



Maritime Helicopters

January 2016 QUALITY & Safety Notes

New Year's Requirements:

The New Year brings a rather busy time to the Quality and Safety Department. End of Year 2015 reports and the promise of 2016 audits from customers as they update their Safety, Maintenance, and Operations information. So far we have Department of Defense audits scheduled for February 24th, a Conoco-Phillips visit some time in February, and more importantly, the results of our own internal audit from end of year 2015!

Of course, the audits which we are subjected to, or perform on our own, are only as good as the corrective action applied to the Findings and Observations found during the audit. Brent, Isaac, and I would like to thank everyone for their participation in the audit process! I think it is very clear, that everyone at Maritime wants to work for a quality organization. As we work towards compliance to government, industry, and *our own standards*, many of us will apply Root Cause Analysis to our findings to improve the company. More to follow as we continue to work on our results!

Some End of Year Results

In 2015 we worked almost a third more man-hours than we did in 2014! And we had **zero** OSHA recordable injuries. THAT is a great success! We still all need to be very aware, that a small company has very little room to "hide" recordable injuries in a sea of large-corporate statistics. Please, to be watchful in every operation we perform and watch out for your coworkers. It may seem unfair, but a large oil company can kill someone in an accident and we can have a work related slip-or-fall incident, and we will look worse on paper and have to explain our "high" Total Recordable Injury Rate" to our customers and the government.

Skid Steer at Nikiski

Whether you call it a Skid-Loader, a Skid-Steer, a BobCat, or a Uni-Loader, Maritime now has one in place at the Nikiski hangar. The Skid-Loader is a different kind of animal as far as vehicle safety goes...if you wear it like a second skin (seat belt on) it's actually hard to hurt yourself on one. But the second you're not strapped in and get a load too high or have a rollover due to a bad slope, you can get thrown out and pinned in a second. What I'd like for everyone to do is take a look at this class from OSHA, and then if you operate the skid-steer, please put the words "SKID STEER" in your response to Jessica for compliance that you've taken the class along with the January safety notes.

https://www.osha.gov/dte/grant_materials/fy09/sh-19503-09/skid_steer_loader_safety.pdf

Ladders at Alyeska Sites

I need to remind everyone who works the Alyeska contract again after a call from their safety rep. When ladders are not in use in the Alyeska facilities, please ensure that the bungies or ropes which secure them to the wall so they don't fall, are properly used. This is their policy and since they are the customer, they win. Make sure the ladders are secured!



Incident Reporting

Ground Occurrence & Flight Irregularity Reports

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There are three Incident Reports that I'd like to discuss this month...Both Ground Maintenance Issues that we need to be aware of...

The Right Tool for the Job?

In the back shop at Fairbanks, a small team was using the arbor (manual) press to push out blade bushings. One particularly pesky bushing was offering a bit more resistance than the other. The hydraulic press sits about 3 feet away. What would you do in this situation???

- A. Use the Hydraulic Press?
- B. Hang your full weight on the Arbor Press?
- C. Get two people to hang their full weight on the Arbor Press, those individuals falling to the floor when the press fails? Then order new parts to fix the Arbor Press???

Well, the unfortunate answer in this situation was C. Luckily no person and no aircraft parts were damaged in this operation. We probably don't need to beat this to death. Please use the right tools for the job. The "Good Idea Elves" rarely have good ideas.

The Best Time to Find Broken Components?

Good old 305 MH was in for its annual and engine turbine replacement. When the turbine was replaced and the engine almost ready to install. When the compressor protective cover came off it, the compressor was found to have some pretty serious damage to the blades. I think you can fill in the blanks for yourself...last minute parts ordered, annual takes longer than it was supposed to, and every one runs around trying to make something happen that should have been caught earlier. Let's just use this one as an example...whether we are doing a preflight, a daily, or any other inspection, let's keep an eye open to the big picture and catch these things before it's too late.

GRB Hangar Door Failure

Okay, so maybe this isn't a *Maritime* Ground Occurrence Report, but it happened **to** the hangar where we keep the Glennallen Response Base aircraft. While opening the hangar door to begin towing 308MH out, the bifold hangar door failed and the door came crashing down on **nobody**...Lucky Day?



For the last word on this month's safety letter, I'd like to include the text of an article that I totally stole and re-worked from Gizmodo.com. This writer does the best job of explaining why wearing cotton fibers in the cold is the absolute worst thing you can do. All the Denali climbers always said that "Cotton Kills" and I took that as gospel. But here is the "why".

Why Cotton Kills, A Technical Explanation



"He was wearing all cotton, which is the worst fabric for cold, wet weather. The weather just got the best of him," reads an official statement by Alaska State Troopers about the death of a hiker there in 2005. This is how and why cotton can kill you.

Hypothermia

The Mayo Clinic definition reads: "Hypothermia is a medical emergency that occurs when your body loses heat faster than it can produce heat, causing a dangerously low body temperature. Normal body temperature is around 98.6 F (37 C). Hypothermia (hi-poe-THUR-me-uh) occurs as your body temperature passes below 95 F (35 C)."

Over 1,500 people in the US die from hypothermia each year. It causes a variety of things in your body to stop working, but the most important seems to be your heart. It will stop if your core temperature drops too low.

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So you only have to worry about it in sub-freezing temperatures right? Wrong. While cold conditions will affect us all differently depending on our general health, physical fitness and other factors like genetics, hypothermia can be experienced in surprisingly warm weather. For instance, the Mayo Clinic warns that elderly persons may be subject to hypothermia, "...in an air-conditioned home."

Hikers are more likely to die of hypothermia in the spring, summer and fall than they are in the winter; during those months the odds that they'll be caught unprepared are simply higher.

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And, the Mayo Clinic also specifically cautions against wearing cotton, saying, "Wool, silk or polypropylene inner layers hold body heat better than cotton does."

Cotton And Water

Cotton garments can absorb up to 27 times their weight in water, something which means they a) take forever to dry out and b) actively work to cool your body in even moderate temperatures.

And you can get cotton wet without exposing it to rain or submersion. Sweat heavily in it and it will soak up that sweat and hang onto it, which can lead to any of the problems described in this article as easily as falling into a lake will.

Why is cotton so absorbent? According to the Appalachian Mountain Club:

"A cotton fiber is like a tiny tube formed of six different concentric layers. As individual cotton fibers grow on the plant, the inside of the 'tube' is filled with living cells. Once the fiber matures and the cotton boll opens up to reveal its puffy white contents, these cells dry up and the fiber partially collapses, leaving behind a hollow bean-shaped canal, or 'lumen'. This empty space holds lots of water."

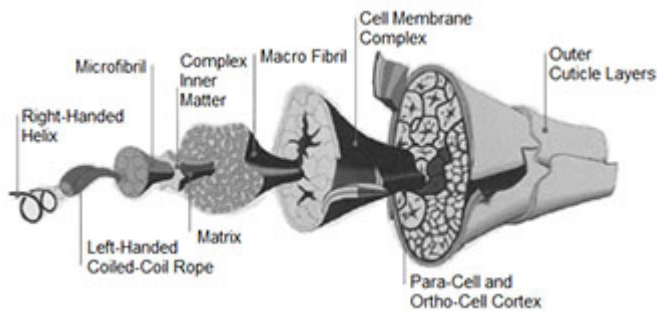
This, coupled with the vast amount of space contained within and between the fibers, provides cotton with its tremendous water-absorbing properties."

"Processed cotton fibers are 99 percent cellulose. Cellulose is a polymer composed of a long chain of connected glucose molecules that each contains three hydroxyl groups with slight negative charges. Water, as you may remember from high school chemistry, has a slightly positive charge (the oxygen atom draws in the two hydrogen atoms' electrons). The upshot is that water molecules are attracted to—and bond with (via hydrogen bonds)—the zillions of hydroxyl groups in cotton. This, coupled with the vast amount of space contained within and between the fibers, provides cotton with its tremendous water-absorbing properties." Cotton traps water inside its fibers, which is why it takes so long to dry out.

Why Being Wet Is A Problem

According to the United States Search and Rescue Task Force, "Water conducts heat away from the body 25 times faster than air because it has a greater density (therefore a greater heat capacity). Stay dry = stay alive!" Getting wet and staying wet, even in above-freezing temperatures can rapidly cool your body as a result. And, by filling up with water, an insulating cotton garment such as a hoodie loses the trapped air space that made it warm when it was dry. This exposes you more significantly to simple radiant heat loss, where the sheer difference in temperature between your body and the environment causes you to get colder. You'll also be more subject to evaporative heat loss as water slowly leaves the cotton garment, something exacerbated by wind chill. Altogether, getting wet and staying wet outdoors is simply a recipe for disaster.

How Other Fabrics Keep You Warm When They're Wet



Wool: The outer layer of each wool fiber is a filmy skin called an epicuticle. This coating repels water drops, preventing them from soaking through the fibers. Due to the fuzzy nature of wool fabrics, rain droplets are less likely to break up, instead beading on the surface and running off. When water is in vapor form from humidity or sweat, it can pass through the epicuticle and be absorbed into the wool fiber; each fiber can absorb up to 37 percent of its weight without feeling wet, pulling water vapor away from your body and spreading it across a larger surface area so it can evaporate. And finally, the "crimp" or kinkiness of the wool fibers also builds dead air space into any wool garment, providing insulation even when wet.

Polyester: Polyester fibers are the basis of many garments and insulating materials, including Polarfleece, Primaloft, Capilene, microfibers and anything similar. Polyester fibers do not absorb any water. At a minimum that means materials made from them will dry more quickly than cotton. Most garments made from polyester are designed to insulate while wet by retaining trapped air and many are designed to actively shed moisture through the shape or arrangement of their fibers.

Nylon: Similar to polyester in that its fibers are created from petroleum, nylon is also used to make "fleece" insulating garments. While nylon fibers can absorb some water, their saturation rate (dependent on which type of thread is used) never exceeds 10 percent and it lacks the polarity issues of cotton. Thanks to the lack of molecular bonding and the small amount of water absorbed, Nylon dries very quickly and, similar to polyester, fabrics made from it can be designed to retain trapped air when wet, keeping them warm.

Rayon, Viscose, Tencel, Lyocell, Bamboo and Silk: Silk can retain up to 30 percent of its weight in water and will lose most of its insulation when it does. Other materials listed here are essentially artificial silk made from cellulose. Not only do they absorb water, but they have the same molecular bonding issues described for cotton above.

So What Do You Wear?

It's fairly easy to ditch cotton on the top half of your body. Your best option is to swap a cotton t-shirt for one made from an appropriate weight of merino wool. Merino is a wonder material that helps keep you cool when it's hot and warm when it's cold, while wicking water away from your skin to keep you dry. Yes, t-shirts made from it are more expensive than their cotton equivalents, but they'll also last longer, won't stink after you sweat in them and, well, won't kill you through hypothermia. You can find merino in weights appropriate for the hottest desert conditions on down to stuff designed for the coldest winters. It's an excellent fabric to be active in. Insulation layers are also easily replaced. There's very few things that are warmer or more versatile than a wool sweater and mid-layers made from fleece are insanely good value while being very warm.

The hardest item of cotton to ditch is going to be your jeans. Nothing is more of a staple in the western wardrobe and jeans manage to be both fashionable and rugged, all factors that make it easy to just acquiesce and wear them to do stuff outdoors. But, even in warm summer conditions, you'll be better off in a pair of synthetic trousers, which will breathe better, wear cooler and won't soak up water from sweat or a stream crossing.

For pants that replicate much of the look and versatility of jeans, but are practical and comfortable for use outdoors, we recommend the Lululemon ABC Pant (\$128) which combines solid casual style with a wicking, four-way stretch material for movement and comfort. Those are great for warmer weather while the Makers and Riders Commuter Jean (\$169), which combines a waterproof, four-way stretch material with a jeans-alike cut and look is a great option for colder or wetter conditions.

There's plenty of cheaper options out there if you don't mind looking like the type of person who values the ability to convert their pants to shorts by just zipping them off. **Any material but cotton is going to work better at everything, especially at not killing you.**

(The pilots reading this will remember that having lots of artificial fibers next to you in a flash fire, isn't the greatest thing unless you like being doused with hot, molten plastic...better stick with the wool)

See you next month!

Dennis

Dennis S. Busch

Quality and Safety Manager

safety@maritimehelicopters.com



1915 Donald Ave

Fairbanks, AK 99701

Tel 907.452-1197

Cell 907.750-9548

Fax 907.452-4539

