flight training** need to be contained more than ever **maintaining the highest standards** in order to always **improve safety and efficiency of operations**.
- ❑ Helicopter Cabin Crew and especially Hoist Operator still have to perform almost all their flight training on helicopter while **Pilots and Technicians are largely using simulated training solutions**.

ESPN-R “Hoist Safety Promotion” does not aim to establish a standard concerning Hoist Operation simulated training but has the scope to recommend a structured approach in order to give credits to such activity.

Simulated Helicopter Hoist Operations for ab-initio, advanced, recurrent, etc...



Crew to receive training in simulator or similar device can reproduce various kind of normal & emergency procedures

Simulated Helicopter Hoist Operations

WHAT TO WE EXPECT?

- *Adapted to the crew member that need to be trained;*
- *Providing a safe environment (Risk free training);*
- *Allows to apply Standard Procedures;*
- *Helps to reduce flight training time on real aircraft;*
- *Practicing emergencies and abnormal situations that cannot be performed on real aircraft;*
- *Be able to perform more repetitions of a procedure, a task or an event;*
- *Promotes positive training transfer (related to fidelity);*
- *Sustainable by reducing greenhouse gas emissions and environmental impacts of flight activities;*



SIMULATED HELICOPTER HOIST OPERATION TRAINING

Training Device	Main Target/Crew	Concept	Comments
Training Tower (Procedural tower)	<ul style="list-style-type: none"> • HEC • Hoist Operator 	A platform hanging at height reproducing a helicopter cabin. Cabin is fitted with a rescue hoist or equivalent.	This device allows to train HEC and HO on basic safety and hoisting procedure (e.g. entry and exit the cabin in flight), use of personal protective and mission equipment, hand signals, use of the rescue hoist hook (tasks not limited to).
Virtual Reality (VR)	<ul style="list-style-type: none"> • Hoist Operator 	Helicopter cabin and hoist operation are virtually reproduced. To access the simulation, Hoist Operator needs to wear VR Goggles. System can be enhanced using different hardware like physical hoist pendant, physical rescue hoist cable, etc...	This device, when used in stand-alone mode, allows the full immersion of the Hoist Operator in all hoist mission scenarios, in all weather conditions. The HO can apply standard phraseology (including voice marshaling) performing normal and emergency procedures, hoist malfunctions training and different type of lifts.
Dynamic Simulator	<ul style="list-style-type: none"> • HEC • Hoist Operator 	An Helicopter cabin (or a mock-up) fitted with a rescue hoist (or equivalent) hanging at height on a mobile platform.	It is a more advanced device than the training tower. HEC and Hoist operator perform hoist operation using a moving platform allowing them to carry out basic voice marshalling procedure. Offshore and inland basic hoist operation can be played but it depends on how the whole structure (where the simulator is installed) is equipped. Can be partially positive for Pilot in terms of Crew Coordination.

**IMPROVES SAFETY
& EFFICIENCY OF
HHO**

**REDUCES TRAINING
COSTS**



ESPN-R RECOMMEND TO PROMOTE STRONG CRM CONCEPT FOR HELICOPTER HOIST OPERATIONS

FOR WHO?

- ❑ HHO CREW MEMBER;
- ❑ HELICOPTER TECHNICIAN;
- ❑ GROUND PERSONNEL;
- ❑ MANAGEMENT STAFF.

TOPICS

Not Limited to...

- EFFECTIVE COMMUNICATION WITHIN THE HHO CREW;
- BRIEFING AND DEBRIEFING *INCLUDING POST INCIDENT CONSIDERATIONS*;
- THE TEAMWORK;
- DECISION MAKING;
- HUMAN FACTORS.

THE TEAM MISSION STATEMENT SHOULD ADDRESS THE NEED TO PREVENT AIRCRAFT ACCIDENTS BY IMPROVING TEAM PERFORMANCE THROUGH BETTER TEAM COORDINATION.

The rescue hoist was intended to save and rescue life's and had developed new fields of operation/missions.

All who work on and with the hoist, shall have **full awareness** of potential hazards caused by non-complying with regulations, procedures, recommendations, lack of communication, etc.... which may lead to injuries and loss of life.


At all time
THINK

FLIGHT SAFETY!



WE NEED YOUR FEEDBACK!

Let's work together, as **SAFETY** is no competition!



Beiträge in dieser Gruppe suchen

Start

Ihr Netzwerk

Jobs

Nachrichten


Mitteilungen

Sie

Mehr

Premium testen

16-18 Nov | Bremen - Hear from industry leaders at Space Tech Expo Europe 2021. Anzeige ...



Alexander Weissenboeck

Verantwortlicher

Gruppe erstellt: Okt. 2018

Ausstehende Beiträge0

Mitgliedschaftsanfragen0

Gruppe verwalten


Gruppe bearbeiten


Aktuell

ESPN-R Hoist Operation Safet...


ESPN-R Sling Load Operations...


EUROPEAN ROTORS: THE VTO...





ESPN-R Hoist Operation Safety Promotion

Standardgruppe

Beitrag in dieser Gruppe beginnen

Foto

Video





Umfrage

Alle

Empfohlen

802 Mitglieder

Darunter Dr. Bettina Schleidt und 363 weitere Kontakte



+360

Kontakte einladen

Alle anzeigen


Über diese Gruppe

Share best practices, SOP's, leaflets, check lists, guidance & training material, templates, risk assesments, hoist operations pictures, etc. and make them accessible to the hoist community.

Join the ESPN-R Hoist Safety Promotion Community, link [here](#)

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Thank you, for helping us to
increase safety on hoist
operations



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