

IASA 21-06

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A small contribution on the subject of "operational safety" (occupational, machine and flight safety).

An interesting report that is thought-provoking at the same time. I am proud that we published the Marshaller-Syllabus in Switzerland as early as 1996. Everything that led to the incident was discussed and documented as early as 1993 - 1996 in the FOCA / SUVA working group "Marshaller-Syllabus" (FH-SY). See FH-SY chapter 3.2. Some of the things that led to the incident have to do with the violation of the fundamental rules of the EN 1492-1 to 1492-4 and EN 1677 standards. So much for the state of the art in Europe and Switzerland.

But what do we learn from what happened?

This is not recognizable on the label, but we can assume that there are standards in the USA that reflect best practice. Obviously we are dealing with a manufacturer/distributor who does not know these rules.

The user does not seem to have any knowledge of this either. The user/owner appears to be the US Forest Service - Department of Agriculture or another company. When the helicopter operator accepts the load, strict liability is transferred to the helicopter operator. A legally tricky situation that we are also familiar with in our part of the world.

What is problematic about the incident (triggering factors):

- Nylon tape = polyamide, with a usage elongation of > 5% (more likely 15%) is not suitable.
 - > Elongation under load = friction = heat >> see traces of melting and destruction on the harness.
- Flat ribbon, with additional stretching = worst solution, because ribbons are set in strong axial and lateral vibrations when the flow is flowing into them.
 - > Vibration under load = friction = heat >> see traces of melting and destruction on the harness.
- Loose loops of the belt straps combined in a fitting (Gunnebo SKO), without separation by B-links and without connection by suitable connex links.
 - > Vibration under load and stacking of loops = friction and pressure = heat >> see damage to the loops
- Connections of loops with a shackle is OK so far; the loose loops made of polyamide are exposed to great friction, the loops are poorly protected against abrasion (no edging with abrasion protection). After all, the shackle is secured with a cable tie.
 - > Vibration under load and stacking of loops = friction and pressure = heat >> see damage to the loops.

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The report does not really go into all of these causes. After all, it is mentioned that the strands should be as round as possible.

Measurements to reduce the risk

- Materials such as polyester (PES) or high modulus polyethylene (HMPE) or wire rope with elongations <2%
- Round, compact strands with the smallest possible cross-section
- strands equipped with thimbles, connected at the top with a ring set with an A-link and two B-links and per strand with a connex link (2 per B-link); the strands must be separated. Connected at the bottom with connex link with a safety hook.

The report mentions UV damage. The lifting straps are damaged directly on the supporting fibers (aging). One reason is likely that they get stuck on the Smart Pump for weeks or months and are exposed to the elements.

Measure: if necessary equip with safety hooks - which makes removal easier - and stow in a container after each transport.

Author

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In the helicopter operation since 1983. 1993 - 1997 project employee at Suva and FOCA for the "Marshall-Syllabus" project.

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References: Approved Supplier Airbus CH-53 and NH90 program, ISO 9001:2015, EASA Part 21 G POA CH.21.G.0022, NATO NCAGE SAC 17.

Author: FOCA Marshall-Syllabus (1996), co-Author: DGUV 214-911 Information "Safe operations of helicopters during aerial work" (2017).

Downloads: <https://www.air-work.swiss/library-history> (FH-SY, DGUV 214-911, other)

Reference: <https://www.air-work.swiss/services/experts#vorkommnisse-unfalle-kommentare>

#slingload
#helicopter
#Rigging
#slingingequipment
#ShortLine
#LongLine
#HESLO
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