HIGH AMBITIONS

WHAT EQUIPMENT, MODIFICATIONS AND PREPARATIONS ARE NEEDED FOR SAILING TO HIGH LATITUDES? ICE PILOT MAGNUS DAY EXPLAINS

Specialist high latitude yachts invariably have metal hulls and are very solidly built with large fuel tanks and internal steering positions. But that doesn't mean that a well-insulated, properly prepared, solid oceangoing yacht built of other materials can't cruise some high latitude areas.

The key is that a yacht needs to be solid – solid hull, solid rig, solid systems and solid crew and, if of fibreglass construction, avoid high risk areas. You'll need to outfit and equip to commercial standards: a vast amount of yachting gear will not last in these conditions. Any boat so lightly built that it deforms in a seaway should be avoided, so if your rigging goes slack or you find doors and drawers don't fit when pounding to weather, forget it. Water will find its way in and make life below miserable, quite apart from the risk of a catastrophic ice or ground impact.

The hull and rig should be capable of taking a full speed grounding on solid rock and the stem strong enough to smash into that unseen berg. Glacial ice should be considered rock hard and even a small bergy bit can weigh tens of tons, probably more than your yacht. Unless you have absolute faith in your stem you should consider protecting it with a stainless or Kevlar sheath. If nothing else, this will protect your gelcoat against abrasion if you do decide to get involved with the brash in front of a glacier. Three-bladed fixed propellers are much tougher in ice, but never engage reverse gear unless someone is watching astern for ice that might get sucked under the hull. Carry a spare propeller.

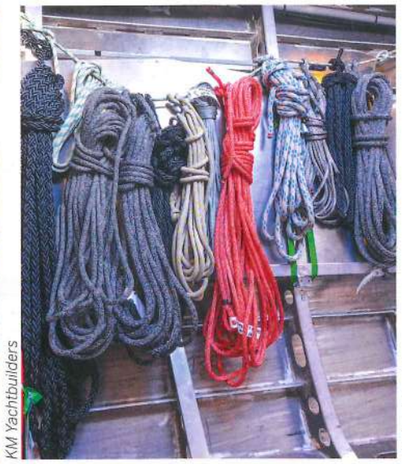
Ready for anything

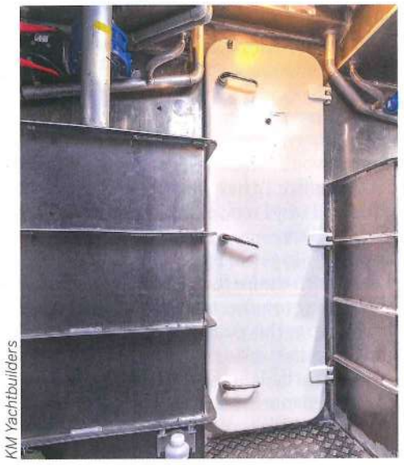
All systems must be in tip-top condition. That means a full service or overhaul of the engine and its associated systems. If your engine is at all reluctant to start, go back to first principles before you leave home.

Are the batteries in good condition and getting properly charged? What condition are the starter motor cables in? Do you have a spare starter motor on board? Is it easy to change fuel filters? Duplex fuel filters are a great idea here. Change your gearbox oil and carry spares and repair materials for everything. Make sure you know how to service and fix all the systems on your boat.

If there are items you consider too big or too expensive to carry, do some research before you leave home port for suppliers that have stock and are used to dealing with international couriers. Make sure you have serial and part numbers and supplier details written down. ›

Anchored at Faraday, a British Antarctic Survey station in Antarctica





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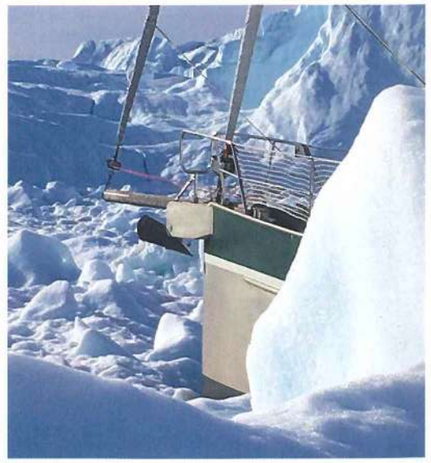
Collision bulkheads, watertight doors and plenty of stowage space aboard the new 66ft *Qilak* designed by Owen Clarke Design and built by KM Yachtbuilders



Above: Skip Novak tying ashore to a rock with warp and wire strop. Above right: a boat must be strongly built to handle sailing through ice

Download manuals for everything. Researching these details online once you get to remote locations may very well be impossible. Many a high latitude expedition has wasted its time waiting in port for spares to arrive.

The polar high extends south in the northern hemisphere during the summer and long periods of calm are common. The same is true on the southern half of the Antarctic Peninsula. Consider the fuel range of your vessel and remember heating and generation demands as well. Examine the distances between fuel stops along your proposed route and remember that remote northern communities may only have enough fuel for themselves.

The same is true of the south but there is no fuel available in Antarctica, South Georgia or any sub-Antarctic island. Look at where a fuel bladder could be securely placed as low down as possible in your vessel and revert to jerrycans on deck only as a last resort. Have a naval architect investigate how this added weight will effect your stability curve.

If you must have cans on deck they should be of the very strongest design and they'll need a bombproof cradle system to hold them in place in the worst conditions. And are your stanchions strong enough?

Water everywhere

Drinking water can be made from glacial ice but not sea ice, and clean, fresh water can be hard to find in the Canadian and American Arctic. If you have a watermaker, check with the manufacturer what its performance is like in 2°C water. It can be as little as 20% of that in 20°C water. If you think that will be an issue, plumb a heat exchanger into the raw water side of the system.

The art of safe, enjoyable high latitudes cruising is a comfortable life on board so you can keep a fully vigilant watch on deck. At the very least, a good dodger will be needed and excellent clothing. All-in-one insulated waterproof suits from the likes of Mustang and Fladen are easy to get into and solidly warm. Breathability is not as important as being 100% waterproof. Semi-permeable membranes don't work well in cold, damp conditions.

Don't bother with any form of 'winter' sailing or mountaineering glove; buy rubber fisherman's gloves with removable liners and several pairs of cheap fleece gloves to go inside. Most of them will be on the drying rack most of the time!

Neoprene welly boots and hats that cover your ears should complete your outerwear, along with plenty of layers of fleece and/or wool underneath – avoid cotton. Every crewmember should have an immersion suit and practice getting into it in a hurry. Clear goggles such as those workmen use to protect their eyes will help you see into windy blizzard conditions without hurting your eyes.

Below decks it's all about heat and moisture management. Keep doors open to allow air to circulate and open all the hatches on those warm sunny days. Drip pot diesel heaters are reliable and don't use any electricity and as they're designed to run non-stop on small and medium fishing vessels most come with hotplates and even ovens for cooking too. Consider a rack over and around the heater for drying wet gear but make sure it's impossible for anything to fall on the hotplate – which is the best place to keep the kettle hot.

KM Yachtbuilders

Top: biodiesel stove provides warmth, comfort and reliability below decks. Above: warm underlayers need to be kept dry with 100% waterproof outers

If you can't find a space for a drip pot heater you'll probably have to revert to a diesel fired forced air heater, often called a night heater or bus heater. They use considerable electricity and can be unreliable and are tricky to fix so carrying a spare is a good idea. They're also a bit noisy so think about where to install it and the routeing of the hot air ducts so you lose as little locker space as possible. Lead a duct to the bathroom and, if sufficient ventilation can be arranged, you've got an instant drying room. They crew will be much easier to encourage on to deck if they have nice, warm, dry foulies to get into.

Hatches and portlights are likely to run with condensation and can be insulated with closed cell foam pads, temporary acrylic double glazing and even bubble wrap can help here. Take care that any added insulation is instantly removable from any hatch that may be needed in an emergency.

'THE ART OF HIGH LATITUDES CRUISING IS A COMFORTABLE LIFE ON BOARD'

Benedict Gross

***Morning Haze* is an aluminium-hulled Bestevaer 55ST built specifically for high latitudes cruising**

Above: if you have the space on deck, drum reels are an effective way to stow and deploy polypropylene shore lines.
Right: home comforts are important for crew morale. This was taken during a birthday dinner aboard Skip Novak's 54ft *Pelagic*

Comforts of home

Your crew's consumption of hot food and especially hot drinks is likely to go through the roof as it gets colder and you'll therefore use more propane/butane for cooking. Think about shipping twice the gas you'd usually need for a cruise of the duration you're considering. Where will the bottles live? You may not be able to get your gas bottles filled in faraway locations but if you carry a universal adapter kit you can use local bottles if you can find them.

The crew may also develop a taste for roast meals and the oven will warm up the cabin but the attendant condensation will need to be dealt with. Amazingly, every 13kg bottle of gas burned in your galley produces 20lt of water as steam!

Fully closing the companionway for long periods will make the boat seem colder due to moisture. A hatch over the kitchen will help with this.

For communication, VHF will work well for local weather in the north and Iridium for email and GRIB files in both hemispheres and ice reports where they are available. If you have a reliable shore contact they can download and compress ice reports for you and send them by email. The performance of these systems is usually down to antenna placement and condition. Check your coaxial connections for both antennas and consider replacing if there is any sign of water ingress or if the cable or the antennas are not first class.

Iridium has just launched a new constellation of satellites which they claim will give high speed connections worldwide, but this has yet to be proven. If you're installing new equipment, though, it might be worth waiting to see how that pans out and what costs are like.

HF radio tends not to be very reliable the closer you are to the magnetic poles and while Inmarsat based systems will work in most of the frequently cruised southern destinations it's unreliable above 70°N.

A sharp lookout

Modern radar systems are a godsend and much better at picking up smaller bergs than they used to be but are still no replacement for an attentive watchkeeper with a good view and instant access to the helm and throttle. Make sure all your crew are familiar with the tuning and filtering controls of your radar. It is amazing what a well-tuned radar will pick up and how huge a berg can be entirely missed by a badly tuned set, especially in a seaway.

In thick fog in the Drake Passage on the way back from the Antarctic Peninsula, we came within 50m of a sheer-sided berg the size of an IKEA store. The radar simply did not see it. I suspect the radar signal was reflected straight off into the distance until we were adjacent to it. Luckily the mark one eyeball was paying attention!

Forward looking sounders are good for scoping out uncharted territory but have yet to prove their worth for spotting bergs. They just don't look forward enough yet – but the technology is improving all the time. A good idea for shallow uncharted areas is launching the tender and sending the crew in with a handheld depth sounder so they can get back by radio with soundings.

Get yourself a pair of ice 'tuks' – long poles with a metal spike at one end –for pushing ice away from the boat or, more accurately, pushing the boat away from ice in most cases. These can be wooden poles or, if you want to be fancy, a pair of two-part windsurfing masts.

'WE CAME WITHIN 50M OF A SHEER-SIDED BERG THE SIZE OF AN IKEA STORE'

Ice floes threatening off the sub-Antarctic Macquarie Island

You'll need two or three nice big anchors, and all-chain rode. The modern concave designs with the roll bars really do outperform older designs and some stow almost flat.

Also useful for awkward anchorages are several very long polypropylene shore lines, some heavy-duty lifting strops to wrap around rocks onshore and a bunch of large shackles to join it all together. The best way to store, deploy and recover these lines is from rope drums on deck but if that's a step too far for you they can be stored in climber's rope bags, laundry baskets or even sacks.

As previously discussed you'll need spares and repair materials for all your systems but what about the crew? Feed them well – any idea of operating a calorie deficit to lose weight is a recipe (pun intended!) for disaster. Working in the cold is fatiguing. Look out for each other.

Carry a full medical kit. Annex 1 of MCA UK MSN 1768 Cat A will point you in the right direction for medical stores and equipment. The kit for men and women is slightly different. Do you need gear for both? Invest in training for at least two crewmembers and subscribe to a doctor on call service from a provider like Medical Services Offshore, which can also provide equipment, drugs and training.

High latitudes sailing is very fashionable right now but to head north or south in a lightly built, ill-prepared vessel is to risk your boat, your crew and anyone who tries to help you. Take the time to review, plan, budget, organise and execute solid modifications to your boat and her equipment and you can safely enjoy the wonders of the polar regions. ■

Learn more about preparing for high latitudes cruising and storm sailing from our 12-part series **Skip Novak's Storm Sailing on www.yachtingworld.com**, with accompanying videos and explanations by Skip on the Storm Sailing series on Yachting World's YouTube channel.

Above: this forepeak is a stowage area for stores, spares, vegetables, tender and shore gear. Left: heavy ice build-ups need regular removal to maintain boat stability

Gear has to be well maintained to keep working in extreme conditions

Magnus Day has been working and travelling on boats from 40-185ft in the Arctic and Antarctic every year since 2005. He is best known for his long-term involvement with Skip Novak's Pelagic Expeditions and now runs High Latitudes, **www.highlatitudes.com**, a consulting company to yacht owners and their captains on vessel choice, modification and refit, permitting, crewing and logistics for both polar regions. He also acts as ice pilot to sailing superyachts through EYOS (**www.eyos-expeditions.com**) and owns expedition yacht *Baltazar*, which is available for interesting projects worldwide.